



PSYCHONOMIC
SOCIETY®

ABSTRACTS

of the PSYCHONOMIC SOCIETY

65th ANNUAL MEETING
New York City • November 21-24, 2024

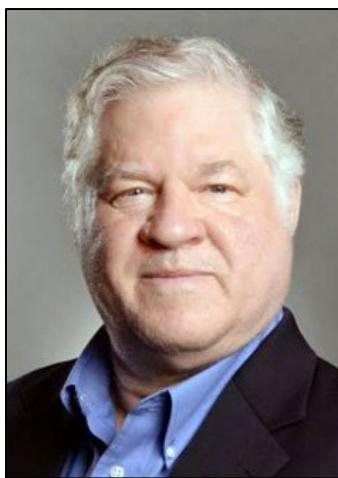
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psychonomic.org

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KEYNOTE ADDRESS



Working Memory and Cognition Inside and Outside the Focus of Attention

Thursday, November 21, 6:30–7:30 PM EST
Westside Ballroom (5th floor)

Nelson Cowan

University of Missouri, USA

This talk illustrates how research can be guided by a conceptual model of information processing and working memory—in this case, the embedded-processes model. In this model, the focus of attention is embedded within the activated portion of long-term memory. Both contribute to working memory, the limited amount of information temporarily held in mind and used to carry out various mental activities.

Working memory is involved, for example, in comprehension, reading, math, and problem-solving. There are some fundamental questions about it. What limits our working memory when attention is available for a task versus when attention is instead directed elsewhere? How does attention pursue goals and deal with distractions?

Dr. Cowan will start by describing some theoretical background of the embedded-processes approach. Then, he will consider what we know, from old and new studies, of three aspects of the mind:

1. the capacity of the focus of attention
2. the persistence of temporary activation of features and concepts in long-term memory
3. the direction of attention by a combination of voluntary and involuntary processes.

For each component, Dr. Cowan will illustrate foundational evidence; subsequent evidence that has motivated changes in the theory; and practical applications of the research topics to education, health, and communication. The evidence includes cognitive behavioral and neuroscientific contributions and considers lifespan development from childhood onward.

About Dr. Cowan

Nelson Cowan is the Curators' Distinguished Professor of Psychological Sciences at the University of Missouri. He specializes in working memory, the small amount of information held in mind and used for language processing and various kinds of problem solving. To overcome conceptual difficulties that arise for models of information processing in which different functions occur in separate boxes, Cowan proposed a more organically organized "embedded processes" model. Within it, representations held in working memory comprise an activated subset of the representations held in long-term memory, with a smaller subset held in a more integrated form in the current focus of attention. Other work has been on the developmental growth of working memory capacity and the scientific method. His work, funded by the National Institutes of Health since 1984 (primarily NICHD), has been cited over 57,000 times according to Google Scholar. The work has resulted in over 300 peer-reviewed articles, over 60 book chapters, two sole-authored books, and five edited volumes.

Captioning and an American Sign Language (ASL) interpreter will be available for this address. This event will be recorded.



GENERAL INFORMATION

Registration

The 2024 Annual Meeting promises to be a global gathering, with over 2,700 colleagues from more than 40 countries converging in the vibrant city of New York. With **more than 1,650 submissions**, this year is likely to be the best-attended meeting in our 65-year history!

Included in registration:

- More than 365 spoken presentations (abstract-driven)
- 5 symposia (member submitted)
- 1,300+ posters in 7 sessions (abstract-driven)
- All Psychonomic Society receptions
- Special sessions such as the keynote address, 5 lunchtime workshops, a special D&I symposium, and more!
- Opportunities for collaboration with an interdisciplinary network of early career, mid-career, and senior scientists.

Registration categories are based on our membership categories. You must have a current membership to take advantage of the member registration fees. If you have questions about your membership category (e.g., in between studies or working in a “pre-PhD” status such as a lab manager or research assistant), please contact Member Services for guidance at info@psychonomic.org.

2024 Registration Fees (USD)

Membership Category	Early Registration <i>Ended Aug. 31</i>	Regular Registration <i>Sept. 1–Oct. 31</i>	Late Registration <i>Nov. 1 or later</i>
Fellow	\$200	\$250	\$300
Member	\$200	\$250	\$300
Emeritus Fellow	\$100	\$125	\$150
Emeritus Member	\$100	\$125	\$150
Graduate Student	\$60	\$75	\$125
Undergraduate Student	\$40	\$50	\$100
Guest*	\$40	\$50	\$60
Non-member**	\$380	\$475	\$500

*Guest

The Guest registration category is for guests who are partners or traveling companions of registered attendees. Attendees eligible to register for the annual meeting as an attendee may not register as a guest.

Guests are allowed to attend our receptions but are not eligible to participate in the educational programming unless they are providing support for the presenter (e.g., ASL/voice interpreter). If the guest is providing support for a presenter or attendee who needs accommodations, a guest registration fee will not be charged.

**Non-member

To register at the non-member rate, you MUST create a user account (if you have not already done so) to register online. Go to [psychonomic.org/page/member](https://www.psychonomic.org/page/member), and follow the instructions for joining as a member but do not pay for membership. After creating and saving your profile, go to <https://www.psychonomic.org/page/2024registration> to register for the meeting as a non-member.

Children Aged 17 and Under

Individuals aged 17 and under can only attend the annual meeting with adult supervision. Children will not register or receive badges. Group leaders must contact staff at info@psychonomicssociety.com for permission to bring high-school groups to the meeting.

Onsite Registration

The onsite registration desk will be at the New York Marriott Marquis in the South pre-function area on the fifth floor. We strongly encourage all attendees to register early to avoid higher onsite fees, expedite your check-in process, and reduce wait times for all attendees.

PSYCHONOMIC SOCIETY'S

ONE WORLD

COGNITIVE PSYCHOLOGY

SEMINAR SERIES

2024-2025 One World Cognitive Psychology Seminars



Liane Gabora
University of British Columbia, Canada
September 25, 2024



Penny Lewis
Cardiff University, UK
March 26, 2025



Richard Prather
University of Maryland, USA
October 23, 2024



Alin Coman
Princeton University, USA
April 23, 2025



Morgan Barense
University of Toronto, Canada
January 22, 2025



Ranxiao Frances Wang
University of Illinois Urbana-Champaign, USA
May 21, 2025



Mel Goodale
University of Western Ontario, Canada
February 26, 2025



All seminars will take place from
11:15 AM until 1:00 PM US Eastern Time.

psychonomic.org/oneworld

Become a Member!

Join the Psychonomic Society to connect with more than 4,300 cognitive and experimental psychologists from around the world! Our members include some of the most distinguished researchers in the field.

Many of us are concerned with the application of psychology to health, technology, and education, and many of us use converging methods such as neuroscience and computational science to achieve our research goals.

Join online at <https://www.psychonomic.org/member>.

Undergraduate Student

Qualifications: Applications require a letter certifying enrollment in an undergraduate program in psychology or an allied field.

2024 Dues: \$15 USD

2025 Dues: \$15 USD

Graduate Student

Qualifications: Actively enrolled in a graduate program in psychology or an allied field.

2024 Dues: \$15 USD

2025 Dues: \$25 USD

Member

Qualifications: Must have a PhD or equivalent in psychology or an allied field.

2024 Dues: US, \$35 USD; Outside US, \$20 USD

2025 Dues: \$85 USD

Fellow (by application only)

Qualifications: Please visit www.psychonomic.org/fellows

2024 Dues: US, \$75 USD; Outside US, \$60 USD

2025 Dues: \$120 USD

Emeritus

Qualifications: Fellows and Members in good standing who have retired may request Emeritus status.

2024 Dues: No Dues

2025 Dues: No Dues



WHY JOIN?



Access to Our Highly Respected Journals & Annual Meeting



Propel Your Professional Growth & Recognition In the Field



Advocate for the Advancement of Cognition & the Allied Sciences



Expand Your Global Network of Colleagues

Explore Interdisciplinary Collaboration

Learn more at www.psychonomic.org/member

Policies

Registration Cancellation & Refund Policy

Notice of registration cancellation for the Annual Meeting must be made in writing to info@psychonomic.org. Cancellations will not be accepted by telephone.

Meeting cancellations received before September 30 will be refunded in full. Cancellations received October 1–31 will incur a \$50 administrative fee. No refunds will be provided after October 31.

All refunds are issued via the same method used for payment. Refunds are processed within 30 days after the conclusion of the meeting.

Statement on Harassment

The Psychonomic Society is an inclusive and welcoming organization, and our meeting should reflect those values. Conference attendees and visitors should enjoy freedom of speech, freedom of thought, and freedom from harassment and discrimination of all kinds.

We encourage members to be mindful of others' perspectives and to consider how a question, comment, or invitation might be received, particularly when there is a power differential between parties. Constructive criticism is an essential part of science. No participant should feel vulnerable to harassment or discrimination, nor should they endure a climate of fear or hostility, at our meetings or in our digital events.

Let's all work together to ensure that our values of inclusion, respect, and professionalism are ones that are enjoyed by all of our members and event participants.

Code of Conduct for Meetings, Events, Press & Media, and Workshops

The Psychonomic Society is dedicated to creating a safe and productive setting for meetings, events, and workshops while providing a valuable platform for the presentation and discussion of diverse scientific perspectives in a structured, respectful, and equitable format.

We advocate for equal treatment and opportunities for all attendees, maintaining a space free from harassment and discrimination. Respectful and considerate behavior toward others is expected, alongside compliance with venue regulations. Attendees are encouraged to promptly notify staff or security of any situations or individuals in need.

Speakers also are urged to adhere to principles of scientific integrity and professional ethics, disclosing any potential conflicts of interest (e.g., financial support from an evaluated product) to Psychonomic Society staff before the event.

[View the full Code of Conduct for Meetings, Events, Press & Media, and Workshops.](#)

Name Badges

For everyone's security and enjoyment, we require all attendees to wear their official name badge throughout the meeting. You'll receive your badge at the registration desk. Badges are non-transferable and may be checked by staff. Lost or damaged badges can be replaced free of charge. Please return your badge for recycling at the end of the meeting. For your safety, we advise removing your badge when outside the hotel.

Photography & Recording Policy

Attendee photography and recording of presentations and exhibits should not be disruptive. Flash photography is not permitted. Devices should be handheld.

All attendees will immediately honor the request of the presenter and/or session chair to stop photographing or recording the talk, as a matter of scientific and professional courtesy.

Large cameras and other equipment such as tripods, monopods, etc., are prohibited unless used by staff or the official meeting photographer.

For the 2024 Annual Meeting, the Psychonomic Society reserves the right to use live stream or record any presentation for later viewing by meeting attendees or Psychonomic Society members and to publish still photographs online or in any printed material for marketing purposes at its sole discretion. If you do not wish to have your video or photograph used for such purposes, notify us at info@psychonomic.org. The Psychonomic Society will consider such requests but does not guarantee they can be honored.

Travel Health Policy

The safety of our members and meeting attendees is our top priority. Health and safety requirements apply to all participants who will be on site at the 2024 Annual Meeting. As of September 1, the state of New York, city of New York, New York Marriott Marquis, and the Psychonomic Society are not requiring vaccination, masks, or social distancing for the 2024 meeting.

All-Gender Restroom

The Psychonomic Society offers a designated all-gender restroom for use by all attendees. Ask at our registration desk for the location.

Family & Guest Policy

The guest registration category is for guests who are partners or traveling companions of registered attendees. Guests are allowed to attend our receptions but are not eligible to participate in the educational programming

unless they are providing support for the presenter (e.g., ASL/voice interpreter).

Attendees who are eligible to register for the Annual Meeting as an attendee may not register as a guest.

Children Aged 17 and Younger

Individuals aged 17 and younger can attend the Annual Meeting only with adult supervision. Children will not register or receive badges. If you are part of a high school group attending the meeting, your group leader must contact staff at info@psychonomic.org before the meeting.

Accessibility & Accommodations

The Psychonomic Society is committed to making our events accessible and welcoming for everyone. We strive to host inclusive events that enable everyone, including individuals with disabilities, not just to attend, but to engage fully.

[View the full Accessibility/Accommodations Policy.](#)

Wellness Room

A wellness room is available at the hotel for lactation, meditation, administering self-injections, or other private needs during the meeting. Access instructions will be provided at the Psychonomic Society registration desk. The room is a private area equipped with refrigeration. Attendees may not use this room for babysitting purposes.

Hotel Reservations

Special rates are available for attendees at the Sheraton New York Times Square. All events will take place in the New York Marriott Marquis. To take advantage of these special rates, **book by October 31** or before the room block at the Sheraton is filled. The Sheraton New York Times Square is a quick 10-minute walk to the New York Marriott Marquis.

- Get the lowest guaranteed rate at both hotels during the meeting.
- Your support by booking within our reserved blocks helps avoid financial penalties for the Society.

New York Marriott Marquis (**sold out**)

1535 Broadway
New York, New York 10036 USA
+1 212-398-1900

[Reserve your room at the New York Marriott Marquis.](#)

Special Rates

- \$289 USD single/double occupancy
- \$309 USD triple occupancy
- \$339 USD quad occupancy

(Plus 14.75% tax plus a \$3.50 per day occupancy fee)

Visa Letter of Invitation

Visa letters are provided only to accepted speakers, poster presenters, and fully paid attendees of the Annual Meeting.

[Request a Visa Letter of Invitation.](#)

Certificates of Attendance or Participation

To receive a certificate of attendance or participation, submit your request in writing to info@psychonomic.org after the meeting.

Press & Media Policy

Journalists who are employed by accredited news organizations attending the meeting for the purpose of editorial coverage will be granted media credentials.

[Access information for Press & Media.](#)

Sheraton New York Times Square Hotel

811 7th Avenue, W 53rd Street
New York, New York 10019 USA
+1 212-581-1000

[Reserve your room at the Sheraton New York Times Square.](#)

Special Rates

- \$279 USD single/double occupancy
- \$309 USD triple occupancy
- \$339 USD quad occupancy

(Plus 14.75% tax and a \$3.50 per day occupancy fee)

Special rate reservation deadline: October 31, 2024 (or whenever the room block has been filled, whichever comes first)



Venue and Meeting Rooms

All spoken presentations, special events, and poster presentations will take place at the New York Marriott Marquis.

Speaker-Ready Room

All presentations for spoken sessions will be submitted to the speaker-ready room where they will be distributed to the appropriate computer by our technicians.

The computers in the speaker ready room and session rooms are alike. If your presentation looks good in the speaker ready room, it will look good in the session. Please prepare your presentation in a 16:9 ratio format. If your presentation has audio, please inform a technician in the speaker ready room. It is strongly recommended that you test your presentation in the speaker-ready room 2 hours before your presentation. Session chairs are encouraged to solicit papers from individuals in their sessions prior to the meeting and to load presentations in the speaker ready room prior to the session

Audiovisual support is available in the speaker ready room to help with loading presentations and to answer any questions you may have during the following hours:

Thursday, November 21 4:00–7:00 PM EST

Friday, November 22 7:00 AM–5:00 PM EST

Saturday, November 23 7:00 AM–5:00 PM EST

Sunday, November 24 7:00–11:00 AM EST

Weather/Conference Attire

New York City's average high in November is upper 40s °F and the low is upper 30s °F; expect some rain. Meeting room temperatures tend to vary. Please bring a light sweater or jacket to all meetings.

Scientific Program

2024 Program

There were 1,650 submissions, of which 1,649 were valid. Of the 1,649 placed on the program, 365 are spoken and 1,323 are posters. In addition, there are 5 accepted symposia.

Program History

2024—New York.....	1,650
2023—San Francisco.....	1,323
2022—Boston (hybrid)	1,326
2021—Virtual	1,297
2020—Virtual	1,294

Abstracts and Program Book

The abstract book is provided as an interactive digital publication that can be downloaded as a PDF at <https://www.psychonomic.org/page/2024program>.

Poster Sessions

All PS poster sessions will take place in-person in the Broadway Ballroom of the New York Marriott Marquis.

Poster Session I: Thursday, November 21, 7:30–9:30 PM

Poster Session II: Friday, November 22, Noon–1:30 PM

Poster Session III: Friday, November 22, 6:00–7:30 PM

Poster Session IV: Friday, November 22, 7:30–9:00 PM

Poster Session V: Saturday, November 23, Noon–1:30 PM

Poster Session VI: Saturday, November 23, 6:00 PM–7:30 PM

Poster Session VII: Saturday, November 23, 7:30–9:00 PM



2024 ABSTRACTS

of the PSYCHONOMIC SOCIETY

Exhibit Hall Schedule

Thursday, November 21.....4:00 PM–6:30 PM, 7:30 PM–9:00 PM
Friday, November 22 8:00 AM–10:15 AM, 10:45 AM–2:30 PM, 4:00 PM–7:30 PM
Saturday, November 23..... 8:00 AM–10:15 AM, 10:45 AM–2:30 PM, 4:00 PM–7:30 PM
Exhibitor booths will be on the 5th floor near the registration desk.

Program & Conference Organization

The Secretary, Marianne Lloyd, is responsible for organizing the program, and the Program Committee reviews all submissions. They do so with the indispensable help of Lou Shomette, Executive Director; Lauren Bettcher, Director of Meetings; Lisa Delventhal, Director of Membership, Marketing, & Communications; Lauren Winters, Education Manager; Jenny Florez Rueda, Marketing Coordinator; Heena Hira, Registration Specialist; Jerrod Liveoak, Senior Manager, Editorial & Content; Phyllis Milz, Finance Manager; Kathy Kohl, Member Services Manager; Abby Pendergraph, Meetings Administrator; and Julie Rogers, Senior Editorial & Content Manager.

Future Meetings

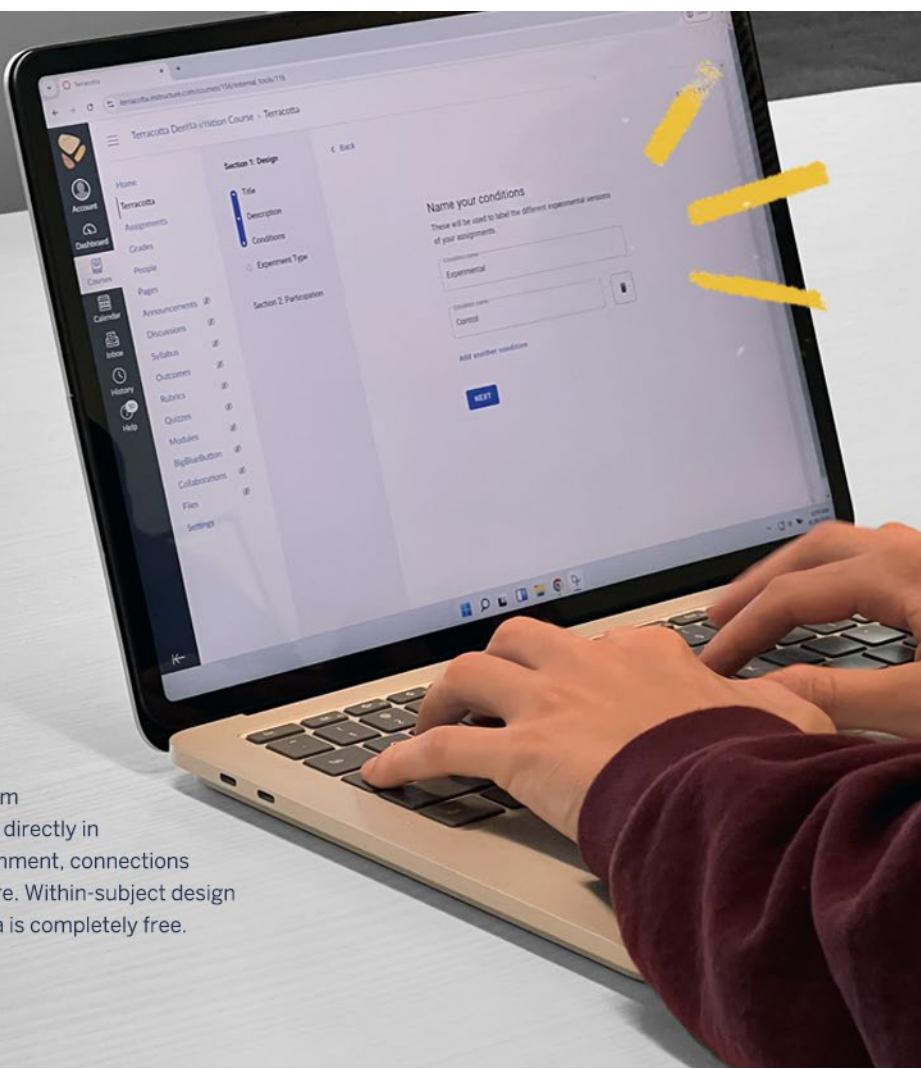
- 2025 Denver, Colorado, USA, November 20–23
2026 San Diego, California, USA, November 19–22
2027 New Orleans, Louisiana, USA, November 18–21



experiment
on your
students

Terracotta is a plug-in to the Canvas learning management system (LMS) that makes it easy to run experiments on student learning directly in an LMS course site. It manages informed consent, random assignment, connections with Canvas gradebook data, de-identified data exports, and more. Within-subject design with multiple crossovers? No problem. And best of all, Terracotta is completely free.

Learn more at <https://terracotta.education>



Psychonomic Society 65th Annual Meeting

New York City • November 21-24, 2024

Thank You to Our 2024 Review Committee

Your expertise and dedication in selecting this year's [Graduate Travel Award recipients](#) have been invaluable. Your efforts support emerging talent and advance our field.

Pedro Albuquerque, University of Minho

Jeanette Altarriba, University at Albany, SUNY

Karen Banai, University of Haifa

Holly Bowen, Southern Methodist University

Patricia Brooks, College of Staten Island and The Graduate Center, CUNY

Curt Carlson, Texas A&M University-Commerce

Paulo Carvalho, Carnegie Mellon University

Monica Castelhano, Queen's University

Jing Chen, Rice University

William Choi, The University of Hong Kong

Meghan Clayards, McGill University

Andrew Cohen, University of Massachusetts Amherst

Mandeep Dhami, Middlesex University, London

Chad Dubé, University of South Florida

Karen Emmorey, South Dakota State University

Myrthe Faber, Tilburg University

Myra Fernandes, University of Waterloo

Sara Finley, Pacific Lutheran University

Gidon Frischkorn, University of Zurich

Laura Getz, University of San Diego

Stephanie Goodhew, The Australian National University

Zenzi Griffin, The University of Texas at Austin

Karl Healey, Michigan State University

Heather Hill, St. Mary's University

Michael Hout, New Mexico State University

Timothy L. Hubbard, Grand Canyon University

Eve Isham, University of Arizona

Yoonhee Jang, University of Montana

Alexandra Jesse, University of Massachusetts Amherst

Rebecca Johnson, Skidmore College

Irene Kan, Villanova University

Michael J. Kane, University of North Carolina at Greensboro

Shelia Kennison, Oklahoma State University

Asli Kilic, Middle East Technical University

Jessica Lee, University of Sydney

Stephan Lewandowsky, University of Bristol and University of Western Australia

Xiaonan Liu, The Chinese University of Hong Kong

Belem Lopez, in her personal capacity

Kristen Macuga, Oregon State University

Christopher Madan, University of Nottingham

Philip Marshall, Texas Tech University



2024 ABSTRACTS

of the PSYCHONOMIC SOCIETY

John McDonald, Simon Fraser University

Janet Metcalfe, Columbia University

Ramesh Mishra, University of Hyderabad

Akira Miyake, University of Colorado Boulder

Katherine Moore, Arcadia University

Shuji Mori, Kyushu University

Joseph Orr, Texas A&M University

Josefa Pandeirada, William James Center for Research
and University of Aveiro

Robert Rauschenberger, J.S. Held

Zachariah Reagh, Washington University in St. Louis

Lauren Richmond, Stony Brook University

Agnes Rosner, Leibniz University Hannover

Jill Shelton, The University of Tennessee at Chattanooga

Tilo Strobach, Medical School Hamburg

Hongjin Sun, McMaster University

Susan Teubner-Rhodes, Auburn University

Laura Thomas, North Dakota State University

Michael Toglia, Cornell University

Chi-Shing Tse, Chinese University of Hong Kong

Jonathan Tullis, University of Arizona

Tugba Uzer, TED University

Marco Vasconcelos, University of Aveiro

Min Wang, University of Maryland, College Park

Carmen Westerberg, Texas State University

Naohide Yamamoto, Queensland University of
Technology

Yusuke Yamani, Old Dominion University

Albert Yonas, Arizona State University

Katarzyna Zawadzka, Adam Mickiewicz University

We deeply appreciate your commitment to fostering the next generation of cognitive and experimental psychologists.

With gratitude,

The Psychonomic Society Governing Board

SPECIAL EVENTS

Coffee Breaks

Friday, November 22–Sunday, November 24,

9:30–10:30 AM EST

Westside Ballroom Foyer, Fifth Floor

Complimentary coffee and tea will be available from 9:30 until 10:30 AM EST on Friday, Saturday, and Sunday. Coffee also may be available at outlets in the hotel.

Receptions

Opening Reception

Thursday, November 21, 7:30–9:00 PM EST

(Immediately following the Keynote Address.)

Broadway Ballroom

Diversity & Inclusion Reception

Friday, November 22, 5:45–7:00 PM EST

Juilliard Complex

Please join us for a reception to celebrate diversity, equity, and inclusion in our field. We hope to foster an environment of inclusivity, where all individuals feel welcome, valued, and heard. We encourage you to engage with one another, share your experiences, and celebrate the unique perspectives that each of you bring to the conversation.

Sponsored by the Psychonomic Society's Diversity & Inclusion Committee

Friday Reception

Friday, November 22, 6:00–10:00 PM EST

Broadway Ballroom

Student Social

Friday, November 22, 9:00 PM–MIDNIGHT EST

Location TBD

Kick back and relax as you meet other student members at the Annual Meeting. Light hors d'oeuvres and one drink ticket good for beer, wine, soda, or water will be handed out per person (limited availability). You must be over 21 to attend. Bring an appropriate ID and your PS Annual Meeting name badge.

Saturday Reception

Saturday, November 23, 6:00–10:00 PM EST

Broadway Ballroom

Lunchtime Workshops

Encouraging Future Scientists: Supporting Undergraduates at Psychonomics

Friday, November 22, Noon–1:30 PM EST

Lyceum Complex, Fifth Floor

Organizers: *Abhilasha Kumar, Bowdoin College, USA; Jessica Karanian, Fairfield University, USA; Nayantara Kurpad, St. Mary's College of Maryland, USA; Sharda Umanath, Claremont McKenna College, USA*

Text Analysis Using CAILA: Collaborative AI for Learning and Analysis

Friday, November 22, 12:00 PM–1:30 PM EST

Westside Ballroom 3, Fifth Floor

Organizers: *Grace C. Lin, Harvard University/Massachusetts Institute of Technology, USA; Susanne Jaeggi, Northwestern University, USA*

Keeping Your Options Open: Alternative Non-Academic Career Paths

Sponsored by the PS Graduate Student and Postdoc Committee

Saturday, November 23, Noon–1:30 PM EST

Lyceum Complex, Fifth Floor

Organizers: *Monica Castelhano, Queen's University, Canada, in conjunction with the Inaugural Student Postdoc Committee (GSPC), Mariel Barnett, Purdue University, USA; Han Hao, Tarleton State University, USA; Caro Hautekiet, University of Zurich, Switzerland; Shuangke Jiang, University of Zurich, Switzerland; Raunak Pillai, Vanderbilt University, USA; Rachel Smith-Pearce, Washington University in St. Louis, USA*

Conducting Ethical Research in

Misinformation and False Memory

Saturday, November 23, Noon–1:30 PM EST

Westside Ballroom 3, Fifth Floor

Organizer: *Ciara Greene, University College Dublin, Ireland*

Hands-On Neural Process Modeling Through Dynamic Field Theory

Saturday, November 23, Noon–1:30 PM EST

Westside Ballroom 4, Fifth Floor

Organizer: *Gregor Schöner, Ruhr-University Bochum, Germany*

SPECIAL EVENTS (cont.)

Jogonomics

Saturday, November 23, 6:00 AM EST
New York Marriott Marquis portico (ground level)

Organizers: Marianne Lloyd, Seton Hall University, USA; and Andrew Butler, Washington University in St. Louis, USA

Join your fellow Psychonomes on a 5k or 5-mile run. You choose a distance that works best for you. Sign up for Jogonomics when you register for the meeting. [A waiver is required](#). Participants will meet in the New York Marriott Marquis portico (ground level) to depart.

Awards and Business Meeting

Saturday, November 23, 5:10 PM–6:30 PM EST
Westside Ballroom 1/2

Join the Psychonomic Society's leadership as they honor the 2024 award recipients and provide updates on Society business.

Recipients of the following awards will be recognized:

- Clifford T. Morgan Distinguished Leadership Award
- Mid-Career Award
- Early Career Award
- Best Article Award
- J. Frank Yates Student Travel Award
- Graduate Travel Award
- Student Travel Award from Developing Nations
- Governing Board Service Recognition Award
- Governing Board Chair Recognition Award

Thank You to Our 2024 Exhibitors



behavioral sciences

an Open Access Journal by MDPI



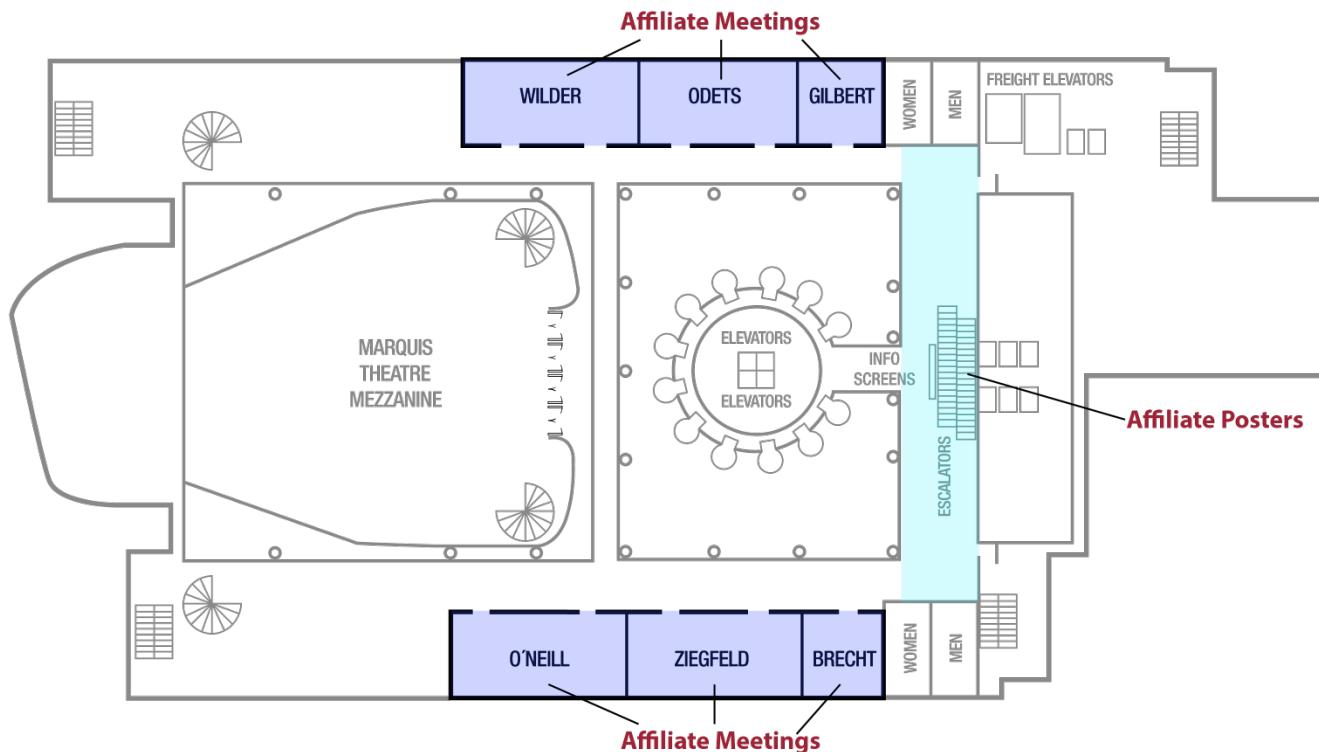
Springer



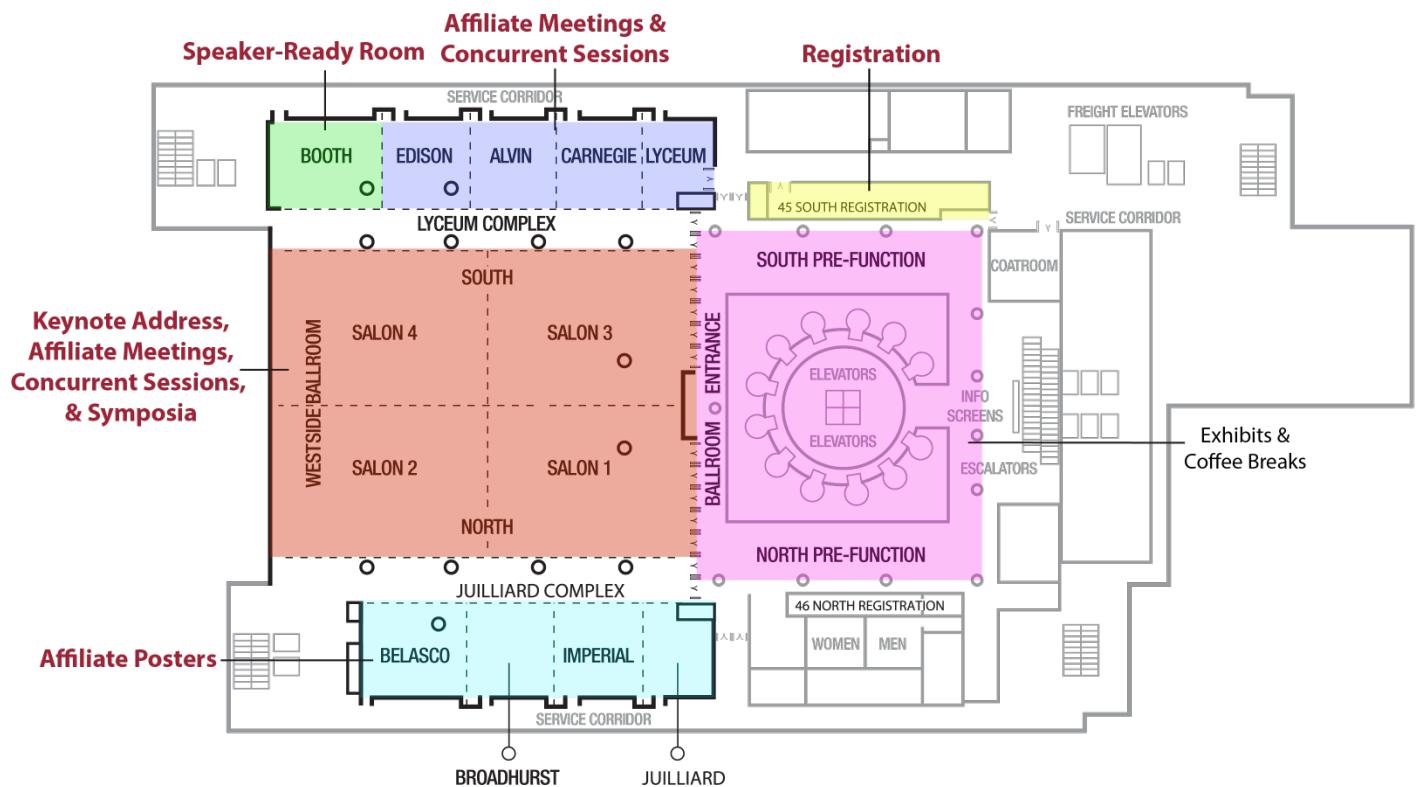
The MIT Press

FLOOR PLANS

Fourth Floor

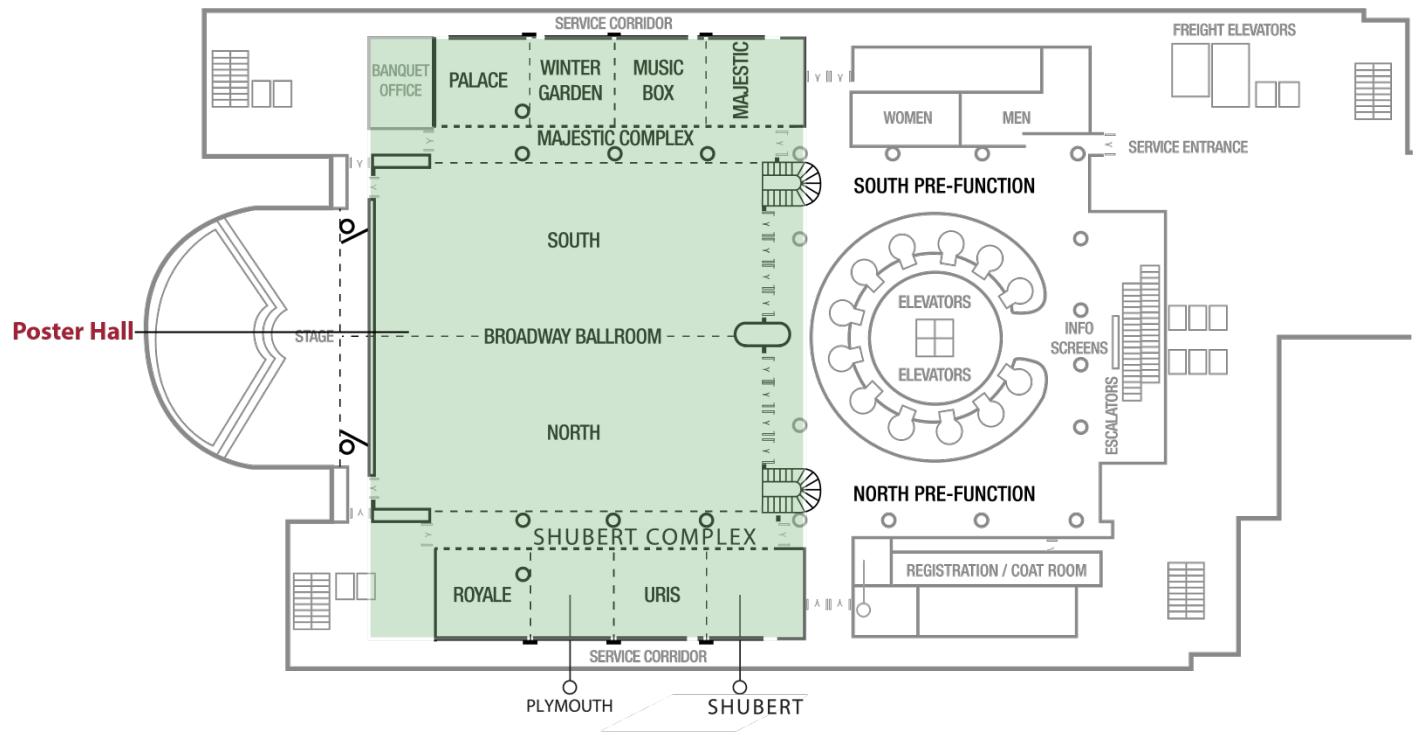


Fifth Floor

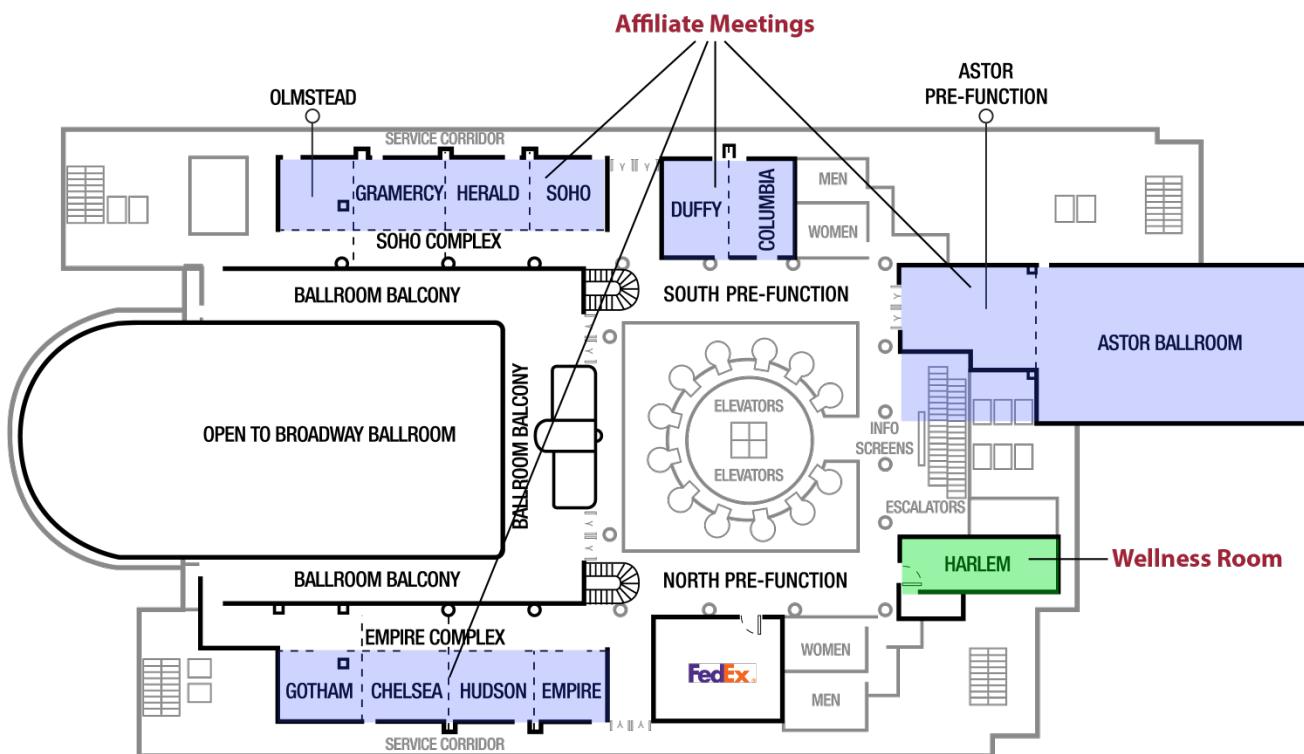


FLOOR PLANS (cont.)

Sixth Floor

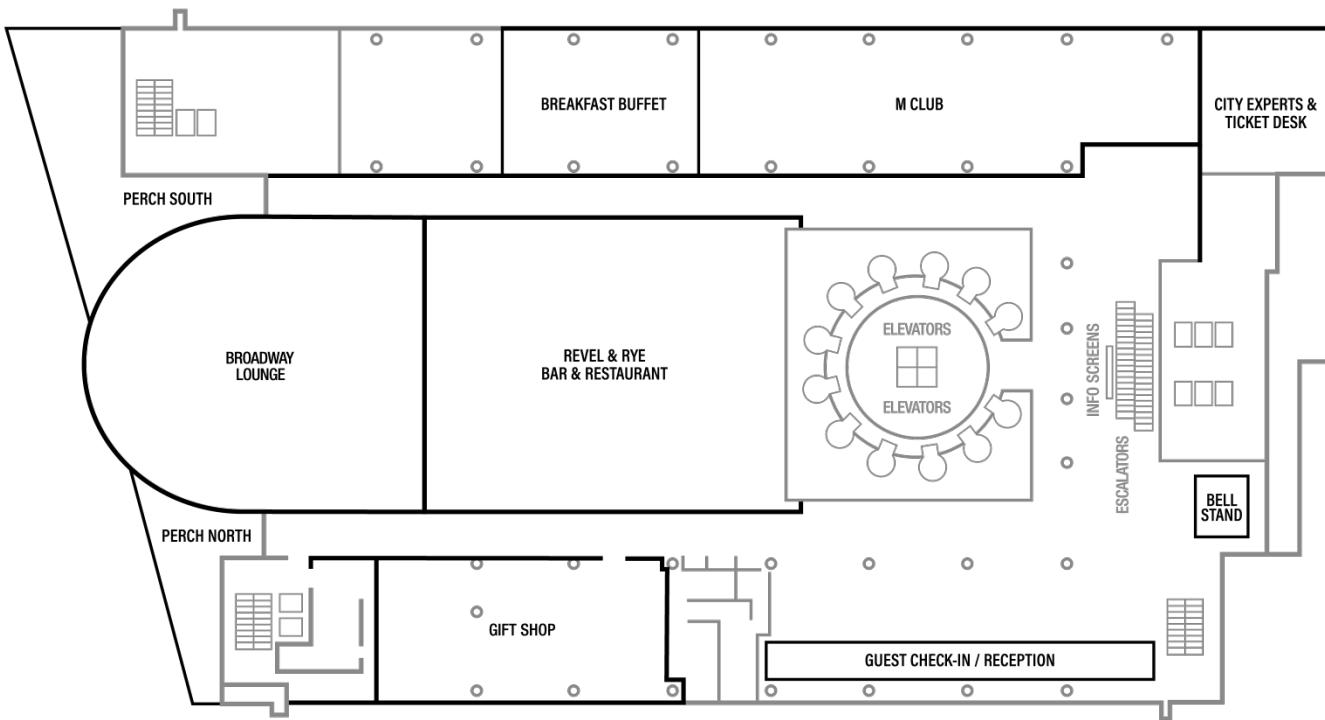


Seventh Floor

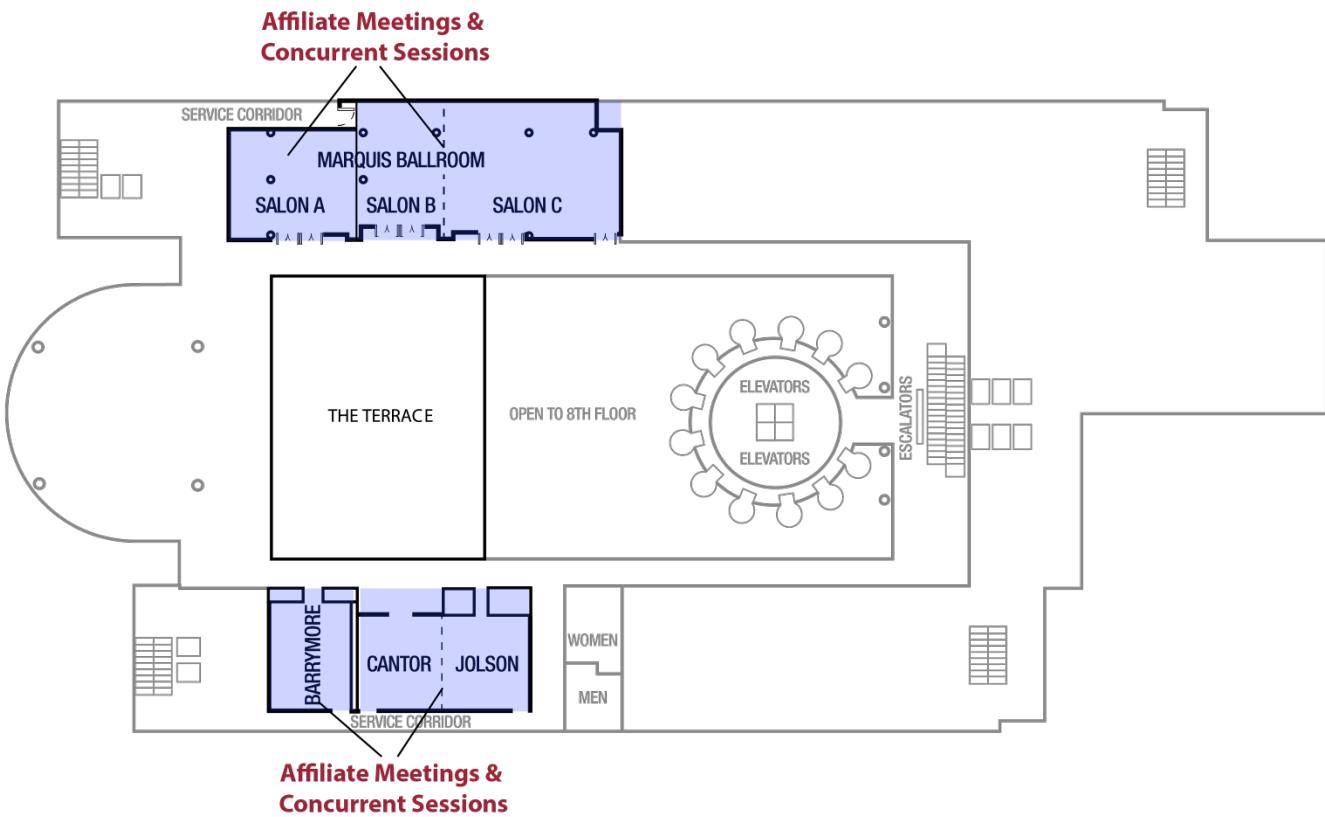


FLOOR PLANS (cont.)

Eighth Floor



Ninth Floor



SYMPOSIA

SYMPOSIUM I

The Future of Future Thinking: Toward an Integrated Science of Prospective Cognition (PS Leading Edge Workshop Initiative)

Friday, November 22, 10 AM–Noon EST
Westside 1/2

Organizers: *Karl Szpunar, Toronto Metropolitan University, Canada; and Donna Rose Addis, Rotman Research Institute, Canada*

The capacity to think about the future is a core feature of human cognition that has received considerable attention across various subdisciplines of psychological science. Briefly, cognitive psychologists focus on the cognitive and neural mechanisms that give rise to the capacity to think about the future; developmental psychologists focus on how this capacity emerges, changes, and dissipates across the lifespan; social psychologists focus on errors that people make when attempting to predict the future; clinical psychologists focus on biases in future thinking that characterize various mood and anxiety disorders; and comparative and behavioural psychologists seek to understand the extent to which animals other than human beings are capable of using representations of the future to guide behavior.

**Episodic Future Simulation: Mechanisms,
Functions, and Applications**—*Daniel Schacter,
Harvard University, USA*

**Episodic Future Thinking: A Developmental
Perspective**—*Cristina Atance, University of Ottawa,
Canada*

**The Role of Autobiographical Knowledge in
Future Thinking: Insights into Belief in Future
Occurrence**—*Arnaud D'Argembeau, University of
Liège, Belgium*

Future Thought and Behavior Change—*Gabriele Oettingen, New York University, USA*

**Pragmatic Nature of Spontaneous Future
Thinking: Findings from Children and Adults**—*Lia Kvavilashvili, University of Hertfordshire, UK*

**Dissociations in Future Thinking: Insights from
Aging and Amnesia**—*Shayna Rosenbaum, York
University, Canada*

SYMPOSIUM II

Understanding and Combating Misinformation Spread: The Role of Individual Differences, Sociocognitive Correlates, and Artificial Intelligence

Friday, November 22, 1:30–3:30 PM EST
Westside 1/2

Organizer: *Taylor M. Curley, Air Force Research Laboratory, USA*

The popularity of social media platforms has encouraged rapid, wide-spread transmission of information, some of which is misleading or completely incorrect. Recent research has demonstrated that this misinformation not only spreads quickly but is also long-lasting and difficult to correct once it has been introduced. Importantly, the impacts of these effects are largely dependent upon differences in social and cognitive characteristics that exist at the level of the individual. The purpose of this symposium is to highlight the importance of individual characteristics, sociocognitive factors, and artificial intelligence in understanding and combating the effects of misinformation and social contagion. The individual talks will highlight a cross-section of emerging theoretical and experimental approaches to the study of misinformation and variations within individuals that lead to misinformation effects, starting with psychological microtargeting based on digital fingerprints (Dr. Lewandowsky) and continuing with the correction of sleep-related beliefs (Dr. Kan), the use of artificial intelligence to dissuade conspiracy theories (Dr. Pennycook), susceptibility to false memory production in individuals and groups (Dr. Rajaram), and individual predictors of false memories and false beliefs in cancer misinformation (Dr. Greene).

The Microtargeting Manipulation Machine—
Stephan Lewandowsky, University of Bristol, UK

**Social Contagion of Memory from People, Robots,
and Microblogs**—*Suparna Rajaram, Stony Brook
University, USA*

Utilizing Infographics to Combat Sleep Myths—
Irene Kan, Villanova University, USA

**Evidence-Based Dialogues with Generative AI
Substantially Reduce Conspiracy Beliefs**—*Gordon
Pennycook, Cornell University, USA*

**Individual Differences in False Memories and
False Beliefs for Health-Related Misinformation**—
Ciara Greene, University College Dublin, Ireland

SYMPOSIA (cont.)

SYMPOSIUM III

Climate Change and Human Cognition (PS Symposium on Cognition, Behavior, and Society)

Friday, November 22, 3:45–5:45 PM EST
Westside 1/2

Organizers: *James Pomerantz, Rice University, USA, and Suparna Rajaram, Stony Brook University, USA*

Climate change has become one of the chief existential issues of the day, with the potential to alter and threaten life on the planet. It has become increasingly clear over recent decades that human choices and behaviors are a primary driver of climate change. This symposium will address the role human cognition has played in the changes to our climate that have already occurred as well future changes that result from the perceptions and decisions that people make about responding to adverse climate events. Here we present experts across a range of research areas who will discuss how human cognition has led us to where we are regarding climate and our environment, as well as regarding possible future behaviors that could limit the damage that climate change portends.

Persuasion: How to Advance from Scientific Arguments on Climate Change to Results on Behavioral Change—*Elke Weber, Princeton University, USA*

Psychonomes Believe in Human-Caused Climate Change, But How Do They Want To Address It?—*Ben Newell, University of New South Wales, Australia*

Steps Individual Psychonomes Can Take to Shrink Their Own Carbon Footprints—*Sara Constantino, Northeastern University, USA*

The Moral Calculus of Climate Change Choices—*Naomi Oreskes, Harvard University, USA*

Synthesis and Remaining Points—*Morton Ann Gernsbacher, University of Wisconsin–Madison, USA*

SYMPOSIUM IV

New Frontiers in the Cognitive Sciences of Music and Health

Saturday, November 23, 10 AM-Noon EST
Westside 1/2

Organizers: *Daniel J. Levitin, Minerva University, USA; and Assal Habibi, University of Southern California, USA*

The past 10 years have seen an exponential growth of research in the scientific study of music, merging perspectives from cognitive psychology, cognitive neuroscience, psychophysics, social psychology, anthropological sciences, and medicine. We present recent major findings and new directions for future research, with a nod toward applications to health and wellness.

Cognitive Scientific Models of Music Processing—*Daniel J. Levitin, Minerva University, USA*

The Brain's Crescendo: How Music Training Enriches Neurocognitive Development Across the Lifespan—Evidence from Longitudinal and Cross-Sectional Studies—*Assal Habibi, University of Southern California, USA*

Evolutionary Basis of Music—*Psyche Loui, Northeastern University, USA*

Music and Memory—*Petr Janata, University of California, Davis, USA*

Musical Preferences and a Theory of Musical Aesthetics—*Peter J. Renfrow, University of Cambridge, UK*

SYMPOSIA (cont.)

SYMPOSIUM V

How Does Meaning Come to Mind? Advances in Understanding Conceptual Knowledge

Saturday, November 23, 1:30–3:30 PM EST
Westside 1/2

Organizers: *Veronica Diveica, McGill University, Canada; Emiko Muraki, University of Calgary, Canada; and Penny Pexman, Western University, Canada*

With experience comes an ever-changing body of conceptual knowledge that shapes our understanding of the world and guides our interactions with objects, words, and people. Concepts, thus, represent the bedrock of human cognition, providing the necessary scaffolding for complex abilities such as object recognition, language processing, and social interaction. Therefore, understanding how concepts are learned, represented in the mind, accessed, and used to inform our behaviors is fundamental to the field of cognitive science. This symposium will highlight the latest advances in our understanding of conceptual knowledge. The series of talks will (1) explore the informational content of concepts, including the complementary roles of linguistic, sensorimotor and introspective information; (2) highlight both universal principles and sources of individual variability in concept knowledge; (3) emphasize the role of social interactions in concept learning; (4) discuss how

contexts/tasks shape access to conceptual information; and (5) provide insights into how the brain supports conceptual processing. By bringing together researchers with diverse theoretical and methodological expertise, this symposium endeavors to unveil the multifaceted nature of concept knowledge and foster interdisciplinary discussions.

Revealing the Information Content of Conceptual Representation Using Neuroimaging and Behavior—*Leonardo Fernandino, Medical College of Wisconsin, USA*

Social Experience Makes Unique Contributions to Conceptual Knowledge—*Veronica Diveica, McGill University, USA*

Learning New Concepts in Naturalistic Social Interaction—*Gabriella Vigliocco, University College London, UK*

Tools in the Mind: Semantic Representations of Manipulable Objects and Their Actions—*Laurel Buxbaum, Moss Rehabilitation Research Institute, Thomas Jefferson University, USA*

The Necessity of Cross-Cultural Evidence for Understanding Conceptual Representation—*Asifa Majid, University of Oxford, UK*

Using Individualized Models of Semantic Memory to Determine the Relativity of Word Meanings—*Brendan Johns, McGill University, USA*

AWARDS

2024 CLIFFORD T. MORGAN DISTINGUISHED LEADERSHIP AWARD RECIPIENTS



The Psychonomic Society is pleased to announce the 2024 recipients of our Clifford T. Morgan Distinguished Leadership Award: **D. Stephen Lindsay**, University of Victoria, Canada; and **Randi Martin**, Rice University, USA.

D. Stephen Lindsay

University of Victoria, Canada

D. Stephen Lindsay is professor of psychology at the University of Victoria in British Columbia, Canada. He earned his BA at Reed College in 1981 and his PhD at Princeton University in 1987 under the supervision of Marcia K. Johnson. Lindsay taught at Williams College for 3 years, then worked for a year at McMaster University in the lab of Larry Jacoby, before taking up a position as assistant professor of psychology at the University of Victoria in 1991, where he is now professor and chair.

Lindsay served as editor in chief of the *Journal of Experimental Psychology: General* from 2002 to 2007, and as editor in chief of *Psychological Science* from 2015 through 2019. He joined the Psychonomic Society as an Associate Member soon after his PhD and as a member as soon as he met the criteria.

Lindsay has served the Psychonomic Society in numerous ways as Governing Board member (2007–2012), Publications Committee member (2007–2008), Publications Committee Chair (2009–2011), *Psychonomic Bulletin & Review* Editor Search Committee member (2008–2009), Transition Committee member (2009–2010), Human Resources Committee chair (2010–2010), and Ethics Committee chair (2012–2013).



Randi Martin

Rice University, USA

Randi Martin is the Elma Schneider Professor of Psychological Sciences and director of the T.L.L. Temple Foundation Neuroplasticity Research Laboratory at Rice University. She received her BA in 1971 from the University of Oregon, her MS in 1977 from Johns Hopkins University, and her PhD in 1979 from Johns Hopkins University. She has advocated a model of verbal working memory that includes separate systems for maintaining phonological and semantic information, drawing on converging evidence from behavioral and neuroimaging studies of healthy and brain damaged individuals.

She has served as the chair of the Governing Board of the Academy of Aphasia and is currently president of the Association for Psychological Science. She is the past editor of the *Journal of Experimental Psychology: Learning, Memory and Cognition* (2006–2012) and past senior editor at *Cognition* (2018–2020). She cofounded the Women in Cognitive Science organization in 2001 and currently serves on its advisory board.

The 2024 Clifford T. Morgan Distinguished Leadership Award Committee members are Monica Castelhano (Chair), Queen's University, Canada; Jeanette Altarriba, University at Albany, SUNY, USA; Nurit Gronau, The Open University, Israel; Morton Ann Gernsbacher, University of Wisconsin–Madison, USA; Judith Kroll, University of California, Irvine, USA; Jochen Laubrock, University of Potsdam, Germany; and Jeremy Wolfe, Harvard Medical School/Brigham & Women's Hospital, USA. The recipients will be recognized at the Awards and Business Meeting on Saturday, November 23, 5:10–6:30 PM EST. Read more about the award at psychonomic.org/page/leadershipaward.



About Clifford T. Morgan

Born in 1915 in Minolta, New Jersey, Clifford Thomas Morgan received his undergraduate education at Maryville College and his PhD from Rochester University in 1939. Morgan held academic positions at Harvard University; Johns Hopkins University; University of Wisconsin; the University of California, Santa Barbara; and, finally, at the University of Texas. He was a founding member of the Psychonomic Society and the first Governing Board Chair, and he led the Society's journal program for many years. He passed away in 1976 in Austin, Texas.

AWARDS (cont.)

2024 Mid-Career Award Recipients

The Psychonomic Society is pleased to announce the recipients of the 2024 Mid-Career Award: **Audrey Duarte**, University of Texas at Austin, USA; and **Viorica Marian**, Northwestern University, USA.



Audrey Duarte

University of Texas at Austin, USA

Audrey Duarte received her PhD in neurobiology in 2004 from the University of California, Berkeley. She was a postdoctoral fellow at the Medical Research Council Cognition and Brain Sciences Unit in Cambridge, UK, prior to serving as faculty in the School of Psychology at Georgia Tech from 2008 to 2021. She has been a professor of psychology and neurology at the University of Texas at Austin since 2021.

Duarte uses multiple, complementary, neuroimaging methods, including electroencephalography (EEG), functional magnetic resonance imaging (fMRI), and neuropsychology to investigate neural changes underlying age-related episodic memory decline across the adult lifespan. She and her lab study the role of malleable factors including sleep quality and depressive symptomology, as well as social determinants of health (e.g., discrimination stress, social support), as mediators and moderators of individual differences in memory impairment and decline. She has served as editor in chief for the journal *Aging, Neuropsychology, and Cognition*, and as an editor of *Neuroimage* and currently *Imaging Neuroscience*. She is a Fellow of the Psychonomic Society.

Duarte is a first-generation college graduate from a Mexican-American family. She is an avid proponent of diversity outreach and retention programs for first-generation students and of diversity in STEM careers.



Viorica Marian

Northwestern University, USA

Viorica Marian is a psycholinguist and cognitive scientist at Northwestern University, where she is the Sundin Endowed Professor of Communication Sciences and Disorders, professor of psychology, and director of the Northwestern Bilingualism and Psycholinguistics Research Lab.

Her research centers on bilingualism, multilingualism, and linguistic diversity, with a focus on the cognitive, developmental, linguistic, neural, and social consequences of knowing more than one language. Her work demonstrated parallel activation of multiple languages and language-dependent memory and advanced the understanding of multilingual assessment, language learning, and bilingual and multilingual neural function using a range of methodological approaches, such as eye-tracking, mouse tracking, EEG, fMRI, computational modeling, standardized testing, and other cognitive and behavioral measures.

Marian previously served as chair of the National Institutes of Health Study Section on Language and Communication and as chair of the Northwestern University Department of Communication Sciences and Disorders. Her research has been funded by the National Science Foundation, the National Institutes of Health, and private foundations, and she has been recognized with the American Association for the Advancement of Science McGovern Award Lecture in the Behavioral Sciences, the University of Alaska Alumni of Achievement Award, the *JSLHR* Editor's Award for best paper, and the Clarence Simon Award for Outstanding Teaching and Mentoring.

Originally from Moldova, Marian received her PhD in psychology from Cornell University in 2000, master's degrees in psychology from Cornell University and Emory University, and bachelor's degree from the University of Alaska. She is a Fellow of the Psychonomic Society, first presenting at the annual meeting in 1997. She is the author of more than 200 publications, and her new popular science book "The Power of Language" is being translated into 12 languages and counting.

The 2024 Mid-Career Award committee members are Monica Castelhano (Chair), Queen's University, Canada; Kristi Multhaup, Davidson College, USA; Beatrice Kuhlman, University of Mannheim, Germany; Vishnu "Deepu" Murty, Temple University, USA; and Aidan Horner, University of York, UK. The recipients will be recognized at the Awards and Business Meeting on Saturday, November 23, 5:10–6:30 PM EST. Read more about the award at <https://www.psychonomic.org/page/midcareeraward>.

AWARDS (cont.)

2024 Early Career Award Recipients

The Psychonomic Society is pleased to announce the recipients of the 2024 Early Career Award: **Amy Belfi**, Missouri University of Science and Technology, USA; **Kimberly Chiew**, University of Denver, USA; **Taraz Lee**, University of Michigan, USA; and **Brooke Macnamara**, Case Western Reserve University, USA.



Amy Belfi

Missouri University of Science and Technology, USA

Amy Belfi is an associate professor in the Department of Psychological Science at Missouri University of Science and Technology. She received her BA in psychology from St. Olaf College and her PhD in neuroscience from the University of Iowa, and she completed postdoctoral training at New York University. Her work covers a broad range of topics in the field of music cognition, including music and autobiographical memory, aesthetic judgments of music, and musical anhedonia. She is a recent recipient of the Rising Star designation from the Association for Psychological Science (2021) and currently serves as co-editor of *Psychology of Aesthetics, Creativity, and the Arts*.



Kimberly Chiew

University of Denver, USA

Kimberly Chiew is an associate professor and director of the Motivation, Affect, & Cognition Lab in the Department of Psychology at the University of Denver. She received a BSc (Hons) in neuroscience from University of Toronto, a PhD in psychology from Washington University in St. Louis, and completed a postdoctoral fellowship at the Center for Cognitive Neuroscience at Duke University. Her research program investigates how affective and motivational influences modulate cognitive performance across multiple domains and levels of analysis, with a particular focus on cognitive control and memory. Chiew is currently on the Executive Committee for Women+ in Cognitive Control. She was previously recognized as a Rising Star by the Association for Psychological Science in 2019 and nominated by her students for University of Denver Student Supervisor of the Year in 2023. Chiew has received funding support from the National Institute of Mental Health and the Brain and Behavior Research Foundation.



Taraz Lee

University of Michigan, USA

Taraz Lee is an assistant professor in the Department of Psychology at the University of Michigan, where he directs the Cognition, Control, and Action Lab. His research explores how cognitive control processes, such as working memory and attention, influence motor learning and performance across various contexts. Lee employs a diverse range of methods in his research, including computational modeling, transcranial magnetic stimulation, functional neuroimaging, and studies involving individuals with neurological disorders. In 2021, he was honored with the Stanley Fahn Junior Faculty Award by the Parkinson's Foundation and was inducted as a Fellow into the Psychonomic Society in 2023.



Brooke Macnamara

Case Western Reserve University, USA

Brooke N. Macnamara is an associate professor in the Department of Psychological Sciences at Purdue University. She received her PhD in psychology from Princeton University in 2014. Macnamara investigates predictors of intra- and inter-individual differences in complex performance: skill acquisition, expertise, and achievement. Macnamara's research has been funded by the National Science Foundation and the U.S. Army Research Institute. In 2017, she was recognized as a Rising Star by the Association for Psychological Science and became a Psychonomic Society Fellow. In 2024, she received the Psychonomic Society Early Career Award.

The 2024 Early Career Award committee members are Monica Castelhano (Chair), Queen's University, Canada; Kristi Multhaup, Davidson College, USA, Beatrice Kuhlman, University of Mannheim, Germany; Vishnu "Deepu" Murty, Temple University, USA; and Aidan Horner, University of York, UK. Recipients will be recognized at the Awards and Business Meeting on Saturday, November 23, 5:10–6:30 PM EST. Read more about the Early Career Award at https://www.psychonomic.org/page/early_career_award.

AWARDS (cont.)

2024 Best Article Award Recipients

The Psychonomic Society is pleased to announce the recipients of the 2024 Best Article Awards.



Attention, Perception, & Psychophysics

Editor: Sarah Shomstein

Heinrich R. Liesefeld, Dominique Lamy, Nicholas Gaspelin, Joy J. Geng, Dirk Kerzel, Jeffrey D. Schall, Harriet A. Allen, Brian A. Anderson, Sage Boettcher, Niko A. Busch, Nancy B. Carlisle, Hans Colonius, Dejan Draschkow, Howard Egeth, Andrew B. Leber, Hermann J. Müller, Jan Philipp Röer, Anna Schubö, Heleen A. Slagter, Jan Theeuwes & Jeremy Wolfe

“Terms of Debate: Consensus Definitions to Guide the Scientific Discourse on Visual Distraction”

<https://doi.org/10.3758/s13414-023-02820-3>



Behavior Research Methods

Editors: Erin Buchanan & Dora Matzke

Morten Moshagen & Martina Bader

“semPower: General Power Analysis for Structural Equation Models”

<https://doi.org/10.3758/s13428-023-02254-7>



Cognitive, Affective, & Behavioral Neuroscience

Editor: Diego Pizzagalli

Annika Ziereis & Anne Schacht

“Motivated Attention and Task Relevance in the Processing of Cross-Modally Associated Faces: Behavioral and Electrophysiological Evidence”

<https://doi.org/10.3758/s13415-023-01112-5>



Cognitive Research: Principles & Implications

Editor: Sarah Creem-Regehr

Lucas Bellaiche, Rohin Shahi, Martin Harry Turpin, Anya Ragnhildstveit, Shawn Sprockett, Nathaniel Barr, Alexander Christensen & Paul Selig

“Humans Versus AI: Whether and Why We Prefer Human-Created Compared to AI-Created Artwork”

<https://doi.org/10.1186/s41235-023-00499-6>



Learning & Behavior

Editor: Lauren M. Guillette

Candela Zorzo, Jorge L. Arias & Mara Méndez

“Are There Sex Differences in Spatial Reference Memory in the Morris Water Maze? A Large-Sample Experimental Study”

<https://doi.org/10.3758/s13420-023-00598-w>



Memory & Cognition

Editor: Bennett Schwartz

Katarzyna Zawadzka, Oliwia Zaborowska, Ewa Butowska, Krzysztof Piątkowski & Maciej Hanczakowski

“Guessing Can Benefit Memory for Related Word Pairs Even when Feedback Is Delayed”

<https://doi.org/10.3758/s13421-022-01385-0>



Psychonomic Bulletin & Review

Editor: Dan Mirman

Jeffrey N. Rouder, Aakriti Kumar & Julia M. Haaf

“Why Many Studies of Individual Differences with Inhibition Tasks May Not Localize Correlations”

<https://doi.org/10.3758/s13423-023-02293-3>

The Psychonomic Society Best Article Award recognizes the best article published in each of the Psychonomic Society's journals during the last year. Selections are made by the editorial team of each journal. Award recipients (the lead author) receive a certificate and honorarium of \$1,000 USD and will be recognized at the Awards and Business Meeting on Saturday, November 23, 5:10–6:30 PM EST. Visit www.psychonomic.org/page/BestArticleAward for more information and to view previous recipients.

AWARDS (cont.)

2024 J. Frank Yates Student Travel Award Recipients

Supporting Diversity and Inclusion in Cognitive Psychology

The Diversity & Inclusion Committee selected 12 recipients of the J. Frank Yates Student Travel Award for the 2024 Annual Meeting:



Durna Alakbarova
The University of Texas at Arlington, USA

Abstract 7135: Looking Inward: Does Pupil Size Track Encoding Effort? A Meta-Analytic Approach



Hatice Dedetaş Şatır
University of Mannheim, Germany

Abstract 1118: Cued Recall Is Not More Than a Combination of Recognition and Recall Unless You Use Images



Seyma Nur Ertekin
University of Amsterdam, The Netherlands

Abstract 1043: Playing with Cognition: Investigating How Children Learn to Tell Time Within a Large-Scale Online Learning Environment



Andy Fordyce
Purdue University, USA

Abstract 7154: The Effect of Retrieval Practice on List Discrimination Performance



Bianca Gurrola
The University of Texas at El Paso, USA

Abstract 7034: False Memories in Bilinguals: False Recognition Patterns are Influenced by Intervening Recall



Kevin Mohawk
University of Nevada, Las Vegas, USA

Abstract 4149: Interaction Effects of Environmental Regularity and Prediction Error on Episodic Memory



Sofia Navarro-Báez
Technical University of Darmstadt, Germany

Abstract 2168: Learning Cues for Metacognitive Judgments via Statistical Learning



Satwika Rahapsari
The University of Sheffield, UK

Abstract 4170: Neural Correlates of Cognitive Control in Adolescents with Adverse Childhood Experiences (ACEs): An EEG Study



Jajaira Reynaga
University of California, Santa Cruz, USA

Abstract 7035: Feedback, Error Correction, and Cognate Status: Keys to Successful Vocabulary Learning in Second Language Acquisition



Maryna Ridchenko
University of Illinois Chicago, USA

Abstract 7036: The Role of Short and Long-Term Memory Systems in Language Learning in Adults with ADHD



Portia Washington
University of Connecticut, USA

Abstract 4123: Do Individual Differences in Phonetic Category Structure Predict Successful Accented Speech Perception?



Yunfeng "Barry" Wei
Montana State University, USA

Abstract 1142: Examining Individuals' Memory and Judgment of Learning after Group Testing, Individual Testing, and Restudying

The 2024 Diversity & Inclusion Committee members include Zenzi M. Griffin (Chair), University of Texas at Austin, USA; Jeanette Altarriba, University at Albany, SUNY, USA; Monica Castelhano, Queen's University, Canada, Karen Emmorey, South Dakota State University, USA; Rebecca Johnson, Skidmore College, USA; Belem Lopez, National Institutes of Health, USA (in her personal capacity); and Jill Shelton, University of Tennessee at Chattanooga, USA. Please join the committee in congratulating the recipients of the 2024 J. Frank Yates Student Conference Award. Each recipient receives an award of \$1,000 USD, a certificate, ribbon, and complimentary registration and will be recognized at the Awards and Business Meeting on Saturday, November 23, 5:10–6:30 PM EST. Visit <https://www.psychonomic.org/page/yatestravelaward> for more information.

AWARDS (cont.)

2024 Graduate Travel Award Recipients

The Program Committee selected 15 recipients for the Graduate Travel Award for the 2024 Annual Meeting based on the quality of the abstracts submitted by student members of the Society.



Alicyn Ager
Idaho State University, USA

Abstract 1040: Decisional Conflict and Confidence in Logical and Moral Reasoning



Noah Britt
McMaster University, Canada

Abstract 6003: The Perihand Bias for Attention is Specific to Peripersonal Space Across Depth



Sean Conway
University of Massachusetts Amherst, USA

Abstract 1038: Capturing Value and Covariance in Choice, With an Application to Context Effects



Anne Marie Crinnion
University of Connecticut, USA

Abstract 4122: Individual differences in acoustic-phonetic and contextual cue use: Considering relationships to hearing and cognitive functions



Adriana F. Chávez De la Peña
University of California, Irvine, USA

Abstract 5182: An EZ Bayesian Hierarchical Drift-Diffusion Model for Response Time and Accuracy



Yining Ding
Washington University in St. Louis, USA

Abstract 4055: Readers Use Larger Temporal Structure to Remember Specific Event Order



Lauren Garner
The University of Texas at Arlington, USA

Abstract 3004: Setting Specific Goals Improves Cognitive Effort, Self-Efficacy, and Sustained Attention



Mianzhi Hu
Texas A&M University, USA

Abstract 2072: The Alternating Mind: A Bayesian Dual Process Model for Human Decision-Making



Merve Ileri-Tayar
Washington University in St. Louis, USA

Abstract 3005: Switching Between Cognitive Control States? No, Thank You



Vijay Marupudi
Georgia Institute of Technology, USA

Abstract 3072: People's Magnitude Comparison and Numerosity Estimation Behavior Depends on the Statistical Cluster Structure and the Number of Clusters Perceived



Mar Nikiforova
University of Massachusetts Amherst, USA

Abstract 3035: Uneasy on the Eyes: Manipulating the Appeal of Androgynous Faces Through Categorization



Krzysztof Piątkowski
SWPS University of Social Sciences and Humanities, Poland

Abstract 7164: Transfer of Learning via Hebb Repetition

AWARDS (cont.)

2024 Graduate Travel Award Recipients (cont.)



Solveig Tonn

University of Trier, Germany

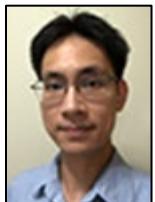
Abstract 5173: To-be-prevented events enter action representations



Madeline Valdez

Washington University in St. Louis, USA

Abstract 2146: Learning-based strategic monitoring in prospective memory



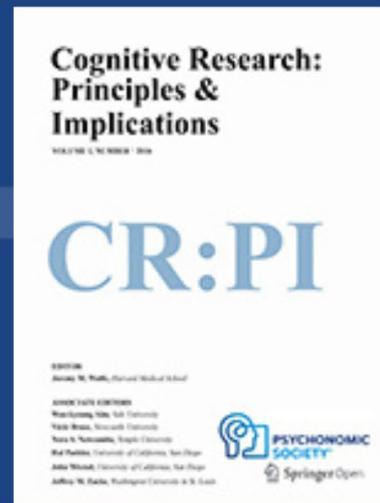
Jonathan Yuquimpo

University of Illinois Urbana-Champaign, USA

Abstract 2164: Confidence Trumps Calibration in Making Decisions with Multiple Advisors

The 2024 Program Committee members include Michael J. Kane (Chair), University of North Carolina at Greensboro, USA; A Monica Castelhano, Queen's University, Canada; Myra Fernandes, University of Waterloo, Canada; Zenzi M. Griffin, University of Texas at Austin, USA; Heather Hill, St. Mary's University, and Christopher Madan, University of Nottingham, UK. Each recipient receives an award of \$1,000 USD a certificate, ribbon, and complimentary registration and will be recognized at the Awards and Business Meeting on Saturday, November 23, 5:10–6:30 PM EST. Visit <https://www.psychonomic.org/page/graduatetravel> for more information.

Call for Editors-in-Chief



Submit your nomination by
February 15, 2025.



AFFILIATE EVENTS

Affiliate Meetings

Auditory Perception and Cognition Society

Thursday, November 21, 2024

8:00 AM–5:00 PM EST

Marquis A

<https://apcsociety.org>

Bilingualism Matters Across the World

Thursday, November 21, 2024

10:00 AM–Noon EST

Ziegfeld

<https://bilingualismattersworld.wordpress.com/>

Configural Processing Consortium

Wednesday, November 20, 2024

8:30 AM–5:30 PM EST

Gilbert

www.configural.org

Culture and Cognition

Thursday, November 21, 2024

9:00 AM–2:00 PM EST

Cantor/Jolson

<https://cultureandcog.com/>

Object Perception, Attention, & Memory

Thursday, November 21, 2024

9:00 AM–6:00 PM EST

Marquis B/C

<http://www.opam.net/>

Psi Chi

Thursday, November 21, 2024

9:00 AM–5:00 PM EST

16th Floor Skylobby

<https://www.psichi.org>

Society for Computation in Psychology

Thursday, November 21, 2024

8:00 AM–5:30 PM EST

O'Neill/Wilder

<https://computationinpsych.com/>

Society for Judgment and Decision Making

Friday, November 22–Monday, November 25, 2024

Times to be announced

7th Floor, Astor Ballroom/Soho Complex/Empire Complex/Duffy/Columbia

<https://sjdm.org/>

Society for Mathematical Psychology

Thursday, November 21, 2024

9:00 AM–6:00 PM EST

Odets

<https://mathpsych.org/>

SPARK Society

Thursday, November 21, 2024

2:30–4:00 PM EST

Ziegfeld

<https://www.sparksociety.org/>

Tactile Research Group

Thursday, November 21, 2024

9:00 AM–2:00 PM EST

Gilbert

<https://www.facebook.com/tactileresearchgroup/>

Women in Cognitive Science

Thursday, November 21, 2024

3:00–5:00 PM EST

Cantor/Jolson

<https://www.womenincogsci.org/>

Other Affiliated Events at the Annual Meeting

Celebrating Brenda Rapp's Mentorship

Thursday, November 21, 2024

3:00 PM–5:00 PM EST

Gilbert

CowanFest 2024, a festschrift honoring Dr. Nelson Cowan

Thursday, November 21, 2024

9:00 AM–4:00 PM EST

Lyceum 1–4

<https://faculty.lsu.edu/eelliottlab/cowanfest.php>

2024

APCAM

**23rd Annual Auditory Perception,
Cognition, and Action Meeting**

Thursday, November 21, 2024

New York Marriot Marquis, New York City

8:00 am - 5:00 pm EST

Keynote address by Dr. David Poeppel

APCAM brings together researchers from various theoretical perspectives and empirical traditions to share research on auditory perception, cognition, and action.

We offer a unique meeting in our broad inclusion of multiple theoretical and methodological perspectives on a wide range of basic and applied research.

APCAM is supported by the Psychonomic Society and by the Auditory Perception and Cognition Society. Brief reports based on accepted abstracts can be submitted for consideration for a special issue of *Auditory Perception & Cognition* focused on APCAM.

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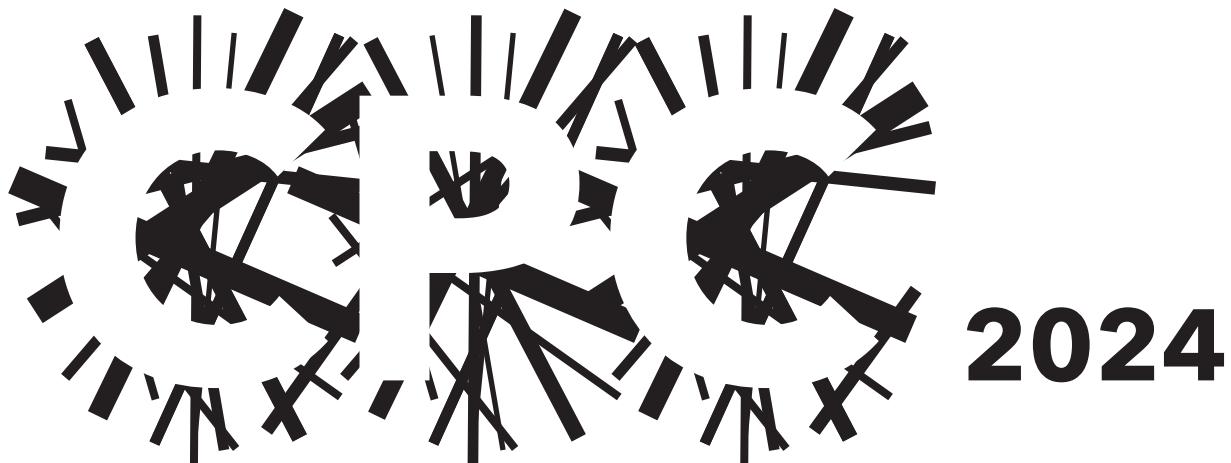
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Configural Processing Consortium

www.configural.org

Wednesday, November 20, 2024
8:30 a.m. - 5:30 p.m.

The Configural Processing Consortium (CPC) is an annual workshop bringing together researchers in configural processing. We aim to tackle deep issues underpinning perceptual organization, cognition, and action, as well as the most cutting edge theoretical and experimental research on configural topics. Although vision typically dominates, our interests include all modalities.

Each year, we seek to both define the major problems underlying the field of configural processing and to develop more unified ways of approaching these problems.

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FIFTH ANNUAL

CULTURE & COGNITION PRECONFERENCE

THURSDAY, NOVEMBER 21, 2024

Register below for our annual meeting located at New York Marriott Marquis, NY, USA, from 9am to 2pm.

Space is limited!

THIS YEAR'S SPEAKERS:

Dorthe Berntsen

Remembering the past and imagining the future takes place along a culturally structured timeline

Isu Cho

How do cultural differences in memory change with age?

Sonia Das

Language, culture, and technology in 21st century policing: How video changes perception of narrative/narrated events

Yang Qu

Stereotypes about adolescence: Cultural differences, consequences, and intervention

Vaishali Raval

Addressing the underrepresentation of majority world in psychological science

This meeting is made possible through support from the Perception, Action, and Cognition and Cultural Anthropology Programs at the National Science Foundation and the Psychonomic Society



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OPAM 32

November 21, 2024

N E W Y O R K C I T Y N Y

i Join the conference organised for and by graduate and postdoctoral researchers where we highlight outstanding early career research on the topics of Object Perception, Attention, and Memory (OPAM)

- Thursday, November 21st, at the New York Marriott Marquis
- Free registration 7:15 - 9am, talks and posters 9am - 4:40pm
- Keynote by Dr. Edward Awh 4:50 - 5:50pm



Visit www.opam.net for full program with talk and poster sessions details



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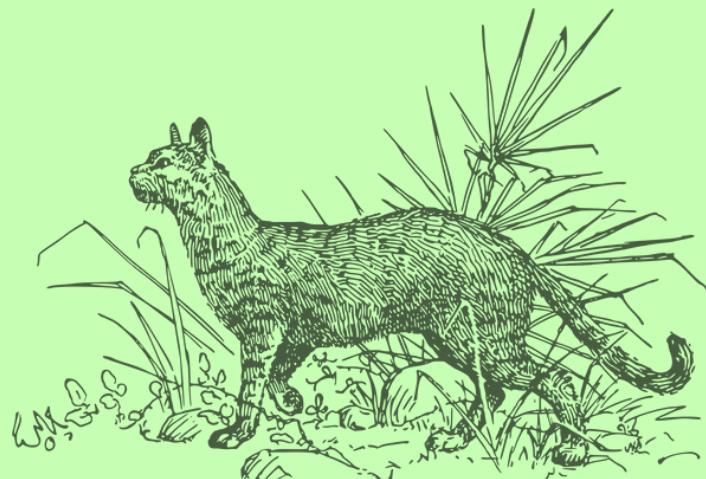
SATELLITE MEETING

MEMORY IN THE WILD

With 'memory in the wild' we aim to Bring together researchers to discuss modeling approaches to and challenges of studying human memory in scenarios that resemble real-world and naturalistic settings. The invited speakers will discuss Realistic Experimental paradigms, Nontraditional stimuli such as movies and events, and Memory for experiences in the real world.

HOSTED BY CHRISTOPHER BALDASSANO,
JULIA HAAF AND QIONG ZHANG

THURSDAY
NOVEMBER 21, 2024



PRELIMINARY PROGRAM

0900-0910	OPENING REMARKS	1300-1420	POSTER SESSION
0910-1040	INVITED SPEAKERS Realistic paradigms and ways of retrieving memories	1420-1550	INVITED SPEAKERS Memories for nontraditional stimuli
1040-1100	BREAK	1550-1610	BREAK
1100-1200	INVITED SPEAKERS Memory for experiences in the real world	1610-1650	PANEL DISCUSSION
1200-1300	LUNCH (on your own)	1650-1700	CLOSING REMARKS

Sponsored by: Society for Mathematical Psychology and Psychonomics Society

SPARK SOCIETY'S ANNUAL MEETING

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In this panel, we will discuss ideas of race-neutrality in cognitive psychology, examine how identity, context, and culture may influence theories of cognitive psychology, and consider tensions that exist between current practice and those that may push our field towards decolonized thought.

PANELISTS:

Akira O'Connor, Ph.D., University of St. Andrews

Suparna Rajaram, Ph.D., Stony Brook University

Erin Robbins, Ph.D., University of St. Andrews

Jyotsna Vaid, Ph.D., Texas A&M University

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November 21, 2024
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The 24th Annual Meeting of Women in Cognitive Science



Thursday, November 21, 2024

Social Hour & Speed Mentoring: 3 - 4 ET

Panel and Q&A: 4:15 - 6 ET



Note the flipped
order of events.

You Don't Know What You Don't Know: But How to Figure It Out

How do I balance my classes with research time? Are there secrets to the job market that I don't know? Where do I even start with this new leadership role? What is expected of me now? At every stage in an academic career, we are faced with new situations and unknown expectations. How do we find our paths when we don't even know what it is we don't know? Whether you're a first generation student, international scholar, or a long-time faculty member taking on a new role, facing the unknown can leave us all wondering what questions we need to ask.

Panelists

Ira Hyman, Western Washington University
Michelle Rivers, Santa Clara University
Joo-Hyun Song, Brown University
Sharon Thompson-Schill, University of Pennsylvania

For this year only: the social hour and speed mentoring will take place before the panel and presentation of travel awards.

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WiCS+ is affiliated with the Psychonomic Society and its activities are funded by the Perception, Action & Cognition program at the National Science Foundation.



MORE INFORMATION
<https://tinyurl.com/y6swhsjb>



CowanFest

Thursday, November 21

2024



Gather with friends and colleagues to celebrate the achievements of Dr. Nelson Cowan.



Invited Speakers
highlight Dr. Cowan's contributions to the understanding of working memory.



Lunch and Toast
at Carmine's NYC.



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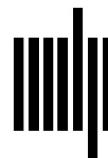
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and consultancy (if you're short on time we can build your next study ready for you) goes directly to building better tools tomorrow, and to keeping PsychoPy free forever!

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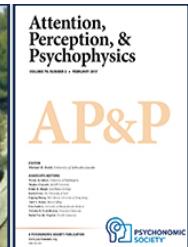
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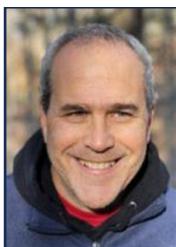
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IN MEMORIAM

Psychonomic Society Members • July 1, 2023–August 31, 2024



Daniel Kahneman (1934–2024)

Daniel Kahneman's research and writings on judgment and decision making (much of it with Amos Tversky), attention, well-being, and thinking have had enormous influence not only on psychology but also on economics, AI, business, philosophy, political science, law, sports, and a receptive public. His 2011 book, *Thinking Fast and Slow*, has sold more than 10 million copies worldwide. He was awarded 24 honorary degrees and many prizes, including the Nobel Prize in Economics (2002) and the Presidential Medal of Freedom (2013). Born in what is now Israel, he spent his childhood in France, much of it hiding from Nazi invaders. His undergraduate work was at Hebrew University and his graduate work at University of California, Berkeley. He later taught at both, at the University of British Columbia, and finally at Princeton University, retiring in 2008. He is sorely missed by his family, as well as by his many friends and collaborators.

More information about Danny can be found [here](#) and [here](#).

~Barbara Tversky

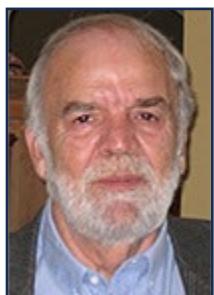


Robert Perry Sanford (1953–2024)

After attending the Berklee School of music in Boston, Rob Sanford worked for the Psychonomic Society, initially as manager at our Austin publications office and subsequently as submissions editor for our journals, for virtually his entire adult life. Rob was universally liked for his competence, for his directness, and for his laid-back attitude. His integrity in maintaining the highest standards of academic excellence was unparalleled. His legacy is not just in the work bearing his meticulous touch, but in the countless researchers whom he mentored and inspired through the complex landscape of scientific publishing. Rob's passion for our science and his commitment to quality will continue to resonate in the pages of our journals, and he will be sorely missed. Beyond his commitment to the Society, Rob continued throughout his life to compose and play music and to greatly enjoy his time with his extended family and friends.

More information about Rob can be found [here](#).

~Louis Shomette



Larry L. Jacoby (1944–2024)

Larry Jacoby's ideas and experimental findings were transformational for theories of memory and social cognition. He studied the interplay between consciously controlled and automatic processes on subjective experiences such as the feeling of remembering, and his process dissociation procedure was an ingenious and highly influential method for separating these two influences. Larry was born in Kansas in 1944 and died in March 2024 in the presence of his wife Carole, son Derek, daughter Karin, and granddaughters Becca and Shannon. He played center on his high school football team and decades later joked that he was cursed with "a brilliant mind trapped in the body of a football player!" He held positions at multiple universities, but his two longest-lasting research homes were McMaster University and Washington University in St. Louis. Google Scholar lists nine articles with more than a thousand citations. Larry lived and breathed his work with perseverance and dedication.

More information about Larry can be found [here](#).

~Steve Lindsay, Gus Craik, and Derek Jacoby

IN MEMORIAM (cont.)

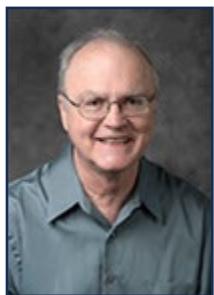


Colleen M. Kelley (1953–2023)

Colleen Kelley completed her BA at Reed College (1975) and her PhD at Stanford (1983), supervised by Gordon Bower. She taught at Reed, Williams, and Macalister Colleges before moving to Florida State University in 1996, becoming professor emerita in 2021. Her memory research, funded by sources including the National Science Foundation and the National Institute of Aging, has had substantial impact. A Fellow of both APA and APS, Colleen read widely and penetratingly and had rigorous standards. She was a superb mentor for her own graduate students and for other students and junior faculty. As former student Michael Alban said, Colleen possessed “an extraordinary combination of clear thinking and kindness.” She was an insightful collaborator who enhanced her coauthors’ thinking and the clarity and reach of the works they cocreated. She was also an altogether remarkable person possessed of a rapier wit, and was much admired and greatly appreciated.

More information about Colleen can be found [here](#).

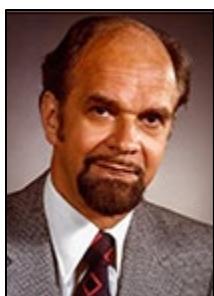
~Steve Lindsay and Larry Jacoby



Robert Proctor (1949–2023)

Robert Proctor is remembered for his empirical work on stimulus-response compatibility. Robert earned his PhD from The University of Texas at Arlington in 1975. After stints at Michigan State University and Auburn University, Robert joined the faculty at Purdue University in 1988, where he remained for his career. He became a distinguished professor at Purdue in 2007. His academic legacy includes 38 PhD graduates, 24 books, 66 book chapters, 325 journal articles, and 26 book reviews and commentaries. Robert was the editor-in-chief for the journals *Behavior Research Methods, Instruments, & Computers* (1994–1999), and the *American Journal of Psychology* (since 2008). He was an award-winning mentor for faculty and students. In addition to a love of science, Robert enjoyed watching Purdue football and women’s basketball games, listening to jazz and progressive rock music, and a good chile relleno with a margarita.

~Gregory S. Francis



Endel Tulving (1927–2023)

Endel Tulving was one of the most influential psychologists of the last 100 years. Born in Estonia, he spent most of his career in Toronto. In early studies, he rejected the notion of pair-wise associations in verbal learning in favor of the concept of organization. He next explored the neglected issue of retrieval processes and the crucial role of cues, culminating in the encoding specificity principle. He may be best known for the idea of memory systems—notably the distinction between episodic and semantic memory—laid out lucidly in *Elements of Episodic Memory*. His later work focused on brain correlates of encoding and retrieval, and on the case of KC, a man with essentially no episodic memory. Tulving's importance as a scientist was recognized by election to the national academies of Canada, Britain, USA, Sweden, and Estonia. In his leisure time he played tennis, bridge, and chess with competitive enthusiasm.

More information about Endel can be found [here](#) and [here](#).

~Gus Craik and Roddy Roediger

CONDENSED SCHEDULE

Thursday, November 21

Poster Session I with Authors Present	7:30–9:00 PM EST, Broadway Ballroom
Attention: Capture (1001-1011)	Learning and Memory: Recognition (1150-1159)
Attention: Other (1012-1022)	Learning and Memory: Reward, Motivation, and Emotion (1160-1171)
Bilingualism: Comprehension and Production (1023-1031)	Metamemory (1153, 1172-1179)
Cognition: Decision Making (1032-1041, 1092)	Sensation and Perception: Audition (1180-1188)
Cognition: Development (1042-1049)	Sensation and Perception: Vision (1189-1192)
Cognition: Emotion and Cognition (1050-1059)	Spatial Memory (1193-1198)
Cognition: Neural Mechanisms (1060-1068)	
Cognition: Reasoning/ Problem Solving (1069-1078)	
Cognition: Spatial Cognition (1079-1091)	
Cultural/Social Influences on Cognition (1093-1100)	
Language: Psycholinguistics (1101-1115)	
Learning and Memory: Associative Learning (1116-1125)	
Learning and Memory: Human Learning and Instruction (1126-1139)	
Learning and Memory: Recall (1040-1149)	

Friday, November 22

Spoken Sessions and Symposia	
Visual Working Memory I (1-6).....	8:00-10:00 AM EST, Westside Ballroom 3
Decision Making I (7-12).....	8:00-10:00 AM EST, Westside Ballroom 4
Speech Perception I (13-18)	8:00-10:00 AM EST, Lyceum 1-4
Attention: Cognitive Control (19-24)	8:00-10:00 AM EST, Marquis B-C
Emotion and Cognition (25-30).....	8:00-10:00 AM EST, Cantor/Jolson
Human Learning and Instruction I (31-36).....	8:00-10:00 AM EST, Julliard/Belasco

Symposium I: The Future of Future Thinking: Toward an Integrated Science of Prospective Cognition (PS Leading Edge Workshop Initiative).....	10:00 AM-12:00 PM EST, Westside Ballroom 1/2
Visual Working Memory II (37-42)	10:00 AM-12:00 PM EST, Westside Ballroom 3
Decision Making II (43-48).....	10:00 AM-12:00 PM EST, Westside Ballroom 4
Speech Perception II (49-54).....	10:00 AM-12:00 PM EST, Lyceum 1-4
Cognition: Reasoning/Problem Solving (55-60).....	10:00 AM-12:00 PM EST, Marquis B-C
Test Effects (61-66).....	10:00 AM-12:00 PM EST, Cantor/Jolson
Sensation and Perception I (67-72).....	10:00 AM-12:00 PM EST, Julliard/Belasco

Poster Session II with Authors Present.....	12:00–1:30 PM EST, Broadway Ballroom
Attention: Cognitive Control (2001-2011)	Learning and Memory: Human Learning and Instruction (2128-2142)
Attention: Individual Difference (2012-2022)	Learning and Memory: Prospective Cognition (2143-2149)
Attention: Scene Processing (2023-2024)	Learning and Memory: Recall (2150-2159)
Bilingualism: Development and Individual Differences (2025-2031)	Metacognition (2160-2179)
Cognition: Concepts and Categories (2032-2040)	Sensation and Perception: Perception and Action (2180-2193)
Cognition: Decision Making (2041-2050)	
Cognition: Emotion and Cognition (2051-2060)	
Cognition: Neural Mechanisms (2061-2070)	
Cognition: Reward, Motivation and Decision Making (2071-2080)	
Cognition: Technology and Cognition (2081-2094)	
Language: Discourse Processes (2095-2103)	
Language: Psycholinguistics (2104-2118)	
Learning and Memory: Autobiographical Memory (2119-2127)	

Spoken Sessions and Symposia	
Symposium II: Understanding and Combating Misinformation Spread: The Role of Individual Differences, Sociocognitive Correlates, and Artificial Intelligence.....	1:30-3:30 PM EST, Westside Ballroom 1/2
Autobiographical Memory (73-78).....	1:30-3:30 PM EST, Westside Ballroom 3
Bilingualism (79-84).....	1:30-3:30 PM EST, Westside Ballroom 4
Psycholinguistics I (85-90).....	1:30-3:30 PM EST, Lyceum 1-4
Cognition and Technology (91-96).....	1:30-3:30 PM EST, Marquis B-C
Metamemory (97-101).....	1:30-3:10 PM EST, Cantor/Jolson
Language & Reading (103-107)	1:30-3:10 PM EST, Julliard/Belasco



2024 ABSTRACTS of the PSYCHONOMIC SOCIETY

Friday, November 22 (*continued*)

Working Memory (109-115)	3:30-5:50 PM EST, Westside Ballroom 3
Cognitive Control (116-122)	3:30-5:50 PM EST, Westside Ballroom 4
Psycholinguistics II (123-128).....	3:30-5:30 PM EST, Lyceum 1-4
Recognition I (130-136).....	3:30-5:50 PM EST, Marquis B-C
Statistics and Methodology (137-143).....	3:30-5:50 PM EST, Cantor/Jolson

Symposium III: Climate Change and Human Cognition (Symposium on Cognition, Behavior, and Society)	3:45-5:45 PM EST, Westside Ballroom 1/2
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Poster Session III with Authors Present	6:00-7:30 PM EST, Broadway Ballroom
Attention: Cognitive Control (3001-3010)	Learning and Memory: Prospective Cognition (3140-3149)
Attention: Visual Search (3011-3020)	Learning and Memory: Reading (3150-3154)
Cognition: Cognitive Aging (3021-3031)	Learning and Memory: Recall (3155-3164)
Cognition: Concepts and Categories (3032-3039)	Learning and Memory: Working Memory (3165-3178)
Cognition: Decision Making (3040-3054)	Sensation and Perception: Multisensory Integration (3179-3189)
Cognition: Emotion and Cognition (3055-3069)	Sensation and Perception: Touch, Taste and Smell (3190-3193)
Cognition: Numerical Cognition (3070-3079)	
Cognition: Reward, Motivation and Decision Making (3080-3088)	
Cultural/Social Influences on Cognition (3089-3097)	
Language: Discourse Processes (3089-3097)	
Language: Psycholinguistics (3107-3121)	
Learning and Memory: Visual Working Memory (3122-3129)	
Learning and Memory: Autobiographical Memory (3130-3139)	

Poster Session IV with Authors Present	7:45-9:15 PM EST, Broadway Ballroom
Attention: Cognitive Control (4001-4010)	Learning and Memory: Recognition (4145-4159)
Attention: Individual Difference (4011-4022)	Learning and Memory: Test Effects (4160-4167)
Attention: Visual Search (4023-4033)	Performance: Cognitive Control (4168-4180)
Cognition: Cognitive Aging (4034-4043)	
Cognition: Decision Making (4044-4053)	
Cognition: Event Cognition (4054-4064)	
Cognition: Other (4065-4074)	
Cognition: Spatial Cognition (4075-4087)	
Language: Letter/Word Processing (4088-4099)	
Language: Psycholinguistics (4100-4113)	
Language: Speech Perception (4114-4126)	
Learning and Memory: False Memory (4127-4144)	

Saturday, November 23

Spoken Sessions and Symposia

Recall (144-149).....	8:00-10:00 AM EST, Westside Ballroom 3
Decision Making III (150-155).....	8:00-10:00 AM EST, Westside Ballroom 4
Attention: Capture I (156-161).....	8:00-10:00 AM EST, Lyceum 1-4
Learning and Memory I (162-167).....	8:00-10:00 AM EST, Marquis B-C
Semantics (168-173).....	8:00-10:00 AM EST, Cantor/Jolson
Cognition: Neural Mechanisms (174-179)	8:00-10:00 AM EST, Julliard/Belasco

Symposium IV: New Frontiers in the Cognitive Sciences of Music and Health	10:00 AM-12:00 PM EST, Westside Ballroom 1/2
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Language (180-185)	10:00 AM-12:00 PM EST, Westside Ballroom 3
Decision Making IV (186-191).....	10:00 AM-12:00 PM EST, Westside Ballroom 4
Attention: Capture II (192-197).....	10:00 AM-12:00 PM EST, Lyceum 1-4
Recognition II (198-203).....	10:00 AM-12:00 PM EST, Marquis B-C
Animal Learning (204-209).....	10:00 AM-12:00 PM EST, Cantor/Jolson
Letter/Word Processing (210-215)	10:00 AM-12:00 PM EST, Julliard/Belasco

Poster Session V with Authors Present	12:00-1:30 PM EST, Broadway Ballroom
Animal Research: Animal Learning & Cognition (5001-5008)	Learning and Memory: Implicit Memory (5145-5148)
Attention: Cognitive Control (5009-5018)	Learning and Memory: Recognition (5149-5159)
Bilingualism: Cognitive Control (5019-5031)	Metacognition (5160-5172)
Cognition: Cognitive Aging (5032-5041)	Performance: Motor Control (5173-5178)
Cognition: Decision Making (5042-5051)	Performance: Other (5179-5180)
Cognition: Embodied Cognition (5052-5058)	Statistics and Methodology (5181-5192)
Cognition: Judgment (5059-5073)	
Cognition: Other (5074-5086)	
Language: Language Production/Writing (5087-5100)	
Language: Reading (5101-5112)	
Language: Speech Perception (5113-5125)	
Learning and Memory: Cognitive Skill Acquisition (5126-5129)	
Learning and Memory: False Memory (5130-5144)	



2024 ABSTRACTS

of the PSYCHONOMIC SOCIETY

Saturday, November 23 (*continued*)

Spoken Sessions and Symposia

Symposium V: How Does Meaning Come to Mind? Advances in Understanding		
Conceptual Knowledge	1:30-3:30 PM EST, Westside Ballroom 1/2	
Learning and Memory II (216-221).....	1:30-3:30 PM EST, Westside Ballroom 3	
Cognition I (222-227).....	1:30-3:30 PM EST, Westside Ballroom 4	
False Memory (228-233).....	1:30-3:30 PM EST, Lyceum 1-4	
Concepts and Categories (234-239).....	1:30-3:30 PM EST, Marquis B-C	
Cognition II (240-245).....	1:30-3:30 PM EST, Cantor/Jolson	
Reading I (246-251).....	1:30-3:30 PM EST, Julliard/Belasco	
Event Cognition (252-258).....	3:30-5:50 PM EST, Westside Ballroom 3	
Attention (259-265).....	3:30-5:50 PM EST, Westside Ballroom 4	
Metacognition (266-272).....	3:30-5:50 PM EST, Lyceum 1-4	
Cognition: Judgment I (273-279)	3:30-5:50 PM EST, Marquis B-C	
Sensation and Perception II (280-286)	3:30-5:50 PM EST, Cantor/Jolson	
Cultural/Social Influences on Cognition I (287-293).....	3:30-5:50 PM EST, Julliard/Belasco	
Poster Session VI with Authors Present	6:00-7:30 PM EST, Broadway Ballroom	
Attention: Automatic Processing (6001-6006)	Cognition: Reasoning/ Problem Solving (6074-6084)	Learning and Memory: Human Learning and Instruction (6139-6150)
Attention: Cognitive Control (6007-6016)	Cognition: Technology and Cognition (6085-6096)	Learning and Memory: Recognition (6151-6160)
Attention: Features and Objects (6017-6027)	Language: Other (6097-6106)	Learning and Memory: Working Memory (6161-6171)
Bilingualism: Comprehension and Production (6028-6038)	Language: Semantics (6107-6113)	Sensation and Perception: Vision (6172-6184)
Cognition: Cognitive Aging (6039-6048)	Language: Speech Perception (6114-6129)	
Cognition: Decision Making (6049-6058)	Learning and Memory: Eyewitness Identification (6130-6138)	
Cognition: Judgment (6059-6073)		
Poster Session VII with Authors Present.....	7:45-9:15 PM EST, Broadway Ballroom	
Attention: Capture (7001-7010)	Cognition: Reasoning/ Problem Solving (7064-7073)	Learning and Memory: Eyewitness Identification (7124-7133)
Attention: Cognitive Control (7011-7014)	Cognition: Technology and Cognition (7074-7085)	Learning and Memory: Other (7134-7149)
Attention: Consciousness (7015-7020)	Language: Letter/Word Processing (7086-7099)	Learning and Memory: Test Effects (7150-7158)
Attention: Divided (7021-7022)	Language: Reading (7100-7114)	Learning and Memory: Working Memory (7159-7173)
Bilingualism: Comprehension and Production (7023-7032)	Learning and Memory: Visual Working Memory (7115-7123)	Statistics and Methodology (7174-7185)
Bilingualism: Memory (7033-7043)		
Cognition: Decision Making (7044-7053)		
Cognition: Music Cognition (7054-7063)		

Sunday, November 24

Cognitive Development (294-299)	8:00-10:00 AM EST, Westside Ballroom 3
Bilingualism Comprehension and Production (300-305).....	8:00-10:00 AM EST, Westside Ballroom 4
Cultural & Contextual Effects (306-311)	8:00-10:00 AM EST, Lyceum 1-4
Eyewitness Identification I (312-317)	8:00-10:00 AM EST, Marquis B-C
Reading II (318-323)	8:00-10:00 AM EST, Cantor/Jolson
Discourse Processes and Language Production/Writing (324-329).....	8:00-10:00 AM EST, Julliard/Belasco
Cognitive Aging (330-335).....	10:00 AM-12:00 PM EST, Westside Ballroom 3
Multimodal Cognition & Mind Wandering (336-341)	10:00 AM-12:00 PM EST, Westside Ballroom 4
Bilingualism: Development and Individual Differences (342-347).....	10:00 AM-12:00 PM EST, Lyceum 1-4
Human Learning and Instruction II (348-353).....	10:00 AM-12:00 PM EST, Marquis B-C
Cultural/Social Influences on Cognition II (354-359)	10:00 AM-12:00 PM EST, Cantor/Jolson
Cognition: Judgment II (360-365).....	10:00 AM-12:00 PM EST, Julliard/Belasco



Symposia and Spoken Abstracts

Welcome/Keynote Address

Thursday, November 21, 2024, 6:30-7:30 PM US EST

Working Memory and Cognition Inside and Outside of the Focus of Attention.

NELSON COWAN, *University of Missouri* — This talk illustrates how research can be guided by a conceptual model of information processing and working memory, in this case the embedded-processes model. In this model, the focus of attention is embedded within the activated portion of long-term memory. Both contribute to working memory, the limited amount of information temporarily held in mind and used to carry out various mental activities.

Working memory is involved, for example, in comprehension, reading, math, and problem-solving. There are some fundamental questions about it. What limits our working memory when attention is available for a task, versus when attention is instead directed elsewhere? How does attention pursue goals and deal with distractions? Dr. Cowan will start by describing some theoretical background of the embedded-processes approach. Then he will consider what we know, from old and new studies, of three aspects of the mind: (1) the capacity of the focus of attention, (2) the persistence of temporary activation of features and concepts in long-term memory, and (3) the direction of attention by a combination of voluntary and involuntary processes. For each component, he will illustrate foundational evidence, subsequent evidence that has motivated changes in the theory, and practical applications of the research topics to education, health, and communication. The evidence includes cognitive behavioral and neuroscientific contributions and considers life span development from childhood onward.

Opening Reception to immediately follow the Keynote Address

Visual Working Memory I

Friday, November 22, 2024, 8:00-10:00 AM US EST

Chaired by Christian Olivers, *Vrije Universiteit Amsterdam*

8:00-8:20 AM (1)

Action Similarity Warps Feature Space in Visual Working Memory. CHRISTIAN OLIVERS, *Vrije Universiteit Amsterdam*, CATERINA TRENTIN, *Vrije Universiteit Amsterdam*, HELEEN SLAGTER, *Vrije Universiteit Amsterdam* — By definition, visual working memory (VWM) retains representations of past

perceptions for future action. Yet, to date, most studies have approached VWM as serving perception beyond the immediate, while it remains unclear whether and how future action requirements may shape information in VWM. Here we show for the first time that the similarity of the actions that observers plan to perform on VWM items retrospectively alters the mnemonic representation. In two experiments, on each trial, participants memorized two bar orientations and either reproduced them by means of the same or a different type of action. We found that when perceptually similar items were paired with two different action plans, they were remembered as more distinct than when the same items were coupled with the same action plan. This finding shows that action plans can retrospectively warp sensory feature space in VWM, consistent with its central role in chaining perception and action. The findings are discussed in the context of common coding and attentional weighting accounts.

Email: Christian Olivers, c.n.l.olivers@vu.nl

8:20-8:40 AM (2)

Bidirectional Interference Between Working Memory and Perception for Faces and Motion over Time. SANIKA PARANJAPE, *The George Washington University*, SARAH SHOMSTEIN, *The George Washington University*, DWIGHT J. KRAVITZ, *The George Washington University & US National Science Foundation's Directorate of Social, Behavioral, and Economic Sciences (SBE) Division of Behavioral and Cognitive Science* — The sensorimotor recruitment theory of visual working memory (VWM) posits the recruitment of cortical areas involved in encoding a stimulus in its maintenance. Here, we expand evidence beyond low level features (e.g., color, orientation) to motion direction and face identity. In an orthogonal dual-task paradigm, participants maintained information while performing a perceptual discrimination. The maintained information predictably interfered with discrimination for both motion direction and face identity, both decreasing and increasing discriminability depending on the relationship of the maintained and discriminated information. Moreover, the discrimination stimuli introduced systematic biases in the continuous report of the maintained information. Finally, the strength of this interference was modulated by the time between encoding and discrimination, evidencing sustained interference and systematic oscillations. The bidirectional interference observed with low level

features (color and orientation) as well as high level features (motion and faces), suggests that sensory recruitment is a general VWM mechanism that is not limited to maintenance of low-level features in primary sensory areas.

Email: Sanika Paranjape, sanikap@gwmail.gwu.edu

8:40-9:00 AM (3)

Boundary Extension vs. Boundary Contraction: Differential Effects of Encoding Time. BANJIT SINGH, *University of Delaware*, HELENE INTRAUB, *University of Delaware* — Lin et al. (2022) tested memory for the expanse of close, modal, and far views. They observed a bidirectional error pattern consistent with normalization toward the modal distance of each scene category tested. However, an alternative explanation is that their timing—150 ms stimulus duration/250 ms mask duration/ test picture—may have disrupted encoding of complex far views causing loss of periphery (boundary contraction, BC) while allowing scene construction for simple close-ups (boundary extension, BE). To test these alternatives, timing was varied to determine if bidirectionality would hold or change, reducing BC with more encoding time. In Exp 1, duration was varied (150 ms vs. 250 ms). In Exp 2, duration was 250 ms, and the masked retention interval was varied (250 ms, 500 ms, 750 ms, and 4,000 ms). In Exp 3, stimulus onset asynchrony was 4,250 ms, and duration was varied (250 ms, 750 ms, 2000 ms, and 3000 ms). Increased timing (both stimulus duration and retention interval) led to systematic reductions and elimination of BC for far views, while BE for close-ups remained stable. Results are inconsistent with normalization alone, suggesting a more complex explanation of BE and BC in working memory.

Email: Banjit Singh, bspelia@udel.edu

9:00-9:20 AM (4)

Decisional Dynamics in Cardinal and Serial Biases in Delayed Estimation Working Memory Tasks. GI-YEUL BAE, *Arizona State University*, KUO-WEI CHEN, *Arizona State University* — Reports in visual working memory (WM) tasks exhibit systematic biases in relation to the categorical structure of the stimulus space (i.e., cardinal bias) and to the task-irrelevant prior stimulus (i.e., serial bias). Do these biases reflect distortions in the representation itself or biases in post-perceptual decision processes? To answer

this question, we investigated how the response unfolds over time in delayed estimation WM tasks by scrutinizing the response time (RT) and response trajectories for a mouse report. In three experiments, we found canonical cardinal and serial biases. However, the RT and response trajectories were independent of the cardinal axis whereas they were systematically modulated by the prior stimulus. These results suggest that the cardinal bias is a visual bias that reflects the distortions in the representation itself, whereas the serial bias is a decisional bias that reflects the integration of the prior stimulus during the decision for the new stimulus.

Email: Gi-Yeul Bae, gbae2@asu.edu

9:20-9:40 AM (5)

Errors of Attention Adaptively Warp Spatial Working Memory Representations. JAMES BRISSENDEN, *University of Michigan*, YITONG YIN, *University of Michigan*, MICHAEL VESIA, *University of Michigan*, TARAZ LEE , *University of Michigan* — Adaptation is the process by which we adjust internal models of the body, world, and mind in response to sensory feedback. While adaptation is studied extensively in the context of motor control, there is limited evidence that cognitive functions such as working memory are subject to the same error-driven adaptive control mechanism. To examine this possibility, we had participants perform a task that interleaved a perceptual discrimination task and a spatial working memory task. Perceptual discrimination trials presented an initial peripheral cue to exogenously capture attention, immediately followed by a displaced target stimulus. This sequence served to repeatedly induce a covert attentional error. Interleaved spatial working memory trials presented a stimulus at either a random peripheral location or the same location as the initial attentional cue. We found that as attentional errors accumulated, working memory recall robustly shifted in the direction of the error. Control experiments ruled out alternative explanations such as oculomotor confounds and attentional biases unrelated to error. These findings indicate that the mechanisms governing the adaptive control of motor commands appear to similarly adjust memory processes.

Email: James Brissenden, brissend@umich.edu

9:40-10:00 AM (6)

Greater Interference Between Ongoing Perception and Working Memory Across the Lifespan for Both High- and Low-Level Visual Features. SHIRA TKACZ-DOMB, *The George Washington University*, SARAH SHOMSTEIN, *The George Washington University*, DWIGHT J. KRAVITZ, *The George Washington University & US National Science Foundation's Directorate of Social, Behavioral, and Economic Sciences (SBE) Division of Behavioral and Cognitive Science* — Previous studies show bidirectional interference between visual working memory (VWM) and ongoing perception, consistent with the common recruitment of perceptual cortical areas. We hypothesized that maintained representations become less stable with age, resulting in stronger interference effects from ongoing perception. In three experiments, participants (N=900, sampled evenly across experiments, gender, and ages 20-69) were asked to maintain a memory cue (color, orientation, face identity) while performing an orthogonal detection task with a task-irrelevant distractor whose similarity to the memory cue was parametrically manipulated. In all experiments, and across all ages, the distractor interfered with the subsequent continuous memory report. Across all three types of information, we found a significant interaction between age and similarity, wherein as the similarity increased so did the interference, albeit more weakly for faces than color and orientation. Together, these findings show that VWM representations are less stable with age and more easily influenced by incoming perceptual information due to the joint recruitment of sensorimotor areas.

Email: Shira Tkacz-Domb, shira.tkaczdomb@gwu.edu

Decision Making I

Friday, November 22, 2024, 8:00-10:00 AM US EST

Chaired by Audrey E. Parrish, *The Citadel*

8:00-8:20 AM (7)

A Cognitive Evidence Accumulation Model Incorporating Attention Explaining How Attention Affects Decision Making. JÖRG RIESKAMP, *University of Basel*, AMIR HOSEIN HADIAN RASANAN, *University of Basel* — Attention should play an important role in decision making. Yet how attention affects the cognitive process underlying a decision is still unclear. Different mechanisms have been

proposed for how attention may affect the subjective value. First, it could be that attention has an additive effect, such that an option that receives more attention receives a constant "bonus" in the subjective value. Second, attention could be connected multiplicatively to the subjective value so that the more attention an option receives and the higher the subjective value, the greater the increase in subjective value. Third, a hybrid mechanism is also plausible. The present work rigorously tested all three mechanisms against each other by proposing the gaze-weighted advantage race diffusion model. The model was tested on five existing data sets, and the results show that a hybrid attention mechanism that has an additive and a multiplicative component of attention is most appropriate to explain the observed findings. The results illustrate that taking attentional processes into account leads to a better understanding of human decision making, with important implications for theory advancement.

Email: Jörg Rieskamp, joerg.rieskamp@unibas.ch

8:20-8:40 AM (8)

A Registered Report on Presentation Factors that Influence the Attraction Effect. EESHAN HASAN, *Indiana University Bloomington*, YANJUN LIU, *University of New South Wales*, NICOLE OWENS, *Vanderbilt University*, JENNIFER S. TRUEBLOOD, *Indiana University Bloomington* — Context effects occur when the preference between two alternatives is affected by the presence of an extra alternative. These effects are some of the most well-studied phenomena in multi-alternative, multi-attribute decision making. Recent research has revealed an intriguing pattern of results. On the one hand, these effects are ubiquitous and have been demonstrated in many domains and different choice settings. On the other hand, they are fragile and they disappear or even reverse under different conditions. This pattern of results has spurred debate and speculation about the cognitive mechanisms that drive these choices. The attraction effect, where the preference for an option increases in the presence of a dominated decoy, has generated the most controversy. In this registered report, we systematically vary factors that are known to be associated with the attraction effect to build a solid foundation of empirical results to aid future theory development. We find a robust attraction effect across the different conditions. The strength of this effect is modulated by the display order (e.g., decoy top, target middle, competitor bottom) and mode (numeric vs.

graphical) but not display layout (by-attribute vs. by-alternative).

Email: Eeshan Hasan, eehsan@iu.edu

8:40-9:00 AM (9)

Decoys in Developmental Decision-Making:

Studying Context Effects in Children. AUDREY E. PARRISH, *The Citadel* — The asymmetric dominance effect (or decoy effect) is a decision-making phenomenon that occurs when preference for a target alternative shifts with the addition of a similar, yet inferior alternative dubbed the decoy. Despite the considerable research examining the decoy effect in adult humans and animals, there is comparatively less research on context effects within the developmental domain. In this study, we explored the impact of a decoy on choice behavior by young children (3- to 9-years-old) using a preferential choice task as well as a perceptual discrimination task. Introduction of an inferior decoy impacted choice behavior across 2-alternative (binary) versus 3-alternative (trinary) sets, such that inclusion of the dominated decoy in expanded sets decreased selection of the superior target alternative. This pattern of results indicates a reversal of the standard attraction effect, also known as the repulsion effect. These developmental findings are discussed in light of the adult and comparative literatures on decoy effects along with future directions for this field of study.

Email: Audrey Parrish, audrey.parrish1@gmail.com

9:00-9:20 AM (10)

Overinterpretations of Science Findings Among

Laypeople. AUDREY L. MICHAL, *University of Michigan*, PRITI SHAH, *University of Michigan* — Laypeople are increasingly using findings from scientific studies to inform their everyday decisions. We investigated the extent to which laypeople might be misled about the generalizability or practical value of particular findings. In Experiment 1 ($N=234$, between-subjects), laypeople valued an intervention less when a positive outcome was reported in the context of an additional, ineffective outcome than when it was reported as a single outcome, suggesting consequences of reporting bias for decisions. In Experiment 2, laypeople ($N=233$, between-subjects) were initially just as likely to act on a study done with animals as an identical study done with humans, but pointing out the human-animal sample differences led to more appropriate decisions.

Our findings suggest that laypeople tend to overinterpret the value and applicability of science findings from media reports, but they can make better informed decisions if important details about the study design are highlighted.

Email: Audrey Michal, audrey.lustig.michal@gmail.com

9:20-9:40 AM (11)

The Best Fit Is Not the Best Model: On the Need for Identifying How Participants Navigate the Cognitive Parameter Space. GAURAV

MALHOTRA, *University of Albany*, ERIK STUCHLÝ, *Universität Hamburg*, CASIMIR LUDWIG, *University of Bristol* — A key goal of psychological research is to provide mechanistic explanations of observed behaviour. Many studies cast these mechanistic explanations as computational process models and search for the most plausible model parameters. Such model-based inferences have a critical shortcoming: they rarely take the agent's perspective and consider why and how agents arrive at these estimated parameter values. To explore this problem, we simulate an agent that navigates a "cognitive parameter space" trying to maximise reward rate in a typical decision-making paradigm. We find that static models fits, typically used in existing studies, frequently lead to incorrect inferences when the agent explores this space. In contrast, a particle filter method is able to capture their trajectory. We apply this method to data from an expanded judgement task and find that participants use a variety of strategies to perform the task and their trajectories are not consistent with any sophisticated statistical optimisation.

Email: Gaurav Malhotra, gmalhotra@albany.edu

9:40-10:00 AM (12)

The Illusion of Diversity. RASHA KARDOSH, *New York University*, ASAEL SKLAR, *Reichman University*, YAACOV TROPE, *New York University*, RAN HASSIN, *Hebrew University* — Across two lines of work we find that due to the basic architecture of the cognitive system, people consistently perceive their social environments as more diverse than they truly are. Human cognition is tuned to the uncommon. Individuals from minority groups are precisely that, uncommon. Therefore, they are salient across various levels of cognition: perception, memory, and visual awareness. As a result, people substantially overestimate their prevalence (Kardosh et al., 2022). The human mind is also tuned to what is

present and cannot dwell on absences. Therefore, when a minority group is absent from a social environment, most people do not notice this absence (Kardosh et al, in prep). Across these two lines of research, using behavioral and eye-tracking data, as well as field studies, we explore how basic principles in cognition shape the perceptions of social environments ultimately guiding our worldviews. Taken together, these lines of work suggest that an illusion of diversity persists, whether minorities are present or absent from an environment.

Email: Rasha Kardosh, rasha.kardosh@gmail.com

Speech Perception I

Friday, November 22, 2024, 8:00-10:00 AM US EST

Chaired by Boaz M. Ben-David, *Reichman University*

8:00-8:20 AM (13)

'The Prosody-Semantics Tango': Insights from 15 Years of Exploring Emotional Speech Processing Across Populations. BOAZ M. BEN-DAVID,

Reichman University — The Test for Rating Emotions in Speech (T-RES) assesses the interplay of prosody (tone) and semantics (content) in processing emotions in speech. Listeners rate predefined emotions (anger, happiness, sadness) in sentences with both prosodic and semantic emotional content. T-RES versions exist in English, German, Hebrew, and online formats. It has been tested in individuals with tinnitus, cochlear implants, forensic and non-forensic schizophrenia, autism spectrum disorders, intellectual disabilities, early and late blindness, as well as older adults and elementary school children. This presentation overviews the tool and key findings: prosody and semantics are separate but not separable dimensions. Typically developed young adults show prosodic dominance in spoken-emotion processing across languages, i.e. prosody plays a greater role than semantics. Some groups exhibit reduced prosodic dominance, possibly compensating for auditory and cognitive challenges. Early age childhood exposure to intact spoken language (visual and auditory) is important for developing spoken-emotion processing. This research has real-life implications, as communication breakdowns between groups can be caused by differences in prosody-semantics interactions.

Email: Boaz M. Ben-David, boaz.ben.david@runi.ac.il

8:20-8:40 AM (14)

A Perceptual Similarity Space for Speech

Perception. MATTHEW GOLDRICK, *Northwestern University*, SEUNG-EUN KIM, *Northwestern University*, BRONYA R. CHERNYAK, *Technion-Israel Institute of Technology*, JOSEPH KESHET, *Technion-Israel Institute of Technology*, ANN R. BRADLOW, *Northwestern University* — Many theories assume speech is perceived using cues (language-specific spectro-temporal properties that map to discrete linguistic elements). To perceive "lap" vs. "lab" an English listener must identify a discrete segment /p/ vs. /b/ using specific temporal (preceding vowel length) and spectral cues (first formant frequency offset). Utterances are perceived by processing the cues to each discrete element in the utterance. We test an alternative approach that emphasizes holistic comparison of utterances in a multidimensional perceptual similarity space, estimated by a neural network trained via self-supervised learning. This approach encodes differences between utterances based on prior experience, without assuming pre-specified temporal windows or discrete linguistic units. We test this new approach by comparing representations of sentences by first- and second-language (L1 vs. L2) English talkers. We find that intelligibility of L2 talkers (N=114) is better explained by the talkers' average distance in perceptual similarity space from L1 talkers than by measures of the talkers' overall cue distinctiveness (e.g. vowel space size, pitch variability), supporting our novel approach to acoustic representations in speech perception.

Email: Matthew Goldrick, matt-goldrick@northwestern.edu

8:40-9:00 AM (15)

Accent Distance Perception in Children and Adults.

TESSA BENT, *Indiana University*, MALACHI HENRY, *Indiana University*, RACHAEL F. HOLT, *The Ohio State University* — Children's sociolinguistic abilities related to accent variation begin to emerge in infancy but do not reach adult-like performance in some tasks until adolescence. One salient accent characteristic for adults is accent strength or perceived distance from the local standard, but children's development for this dimension has received little attention. Therefore, to evaluate the development of accent distance perception, young adults, 6-year-olds, and 12-year-olds ranked 24 talkers representing a range of first (L1) and second language (L2) varieties based on their perceived distance from the local accent for six sentences varying in length



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and type (declarative vs. interrogative). Children showed similar sensitivity to accent distance compared to adults. Significant interactions between sentence type and length uniquely predicted accent distance scores. Results suggest that perception of accent distance develops before some other sociolinguistic abilities related to accents, such as regional dialect classification. [Funded by the National Science Foundation: 1941691 and 1941662]

Email: Tessa Bent, tbent@iu.edu

9:00-9:20 AM (16)

Defining the Contribution of Spatial Selective Attention to the Perceptual Organization of Speech via Individual Differences.

MARK PITT,
The Ohio State University, MARJORIE FREGGENS,
The Ohio State University, SVEN MATTYS, *University of York* — To what degree is the segregation of spatially separated concurrent speech (cocktail party) dependent on selective attention versus auditory cues to perceptual organization (e.g., spatial location, spectro-temporal continuity)? We investigated this question by examining how individuals differ in their ability to attend to speech in one location while ignoring speech in another. Word pairs were presented that varied in the strength with which an /s/ presented in the unattended ear perceptually grouped with the content of the attended ear or the distractor ear. Individuals differed in their reliance on grouping cues to segregate the target. Those with a weak attentional ability were most reliant on the auditory grouping cues to segregate, whereas those with a strong attentional ability showed much less dependence. Results further define the relationship between selective attention and cue-driven speech segregation.

Email: Mark Pitt, pitt.2@osu.edu

9:20-9:40 AM (17)

Effects of Retrieval Modality and Attention on the Encoding of Spoken Sentences.

WILLIAM CLAPP, *Stanford University*, MEGHAN SUMNER, *Stanford University* — Speech perception requires the storage and access of detailed memory traces. To date, the vast majority of work showing acoustic specificity effects in memory has used individual words as stimuli. With most natural speech communication involving more complex utterances, an important step in generalizing these patterns is to adapt this work to sentential contexts. In two experiments, we revisited the finding that divided

attention (DA)—relative to full attention (FA)—reduces the degree of memory encoding, with each experiment targeting different cues for retrieval. Participants heard spoken sentences at study, with different test blocks: auditorily presented sentences (Experiment 1) and orthographically presented sentences (Experiment 2). Accuracy in FA was higher than in DA in both. Correct responses were faster for FA than DA in Experiment 1 but not Experiment 2, showing the added benefit of acoustic information. We find that attention affects encoding strength in the context of spoken sentences, and that the consequences of DA differ based on the cues available to participants at the time of retrieval. We discuss implications for understanding voice-based biases in everyday situations.

Email: William Clapp, wsclapp@stanford.edu

9:40-10:00 AM (18)

Effects of the Melodiousness of a Second-Formant Tone Analog in Sine-wave Speech on Perceptual Bistability and Intelligibility.

ROBERT E. REMEZ, *Barnard College*, MARÍA DEL VALLE GARCÍA LÓPEZ, *Columbia University*, LAUREN E. HECK, *Barnard College*, COLIN T. SIMON-FELLOWES, *Barnard College*, KIARA R. SKALNES, *Barnard College* — When the frequency and amplitude variation of the vocal resonances of natural speech are replicated by time-varying sinusoids, the result is both intelligible and bistable. One perceptual organization of the tones permits an analysis of the auditory form of the individual sine-waves, resulting in a stable auditory impression of the pitch and loudness pattern of each tone. A second perceptual organization groups the tones into a single complex broadband contour, permitting an analysis of the phonetic properties underlying the time-varying pattern. In this project, an algorithm forced the tone analog of the second formant of each sine-wave test sentence to approximate the natural frequency and amplitude variation in a series of 100 ms steady-state tones tuned to notes of the musical scale. Our project calibrated the quality of the second-formant melodies (melodiousness) and the correlated intelligibility of the sentences with melodious second formant tones of differing quality. To a first approximation, the results offer a stable index of resource sharing in the perceptual organization of speech and music occurring at the earliest organizational stage in each perceptual domain.

Email: Robert Remez, remez@columbia.edu

Attention: Cognitive Control

Friday, November 22, 2024, 8:00-10:00 AM US EST

Chaired by Senne Braem, *Ghent University*

8:00-8:20 AM (19)

Dynamic Changes in Task Preparation in a Multi-Task Environment. SENNE BRAEM, *Ghent University*, MENGQIAO CHAI, *Ghent University*, IRIS IKINK, *Ghent University*, STEFANIA MATTIONI, *Ghent University*, RICARDO J. ALEJANDRO, *Ghent University*, NANNE KUKKONEN, *Ghent University*, MEHDI SENOUESSI, *University of Toulouse-Jean Jaurès*, MARCEL BRASS, *Humboldt-Universität zu Berlin*, CLAY HOLROYD, *Ghent University* — A key element of human flexible behavior concerns the ability to continuously predict and prepare for sudden changes in tasks or actions. Across six experiments, we tested whether people can dynamically modulate task preparation when the identity of a to-be-performed task becomes uncertain. Specifically, in some blocks, the task being prepared for could suddenly shift to a different task after a longer cue-target interval, by changing either the stimulus category or categorization rule that defined the initial task. Participants were able to dynamically modulate task preparation in the face of this task uncertainty and increasing switch expectancy. We further demonstrate that these dynamic modulations can be applied in a compositional manner, depending on whether either only the stimulus category or categorization rule would be expected to change, and seem to involve a dynamic regulation of task activation, rather than the unbinding of task components. Finally, we show how these uncertainty-based adaptations in task preparation follow rostral-to-caudal right lateralized prefrontal brain dynamics, while regular task preparation relied more on left prefrontal cortex.

Email: Senne Braem, senne.braem@ugent.be

8:20-8:40 AM (20)

Effect of Increasing Reward Prospect on Cognitive Flexibility Depends on Task.

CATHERINE ARRINGTON, *Lehigh University*, JULIETTE BARAN, *Lehigh University*, KERSTIN FRÖBER, *University of Regensburg*, KATE KELLERK, *Lehigh University*, ALEXANDRIA GARRANT, *Lehigh University* — The term cognitive flexibility is evoked to explain performance in numerous tasks: task switching in multitasking, mental set shifts in problem solving, and

category shifting in verbal fluency tasks. Are the same cognitive processes underlying flexibility in each situation? We considered this question by exploring the effect of increasing reward prospect on tasks with purported measures of cognitive flexibility. Past task switching research shows increasing reward prospect results in more task switching compared to stable reward (Fröber & Dreisbach, 2016). In two experiments using a water jug task (Luchins, 1942), we found increasing reward prospect did result in more participants breaking mental set on the critical problem, but only if a visual reminder of reward sequence was presented across problems. In three experiments using a verbal fluency task (Troyer, 2000), we failed to find any relationship between increasing reward prospect and measures of cognitive flexibility, including cluster shifting and cluster size. This null effect of reward prospect occurred when reward was manipulated across category trials and within a single category over short time intervals. Cognitive flexibility may be different across these tasks.

Email: Catherine Arrington, kate.arrington@lehigh.edu

8:40-9:00 AM (21)

Hierarchical Factor Models.

JEFFREY ROUDER , *University of California, Irvine*, MAHBOD

MEHRVARZ, *University of California, Irvine* — The study of individual differences across a battery of cognitive experiments centers the correlation (or covariance) in performance. Yet, the usual approach of correlating person-by-experiment scores leads to dramatic attenuation of correlations and to difficulty understanding the relations among experiments. We develop hierarchical confirmatory and exploratory factor models for experiments with multiple trials nested in conditions. By modeling trial noise explicitly the approach provides the following benefits: (1) correlations are disattenuated while remaining between -1 and 1 in value, (2) factor loading matrices may be accurately recovered either with or without explicit constraints on loadings, and (3) the effect of trial noise in the resulting uncertainty on correlations and factor loadings may be assessed. In summary, hierarchical factor models provide a large and substantive improvement over classic factor models for experimental psychologists.

Email: Jeffrey Rouder, jrouder@uci.edu

9:00-9:20 AM (22)

Reward Induces Shifts in Learning-Guided Reactive Control.

MERVE ILERI-TAYAR,
Washington University in St. Louis, WOUTER KOOL,
Washington University in St. Louis, JULIE M. BUGG,
Washington University in St. Louis — To optimize cognitive control, many factors such as reward and conflict should be considered. While their individual effects are well-studied, their interaction is less understood, creating a gap. In Experiment 1, we examined proactive shifts induced by reward pre-cues in the Stroop task. Reward specifically enhanced performance on incongruent trials, indicating heightened focus. In Experiment 2, we tested the effect of reward on learning-guided reactive control using the item-specific proportion congruence (ISPC) manipulation in which mostly congruent (MC) and mostly incongruent (MI) items are intermixed in a 50% congruent list. First, we established the ISPC effect without rewards (smaller Stroop effect in MI than MC items as a more focused/relaxed control setting is retrieved for MI/MC items). In a test phase, either MC or MI items were associated with reward. Associating reward with MI items preserved the ISPC effect, while linking reward to MC items eliminated it. Reward heightened focus and negated the tendency to retrieve a more relaxed control setting for MC items, showing rewards shift reactive control. We discuss implications of this novel finding alongside potential mechanisms examined via evidence-accumulation models.

Email: Merve Ileri-Tayar, i.merve@wustl.edu

9:20-9:40 AM (23)

An Adjustable Wave-Like Model of Distributed Attention for Perceptual Streaming.

RICHARD J. JAGACINSKI, *The Ohio State University*, AIJIA MA, *The Ohio State University*, TYLER MORRISON, *Agility Robotics* — Perceptual streaming is a form of distributed attention in which two or more sequences of events are attended in parallel. Several researchers have suggested that streaming occurs when a velocity limit on the movement of more focused attention is exceeded. A linear tradeoff between distance and timing for the onset or loss of streaming provides an estimate of this velocity limit. A proposed process model for this linear tradeoff assumes that distributed attention has a wave-like structure with a constant velocity and an adjustable wavelength and frequency. Peaks in the wave-like attention simultaneously align with the multiple attended

streams. When the attentional wavelength is longer to encompass larger distances between streams of events, the frequency is reduced. It is speculated that the ability to adjust attentional wavelength and frequency may be an important cognitive skill in many different contexts.

Email: Richard Jagacinski, jagacinski.1@osu.edu

9:40-10:00 AM (24)

Embodied Decision Making During Walking.

ROUWEN CAÑAL-BRULAND, *Friedrich Schiller University Jena*, ERIC GRIEBACH, PHILIPP RAßBACH, OLIVER HERBORT, *Julius-Maximilians-Universität Würzburg* — Many daily life decisions are made on the fly; for example, when we walk through the grocery store and decide whether to take the strawberry jam to our left or the blueberry jam to our right. While walking through the store, the action costs for approaching these choice options constantly change. Addressing the question whether, and if so, to what degree the dynamically changing action costs of walking influence decision making was the main aim of a series of multi-experiment studies I present during my talk. In the first set of experiments, we examined whether gait dynamics and associated costs affect value-based decisions during walking. Results showed that choices were indeed biased by action costs, to the degree that participants chose to walk to less rewarding target locations to save action costs. In the second set of experiments, we systematically manipulated action costs of different choice options. Results showed that and how systematic variations of action costs (e.g., by means of manipulating turning angles) biased decision making. Together, our studies seem to provide initial evidence for the idea that action costs directly affect decision making, thereby supporting embodied decision making accounts.

Email: Rouwen Cañal-Bruland, rrouwen.canal.bruland@uni-jena.de

Emotion & Cognition

Friday, November 22, 2024, 8:00-10:00 AM US EST

Chaired by Brooke Macnamara  , *Purdue University*

8:00-8:20 AM (25)

Adaptation Under Pressure: The Role of Emotion-Cognition Traits in Learning and Skill Transfer.

KYLE LAFOLLETTE, *Case Western Reserve University*, DAVID J. FRANK, *Youngstown State University*, ALEXANDER P. BURGOYNE, *Human Resources Research Organization (HumRRO)*,

BROOKE MACNAMARA , *Purdue University* — In today's fast-paced world, rapidly acquiring and transferring new skills is crucial, especially in high-stress professions. Yet, predictors of complex learning across contexts are not fully understood. We investigated how emotion-cognition traits predict learning acquisition and transfer under stress. Participants ($N=256$) trained on a game-like task either with stable stimuli-response mappings or with variable visual cues. Before each round, half in each condition underwent a stress manipulation. After five rounds of the task, participants either continued with their trained version or switched to an unexperienced version. Those who trained in a variably-mapped environment demonstrated perfect transfer—switching to a stable environment boosted performance such that they performed as well as participants who had trained in that environment. However, participants who trained in a stable environment under stress showed incomplete learning transfer when switching to a variably-mapped environment. Learning transfer failure was mitigated by individual differences in cognitive reappraisal, indicating that traits and context interact to predict learning and skill transfer.

Email: Kyle LaFollette, kjl113@case.edu

8:20-8:40 AM (26)

Decoding Affects by Mouse-Cursor Tracking: Representational Similarity Analysis. TAKASHI YAMAUCHI, *Texas A&M University*, KUNXIA WANG, *Anhui Jianzhu University* — Theories of Constructed Emotion and Grounded Cognition suggest that our sensorimotor experiences underpin the formation of emotions. This study explores this premise by examining how movements of a computer cursor can reflect moods of participants. We conducted an experiment where participants engaged in a simple judgment task, with their mouse-cursor movements tracked pixel by pixel. Mood assessments were conducted using the PANAS-X scale before and after the task. Through Intersubject Representational Similarity Analysis, we investigated the correlation between the patterns of mouse movements and self-reported moods. Our findings reveal a significant association between negative emotions, such as fear and hostility, and certain movement patterns, e.g., randomness and deviations from a direct path. Additionally, our study highlights the utility of inter-subject representational similarity analysis by revealing

alignments between distinct measurement domains, sensorimotor actions and emotional states.

Email: Takashi Yamauchi, takashi-yamauchi@tamu.edu

8:40-9:00 AM (27)

Climate Change-Related Stress Anticipation: Conceptualization, Correlates, and Implications. MONIKA LOHANI, *University of Utah*, BENJAMIN JANNEY, *University of Utah*, AMY DO, *University of Utah*, LYNNE ZUMMO, *University of Utah* — Even though climate change continues to escalate, apprehensions about it vary widely, which has consequences for sustainable action. In this project, we introduce the concept of climate change-related stress anticipation—the stress one expects to experience due to climate change. After learning scientific facts on climate issues, community members in a museum ($N=150$) and students in a learning setting ($N=547$) reported their perceptions of climate change issues and personal impacts. Those who reported experiencing higher climate change-related stress anticipation reported higher climate-related worry, anxiety, depression, and eco-consciousness. In contrast, de-emphasis on climate change concerns and apathy were related to lower stress apprehension. At the same time, purposefully choosing more eco-friendly behaviors was also linked to lower stress anticipation, perhaps acting as an anticipatory coping approach. Thus, climate change-related stress anticipation is a useful individual difference that connects one's individual distress and attitudes toward the environment that can motivate successful climate action. Ongoing work connects climate change-related anticipation to attention and memory in applied learning environments.

Email: Monika Lohani, monika.lohani@utah.edu

9:00-9:20 AM (28)

Emotion Recognition in Narratives: The Impact of Literal Meaning vs. Prosody with a Focus on Alexithymia. REYYAN BILGE, *Northeastern University*, BÜŞRA TELLI, *independent researcher* — Alexithymia is characterized by difficulties in identifying, recognizing, and describing emotions. This study examines how individuals with high and low alexithymia comprehend emotional discourse when there is incongruence between prosody and the literal meaning of key words. In two experiments, undergraduates from Istanbul Sehir University were pre-screened using the



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Toronto Alexithymia Scale (TAS-20) and categorized into high and low alexithymia groups. Participants listened to emotion-based narratives where the emotional prosody of key words was either congruent or incongruent with their literal meanings. The results showed that incongruence led to slower reaction times and lower accuracy in emotion recognition, particularly for happiness, sadness, surprise, and fear, while anger was less affected. Individuals with high alexithymia seemed to prioritize prosody over literal meaning for anger compared to other emotions and participants with low alexithymia. Understanding these dynamics provides valuable insights into the cognitive mechanisms underlying emotional discourse comprehension and has implications for future research and clinical practice, especially on speech comprehension in contexts of emotional incongruity.

Email: Reyyan Bilge, r.bilge@northeastern.edu

9:20-9:40 AM (29)

Emotion Regulation and the Preference for Self-Verifying Feedback.

DOUG MARKANT, *University of North Carolina at Charlotte*, SHAINA GLASS, *University of North Carolina at Charlotte* — People often favor “self-verifying” feedback that confirms existing self-views, a bias which has been implicated in the persistence of negative self-beliefs and affective disorders. Although existing theories suggest that emotion regulation plays a central role in self-verification, it is unclear how emotion regulation habits contribute to the selection and evaluation of self-verifying feedback. We aimed to explore the connections between emotion regulation and the preference for self-verifying feedback. The study included an assessment of participants' habitual use of common emotion regulation strategies and a social feedback selection task designed to measure self-verification. Our results demonstrate an association between active “engagement”-based emotion regulation strategies (e.g., reappraisal, perspective-taking) and a preference for self-verifying feedback, suggesting that people who self-verify may respond to disconfirmatory feedback that threatens existing self-views by reappraising its credibility. We discuss how emotion regulation processes contribute to the broader functions of self-verification in maintaining a coherent self-image and adaptively processing feedback that contradicts existing self-views.

Email: Doug Markant, dmarkant@charlotte.edu

9:40-10:00 AM (30)

Emotional Dysregulation and Procrastination in Post-Secondary Students.

JAMIE A. PROWSE TURNER, *Red Deer Polytechnic*, AUTUMN DYKE, *Red Deer Polytechnic* — The dominating, traditional stream regarding procrastination has discussed the cause of procrastination to be due factors including self-efficacy, loci of control, and time management issues. However, a more recent stream of literature has examined procrastination in terms of an emotional dysregulation issue. One factor that is consistently linked to emotional dysregulation is the experience of trauma and trauma-based responding. The current research sought to examine the complex relationship of these factors to gain a more comprehensive overview of procrastination. Results indicated that emotional dysregulation was significantly correlated with both behavioural and emotional aspects of procrastination. Furthermore, childhood trauma and certain trauma-based responding (i.e., freeze responses) significantly predicted emotional dysregulation, as well as procrastination. These results indicate the importance of reducing emotional dysregulation, especially those who experienced trauma or are experiencing trauma-based responding within post-secondary students.

Email: Jamie Prowse Turner, jamie.prowse-turner@rdpolytech.ca

Human Learning and Instruction I

Friday, November 22, 2024, 8:00-10:00 AM US EST

Chaired by Jaclyn H. Ford, *Boston College*

8:00-8:20 AM (31)

An Experimental Investigation of Gender Bias in Student Evaluations of Teaching.

SHANA CARPENTER, *Oregon State University*, KELLY A. KANE, *Elmira College*, AMBER E. WITHERBY, *Creighton University*, KYLER JONES, *Oregon State University* — Data from real college and university courses have revealed biases in student evaluations of teaching (SETs). One of the most widely documented biases shows that male instructors tend to receive more positive evaluations than female instructors; however, experimental data is lacking on the role of instructor gender in SETs. The current study used the same video-recorded lecture delivered by a male vs. female instructor, and assessed students' learning of the lecture content as well as their perceptions of their own learning and of the effectiveness of the instructor's teaching.

Students who viewed the lecture video gave highly comparable SETs to male and female instructors. However, students who saw only a brief screenshot of the video (containing the instructor in front of a PowerPoint screen) rated the male instructor more positively than the female instructor. Results are discussed in the context of experience- vs. belief-based influences on instructor gender bias.

Email: Shana Carpenter, shana.carpenter@oregonstate.edu

8:20-8:40 AM (32)

How Much Academic Stress and Test Anxiety Did Undergraduate Students Report Experiencing Pre- and During the COVID-19 Pandemic of 2020?

HEATHER M. MANITZAS HILL, *St. Mary's University*, DEIRDRE YEATER, *Sacred Heart University*, FARWAH ALAM, *McMaster University* — Since the 1980s, academic stress and test anxiety have increased in undergraduate students, despite attempts to identify myriad predictors and to develop interventions that can mitigate these two educational impediments. The current study was an opportunistic study that investigated the effect of the coronavirus 2020 pandemic on academic stress and test anxiety for approximately 200 undergraduate students at two primarily undergraduate institutions (PUIs) with different ethnic and SES compositions. The study also assessed the influence of the presence of a pet on reported academic stress and test anxiety levels. No difference was found between levels of academic stress or test anxiety for students evaluated before the pandemic began, when transitioning to the pandemic status, or during the pandemic with quarantine in effect. Moreover, the presence of a pet did not mediate the self-reported levels for either measure. The undergraduate students reported academic stress and test anxiety levels at higher levels compared to previous cohorts assessed across multiple decades; females showed a greater vulnerability in both areas of stress. Identifying the key factors are needed to develop effective interventions for these students.

Email: Heather Manitzas Hill, bhill1@stmarytx.edu

8:40-9:00 AM (33)

Metacognition of Varied Retrieval. KATARZYNA

ZAWADZKA , *Adam Mickiewicz University*, MACIEJ HANCZAKOWSKI, *Adam Mickiewicz University* — When presented with some information multiple times, people learn it more effectively when engaging in

retrieval practice in a variable rather than constant manner. However, they believe constant learning to be more beneficial. We thus aimed at helping participants appreciate the benefits of varied learning. Using foreign word translations as study materials, we had participants complete two study-test blocks with half of the translations presented in a varied manner, and half in a constant manner. We asked for global predictions of performance before each test, and for global postdictions after each test. Study and test experience did not alleviate the preference for constant learning, and neither did instructions explaining the benefits of varied learning inserted in between the blocks. Item-by-item performance feedback on the first test, however, managed to help participants appreciate the benefits of varied retrieval practice. This underscores the effectiveness of item-by-item strategy comparisons for mending metacognitive errors.

Email: Katarzyna Zawadzka, k.n.zawadzka@gmail.com

9:00-9:20 AM (34)

Note-Taking Behavior when Learning from Interleaved Versus Blocked Sequences.

JERI L. LITTLE, *California State University, East Bay* — Interleaving is often better for learning than blocking. But what features are participants identifying when exposed to items in an interleaved versus blocked order? In three experiments, participants studied paintings by different artists, with some paintings blocked by artists and some interleaved with those of other artists. Some of the participants were instructed to take notes to learn the artists' styles. Then, participants classified new paintings by the studied artists (some note-takers were able to use their notes on the test). Notes were coded for both style-based and object-based features prominent in the paintings. Although the number of style-based notes was positively associated with performance—both when participants could and could not use the notes on the test—the pattern was less clear for object-based notes. This study sheds light on participants' thought processes when trying to induce categories and provides evidence that participants can articulate important features when learning artists' styles from examples.

Email: Jeri Little, jerilittle@gmail.com

9:20-9:40 AM (35)

Replacing Lectures with Practice and Feedback Can Yield More Efficient Learning.

PAULO F.

CARVALHO, Carnegie Mellon University, MICHAEL W. ASHER, Carnegie Mellon University, FARIA SANA, McMaster University & Athabasca University, KENNETH R. KOEDINGER, Carnegie Mellon

University — In the current best practice in STEM instruction, instructors give students a combination of lecture and practice opportunities with feedback. Do students need both components to succeed, or might eliminating one method of instruction yield more efficient learning? Across three laboratory experiments (total N=681), we tested the hypothesis that feedback can be an efficient replacement for lectures because (1) it can communicate the same information and (2) do so in a metacognitively useful way, helping students identify and correct their misunderstandings. In all three studies, participants were randomly assigned to learn about statistics through a lecture, practice with feedback, or a combination of these approaches. In Studies 1 and 2, participants who learned from practice and feedback performed just as well on a memory posttest as those who received combined instruction, despite spending less than half the time on instruction. Study 3 showed that practice and feedback can also efficiently promote transfer. Compared to those who received combined instruction, participants who received practice and feedback performed equally well on a generalization posttest, despite taking 17% less time.

Email: Paulo Carvalho, pcarvalh@andrew.cmu.edu

9:40-10:00 AM (36)

Enhancing Effects of Emotion on Memory for Teens and Young Adults with Down Syndrome.

JACLYN H. FORD, Boston College, ANA BENITEZ, Boston College, EMILY FINN, Broad Institute, LARYSSA GAZDA, Boston College, BRIANNA LENZA, Boston College, SYLVIA MURRAY, Boston College — Down syndrome (DS) is a developmental disorder with disproportionate deficits to hippocampally-dependent memory. However, research in this population has not yet embraced strategies shown to mitigate hippocampal dysfunction. For instance, emotion enhances memory for emotional relative to neutral content, even in individuals with global memory deficits, highlighting the potential of socioemotional interventions to diminish impairments. The current study examined whether teens and young adults with DS benefit from emotional memory enhancements to the same extent as typically-developing (TD) peers. Twenty-four TD participants (ages 15-25) and 13 DS participants (ages

15-27) encoded 60 images (30 neutral, 15 positive, and 15 negative). After a 20-minute delay, participants viewed a series of studied and unstudied images and responded whether each had been seen during encoding. Both groups exhibited significant emotional memory enhancements, showing greater accuracy for emotional relative to neutral images, supporting the use of socioemotional strategies in DS. Additional analyses revealed a significant group-by-valence interaction, suggesting that strategies optimized for TD individuals may not be ideal for DS peers.

Email: Jaclyn Ford, jaclynhford@gmail.com

Symposium I: The Future of Future Thinking: Toward an Integrated Science of Prospective Cognition (PS Leading Edge Workshop Initiative).

Friday, November 22, 2024, 10:00 AM-12:00 PM US EST

Chaired by Karl Szpunar, *Toronto Metropolitan University*, and Donna Rose Addis, *Rotman Research Institute, Baycrest Hospital*

10:00-10:20 AM (SYM1)

Episodic Future Simulation: Mechanisms, Functions, and Applications.

DANIEL L. SCHACTER, Harvard University — Episodic future simulation refers to constructed mental representations of possible future experiences. Simulating future experiences relies on many of the same cognitive and neural processes as remembering past experiences, reflecting their reliance on a common core network of brain regions. This presentation will provide a brief overview of neuroimaging studies that have delineated some of the key neural mechanisms that underlie episodic simulation, including recent work using novel methods, consider some of the functions served by episodic future simulation, and also note applications of this line of work to individual differences and clinical populations. Taken together, the evidence supports the view that episodic future simulation is a key cognitive process with important implications for a broad range of psychologists and neuroscientists.

Email: Daniel Schacter, dls@wjh.harvard.edu

10:20-10:40 AM (SYM2)

Episodic Future Thinking: A Developmental Perspective.

CRISTINA ATANCE, *University of Ottawa* — I begin my talk by describing the concept of episodic future thinking (EFT) and the broad-reaching

impact it has had across numerous sub-fields of psychology and beyond. I then transition into work on the development of this capacity, highlighting contributions from my lab and others'. In so doing, I argue that several critical aspects of EFT have not been sufficiently explored in early childhood. The first is that tasks to measure EFT have not assessed children's spontaneous (i.e., "unprompted") actions for the future. The second is that current methodological approaches do not speak to the functions EFT serves in children's everyday lives. I then outline recent work from my lab that addresses both aspects. Accordingly, I describe several behavioral tasks we have designed to remove experimental prompting, with results showing a more protracted (and nuanced) development of EFT across early childhood. I also describe several naturalistic approaches (e.g., "parent-report" diary) we've used to glean the functions of EFT in children's own environment. Results suggest both an overlap in functions with those in adults, but also distinct functions that may be more adaptive to development (e.g., future-oriented information-seeking).

Email: Cristina Atance, atance@uottawa.ca

10:40-11:00 AM (SYM3)

The Role of Autobiographical Knowledge in Future Thinking: Insights into Belief in Future Occurrence. ARNAUD D'ARGEMBEAU, *University of Liege* — Information stored in memory—past experiences and general knowledge—can be flexibly used to create mental simulations of events that never happened as such. Thanks to this constructive process, we can envisage all sorts of events that could occur in the future. However, to effectively guide decisions and actions, imagined possibilities must be distinguished according to what is likely (or not) to transpire. Belief in future occurrence—the subjective impression that an imagined event will (or will not) happen in the future—is an epistemic feeling that may serve this function by informing us about the factuality of mental simulations. This belief is determined by multiple factors but relies primarily on the integration and coherence of imagined events with autobiographical knowledge (e.g., with one's personal goals and life circumstances). In this talk, I will first give an overview of the role of autobiographical knowledge in the construction and organization of future thought, and then present data showing the adaptive value of belief in future occurrence in guiding decisions and actions.

Email: Arnaud D'Argembeau, a.dargembeau@uliege.be

11:00-11:20 AM (SYM4)

Future Thought and Behavior Change.

GABRIELE OETTINGEN, *New York University, USA* — "Think positive!" quotes are found everywhere, but contrary to popular belief merely thinking positively about the future leads to low effort and little success. So, how can we conquer the perils of positive thinking? By mentally contrasting our dreams with personal obstacles, we pursue desired futures that can be attained, and we let go from those that cannot. I will talk about such mental contrasting and its mechanisms that work outside of people's awareness. People can use mental contrasting autonomously in a cost- and time-effective way to fulfill their wishes and resolve their concerns. Combining mental contrasting with implementation intentions (MCII) has proven to be particularly effective when obstacles relate to impulses or strong emotions. MCII or – Wish, Outcome, Obstacle, Plan (WOOP) – is a multifaceted self-regulatory tool that has been shown to improve everyday-life and long-term development.

Finally, I will describe three recent data sets emphasizing WOOP's effects across age and life domain: Over-one-year, WOOP made first graders improve in academic skills and impulse control (go/no go task/teachers' ratings), and over-three-years, made them enroll in advanced academic tracks. WOOP reduced stress and depression in spousal caregivers of Alzheimer patients, and it spurred exercise and weight loss in stroke patients.

11:20-11:40 AM (SYM5)

Pragmatic Nature of Spontaneous Future

Thinking: Findings from Children and Adults.

LIA KVALASHVILI, *University of Hertfordshire* — Our remarkable ability to mentally envisage the future has been studied primarily with laboratory methods (e.g., asking participants to think of a novel future event in response to word-cues), and episodic future thinking (EFT) has been understood as a slow, effortful process of constructing future scenarios. However, growing research is showing that in everyday life, and/or under more naturalistic situations, EFT occurs quickly, effortlessly and without prior intention, i.e., thoughts about the future simply pop into mind. Pragmatic dual process model of EFT by Kvavilashvili and Rummel (2020) emphasises the interplay between deliberate and spontaneous EFT in daily life in the process of setting up intentions/goals and getting them completed on time. In this talk, I will present results from studies on adults and

children which examined the content of spontaneous EFTs. The results demonstrate high rates of spontaneous EFTs across the lifespan and their pragmatic nature in terms of EFTs referring to upcoming intentions and plans rather than more hypothetical or long-term scenarios. It is concluded that the future of EFT research lies in the integration of several related fields of research (on EFT, mind-wandering, prospective memory), use of naturalistic methods and examining the contents of EFTs.

Email: Lia Kvavilashvili, lkvavilashvili@herts.ac.uk

11:40 AM-12:00 PM (SYM6)

Disassociations in Future Thinking: Insights from Aging and Amnesia. R. SHAYNA

ROSENBAUM, *York University* — Episodic memory is our internal record of the past events in our lives. Loss of episodic memory is prominent in many brain disorders that damage the hippocampus, ranging from encephalitis and traumatic brain injury to Alzheimer's disease. Recent research shows further that people who are unable to remember past events often are also unable to imagine personal future events. Neuroimaging studies provide converging evidence that tasks eliciting episodic memory and future imagining are consistently associated with an overlapping network of brain regions, including the hippocampus. Does this imply that amnesic individuals with episodic memory loss are confined to the "here and now"? Can one make important decisions about how one's life should go or about which actions one should take when one is unable to remember past or imagine future personal experiences? We examined these questions in a series of studies involving healthy older adults and individuals with episodic amnesia. We replicated findings of comparable deficits in episodic memory and future imagining. We found additional evidence of 1. normal rates of discounting future rewards on an established measure of intertemporal choice (deciding whether to forgo smaller, immediate rewards in favour of larger future rewards), but not when required to imagine personal future events associated with receipt of the reward, and 2. temporal distance biases involving self-appraisal. These findings suggest that the temporal, constructive, and self-related processes underlying episodic thinking are dissociable, and that conditions do exist in which episodic memory may not be needed for other forms of thinking and reasoning about current and future decisions.

Email: R. Shayna Rosenbaum, shaynar@yorku.ca

Visual Working Memory II

Friday, November 22, 2024, 10:00 AM-12:00 PM US EST

Chaired by Kim M. Curby, *Macquarie University*

10:00-10:20 AM (37)

It's Written All Over Their Face: Job Candidates Are Remembered as Looking More Competent if Their Resume Conveys Competency. EMMA

GASTON, *Macquarie University*, KIM M. CURBY, *Macquarie University* — We tend to make spontaneous trait inferences about others based on how they appear. For example, specific facial features are perceived as portraying characteristics such as competence. Building on this, we investigated whether semantic information conveying competency or incompetency influences people's memory of faces in hiring contexts. Participants viewed faces previously developed to visually convey neutral competence, then read associated application excerpts that implied competency, incompetency or neutral competency. After a short delay, participants were asked to select the initial, neutral face from among seven faces whose appearance gradually morphed from highly incompetent to highly competent. Semantic information implying competence resulted in faces being remembered as more "competent-looking." In a follow-up study, highly competent- and incompetent-appearing faces were paired with neutral application excerpts, but facial appearance in this case did not bias hiring decisions. These findings suggest that whereas visual memory for faces in hiring contexts is influenced by hiring-relevant semantic information, visual face features linked with hiring-relevant trait inferences may have less impact on hiring decisions.

Email: Emma Gaston, emma.gaston@students.mq.edu.au

10:20-10:40 AM (38)

Label-Induced Attraction Bias for Ambiguous Colors in Visual Working Memory.

ALESSANDRA S. SOUZA, *University of Porto* — Some colors are ambiguous to label. For example, a greenish-blueish shade may be referred to as blue or green. We assessed the consequences of label use for the retention of ambiguous colors in working memory. Data from nine published data sets (total N=346) were reanalyzed. In all studies, participants memorized colors for a continuous reproduction test while either labeling the colors aloud or saying "bababa" (aka suppression).

Color labeling yielded better memory than suppression. The labeling output was used to define ambiguous regions in the color space in which participants frequently switched between two terms (e.g., pink-red, red-orange). Although ambiguous colors tended to be remembered worse, labeling benefits were similar for ambiguous and non-ambiguous colors. Labeling an ambiguous shade, however, produced a systematic memory attraction bias toward the labeled category. In an independent experiment ($N=51$), we manipulated the presentation of color labels together with color encoding. Presenting a mismatched label to the color did not produce costs or categorical biases, whereas matching labels improved performance. Hence, label generation seems to be the source of the categorical attraction biases in working memory.

Email: Alessandra Souza, a.souza@psychologie.uzh.ch

10:40-11:00 AM (39)

Neural Evidence for Modality-General Indexing

in Working Memory. HENRY M. JONES, *The University of Chicago*, DARIUS SUPLICA, *The University of Chicago*, WILLIAM THYER, *The University of Chicago*, ED AWH, *The University of Chicago* — Neural studies of working memory (WM) have strongly focused on the stimulus-specific neural patterns that track the stored content. By contrast, we highlight a distinct class of neural signals that appears to track the number of individuated items stored in a content-independent fashion. We propose that these load signals track the deployment of spatiotemporal pointers that bind stored items to the surrounding context. We provide support for this theory in 2 EEG experiments. First, we show that the multivariate signature of these pointers generalizes across color and motion stimuli, despite the cortically disparate representations of these features (Experiment 1). Moreover, representational similarity analysis (RSA) reveals a pointer signal that generalizes across visual and auditory sensory modalities, while also providing evidence for distinct signals reflecting spatial attention and feature load (Experiment 2). These results support the abstract indexing of individuated memory representations as a core component of WM storage and may provide insight into the sharp limits on working memory capacity.

Email: Henry Jones, henryjones@uchicago.edu

11:00-11:20 AM (40)

Retro-Cues Boost Recognition Accuracy for Up to Three Colored Shapes. CANDICE C. MOREY, *Cardiff University*, KARIM RIVERA-LARES, *University of Edinburgh*, ANDRIA SHIMI, *University of Cyprus* — Valid cues reduce effort needed to remember, but how does this differ when cues apply to encoding information versus retaining it? Participants ($N=33$) tried to remember the colors of three or four items. Items also varied by shape, which was used as a 100% valid cue to indicate which items could be probed. In separate randomly-ordered blocks, cues were given either before or after stimulus presentation. We also recorded gaze and pupil size. Both pre-cues and retro-cues boosted performance compared to no-cue trials, however the magnitude of the cue-based gain was larger with pre-cues. With pre-cues, the number of items cued also mattered, with gains larger when fewer items were cued. However with retro-cues, the number of items cued did not matter: whether one, two, or three items were retro-cued, we observed small and statistically indistinguishable gains in recognition accuracy. Changes in pupil size during the retention interval also differed between pre-cues and retro-cues, indicating that cues differentially impacted effort during retention. Compared to the no-cue baseline, pre-cues reduced pupil size while retro-cues increased it. With retro-cues, increases in pupil size were similar however many items were cued.

Email: Candice Morey, moreyc@cardiff.ac.uk

11:20-11:40 AM (41)

Similar Visual Working Memory Crowding for Color, Orientation, and Form.

BENJAMIN J. TAMBER-ROSENAU, *University of Houston*, RILEY WILAND, *University of Houston*, HARUN YÖRÜK, *University of Houston*, PAULINA A. KULESZ, *University of Houston* — Visual crowding occurs when nearby flankers impair identification of items in peripheral vision. We have shown that crowding can arise during visual working memory (VWM) storage, even for sequential stimuli without perceptual crowding (Tamber-Rosenau et al., 2015; Yörük et al., 2020; Yörük & Tamber-Rosenau, 2022). However, these studies all used delayed estimation of orientation. Here, we turned to a 3-alternative forced-choice memory decision, allowing rapid measurement of VWM crowding. This was leveraged to compare VWM crowding of orientation (“clocks”), color, and complex form (kanji) within participants. VWM crowding was characterized by a



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positive slope for middle (10° eccentricity) item accuracy as a function of flanker distance, and was observed for all features (orientation: BF=9872, color: BF=759, form: BF=3.6). Critically, feature did not interact with flanker distance (BF=0.026), suggesting similar effects across features. Alternative analyses of linear slopes or thresholds estimated on sigmoid functions yielded consistent outcomes. These observations suggest a common locus for VWM crowding effects across feature dimensions.

Email: Benjamin Tamber-Rosenau, bjtrbjtr@gmail.com

11:40 AM-12:00 PM (42)

Understanding the Interaction of Working Memory and Imagery Through an Autoencoder.

BRAD WYBLE, *The Pennsylvania State University* — The recursive hierarchy of the visual system allows information to be passed both forward and backward to reach an appropriate level of abstraction to solve a given problem. This mechanism could enable a variety of capabilities that we attribute to working memory and imagery. We explore this idea using a generative, neurocomputational model called Memory for Latent Representations (MLR). First, an autoencoder is trained to disentangle shape, color and location into distinct latent spaces. Then, memory can build engram from those spaces, binding them to tokens. By selecting which latents are used for building these memories, an engram can customize memories to the level of detail that is required for a given task as supported by experimental work. Through its feedback connections, MLR can reconstruct both recollected memories as well as arbitrary combinations of features according to top-down instructions, thereby providing an approximation of compositional visual imagery. By combining a working memory system with an autoencoder, MLR provides a theoretical framework for understanding how visual memory and imagery work jointly to encode, decompose, modify and recode complex visual representations.

Email: Brad Wyble, bwyble@gmail.com

Decision Making II

Friday, November 22, 2024, 10:00 AM-12:00 PM US EST

Chaired by Ross Otto, *McGill University*

10:00-10:20 AM (43)

Distinguishing Between Intrinsic and Instrumental Sources of the Value of Choice.

ROSS OTTO, *McGill University*, SEAN DEVINE, *McGill University*, KEVIN DA SILVA CASTANHEIRA, *McGill University*, STEPHEN FLEMING, *University College London* — Considerable evidence suggests that people value the freedom to choose. However, it is unclear whether this preference for choice stems purely from choice's intrinsic value, or whether people prefer to choose because it tends to provide instrumental information about desirable outcomes. To address this question, participants completed a novel choice task in which they could freely choose to exert choice or not, manipulating the level of instrumental contingency between participants' choices and eventual outcomes, which we operationalized using the information-theoretic concept of mutual information. Across two experiments (N=100 each), we demonstrate a marked preference for choice, but importantly found that participants' preference for free choice is weakened when actions are decoupled from outcomes. Taken together, our results demonstrate that a significant factor in people's preference for choice is an assumption about the instrumental value of choice, suggesting against a purely intrinsic value of choice.

Email: Ross Otto, ross.otto@mcgill.ca

10:20-10:40 AM (44)

Do the Risky Choices Studied in the Behavioral Sciences Reflect Choices People Make in their Lives? OLIVIA FISCHER, *University of Zurich*,

AARON B. LOB, *University of Zurich*, RENATO FREY, *University of Zurich* — Understanding and predicting relevant risky choices of modern life is a key goal of behavioral research. However, do the choices that researchers focus on align with real-life choices that people make? And what are the psychological underpinnings that might explain differences between the two perspectives? To address these questions, we compiled two inventories of 165 risky choices representative of both research and layperson perspectives. Based on a signal detection analysis using cosine similarities of the choices' semantic embeddings, we identified a choice overlap between perspectives of 19%. To better understand how the two perspectives diverge, we conducted an online study (N=825) examining the relevance of seven classes of psychological mechanisms (i.e., choice attributes, time

factors, goals and motivation, cognitive resources and control, social influence, experience and knowledge, affect) for these choices using Bayesian mixed effects models. We found differences in five classes, indicating that the respective mechanisms may affect choices in the two perspectives in distinct ways. These results suggest a need to refine the focus of future studies in terms of both the choices and the psychological mechanisms investigated.

Email: Olivia Fischer, olivia.fischer@psychologie.uzh.ch

10:40-11:00 AM (45)

Effects of Uncertainty on Dynamic Decision-Making During Goal Pursuit. SIMON FARRELL, *The University of Western Australia*, GRETA FASTRICH, *University of Southampton*, TIMOTHY BALLARD, *The University of Queensland*, ANDREW NEAL, *The University of Queensland* — People need to juggle competing goals and deadlines, deciding how to allocate time and resources in the face of competing demands. These decisions are often made in a dynamic and uncertain environment. We examined the specific effects of uncertainty in different aspects of the goal pursuit episode: expected rate of progress, the distance from each goal, completion deadline, and goal value. While these all ultimately impact on expected value and should have similar effects, a computational model of goal pursuit (MGPM) predicts that uncertainty in these different factors will have different effects on performance. We find a consistent overall pattern that people shift from pursuing the easier to the more difficult goal as completion of both of two goals becomes more feasible, and that this effect is moderated in different ways by uncertainty in different factors.

Email: Simon Farrell, simon.farrell@uwa.edu.au

11:00-11:20 AM (46)

Ensemble Perception to Improve Decisions under Uncertainty. JESSICA WITT, *Colorado State University*, BENJAMIN CLEGG, *Montana State University*, ZACHARY LABE, *Princeton University & National Oceanic and Atmospheric Administration Geophysical Fluid Dynamics Laboratory* — Decision making is harder when decisions must be made with only uncertain information. For example, the decision to evacuate in advance of a hurricane is based on the costs to evacuate and uncertain weather forecast. An additional complication is how forecasts are presented. The current

visualization product is known as the cone of uncertainty, a term that exemplifies the challenge of interpreting the forecast. We offer a new visualization called animated risk trajectories (ARTs). ARTs leverage the visual systems immense capability to process ensembles (known as ensemble perception). We found that biases that are typical with the cone of uncertainty are reduced with the ARTs ($d=.17$, $N=28$). In addition, the ARTs can be depicted to portray additional risk information ($d=.91$, $N=335$), thus allowing more detailed risk communication.

Email: Jessica Witt, jessica.witt@colostate.edu

11:20-11:40 AM (47)

Frequency Effects in Decision-Making Involving Loss Minimization. DARRELL A. WORTHY, *Texas A&M University*, MIANZHI HU, *Texas A&M University* — Recent work provides evidence for frequency effects during decision-making, where less-rewarding options presented more frequently are selected more often than more-rewarding alternatives presented less frequently. This is predicted by the decay reinforcement-learning (RL) model, which assumes that higher-frequency options are preferred because the memories of their past outcomes are more readily available in memory. However, most of this research has involved decision-making with gains, rather than losses. In loss-minimization scenarios, the decay model predicts a reversed frequency effect because it assumes greater memory for losses, for the more frequently encountered options. Our new model, the decay-win model, assumes that participants track the number of better-than-average outcomes, or wins, provided by each option, and this model predicts the same frequency effect that has been observed under gain-maximization conditions. Results from a loss-minimization experiment support the predictions made by the decay-win model. This suggests that under loss-minimization scenarios people are more likely to infer and remember relative wins, rather than the actual outcomes, or losses.

Email: Darrell Worthy, worthyda@tamu.edu

11:40 AM-12:00 PM (48)

Hot Hand Thinking in Children. ANDREAS WILKE, *Clarkson University*, GRACIE DELABRUERE, *University of New England*, STEVEN PEDERSEN, *Clarkson University*, BANG-GEUL HAN, *College of Staten Island, CUNY*, H. CLARK BARRETT, *University of California, Los Angeles*, PETER M.

TODD, *Indiana University*, ANNIE E. WERTZ, *University of California, Santa Barbara* — A tendency to perceive illusory streaks or clumps in random sequences of data—the hot hand phenomenon—has been identified as a human universal tied to our evolutionary history of foraging for clumpy resources. We investigated how this misperception of randomness and ecologically relevant statistical thinking develops ontogenetically. Based on our work with adults, we developed three iPad-based decision-making tasks that assess how 3- to 10-year-old children decide that sequential events will continue in a streak or not, their understanding of randomness, and their ability to reason in spatially dependent terms. Our project collected data at research sites in the United States and in Germany. Our analyses suggest that children, indeed, hold strong expectations of clumpy resources when they search through and reason with various statistical distributions.

Email: Andreas Wilke, awilke@clarkson.edu

Speech Perception II

Friday, November 22, 2024, 10:00 AM-12:00 PM US EST

Chaired by Melissa Baese-Berk, *The University of Chicago*

10:00-10:20 AM (49)

Individual Differences in Perception of Unfamiliar Speech Sounds. MELISSA BAESE-BERK, *The University of Chicago*, CHARLIE NAGLE, *The University of Texas at Austin* — Differentiating between pairs of unfamiliar speech sounds is often challenging for adult listeners. However, this difficulty varies depending on multiple factors. For example, it is clear that the relationship between a listener's first language and the target language can impact the ease or difficulty of differentiating pairs of sounds. However, individuals also vary widely in their ability to differentiate these novel sounds, even if they share a language background. In this study we compare native English listeners' ability to differentiate between initial stop consonants in Korean and in Thai. In addition to comparing individual performance across these two target languages, we also assess performance as a function of various linguistic and cognitive measures including phonological short-term memory, language learning aptitude measures, and L1 production and perception patterns.

Email: Melissa Baese-Berk, mmbb@uchicago.edu

10:20-10:40 AM (50)

Noisy Speech Impairs Retention of Previously-Heard Information Only at Short Time Scales.

VIOLET A. BROWN, *Carleton College*, KATRINA SEWELL, *Carleton College*, JED VILLANUEVA, *University of Southern California*, JULIA STRAND, *Carleton College* — Most of the speech we encounter occurs in background noise, which when presented at a sufficiently loud level can impair the listener's ability to identify what was said. However, even when the background noise is relatively quiet and therefore does not affect speech identification, processing speech in noise can impair memory for previously heard information (Rabbitt, 1968). This effect may be driven by the fact that auditory masking generates mismatches between the acoustic input and lexical representations stored in memory. Resolving these mismatches and mapping the degraded input onto mental representations requires the recruitment of cognitive resources that would otherwise be used for encoding, leading to poorer recall of previously-heard speech. The current study evaluated the time scale of the effects of noise on recall of previously heard information, demonstrating that the negative effects of noisy speech on recall are present at short delays, but dissipate rapidly.

Email: Violet Brown, violetbrown@carleton.edu

10:40-11:00 AM (51)

Phonetic Convergence as a Function of Different Distances. JENNIFER S. PARDO, *Montclair State University* — Variability in phonetic form is a core phenomenon for any account of speech perception or speech production. In perception, listeners assimilate a multitude of voices and linguistically-regulated varieties, while in production, speakers accommodate their utterances to a variety of addressees, often resulting in phonetic convergence. The current project examines the extent that patterns of phonetic convergence are modulated by between-talker acoustic-phonetic distance and within-talker variability in acoustic-phonetic form. Previous studies have reported opposing effects of between-talker similarity on phonetic convergence. Results obtained using a new analytical approach indicate that the effect of between-talker starting distance was not as prominent a factor as post-exposure distance in multiple measures of acoustic-phonetic convergence. In analogous assessments, both pre- and post-exposure acoustic distances predicted patterns of phonetic convergence obtained in holistic AXB perceptual

similarity tests. The relative prominence of between-talker versus within-talker variability on patterns of phonetic convergence has important implications for understanding relations between speech perception and production.

Email: Jennifer Pardo, pardoj@montclair.edu

11:00-11:20 AM (52)

Seeing Faces Influences Listeners' Perception of Foreign Accented Speech.

ERIN INGVALSON, *University of Washington*, ASHLEY O'TOOLE, *University of Washington* — It is well established that listeners are sensitive to both the segments of speech as well as to indexical aspects of the talker, such as accent identity. Previous work by our group has demonstrated that these two sources of information may be interrelated, with listeners' judgments about talkers' accentedness accounting for variability in speech perception accuracy. In real world situations listeners have access to other cues to talkers' accent identity, such as the race of the talker. We replicated our previous work where listeners judged talkers without a visual as well as tested two conditions that included a face, one where the face matched the accent of the talker and one where there was a mismatch. Forty-two native English listeners participated, randomly assigned to condition. Relationships between ratings and speech perception were noticeably stronger in the match condition than in either the control or mismatch condition.

Email: Erin Ingvalson, eingvals@uw.edu

11:20-11:40 AM (53)

The Relationship of Speech Perception and Speech Production: It's Complicated.

ARTHUR G. SAMUEL, *Basque Center on Cognition, Brain & Language (BCBL); Ikerbasque; Stony Brook University*, EFTHYMIA C. KAPNOULA, *Basque Center on Cognition, Brain & Language (BCBL) & Ikerbasque*, MELISSA BAESE-BERK, *The University of Chicago* — A widely held belief is that speech perception and speech production are tightly linked, with each modality available to help with learning in the other modality. This positive relationship is often summarized as perception and production being "two sides of the same coin." There are, indeed, many situations that have shown this mutually supportive relationship. However, there is a growing body of research showing very different results, with the modalities operating independently, or even in

opposition to each other. We review findings from our labs, and other labs, demonstrating the negative effect that speech production can have on perceptual learning of speech, at both the lexical and the sublexical level. By comparing the situations that show this pattern to ones in which more positive interactions occur, we provide an initial account of why the different outcomes are found, identifying factors that lead to either positive or negative effects of production on perception. The goal is to clarify the complex relationship that exists between the two modalities; they are indeed linked, but their relationship is more complicated than is suggested by the notion that they are two sides of the same coin.

Email: Arthur Samuel, a.samuel@bcbl.eu

11:40 AM-12:00 PM (54)

Unmasking Speech-on-Speech: Spatial and Spectral Release from Masking Is Supported by Cognitive Abilities.

SVEN MATTYS, *University of York*, SARAH KNIGHT, *Newcastle University*, GEORGIE MAHER, *University of York*, RONAN MCGARRIGLE, *University of Leeds*, YUE ZHENG, *University of York* — Speech-on-speech masking refers to the challenges of selectively attending to a target talker while ignoring a simultaneous competing talker. Spatially separating the two talkers improves performance, a phenomenon known as spatial release from masking (Spatial_RM). Here, we compared Spatial_RM to spectral release from masking (Spectral_RM), a benefit observed when two talkers are filtered into non-overlapping frequency bands. We measured Spatial_RM and Spectral_RM in 240 participants and also administered a battery of cognitive tasks. We found that Spectral_RM was at least as effective as Spatial_RM, which suggests that listeners can selectively attend to parts of the speech spectrum to deal with the challenges of speech-on-speech listening. Factor analysis was used to derive a single measure of cognitive ability from the cognitive tasks. This measure best predicted performance in the conditions where RM was present, suggesting that the benefit provided by spatial or spectral separation is supported by cognitive processes.

Email: Sven Mattys, sven.mattys@york.ac.uk

Cognition: Reasoning/Problem Solving

Friday, November 22, 2024, 10:00 AM-12:00 PM US EST

Chaired by Jessecae K. Marsh, *Lehigh University*

10:00-10:20 AM (55)

University Students' IQ Has Declined to the Population Average. BOB UTTL, *Mount Royal University*, KIEFER SIKMA, *Mount Royal University* — Intelligence and general mental ability (GMA) tests (e.g., Wechsler Adult Intelligence Scale (WAIS), Wonderlic, Shipley/Shipley-2) are used to examine intelligence of samples in research studies and to make high-stakes decisions about individuals in clinical settings. According to a widespread belief, university students and graduates score well above average of the population, in 115 to 130. Using Wechsler Adult Intelligence Scale data, we (Uttl, Violo, & Gibson, 2024) have shown this belief to be a myth. To extend our prior findings, we conducted meta-analysis of university student samples' mean Wonderlic scores reported in published literature since 1940. Our results extend our prior findings and demonstrate that university students' Wonderlic mean scores also declined towards the population average. Researchers and clinicians ought not to rely on outdated, obsolete tests and norms in research and in making high-stakes decisions about individuals. Declines in university students' intelligence have far reaching implications for research, clinical practice, education, and society at large.

Email: Bob Utzl, uttlbob@gmail.com

10:20-10:40 AM (56)

Aha! Moments and the Click of Comprehension. JENNIFER WILEY, *University of Illinois Chicago*, TAYLOR STRICKLAND MILLER, *University of Illinois Chicago* — In early studies using initially incomprehensible ambiguous sentences, Auble and colleagues proposed that individuals experience a "click of comprehension" when they find an appropriate context that allows them to move from a state of non-comprehension to comprehension—and that "Aha!" experiences that result from this shift are responsible for facilitating memory. However, none of this early work collected measures of Aha! to test this memory hypothesis directly. In a series of new studies, we add feeling-of-Aha! judgments and explore the effects of solution generation, solution revelation, and problem-

oriented instructions on the relations between Aha! experiences and memory.

Email: Jennifer Wiley, jwiley@uic.edu

10:40-11:00 AM (57)

Scope of the Illusion of Explanatory Depth.

JULIANNE WILSON, *Lehigh University*, JESSECAE K. MARSH, *Lehigh University* — Overestimation of perceived understanding, or the illusion of explanatory depth (IOED), is a common metacognitive error. While the generation of a causal explanation can serve to correct this meta-miscalibration, little or no work has been done testing the limits of this knowledge reassessment. Through two preregistered experiments, we explored both the generalizability of a broken illusion of knowledge to unexplained concepts and its persistence over time. In addition, we determined whether explanation quality had an impact on this generalizability and/or persistence. We found that people generalized their knowledge reassessment from explained to unexplained items (Experiment 1). The initially broken IOED was also retained over a period of one week (Experiment 2). While explanation quality had no effect on generalization, perceived completeness of a generated explanation was predictive of retention of the broken IOED over time. We discuss implications of our findings for the general IOED phenomenon, explanation generation, and understanding more generally.

Email: Julianne Wilson, juw521@lehigh.edu

11:00-11:20 AM (58)

Training Relational Reasoning. JAN DE HOUWER, *Ghent University*, ZITA MEIJER, *Ghent University*, JAMIE CUMMINS, *University of Bern* — It is generally acknowledged that relational reasoning lies at the core of human cognition and behavior. At the level of behavior, relational responding refers to behavior that is under the control of the relation between stimuli (e.g., whether one stimulus is bigger in size than another). Humans can respond relationally in arbitrarily applicable ways (e.g., responding as if a dime is bigger in monetary value than a nickel). Preliminary data suggest that extensive training in tasks that require various types of arbitrarily applicable relational responding (i.e., SMART training) results in general improvements in cognitive functioning as indexed by IQ tests. We present the results of two large-scale studies ($N>100$) on the effects of training relational responding in children (10-12 years old) and in

older adults (>59 years old) with self-reported memory problems.

Email: Jan De Houwer, jan.dehouwer@ugent.be

11:20-11:40 AM (59)

Who Can't Be Debiased ? Exploring What Predicts Successful Debiasing Training.

ESTHER BOISSIN, Cornell University, GORDON

PENNYCOOK, Cornell University — Reasoners are often biased when solving reasoning problems. Recent studies suggest that brief explanations can boost performance, particularly through intuition, enabling correct responses without extensive deliberation. However, some individuals remain biased despite multiple training sessions. We investigated individual traits that might explain this discrepancy, assessing actively open-minded thinking, bullshit receptivity, generalized overconfidence, cognitive reflection, and fluid reasoning. Biased reasoners were particularly low in open-minded thinking, cognitive reflection, and fluid reasoning, and high in overconfidence and bullshit receptivity, compared to those who improved with training. Interestingly, participants who knew the correct answers prior to training scored higher on these measures than the “improved” group. Overall, this implies that individual traits can predict the debiasing effect and provide a deeper understanding of reasoning errors. We discuss the implications of these findings for ongoing debates in dual-process theory.

Email: Esther Boissin, boissinesther@gmail.com

11:40 AM-12:00 PM (60)

Behavioral Interventions Motivate Action to Address Climate Change.

ALYSSA H. SINCLAIR, University of Pennsylvania, DANIELLE COSME, University of Pennsylvania, KIRSTEN LYDIC, University of Pennsylvania, JOSÉ CARRERAS-TARTAK, University of Pennsylvania, MICHAEL MANN, University of Pennsylvania, EMILY FALK, University of Pennsylvania — Climate change poses an urgent threat to our planet and way of life. We tested interventions that aimed to motivate individuals to take action and share information about climate change. In our intervention tournament, 7,473 U.S. adults (ages 18-88 years) were randomly assigned to one of 17 intervention conditions or a no-intervention control group. These diverse interventions probed multiple psychological mechanisms across three key themes: Self-

and Social-Relevance, Future Thinking, and Action Impact. We found that the most effective interventions for motivating individuals to share news articles and petitions involved writing exercises that relate climate change to you and people you know. The most effective interventions for motivating climate action involved imagining future actions or outcomes, such as by visualizing a future scenario, developing an action plan, or writing a letter to a future generation. Brainstorming personal benefits also motivated action. Overall, our findings suggest that future thinking motivates action and self- and social-relevance motivates information sharing. Insights from our tournament could be broadly applied to online communication campaigns and interventions for behavior change.

Email: Alyssa Sinclair, sinclair.allie@gmail.com

Test Effects

Friday, November 22, 2024, 10:00 AM-12:00 PM US EST

Chaired by David Shanks, University College London

10:00-10:20 AM (61)

A Grain of Truth in the Grain Size Effect: Retrieval Practice Is More Effective When Interspersed During Learning.

DAVID SHANKS, University College London, HILARY DON, University College London, SHAUN BOUSTANI, University College London, CHUNLIANG YANG, Beijing Normal University — Retrieval practice is a powerful method for consolidating long-term learning. When learning takes place over an extended period, how should tests be scheduled to obtain the maximal benefit? In an end test schedule, all material is studied prior to a large practice test on all studied material, whereas in an interim test schedule, learning is divided into multiple study/test cycles in which each test is smaller and only assesses material from the preceding study block. A series of experiments confirmed that final assessment performance was better in students taught using interim than end tests in list and paired-associate learning, with a meta-analysis of all available studies ($k=19$) yielding a small-to-medium-sized effect, $g=0.25$, 95% CI [0.09, 0.42]. Additional analyses also suggest that the forward testing effect, in which tests promote subsequent learning, may be a major cause of the grain size effect. The practical and theoretical implications of these demonstrations of robust grain size effects are discussed.

Email: David Shanks, d.shanks@ucl.ac.uk

10:20-10:40 AM (62)

Testing Effect in Real Classroom Contexts at University. MARIE IZAUTE, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS*, MATHILDE LAMOTTE, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS*, CÉLINE DARNON, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS* — Retrieval practice, using testing, is one of the practices that has produced the most research over the past 30 years. Few studies have examined the effect of testing in a real classroom setting and with real learning content, especially in a university context. Another aim of our study was to determine whether regular testing reduces the pressure of assessment and, consequently, the achievement gap between students from different social backgrounds. Through two experiments, our study aimed to reproduce the test effect at university. In the first experiment, 107 students with intermediate tests were compared to 112 students without tests. And in the second experiment, we conducted an experiment using within-subject design with 196 students. The results confirmed the advantage of intermediate tests on final examinations in continuous examinations. Our results show that students of low social status benefit as much from the tests as those of high social status. When they are used as learning tools tests can reduce the students' socioeconomic status achievement gap.

Email: Marie Izaute, marie.izaute@uca.fr

10:40-11:00 AM (63)

Testing the Error-Driven Learning Hypothesis for the Testing Effect: Independent Contribution of Error Magnitudes and Error Perception. AIKE SHI, *The Chinese University of Hong Kong*, XIAONAN LIU, *The Chinese University of Hong Kong* — Numerous studies have demonstrated that interim retrieval practice can enhance learning, a phenomenon termed the testing effect. One model proposed to explain the testing effect is the error-driven learning theory, which suggests that error signals generated during retrieval practice enhance memory. The current study directly tested this hypothesis by asking participants to memorize object colors and then quantifying retrieval errors using a color wheel. In Experiment 1, we replicated the testing effect and found retrieval practice error positively predicted improvements in the final test, supporting the error-driven learning hypothesis. In Experiment 2, we further

demonstrated that the magnitude of the observed effect was influenced by participants' beliefs of the error magnitude, independent of the actual error size. This finding suggests that subjective error perception plays a crucial role in the benefits of testing by moderating how the error signals are utilized.

Email: Aike Shi, ak-shi@link.cuhk.edu.hk

11:00-11:20 AM (64)

The Testing Effect on L2 Vocabulary Learning Across Different Language Modalities. KEHAN ZHOU, *The Chinese University of Hong Kong*, XIAONAN LIU, *The Chinese University of Hong Kong*, CHUCHU LI, *University of California, San Diego* — The testing effect is a phenomenon that learning is improved when tested on the material, rather than simply restudying it. This effect is robust in vocabulary acquisition in spoken languages, but little investigation has been conducted on sign language learning. The present study investigated whether the testing effect applies to languages with different modalities universally by comparing novice learners' vocabulary acquisition in Spanish and American Sign Language (ASL). Fluent English speakers practiced Spanish spoken words or ASL signs through testing or imitation. In addition to holistic binary accuracy rating by native speakers, learning outcomes were also examined on individual ASL phonological structure units—handshape, location, movement, and orientation, which are utilized simultaneously in sign language lexical composition. Preliminary analyses showed testing effects on both ASL and Spanish vocabulary learning. Furthermore, testing tended to enhance the learning of ASL phonological structure units selectively, rather than uniformly across all of them.

Email: Kehan Zhou, kzhou@link.cuhk.edu.hk

11:20-11:40 AM (65)

A Model-Based Analysis of Maintenance and Retrieval Processes in the Testing Effect. SIMONE MALEJKA, *University of Cologne*, EDGAR ERDFELDER, *University of Mannheim*, CHRISTOPH STAHL, *University of Cologne* — Tests are used to assess knowledge. However, it has become well-known that tests can also modify memory. Taking an initial memory test typically leads to better memory performance on a delayed final test than restudying the same information for an equivalent amount of time. This



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memory benefit is known as the testing effect (also retrieval-practice effect). Despite the wealth of research on this effect, its underlying mechanisms are still debated. Previous research has focused on single mechanisms and rarely aimed at dissociating memory processes that may contribute to it. To simplify the theoretical debate, a multinomial processing-tree model is proposed that disentangles the contributions of encoding, maintenance, and retrieval processes. By applying the model to testing-effect data, it is shown that testing primarily creates maintenance benefits (i.e., resistance against forgetting), while the final retrievability of stored information is not affected by testing versus restudying. The findings thus support maintenance accounts of the testing effect and challenge explanations assuming different accessibilities for tested versus restudied information at final test.

Email: Simone Malejka, simone.malejka@uni-koeln.de

11:40 AM-12:00 PM (66)

Does Pretesting Enhance Learning When It Is Done Covertly? MICHELLE RIVERS, *Santa Clara University*, ASHLEY BERDELIS, *Texas Christian University*, STEVEN C. PAN, *National University of Singapore*, UMA TAUBER, *Texas Christian University* — Pretesting—or taking tests on information that one has yet to learn—leads to learning benefits relative to non-testing methods (e.g., reading only), in part because the experience of answering questions leads learners to process subsequently presented text material more thoroughly. One prediction derived from this explanation is that answering pretest questions mentally (i.e., covert pretesting) would be equally effective as providing a written response to pretest questions (i.e., overt pretesting). To evaluate this prediction, students answered short-answer pretest questions either overtly or covertly before reading a passage, and simply read another passage. On a criterial multiple-choice test of the passages, performance was higher for the pretesting condition compared to the read-only condition, and this was true for both overt and covert pretesting. Results were replicated and pretesting was just as effective as reviewing learning objectives before reading a passage. Outcomes suggest that pretesting is an effective learning strategy even when learners do not provide articulated responses, and provide additional support for attentional accounts of the pretesting effect.

Email: Michelle Rivers, mlrivers3@gmail.com

Sensation and Perception I

Friday, November 22, 2024, 10:00 AM-12:00 PM US EST

Chaired by Michelle R. Greene, *Barnard College, Columbia University*

10:00-10:20 AM (67)

A Critical Examination of Neural Predictivity as a Measure of Mammalian Core Object Recognition.

JEFFREY BOWERS, *University of Bristol*, GAURAV MALHOTRA, *University of Albany* — Many studies have recently shown that deep neural networks (DNNs) can predict large fractions of explainable variance in neural activations. Unfortunately, the factors underlying these predictions are poorly understood. In this study, we develop a method that uses controlled experiments to reveal the stimuli features that drive these predictions. We apply this method to a range of vision models and find that: (1) background scenes, rather than foreground objects, contribute to a large proportion the explained variance, (2) model predictions are not hierarchically related to the information processing along the ventral visual pathway, and (3) model predictions depend on incidental properties of objects such as pose, position and luminosity. These results challenge the view that DNNs provide good models of core object recognition in the visual cortex. They also emphasize the need for complementing prediction with controlled experiments to gain a more complete understanding of alignment between DNNs and brains.

Email: Jeffrey Bowers, j.bowers@bristol.ac.uk

10:20-10:40 AM (68)

Drift Diffusion Modeling Provides Insights

Regarding the Role of Semantic Networks in Object Detection.

MARY A. PETERSON, *University of Arizona*, JINGMING XUE, *University of Arizona*, ROBERT C WILSON, *University of Arizona* — Research shows that semantics, activated by words, impacts object detection. Skocypec & Peterson (2022) indexed object detection via correct reports of where figures lie in bipartite displays depicting familiar objects on one side of a border. They reported two studies with intermixed Valid and Invalid labels shown before test displays and a third, control, study. Valid labels denoted display objects. Invalid labels denoted unrelated objects in a different or the same superordinate-level category in studies 1 & 2,

respectively. We used drift diffusion modeling (DDM) to elucidate the mechanisms of their results. DDM revealed that, following Valid labels, drift rate toward the correct decision increased (i.e., SNR increased). Following Invalid labels, SNR was lower only for upright displays in study 2. Thresholds were higher in studies 1 & 2 than in control. That more evidence must be accumulated from displays that follow labels implies that familiar object detection entails semantic activation. Threshold was even higher following Invalid labels in study 2, suggesting that more evidence from the display is needed to resolve within-category conflicts. These results support the view that semantic networks are engaged in object detection.

Email: Mary Peterson, mapeters@arizona.edu

10:40-11:00 AM (69)

Factors Underlying Emotional Face Perception Deficits in Children and Adults with ADHD.

DAVID ANAKI, *Bar-Ilan University* — Various studies have shown impaired emotional face processing (EFP) in individuals with ADHD. However, it needs to be clarified whether this difficulty is limited to emotional faces or whether it originates from other difficulties. In a series of studies, we examined, in ADHD adults and children, whether EFP is related to basic face perception processes, social cognition, or general visual perception. ADHD and non-ADHD participants were asked to perform various tasks that probed EFP, face perception, theory of mind, and perception of non-face stimuli. Our results suggest that EFT in ADHD is related to specific processes involved in face perception, namely holistic processes.

Email: David Anaki, david.anaki@biu.ac.il

11:00-11:20 AM (70)

Interpreting the Tanaka Typical vs. Atypical Face Bias Effect: A Riemannian Metric Approach.

JAMES T. TOWNSEND, *Indiana University*, HAO-LUN FU, *National Cheng Kung University*, CHENG-JU HSIEH, *Texas Tech University*, CHENG-TA YANG, *National Cheng Kung University* — Tanka and colleagues (Tanaka, Giles, Kremen & Simon, 1998; Tanaka & Corneille, 2007) performed some interesting experiments where they morphed a face to be, as they interpreted it, halfway between a typical face and an atypical face. They found that the morphed face was judged to be closer to the atypical face. Their explanation

centered on a repository of face memories pictured as a vector space where points in the space represent faces and each of these is surrounded by an attractor field of vectors. The attractor fields in the atypical part of face space are presumed to be broader and stronger than those in typical face regions. We propose an alternative interpretation that takes a more standard geometrical approach but also departs from the popular types of metrics assumed in almost all multidimensional scaling studies. Rather we recommend a theoretical structure based on our earlier investigations of non-Euclidean and especially, Riemannian Face Manifolds (e.g., Townsend, Solomon, & Spencer-Smith, 2001). We assert that this approach avoids some of the issues involved in the gradient theme by working directly with the type of metric inherently associated with the face space.

Email: James Townsend, jtownsen@iu.edu

11:20-11:40 AM (71)

Texture Semantics for Visual Communication.

KAREN B. SCHLOSS, *University of Wisconsin–Madison*, KUSHIN MUKHERJEE, *University of Wisconsin–Madison*, ZOE HOWARD, *University of Wisconsin–Madison* — When observers interpret information visualizations (e.g., charts, maps, diagrams) they must determine how perceptual features in the visualization map onto the concepts those features represent. Previous research on color showed people do so using assignment inference, a process that compares potential mappings between colors and concepts and returns the “best” assignment (Schloss et al., 2018). Assignment inference is easier if the colors are semantically discriminable (i.e. one assignment between colors and concepts is far better than the alternative[s]). The capacity to find semantically discriminable colors for a set of concepts increases as color-concept association distributions diverge (semantic discriminability theory; Mukherjee et al., 2022). Here, we assessed the extensibility of semantic discriminability theory from color semantics to visual texture semantics. Interpretation of texture meaning increased with semantic discriminability, and capacity for semantic discriminability increased with association distribution difference. The results support semantic discriminability theory as a general account of perceptual semantics.

Email: Karen Schloss, kschloss@wisc.edu

11:40 AM-12:00 PM (72)

Visual and Semantic Information Limits to Rapid Scene Understanding.

MICHELLE R. GREENE, *Barnard College, Columbia University*, EMILY LO, *Barnard College, Columbia University*, KAIKI CHIU, *Barnard College, Columbia University*, SANIYA GAITONDE — While information bottlenecks are common in cognitive processes, human scene understanding is assumed to be rapid and accurate regardless of scene content. These studies aim to examine and test this assumption. In four experiments, we examine the role of visual and semantic complexity in rapid scene detection and categorization. To sample scene complexity systematically, we collected a set of ~60,000 images from over 250 scene categories in RAW format. Visual complexity was measured by the relative compressibility of photographs, reasoning that more redundancy (less information) would lead to more compressibility. Semantic complexity was assessed by obtaining scene descriptions and the descriptions' complexity using metrics from natural language processing: median word count, variability among descriptions (entropy in a bag of words model), and average pairwise distance between concepts within a description from a word vector model (Word2Vec). In the detection paradigm, observers distinguished briefly-presented scenes (60 ms) from phase-randomized scenes. While visual complexity reduced sensitivity, high semantic complexity increased performance. We discuss through the lens of models of scene gist.

Email: Michelle Greene, mgreene@barnard.edu

Symposium II: Understanding and Combating Misinformation Spread: The Role of Individual Differences, Sociocognitive Correlates, and Artificial Intelligence

Friday, November 22, 2024, 1:30-3:30 PM US EST

1:30-1:50 PM (SYM7)

The Microtargeting Manipulation Machine.

STEPHAN LEWANDOWSKY, *University of Bristol*, FABIO CARRELLA, *University of Bristol*, MATTHEW EDWARDS, ALMOG SIMCHON, *Ben-Gurion University of the Negev* — Psychological microtargeting involves the use of personal data and sophisticated algorithms to create highly specific and tailored messages targeted at individual users online. For example, voters can be targeted on the basis of their personality inferred from their digital fingerprint (e.g.,

“likes”), with messages being personalized to exploit a particular vulnerability. There is considerable evidence that microtargeting offers a persuasive advantage compared to non-personalized messages. We report two experiments in which we used generative AI (ChatGPT) to tailor political messages for people high and low in openness to experience, and found that when the text matched people’s personalities, participants judged it to be more persuasive than when it did not. We next tried to eliminate the persuasive advantage associated with microtargeting by presenting people with a warning whenever a language model judged the message to be “too close to be true” to the participant’s personality. Across three further experiments we found that the warning was ineffective, suggesting that being transparent about microtargeting is insufficient to eliminate its manipulative potential.

Email: Stephan Lewandowsky, stephan.lewandowsky@bristol.ac.uk

1:50-2:10 PM (SYM8)

Social Contagion of Memory from People,

Robots, and Microblogs. SUPARNA RAJARAM, *Stony Brook University* — Beyond face-to-face interactions, we are now entrenched in a digital social world. The ability to connect with others both in-person and through digital systems has given us opportunities as never before to share information, discuss memories, and reminisce about joint experiences. This advance is also exacting a steep cost. We must now contend with rapid misinformation spread, aided by psychological, social, technological, and systemic factors. In my talk, I will focus on cognitive psychological factors, operating at the individual level and amplified by interaction with others. Whether in face-to-face or digital contexts, sharing or recalling information with others boosts not only true memories but also false memories. I will review our studies on the consequences of recalling information alone versus in groups, information transmission from robots to humans, and exposure to social media microblogs on memory. These experiments show that a range of sources—humans, conversational agents, and social media—have powerful impact on individual memory, making us susceptible to misinformation. I will discuss the importance of understanding the cognitive bases of social contagion from such sources for combating misinformation spread.

Email: Suparna Rajaram, suparna.rajaram@stonybrook.edu

2:30-2:50 PM (SYM9)

Utilizing Infographics to Combat Sleep Myths.

IRENE P. KAN, *Villanova University* — Sleep health is increasingly recognized as a critical aspect of overall wellness, as it is believed to influence numerous domains of functioning, including physical and emotional health and cognitive performance. Determinants of sleep health include a broad range of physiological, socio-cultural, and psycho-behavioral factors; here, we focus on sleep-related beliefs. In recent work, we reported an association between false beliefs (myths or misconceptions) about sleep and sleep-related behaviors (Pantesco & Kan, 2022). We found that those with stronger beliefs in sleep myths have less healthy sleep profiles in terms of sleep duration, timing, and hygiene. Thus, understanding how sleep-related beliefs can be modified may be useful in improving sleep health. In this study, we investigated the extent to which infographics may be effective in reducing beliefs in sleep myths. We opted to use infographics because they are easily accessible and have been shown to be effective in promoting health behaviors in non-sleep health domains (e.g., nutrition). We found that brief, one-shot exposures to sleep infographics reduced endorsement of sleep myths, and we also found personality differences in belief and behavioral intention updating.

Email: Irene Kan, irene.kan@villanova.edu

2:50-3:10 PM (SYM10)

Evidence-Based Dialogues with Generative AI Substantially Reduce Conspiracy Beliefs.

THOMAS COSTELLO, GORDON PENNYCOOK, *Cornell University*, DAVID G. RAND, *Massachusetts Institute of Technology* — Conspiracy theories are a paradigmatic example of beliefs that, once adopted, are difficult to dispel. Influential theories propose that conspiracy beliefs are uniquely resistant to counterevidence because they satisfy important needs and motivations. Here, we posit that previous correction attempts have been unsuccessful merely because they failed to deliver counterevidence that was sufficiently compelling and individualized. To evaluate this possibility, we leveraged generative AI to deliver well-argued, person-specific debunks to 2,190 conspiracy theory believers. Participants gave detailed explanations of a conspiracy theory they believed and engaged in a three-round dialogue with a frontier generative AI model instructed to reduce each participant's belief in their conspiracy theory. We find that debunking conversations

reduced beliefs in conspiracy theories by roughly 20%. This effect did not decay over 2 months' time, was observed across different theories, and occurred even for participants whose beliefs were of great importance to their identities. These findings highlight that even people with seemingly fact-resistant conspiratorial beliefs can change their minds in the face of sufficient evidence.

Email: Thomas Costello, t.h.costello1@gmail.com

3:10-3:30 PM (SYM11)

Individual Differences in False Memories and False Beliefs for Health-Related Misinformation.

CIARA GREENE, *University College Dublin* — This talk will describe a series of experiments investigating the role of cognitive abilities and ideological biases in determining susceptibility to false information relating to health information. I will summarise the results of studies investigating the formation of false memories and false beliefs in the context of COVID-19 and cancer treatment. The findings from these experiments will demonstrate (1) that people are more susceptible to health misinformation that aligns with their existing beliefs about the world, including their beliefs about vaccine safety and the utility of complementary and alternative medicines, and (2) that variation in intelligence, cognitive style and reasoning ability predict individual proneness to false memories and false beliefs.

Email: Ciara Greene, ciara.greene@ucd.ie

Autobiographical Memory

Friday, November 22, 2024, 1:30-3:30 PM US EST

Chaired by Qi Wang, *Cornell University*

1:30-1:50 PM (73)

Culture and Memories of Self-Conscious

Emotions. CAGLA DUMAN, *Cornell University*, QI WANG, *Cornell University* — We present a cross-cultural study that investigated autobiographical memories of self-conscious emotions. A sample of 237 European American and East Asian adults recalled, in a memory fluency task, 4 types of events that varied in valence (positive vs. negative) and target (self vs. other), including events in which they felt proud of themselves, ashamed of themselves, admiration towards a close other, and contempt towards a close other. Participants then rated the phenomenological characteristics of the events and completed a self-esteem measure. We found that Americans recalled more positive events and rated them

as more personally important than did Asians, whereas Asians rated negative events as more important. Americans also perceived their negative memories as more temporally distant and rehearsed positive memories more than negative ones than did Asians. Furthermore, self-esteem mediated the effect of culture on the recall of self-related positive events. We discuss the results considering the influence of self-enhancement motives on autobiographical memory in the cultural context.

Email: Cagla Duman, cd626@cornell.edu

1:50-2:10 PM (74)

Memory and Future Prediction of Public Events as a Function of Social Group. SAMI GULGOZ, *Koç University*, SEZIN ONER, *Kadir Has University* — How memory relates to self is often discussed in the context of personal events. However, there is also considerable evidence on the relationship between social groups, identity, and memory. In five studies with large samples, we investigated memory and future predictions for public events. The first three studies were about important events people had experienced throughout their lives and expected to experience in the future. The fourth study was more specific, about events related to the forthcoming presidential election. The final study was about the memory of the presidential election and expected events related to the local elections. In these studies, we observed that although there were common tendencies for all groups, memory for past events and expected future events showed considerable variation on the basis of group membership. Whether an event was reported, its valence, and other event characteristics for remembered events varied across social groups, but the future event expectations showed more pronounced distinctions. Another finding was the confidence that other members of their social group would remember the same events. We argue that certain public events retain the same characteristics as personal events.

Email: Sami Gulgoz, sulguz@ku.edu.tr

2:10-2:30 PM (75)

The Heritability of Individual Differences in Autobiographical Memory. STEVE M. J. JANSEN, *University of Nottingham Malaysia*, KRISTINE ANTHONY, *University of Nottingham Malaysia* — Autobiographical memories can involve specific events, recurrent events, or extended periods. Some people have difficulties recalling specific

memories (i.e., over-general memory), which has been attributed to ruminative processes, functional avoidance and deficiencies in executive functioning. To examine the cognitive mechanisms underlying over-general memory, the present study examined how individual differences in these three areas are related. In addition, to examine the heritability of the aforementioned individual differences and also memory accuracy, memory functionality and recollective experience, 86 monozygotic and dizygotic twin pairs from Malaysia were tested. Memory specificity was unrelated to rumination or executive functioning, but rumination was related to memory functionality and recollective experience. Despite reliability issues, we found support for additive genetic contributions to working memory capacity and memory detailedness (a combination of memory specificity and memory accuracy). Although the outcomes of the study were unsatisfactory, they provide insights for the field of autobiographical memory to move forward. More effort and time should be spent on developing more valid and reliable measures.

Email: Steve Janssen, steve.janssen@nottingham.edu.my

2:30-2:50 PM (76)

Perspective and Emotional Regulation: The Role of Cognitive Flexibility in Memory Recollection. SEZIN ONER, *Kadir Has University*, EREN AKBABA, *Kadir Has University*, CAGLAR SARICICEK, *Kadir Has University* — Visual perspective during memory retrieval affects emotional impact, with field perspective enhancing emotional immersion and observer perspective reducing emotional intensity. However, for self-conscious emotions, observer perspective can intensify emotions. We hypothesized that regulating shame from an observer perspective and anger from a field perspective requires more effort, leading to the retrieval of positive memories with a greater sense of recollection. Participants recalled anger or shame-inducing memories from either a field or observer perspective, then reported a 'happy' memory and rated its phenomenology. They also completed inhibition and cognitive flexibility tasks. Results showed that those recalling anger from a field perspective and shame from an observer perspective reported greater reliving and imagery for positive memories. Cognitive flexibility, especially switching from emotional to neutral content, predicted vivid recollection of events better than inhibition. We highlight the importance of switching in mnemonic emotion regulation.



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Email: Sezin Oner, sezin.oner@khas.edu.tr

2:50-3:10 PM (77)

The Role of Individual Differences in Autobiographical Memory for Moral Dispositions.

ANA LUCÍA CÁRDENAS EGÚSQUIZA, Center on Autobiographical Memory Research, Aarhus University, DAVID C. RUBIN, Duke University, DORTHE BERNTSEN, Center on Autobiographical Memory Research, Aarhus University — Autobiographical memory supports several functions essential to our daily life such as decision-making, social bonding and personal identity. Surprisingly, the role of autobiographical memory for one's moral identity and moral values has scarcely been examined, even though we tend to reflect on our personal events and experiences to make moral judgments of ourselves and others. Across three studies, we examined whether individual differences in the recollective experience of autobiographical memory relate to moral identity and to individual differences in moral concerns. We used the Autobiographical Recollection Test (ART; Berntsen et al., 2019), a psychometric measure of individual differences in autobiographical memory, and a set of widely used morality scales. We show that people who generally remember their past well with vivid, detailed, and coherent recollections also report higher self-importance of moral identity, and internalization of moral values. They also tend to be more concerned with a range of moral principles, especially care and fairness. Our findings provide evidence of an interplay between autobiographical memory and morality at the level of individual differences.

Email: Ana Lucía Cárdenas Egúsquiza, analuc@psy.au.dk

3:10-3:30 PM (78)

The Temporal Organization and Quality of Life Story Memories in Alzheimer Disease, Major Depression, and Healthy Controls.

TILMANN HABERMAS, International Psychoanalytic University Berlin, CAROLINE GRULER, Goethe University Frankfurt, REBEKKA WEYGANDT, Goethe University Frankfurt, NINA JAESCHKE, Goethe University Frankfurt, LARISSA RAPP, Goethe University Frankfurt, FABIAN FUSSER, Pfalzlinikum Klingenmünster, STEFAN FRISCH, Pfalzlinikum Klingenmünster — Autobiographical memory has been studied in Alzheimer's disease (AD) by asking for a specified number of memories from a few defined life

periods. We test whether a retrograde temporal gradient and a change in the quality of memory specificity is confirmed in temporally less restrained tasks. Also, we explored the distribution of memories across the past life and the narrativity of memory reports. Twenty-one elderly adults with AD ($M_{age}=79.0$) were compared to 20 controls with depression ($M_{age}=75.5$) and 20 healthy controls ($M_{age}=76.15$). These ethnic Germans from a rural area provided five most important memories and told their entire life for up to 15 minutes. Segments of life narratives were dated and coded for memory specificity and narrativity. Life narratives in AD were shorter and contained proportionally fewer specific memories and fewer narrative clauses. These differences regarded the remembered period from between mid-30s to the recent past, for which also far fewer memories were produced. Life narratives were less chronological. Thus the decline of autobiographical memories in AD regards life after age 35 and undermines the temporal macrostructure of entire life narratives.

Email: Tilmann Habermas, tilmann.habermas@ipu-berlin.de

Bilingualism

Friday, November 22, 2024, 1:30-3:30 PM US EST

Chaired by Wendy S. Francis, *The University of Texas at El Paso*

1:30-1:50 PM (79)

The Consequences of Bilingual Co-Activation for Memory and Creativity.

VIORICA MARIAN, Northwestern University, MATIAS FERNANDEZ-DUQUE, Northwestern University — Language shapes how people perceive, store, and retrieve information. Bilingualism has been shown to alter these processes, as bilinguals activate both of their languages in parallel, resulting in cross-linguistic influences. While bilingual co-activation is a well-known phenomenon during language processing, its effects beyond the linguistic domain are unclear. Here, we discuss the effects of bilingualism on higher-order cognition, focusing on the impact of dual-language activation on memory and creativity. We present evidence from eye-tracking studies that show that activating multiple languages guides attention during visual search and influences what individuals remember from a visual scene. We also share how novel computational techniques that model semantic memory can be used to examine the relationship between bilingualism and creativity. We find that the consequences of a highly interactive bilingual lexicon



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extend beyond the linguistic domain and cascade into other cognitive functions like long-term memory and creativity. We propose that a next step in bilingualism research is to embrace an interdisciplinary approach that integrates bilingualism into a broader cognitive framework.

Email: Viorica Marian, v-marian@northwestern.edu

1:50-2:10 PM (80)

Bilingual Experiences Predict Neural Responses to Context and Conflict: An ERP Investigation of the N2 and Conflict Slow-Wave Potential (SP).

JOHN G. GRUNDY, *Iowa State University*, ASLI YURTSEVER, *Iowa State University*, KAIAH N. SOTEBEER, *Iowa State University* — We used ERPs to explore how bilingualism influences neural responses to contextual cues and conflict resolution. We specifically examined the N2 and conflict slow potential (SP) within a context-specific proportion congruency (CSPC) paradigm to examine neural mechanisms underlying attentional control. Fifty bilingual undergraduates performed the CSPC task, where proportion congruency varied based on two locations. The results revealed that second language (L2) usage was associated with behavioral adaptations; individuals with more frequent L2 usage displayed reduced conflict effects, suggesting more efficient conflict processing. Neurally, those with lower L2 proficiency exhibited more significant N2 amplitude changes between different contexts, indicating a sensitivity to contextual cues that diminish with greater L2 proficiency. The conflict SP component further revealed that early L2 age of acquisition (AoA) enhances the amount of attentional resources available for all trials. This research highlights how varied bilingual experiences uniquely influence the efficiency and flexibility of neural resources.

Email: John Grundy, grundy@iastate.edu

2:10-2:30 PM (81)

Effects of Bilingual Language Control on Speaking. IVA IVANOVA, *The University of Texas at El Paso*, KYLE WOLFF, *The University of Texas at El Paso*, RACHEL WILLIAMS, *The University of Texas at El Paso*, ALEXIA HERNANDEZ, *The University of Texas at El Paso*, CHRISTIAN RUIZ-ORTIZ, *The University of Texas at El Paso* — Language control is bilinguals' ability to speak the situation-appropriate language(s) and avoid interference from non-target

language(s). Highest control demands are imposed by dual-language contexts (where languages are not interchangeable but are used in close succession). We investigate the effects of language switching in naturalistic dual-language contexts across two experiments. In Experiment 1, Spanish-English bilinguals dominant in English described comics in English before and after describing a comic in Spanish (high-control demand), or before and after a non-linguistic task (low-control demand). Each bilingual completed both the high-control and low-control variants in separate counterbalanced sessions. Experiment 2 reversed the languages to assess potential asymmetries in switching from the dominant vs. non-dominant language. Initial results from Experiment 1 ($N = 25/54$) showed that bilinguals made more pauses at the beginning of their descriptions than toward the end, and spoke more overall during the last compared to the first description. But there were no other significant effects, suggesting that, beyond single words and simple sentences, language control demands may not significantly impact speaking.

Email: Iva Ivanova, imivanova@utep.edu

2:30-2:50 PM (82)

Hypothesis: Nothing (Not Bilingualism, Not Music Training, Not Education, Nothing) Improves Higher Cognitive Processing. VIRGINIA VALIAN, *Hunter College & CUNY Graduate Center* — Can adults improve their higher cognitive functions (sometimes called executive functions or attentional control)? For example, might speaking more than one language lead to improvement in resolving nonverbal conflicting stimuli, or in switching from one task to another, or in managing attention? Some experiments suggest that managing two languages has wide cognitive benefits, while other experiments find no benefits from bilingualism (or from working memory training, musical training, or other skill training) for higher cognitive functions. Perhaps it is not possible to improve higher cognition, but only to improve how it is applied, task by task. Over time, we can improve the specific skills for which we are deploying higher-order cognitive processes, and we can increase the number of skills that we call on our higher-order cognitive processes for. But we do not improve the processes which we are deploying, only the skills for which the processes are deployed. Reasons to consider the hypothesis of immutability include the absence of strong effects from

training in various domains, the absence of far transfer, and the absence of correlations among apparently related tasks.

Email: Virginia Valian, virginia.valian@hunter.cuny.edu

2:50-3:10 PM (83)

Syntax Drives Default Language Selection in Bilingual Connected Speech Production. JESSIE QUINN, *University of California, San Diego*, MATTHEW GOLDRICK, *Northwestern University*, CATHERINE ARNETT, *University of California, San Diego*, VICTOR FERREIRA, *University of California, San Diego*, TAMAR GOLLAN, *University of California, San Diego* — What is the role of syntax in bilingual language selection? Spanish-English bilinguals ($n=120$) read aloud 18 paragraphs with language switches in three conditions: (a) normal, (b) nouns-swapped (in which nouns within consecutive sentences were swapped), and (c) random (in which words in each sentence were reordered randomly). Intrusion errors, in which bilinguals translated language switch words to avoid switching in their speech, indexed difficulty during language control. Bilinguals produced the most intrusions on function words in normal paragraphs, fewer intrusions in nouns-swapped paragraphs, and intrusion rate dropped dramatically in the asyntactic random condition, though it was most prone to within-language errors. A post-hoc analysis showed that intrusions also increased with predictability (surprise), but significant differences between conditions remained when predictability was statistically accounted for. Bilinguals also showed reversed language dominance effects, a common signature of inhibitory control that did not interact with condition. These results demonstrate that syntactic formulation drives bilingual language selection, which operates independently from inhibitory control mechanisms.

Email: Jessie Quinn, j2quinn@ucsd.edu

3:10-3:30 PM (84)

Comprehension of Words in Story Contexts Facilitates Their Later Production. WENDY S. FRANCIS, *The University of Texas at El Paso*, ERIKA L. GUEDEA MORALES, *University of New Brunswick*, BIANCA V. GURROLA, *The University of Texas at El Paso*, MARIAPAULA MARROQUIN SANDOVAL, *The University of Texas at El Paso* — Generally, embedding words in sentences or text passages tends to

reduce or eliminate repetition priming. However, in a previous study, we showed durable repetition priming in picture naming for words previously read or translated in sentence contexts even after a 24-48 hour retention interval (Francis & Tovar, 2019). We attempted to push the limits of this phenomenon by embedding target words in stories at encoding. Spanish-English bilinguals ($N=56$) read or translated a series of short stories that each contained 20 target words. They named pictures corresponding to these words either several minutes later or 24-48 hours later. Repetition priming in picture naming response times was evident in all conditions at both the shorter and longer intervals. Repetition priming in accuracy was observed in some conditions. Along with our previous study, these results indicate that reading or translating contextualized words facilitates their later retrieval for production for at least 24-48 hours.

Email: Wendy Francis, wfrancis@utep.edu

Psycholinguistics I

Friday, November 22, 2024, 1:30-3:30 PM US EST

Chaired by Judith F. Kroll, *University of California, Irvine*

1:30-1:50 PM (85)

Engagement of Cognitive Control Improves Misprediction Management in Sentence Repetition. ANNE THERESE FREDERIKSEN, *Brooklyn College, CUNY*, JUDITH F. KROLL, *University of California, Irvine* — Dynamic engagement of cognitive control improves efficiency of managing incorrect parses in comprehension of garden path sentences or of syntax-semantic conflicts. Here, we investigated whether cognitive control mitigates misprediction in combined comprehension/production of two-clause discourses with implicit causality verbs. We first confirmed a previous finding of poorer sentence repetition outcomes in English sentences leading to mispredictions. In a second experiment, English language users wrote repetitions of and continuations to grammatical two-clause discourses where the pronoun was or was not predicted by the verb's implicit causality bias (Lisa annoys Peter because she (predicted)/he (unexpected) ...). The discourse trials were interspersed with Stroop trials. Pronoun repetition was more accurate in predicted vs. unexpected contexts, and, critically, error rates decreased in unexpected sentences following incongruent Stroop trials (e.g., red written in yellow font), known to engage cognitive control. These results suggest an important role for cognitive control in

misprediction management not only in language comprehension but also in discourse reproduction.

Email: Anne Therese Frederiksen,
anne.frederiksen@brooklyn.cuny.edu

1:50-2:10 PM (86)

Event-Related Potentials Reveal the Effects of Acoustic Challenge on Syntactic Integration in Speech Comprehension Among Younger and Older Listeners.

JACK W. SILCOX, *University of Utah*, KAREN R. BENNETT, *University of Utah*, BRENNAN PAYNE, *University of Utah* — Electrophysiological evidence has reliably shown that semantic processing is impaired during speech comprehension in acoustically challenging environments. Surprisingly, there has been little work investigating the impact of acoustic challenge on syntactic processing. In the current study, sentences containing a target word that was either expected, unexpected but plausible, or a morphosyntactic violation were presented to younger and older listeners either in quiet or with +3 SNR background noise while EEG was recorded. Critically, for both groups, we observed a reduced amplitude of the P600—a component linked to syntactic integration effort—when listening to speech in background noise. This effect persisted even among trials where syntactic violations were detected. In contrast, there was no P600 on trials in which participants failed to identify a syntactic violation, suggesting a role of the P600 in error detection. Collectively, these findings suggest that syntactic integration is impaired when listening to acoustically challenging speech.

Email: Jack Silcox, jack.silcox@utah.edu

2:10-2:30 PM (87)

People Lexically Align More to Partners Who Exhibit Comprehension Difficulties.

RACHEL OSTRAND, *IBM Research*, VICTOR FERREIRA, *University of California, San Diego* — Lexical alignment occurs when producers adapt their word choice to match their interlocutor's. We investigated whether communicative utility drives alignment, by giving participants real-time feedback about their interlocutor's comprehension. Participants performed a picture selection task with a virtual interlocutor, who named pictures first; then the participant named the same pictures back. Pictures could be described with two acceptable labels ("couch" and "sofa"). If the participant

mismatched the interlocutor's label, the interlocutor (between-subjects): (a) understood or (b) failed to understand. The interlocutor in Exp 1 (N=120) was an automated chatbot; in Exp 2 (N=120) it was allegedly human but really the identical chatbot. Participants lexically aligned to both interlocutors, but more to the chatbot than to the "human". Participants also aligned more, to both interlocutors, when the interlocutor demonstrated poor vs. good comprehension ability. Thus, producers modulate alignment based on observed properties of their interlocutor, both (1) high-level characteristics and (2) in-conversation feedback about their comprehension ability, aligning more to an interlocutor who they expect needs it for communicative success.

Email: Rachel Ostrand, rachel.ostrand@ibm.com

2:30-2:50 PM (88)

Simple Recurrent Networks Are Interactive.

JAMES S. MAGNUSON, *University of Connecticut & Basque Center on Cognition, Brain & Language (BCBL)*, SAHIL LUTHRA, *Carnegie Mellon University* — Simple recurrent networks (SRNs; Elman, 1990) have helped advance theories of learning, development, and processing in multiple domains. Some (e.g., Norris, 1993) claim SRNs (and by extension recurrent neural networks generally) are feedforward (FF; not interactive). If so, there would be pervasive theoretical implications: anything SRNs can do would be explainable without interaction. We show that SRNs are interactive feedback (FB) systems. FF nets are acyclic graphs without loops; SRNs have loops (from hidden units back to hidden units with a time delay) and are thus cyclic graphs (with FB). In SRNs, bottom-up inputs and previous hidden unit activations feed the hidden layer via tunable weighted connections, inextricably mixing bottom-up inputs with previous model-internal transformations (a top-down signal). Equations describing inputs to the SRN hidden layer are equivalent to equations for basic FB networks with FF input-to-hidden and hidden-to-output connections, and output-to-hidden FB (though the FB sources are different, and are time-delayed in the SRN). We discuss theoretical implications through an example from spoken word recognition where the status of SRNs as FF or interactive has crucial ramifications.

Email: James Magnuson, james.magnuson@uconn.edu

2:50-3:10 PM (89)

The Effect of Speech Rate on Mechanisms of Statistical Learning. JOSHUA BUFFINGTON, *Georgetown University*, KARA MORGAN-SHORT, *University of Illinois Chicago* — Theory suggests that statistical learning is a key process by which language learners extract words and patterns from linguistic input. Here, we investigated potential mechanisms of statistical learning by testing the hypothesis that faster speech enables prediction-based learning in procedural memory and slower speech enables greater attention-based learning in declarative memory (Conway, 2020; Ullman et al., 2020). During a verbal statistical learning task (Orpella et al., 2021), participants monitored for the presence of a pseudoword (e.g., mogi) that occurred in an adjacent dependency (e.g., baki always preceded mogi). Results showed that participants learned successfully at the slow rate but not at the fast rate. Further, mixed effect models suggested that at the slow rate participants first engaged declarative memory followed by procedural memory at later stages. Altogether, these findings suggest that, at least in brief learning situations involving a relatively straightforward pattern, slow speech may lead to the most robust learning.

Email: Joshua Buffington, joshua.buffington@georgetown.edu

3:10-3:30 PM (90)

The Effects of Aging on Learning the Forms and Meanings of Novel Words. BREND A RAPP, *Johns Hopkins University*, ROBERT W. WILEY, *University of North Carolina at Greensboro*, SARTAJ SINGH, *University of North Carolina at Greensboro*, JENNIFER SHEA, *Johns Hopkins University* — Despite age-related decline in many cognitive skills, older adults reliably outperform younger adults in vocabulary knowledge, with little/no decline with age. This occurs despite worsening performance on word processing tasks such as lexical retrieval. What is not understood is if and how word learning skills themselves are affected by aging. In this study, younger (age 18-35) and older adults (age 55-80) learned spoken and written names and semantic features for novel items, over many weeks. We observed a reliable age-related dissociation in the learning of word-forms vs. semantic features, with older adults exhibiting significantly more difficulty learning spoken and written word forms, while semantic feature learning was similar across the groups. This raises the question: How is semantic-feature learning maintained with age?



We found that, in older adults, semantic feature learning is specifically associated with performance on lexical semantic tasks and is dependent on gray matter volume outside the hippocampus.

Email: Brenda Rapp, brapp1@jhu.edu

Cognition and Technology

Friday, November 22, 2024, 1:30-3:30 PM US EST

Chaired by Amit Almor, *University of South Carolina*

1:30-1:50 PM (91)

Anthropomorphism Mediates the Algorithm Outrage Deficit.

DAWSON PETERSEN, *University of South Carolina*, VALERIE SHALIN, *Wright State University*, MORGAN BORDERS, SPENCER M. SEALS, *Air Force Research Laboratory Oak Ridge Institute for Science and Education*, CHANDLER NICHOLS, AMIT ALMOR, *University of South Carolina* — Bigman et al. (2023) find an “algorithm outrage deficit” such that people feel less outrage when harm is done by AI rather than by humans. We tested this by having 118 participants read a vignette about an LLM that gave deadly health advice in one of two conditions: an agent condition (“Dr. A.I. tried to …”) and a tool condition (“Dr. A.I. was designed to …”). Participants were asked how responsible the AI, the company who made it, and patients were for the outcome in both quantitative and free response questions. We previously reported an interaction ($p=.009$) such that participants with less AI experience rated the AI more responsible in the agent condition than the tool condition. We now present novel findings based on the free response data. We coded the presence of positive and negative affect words in the free responses with Mohammad and Turney’s (2013) dictionary. We found an interaction between condition and AI responsibility assignment ($t=2.59$, $p=.01$) such that those in the highest quartile of AI responsibility assignment showed the predicted effect (more negative affect in the tool condition) while those in the lowest quartile showed the reverse, suggesting that a deficit only occurs when people anthropomorphize AI.

Email: Dawson Petersen, DHP1@email.sc.edu

1:50-2:10 PM (92)

Cognitive Assessment Using Tasks Defined

Within an Interactive Virtual World. DOM CP MARTICORENA, *Washington University*, MARK LU, *Washington University*, ROBERT KASUMBA,

Washington University in St. Louis, YASAMAN ANSARI, Washington University, CHRIS WISSMAN, Washington University, CARRIE CAO, Washington University, YASH AGARWAL, Washington University, JOHN ZEMPEL, Washington University, DENNIS L. BARBOUR, Washington University — Conventional cognitive task designs are reductionist, decontextualized, and unengaging. Attempts to enrich tasks to make them more informative and ecologically valid typically require extensive effort toward design and delivery. We present a platform for implementing cognitive assessment within an interactive virtual world using ready-made building blocks. Tasks designed for this platform can range from adapted versions of classical tasks all the way to complex, multistep tasks with many options for successful completion. A consistent user interface, virtual environment, and data format make designing and delivering new tasks straightforward and fast. Reskinning tasks or altering their context can also be done rapidly. Comparison between conventional tasks and versions embedded within a virtual world reveal concordance between the two assessment strategies in a population of school-age children. Machine learning analysis of intermediate steps on the way to task completion reveal additional informative data streams about cognitive function. Finally, artificial intelligence can act directly on these data to form sophisticated inference for a variety of latent constructs.

Email: Dom CP Marticorena, dom.m@wustl.edu

2:10-2:30 PM (93)

Coherence Ratings by a Large Language Model Match Human Ratings More Closely than

Automated Scores. DAVID BRONIATOWSKI, *The George Washington University*, V. F. REYNA, *Cornell University* — Chatbots based on generative large language models (LLMs), such as OpenAI's ChatGPT, produce outputs that appear human-like, but this similarity is rarely assessed systematically. Here, we asked ChatGPT and humans to assess whether the output of probabilistic topic models, a popular text summarization algorithm, communicated a coherent gist. We fit topic models to posts from millions of Facebook pages and groups, and hundreds of millions of tweets during the COVID-19 pandemic. ChatGPT and human raters ($N=323$) rated the gist coherence of the topic models' output—the most representative words and examples for each of 50 topics for each platform. ChatGPT ratings were significantly correlated with

human ratings for Facebook posts ($r=0.60-0.66$) and tweets ($r=0.51-0.67$) when given the top 10 words and top 10 examples for each topic. In contrast, ChatGPT ratings were more weakly correlated with canonical automated coherence metrics (Facebook: $r=.00-.33$, Twitter: $r=.08-.29$) and diagnostic metrics used to assess topic model quality (Facebook: $|r|=.03-.54$, Twitter: $|r|=.00-.36$). Results suggest that ChatGPT exhibits behaviors that are more consistent with human behaviors than with leading automated measures of coherence.

Email: David Broniatowski, broniatowski@email.gwu.edu

2:30-2:50 PM (94)

Communicating through Zoom: The Effect of Visibility on Gesture Production.

LAURA M. MORETT, *University of Missouri*, SYDNEY TURNER, *University of Missouri*, SYLVIA E. YOUNG, *University of Missouri* — Speakers often use representational gestures to promote listener comprehension. However, gesture production is affected by interlocutor visibility. Specifically, gesture production increases when speakers and listeners can see one another relative to when listeners and/or speakers cannot see one another. It is theorized that visibility of the listener's face may serve as a cue for speakers to increase their gesture production. This work seeks to expand this theory to videoconferencing contexts by examining the impact of interlocutor visibility on speakers' gesture production. College students ($n=66$) participated in a Zoom meeting with a confederate. Participants were directed to watch a series of cartoon clips and describe the events of the cartoon to the confederate. During these descriptions, the experimenter manipulated the visibility of the confederate (face visible, torso visible, or camera off) and/or participant (visible to confederate or not visible to confederate). Participants' verbal descriptions of the cartoons were transcribed and their gestures were coded. The results will reveal the impact of facial and body cues, as well as interlocutor visibility, on gesture production.

Email: Laura Morett, lmorett@health.missouri.edu

2:50-3:10 PM (95)

Examining the Mechanisms and Boundary Conditions of the Internet Fixation Effect. DANA-LIS BITTNER, *University of California, Santa Cruz*, MERCEDES T. OLIVA, *University of California, Santa Cruz*, BENJAMIN C. STORM, *University of California,*

Santa Cruz — Searching for information online can increase the likelihood of searching for other information online, a phenomenon known as the Internet fixation effect. What factors drive this increased reliance on the Internet? The results of two studies are reported. In the first study, across three experiments, we found that online searching did not reduce a person's metacognitive confidence in their memory, suggesting that the Internet fixation effect is not the result of people becoming less confident in their ability to answer questions using memory. In the second study, we examined how the usefulness of initial online searching can affect people's susceptibility to Internet fixation. Three experiments found that people can become fixated on using the Internet to find information even when previous search attempts are largely unsuccessful. Taken together, these results suggest that people can become increasingly reliant on the Internet as a kind of habitual transactive memory partner, and that they may do so in a way that does not necessarily correspond directly to their metacognitive assessments of internal knowledge or the usefulness of the external resource on which they rely.

Email: Dana-Lis Bittner, dbittner@ucsc.edu

3:10-3:30 PM (96)

Creative Artificial Intelligence? Differences in Perceived Quality Between AI-Written and Human-Written Work. SYDNEY SEARS, *Villanova University*, BROOKE GONZALEZ, *Villanova University*, DEENA WEISBERG, *Villanova University* — Given that artificial intelligence (AI) programs like ChatGPT can generate creative content, some fear that such programs will displace human writers. But can ChatGPT's creative works truly compete with human-authored works? To address this question, participants ($N=190$ university students) read either a human-generated or AI-generated story. Regardless of their story's true origin, half of the participants were told that their story was written by a human, while the other half were told that their story was written by ChatGPT. After reading, participants rated various aspects of the story's quality (e.g., "The character(s) in the story had depth"). Both the story's true origin and what participants were told had significant effects, $F(1,189)=8.809$, $p<0.001$, $d=.43$. Participants rated the AI-generated story ($M=1.35$, $SD=0.98$) better than the human-generated story ($M=0.74$, $SD = 1.01$), but they rated the story better when they believed it was written by a human ($M=1.22$, $SD=0.77$) than when they believed it was written by

ChatGPT ($M=0.87$, $SD=1.22$). This study suggests that AI programs might be able to generate human-level work but are not perceived as being able to do so.

Email: Sydney Sears, ssears01@villanova.edu

Metamemory

Friday, November 22, 2024, 1:30-3:30 PM US EST

Chaired by Arndt Bröder, *University of Mannheim*

1:30-1:50 PM (97)

Good Learners Tend to Be Poor Monitors: A Negative Relation Between Metamemory Monitoring Ability and Memory Ability.

CHUNLIANG YANG, *Beijing Normal University*, MENGQI HU, *Beijing Normal University* — Accurately monitoring one's learning and memory status is essential for effective learning and academic success. The current study explores the counterintuitive relationship between memory ability and metamemory monitoring accuracy. Through a meta-analysis of 15 studies (27 experiments) involving 1,694 participants, we found a consistent but weak negative correlation between these two abilities, suggesting that individuals with superior memory ability tend to be poorer at accurately monitoring their own memory or learning status. Two primary mechanisms were proposed: variability in judgments of learning (JOLs) and differences in cue utilization. To validate these explanations and investigate the underlying mechanisms, two experiments were conducted. Experiment 1 confirmed the negative correlation using binary JOLs while Experiment 2 measured memory and metamemory abilities independently in different tasks. These results challenge the intuitive assumption that good learners are also good monitors, providing new insights into the distinct cognitive processes that underpin memory performance and metamemory monitoring accuracy.

Email: Chunliang Yang, chunliang.yang@bnu.edu.cn

1:50-2:10 PM (98)

Investigating Concept Maps for Judgment of Learning Calibration.

CHRISTOPHER M. CISCHKE, *Michigan Technological University*, SHANE MUELLER, *Michigan Technological University* — Students are poor at assessing their knowledge and often unable to determine whether or what they need to study in order to perform well on exams. Judgments of learning (JoLs) have been widely explored in laboratory

settings for simple memory tasks, but less frequently in applied settings where a JoL can help determine study time and focus. Past results suggest that delayed JoLs produce more accurate judgments, suggesting active memory access may serve as useful memory cue for making JoLs. Concept maps are diagrams used to visualize knowledge, particularly the connections between concepts. They mimic the structure of human memory and require active memory access, which may provide a stronger cue for mastery and knowledge than simple judgments. We report on two studies using JoLs for learners who reviewed material AFTER making the judgment, comparing a no-JoL control to simple JoLs and concept-map enhanced JoLs. We examine the study times, JoL calibration, and test results of the subjects. The results suggest that both JoLs and concept mapping, when used as an educational intervention in the classroom, can positively influence study efforts and test outcomes while being considered relatively enjoyable by the students.

Email: Christopher Cischke, cmcischk@mtu.edu

2:10-2:30 PM (99)

Judgments of Learning Modify Memory Regardless of the Response Format or the Response Scale. VERED HALAMISH, *Bar-Ilan University*, YAEL MEER, *Bar-Ilan University*, MONIKA UNDORF, *Technische Universität Darmstadt* — Metamemory research commonly assumes that learners spontaneously monitor their learning progress. To assess monitoring, participants are asked to provide judgments of learning (JOLs) as they memorize new information, usually on a percentage scale. Recent evidence that making JOLs has a reactive effect on memory performance, however, may suggest that the processes involved in spontaneous monitoring are different from those that are involved when requested to make and report JOLs in experiments. We examined two hypotheses regarding the difference between spontaneous monitoring and making JOLs, according to which JOL reactivity results from: (a) the requirement to report the JOLs that are spontaneously being done covertly; and (b) the requirement to translate spontaneous assessments of learning that are qualitative and non-numerical into numerical JOLs. A series of experiments that tested these hypotheses yielded JOL reactivity regardless of the response format (overt or covert) or the response scale (percentage, Likert, yes/no). These findings are inconsistent with both hypotheses and

allude instead to the possibility that JOL reactivity arises when monitoring does not spontaneously occur and is initiated by the JOL prompt.

Email: Vered Halamish, vered.halamish@biu.ac.il

2:30-2:50 PM (100)

Reactivity in Metacognitive Control: A Novel Demonstration of Offloading.

SKYLAR J. LAURSEN, *University of Guelph*, CHRIS M.

FIACCONI, *University of Guelph* — Previous research on metamemory reactivity has shown that explicitly requiring individuals to provide a metacognitive monitoring judgment changes future memory performance. Here, we asked whether a similar form of reactivity is observed when individuals make metacognitive control decisions. We found consistent evidence that items not selected for re-study were better remembered than once-presented items selected for re-study, and that this effect was not merely due to item-difficulty confounds. Rather, this effect appeared to stem from additional encoding effort afforded to items not expected to be re-presented. These results suggest that learners' may spontaneously offload study effort when they expect to restudy an item at a later time, and that metacognitive control decisions can reactively shape memory encoding strategies.

Email: Skylar Laursen, s.laursen@uoguelph.ca

2:50-3:10 PM (101)

Reducing Cheap Talk? How Monetary Incentives Affect the Accuracy of Metamemory Judgments.

ARNDT BRÖDER, *University of Mannheim*, SOFIA NAVARRO BAEZ, *Technische Universität Darmstadt & University of Mannheim*, MONIKA UNDORF,

Technische Universität Darmstadt — The accuracy of metacognitive judgments is rarely incentivized in experiments. According to arguments from economics that performance needs proper motivation, metacognitive abilities might have been underestimated. In two experiments we explored the impact of incentives on the accuracy of judgments of learning (JOLs), memory performance, and cue use in free recall of word lists. We introduced a payoff scheme with a maximum of 5 cents per judgment to promote the accuracy of JOLs while simultaneously discouraging participants from strategic responding in the memory test. Incentivizing JOLs had no effect on memory performance. Metacognitive accuracy in terms of resolution was slightly improved in



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Experiment 1, but not in Experiment 2. On the negative side, incentives boosted JOLs indiscriminately, producing substantial overconfidence. An analysis including word characteristics showed the usual cue effects on JOLs that were largely unaffected in size by incentivizing JOLs. In summary, incentives for accuracy do not improve the resolution of JOLs to an extent that outweighs the large inflation of overconfidence. Hence, we cannot recommend future use of incentivized studies in the field of metamemory.

Email: Arndt Bröder, broeder@uni-mannheim.de

Language & Reading

Friday, November 22, 2024, 1:30-3:30 PM US EST

Chaired by Julia Hofweber, *Northeastern University London*

1:30-1:50 PM (103)

The Cognitive Effects of Sign Multilingualism: Sign Language Expertise Enhances Language-and Modality-Specific Statistical Learning Abilities.

JULIA HOFWEBER, *Northeastern University London*, ZHENGHAN QI, *Northeastern University* — This study investigated the effects of sign language expertise on sign-language specific versus general visual statistical learning. We compared two groups: 37 adult hearing non-signers (L1 English) versus 27 native signers (ASL/BSL, 15 deaf and 12 hearing bimodal). Participants watched a weather forecast in a novel sign language, i.e. Swedish. The forecast contained 22 target signs differing in occurrence frequency and iconicity, i.e. form-meaning similarity. Subsequently, we tested participants' form recognition and meaning assignment of target signs. We also assessed general visual statistical learning abilities using tasks. Our results suggest that sign language expertise enhances modality- and language-specific but not general statistical learning. Form recognition accuracy was positively predicted by sign expertise, frequency and iconicity. Meaning assignment accuracy was predicted by sign expertise and iconicity. Crucially, frequency effects, i.e. evidence of statistical learning, were limited to signers. Importantly, group differences were effects of sign expertise, not deafness: hearing bimodal native signers' performance patterned onto that of deaf native signers, not hearing non-signers.

Email: Julia Hofweber, julia.hofweber@nulondon.ac.uk

1:50-2:10 PM (104)

Learning an Artificial Sign Language: Neural Constraints on Cultural Evolution.

SEANA COULSON, *University of California, San Diego*, TANIA DELGADO, *University of California, San Diego* — Behavioural experiments simulating language evolution have demonstrated how joint pressures of social interaction and cultural transmission can lead to the emergence of functional markers in an artificial sign language. Functional markers are signs that indicate person, location, instrument, or activity needed to discriminate between signs for chef, kitchen, frying pan, and cooking. To test whether there are differences in the brain response to signs from the earliest stage of simulated language evolution versus those that have undergone cultural evolution, we recorded EEG as participants learned hybrid versions of this sign language. Half of the signs each participant learned were from the initial stage of simulated language evolution while the remainder were from the final stage. Learners showed an early sensitivity to the signs from the initial stage, but after greater amounts of exposure, they had more mastery over final generation signs. Subsequent analyses linked early learning advantages to the iconicity of the signs, and the more subtle meaning discriminations were linked to the presence of functional markers. Results support the claim that cultural evolution leads to languages easily learned by the human brain.

2:10-2:30 PM (105)

Language and Modality in Language Learning.

RUSSELL ROSEN, *College of Staten Island, CUNY* — This conceptual paper discusses the roles of language and modality in language learning. Recent research brings into question the modality effects on language and language effects on modality. Modality effects become salient when learning L2 of a different modality from L1 and difficulty in producing and processing language due to physical limitations within languages. Language effects become salient when learning L2, whose linguistic structures differ from L1, and the learners have difficulty producing and processing modality within languages due to linguistic constraints. We need to rethink language as a system of interaction between the cognitive organization of information and physical infrastructures to express information. This paper proffers research questions for the roles of language and modality in language learning: the language requirements for modality and how concepts (e.g.,



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of the PSYCHONOMIC SOCIETY

iconicity) shape its physical articulations, and modality requirements for language and how the physical articulators (e.g., gestures) form concepts. Examples are drawn from studies of M1L1, M1L2, and M2L2 spoken and sign language learners; bilinguals and bimodals (language mixing and cognitive control); and spoken and sign language pathology.

Email: Russell Rosen, rustyrosen1@gmail.com

2:30-2:50 PM (106)

The Unique Neural Dynamics of Sentence

Reading in Skilled Deaf Readers. KAREN

EMMOREY, *San Diego State University*, KATHERINE J. MIDGLEY, *San Diego State University*, PHILLIP J. HOLCOMB, *San Diego State University*, EMILY M. AKERS, *San Diego State University & University of California, San Diego* — The qualitative similarity hypothesis (Paul, 2021) proposes that deaf people acquire literacy skills similarly to their typical hearing peers. However, a unique neurocognitive reading profile is emerging for deaf readers that differs from skill-matched hearing readers. Using ERPs and RSVP sentences, we found both groups showed an N400 effect for semantic violations (larger for deaf readers), but only hearing readers showed a P600 effect for verb agreement violations, replicating Mehravari et al. (2017) but with early signers who were not language deprived and who were matched in reading skill with the hearing group. In addition, however, deaf readers exhibited a P600 effect for word order violations (parallel to the hearing readers), indicating sensitivity to English syntax. We also examined word-final “wrap up effects” and found that both deaf and hearing readers showed an N400 effect for sentences with agreement violations, indicating later semantic analysis of the violation and demonstrating deaf readers’ later sensitivity to agreement violations. We hypothesize that these neural differences arise from differential weighting of semantic information and a lack of transfer from ASL to English for verb agreement.

Email: Karen Emmorey, kemmorey@sdsu.edu

2:50-3:10 PM (107)

THE Elephant in the Room: The Unsolved Question of How Readers Decide Whether to Fixate or Skip a Word. BERNHARD ANGELE, *Universidad Nebrija*, ZEYNEP GUNES OZKAN, FEDERICA DEGNO, *Bournemouth University*, JON ANDONI DUÑABEITIA, *Universidad Nebrija*,

MARINA SERRANO-CAROT, *Universidad Nebrija*, FRANCISCO ROCABADO, *Universidad Nebrija*, FEDERICA DEGNO, *Bournemouth University*, OTTO LOBERG — We report three experiments in three different languages attempting to replicate the observation by Angele and Rayner (2013) that, in a gaze-contingent display change experiment, readers tend to skip words that look like the article "the" even when "the" would be infelicitous given the sentence context. In English, we replicated the effect. In Spanish, we did not only find the effect for articles ("los/las"), but also for the conjunction/relative pronoun "que" and the personal pronoun "nos." However, in Turkish, we did not observe a credible difference in terms of skipping between previews of the high frequency word "bir" ("one"), the personal pronoun "ben" ("I") and the identical control condition. We discuss possible reasons for this difference, and the implications of this for the assumption that low-level properties of eye movement control such as saccade targeting are universal across languages. We argue that the "the" skipping effect indicates that we have not satisfactorily explained how readers decide where to fixate and provide the outline of a theoretical account of this phenomenon.

Email: Bernhard Angele, bangele1@nebrija.es

Working Memory

Friday, November 22, 2024, 3:30-5:50 PM US EST

Chaired by Vanessa Loaiza, *University of Sheffield*

3:30-3:50 PM (109)

Drift Diffusion Modeling to Clarify Prioritization Effects in Working Memory. TIMOTHY J.

RICKER, *University of South Dakota*, JOSHUA

SANDRY, *Montclair State University* — Prioritized

items within working memory often show higher accuracy or faster response times at test. This prioritization benefit is thought to reflect the memory representation being within the focus of attention.

Unfortunately, the literature on prioritization effects lacks consistency in whether prioritization benefits manifest as a benefit to speed, accuracy, or both, implying that some findings may reflect a speed-accuracy tradeoff rather than a true cognitive benefit. In

the present work we use drift diffusion modeling to test two theoretical questions regarding prioritization effects without the possibility of a confounding speed-accuracy tradeoff. First, we test whether prioritization effects rely on shifting capacity limited working memory resources

away from nonprioritized items. Second, we test whether prioritization and recency effects are two distinct mechanisms or two ways to enter the focus of attention. We find that prioritization effects do reflect capacity limited shifts in attentional resources and that prioritization and recency are two distinct mechanisms. These findings are complicated by model fits suggesting differential effects of prioritization at the perceptual and cognitive levels.

Email: Timothy Ricker, timothy.ricker@usd.edu

3:50-4:10 PM (110)

Exploring the Dual Structure of Maintenance in Verbal Working Memory. MAXIMILIEN

LABARONNE, *University of Fribourg*, PIERRE BARROUILLET, *University of Geneva*, VALERIE CAMOS, *University of Fribourg* — Verbal working memory is thought to involve two maintenance systems, an articulatory loop and a central attentional system, each with a theoretical capacity of four items. Following the hypothesis that individuals misuse the dual structure of verbal working memory, Barrouillet and colleagues (2021) proposed the maxispan procedure. This procedure instructs participants to cumulatively rehearse a limited number of letters until the end of the presentation of the list, in such a way that the following letters can no longer enter the articulatory loop and must be stored in the attentional system. The maxispan procedure has resulted in a drastic increase in verbal working memory span, reaching nearly the theoretical span of eight. In the present study, we first replicated the maxispan advantage with monosyllabic words. In two follow-ups experiments, we manipulated the length of the to-be-rehearsed and following words between-trial or within-trial, to examine how it would affect the maintenance in the articulatory loop, the attentional system, and their independence. Our results support a dual structure of working memory, but also shed light on its functioning.

Email: Maximilien Labaronne, maximilien.labaronne@unifr.ch

4:10-4:30 PM (111)

Forget Now, But Remember Later—Can People Direct Forgetting Selectively to Working Memory or to Long-Term Memory? KLAUS

OBERAUER, *University of Zurich*, HANNAH DAMES, *University of Zurich* — Sometimes it would be useful to remember information in the long term but remove it from working memory (WM) quickly to avoid

distraction from the current task. In other situations, information is only relevant for the ongoing activity. It needs to be held in WM but not maintained in long-term memory (LTM). Previous research has shown that people can intentionally forget information in studies of episodic LTM and of WM. We investigated whether people can selectively forget information in LTM while keeping it in WM and conversely, whether they can selectively remove information from WM while keeping it in LTM. Participants encoded 6 words into WM, each followed by a “remember” or “forget” cue. Participants in one group were instructed to drop the “forget” words from WM but maintain them for a final test of LTM. In the other group they were instructed to keep the words in WM but forget them for the final LTM test. Compared to non-selective “forget” cues pertaining to all memory, these selective “forget” cues were much less effective. People appear to be unable to selectively forget information from one form of memory but maintain it in the other.

Email: Klaus Oberauer, k.oberauer@psychologie.uzh.ch

4:30-4:50 PM (112)

Modulation of Maintenance and Processing in Working Memory by Negative Emotions. GAËN

S. PLANCHER, *University of Lyon*, PASCALE COLLIOT, *University of Lyon*, HIPPOLYTE FOURNIER, *University of Lyon*, MAXIMILIEN LABARONNE, *University of Fribourg*, HANNA CHAINAY, *Université Lumière Lyon 2* — Previous research has shown that working memory processes are affected by emotion. However, it is not clear if both components—maintenance and processing of information—are modulated by emotion. Some theoretical models assume that working memory is a unitary system, resulting in a perfect trade-off between maintenance and processing. If this is true, we should observe that processing emotional information affects memory performance and that maintaining emotional stimuli affects the processing of neutral information. Since emotion is intimately related to attention, we focused on attentional maintenance. In several experiments, using complex span tasks, we observed lower recall when negative stimuli were processed compared to neutral ones and longer processing times when series of negative stimuli were maintained. Overall, our results showed that emotion impacts both processing and attentional maintenance in working memory. This is consistent with models of working

memory suggesting an attentional trade-off between maintenance and processing.

Email: Gaen Plancher, gaen.plancher@univ-lyon2.fr

4:50-5:10 PM (113)

Which Working-Memory Updating Processes Predict the Continued Influence Effect?

VANESSA LOAIZA, *University of Sheffield*, CLAUDIA C. VON BASTIAN, *University of Sheffield* — Updating in working memory (WM) is often correlated with many higher-order cognitive variables, including the continued influence effect (CIE), or the finding that retracted misinformation can still continue to influence memory and reasoning. This study aimed to better isolate the source of this relationship by decomposing updating into more basic components of transformation, retrieval, and substitution, with particular interest in the latter two processes. Participants completed a WM updating task that varied the contribution of the three components and a common CIE task of fictional news stories, half of which retracted key information in their follow-up articles. The results showed that nearly every updating component credibly impacted accuracy and response times (RTs) on the WM updating task. Similar to prior work, susceptibility to the CIE correlated with WM updating performance, with unique variance associated with each component. The results are discussed with regard to broader theoretical accounts of how interference from irrelevant information continues to influence memory, especially insufficient removal (substitution) and failed recollection (retrieval) of outdated information.

Email: Vanessa Loaiza, v.loaiza@sheffield.ac.uk

5:10-5:30 PM (114)

When There Is Too Much to Remember: Coordinating the Storage of Multiple Sets of Information in Working Memory.

LUÍSA SUPERBIA GUIMARÃES, *University of Leeds*, NELSON COWAN, *University of Missouri* — People retain 3-4 items in working memory (WM), or more if information is well-organized, allowing efficient encoding. We investigated constraints on capacity for multiple sets of visual items (symbols, shapes, locations, and colors) by varying the total number of items, the number of sets, and the similarity between sets in immediate serial recall. If sets were perfectly encoded as chunks, only the number of sets should limit recall. In

Experiment 1, there was a 1500-ms inter-set interval, enabling the chunking of sets, but we nevertheless found that the total number of items across sets was the main limiting factor; the number of sets was a secondary factor. Experiment 2 ruled out an account based entirely on item interference. Experiments 3-4 showed that the influence of the number of sets on recall is greatly reduced when the inter-set interval is removed, or when sets are temporally intermixed. In multi-set situations, performance may depend on an organization of materials allowing retention of sets as chunks in activated long-term memory, with pointers to these sets in the focus of attention.

Email: Luísa Superbia Guimarães, L.SuperbiaGuimaraes@leeds.ac.uk

5:30-5:50 PM (115)

Associative Learning Changes Multivariate Neural Signatures of Working Memory.

WILLIAM NGIAM, *The University of Adelaide*, WILL EPSTEIN, *The University of Chicago*, WOOHYEUK CHANG, *The University of Chicago*, HENRY M. JONES, *The University of Chicago*, DARIUS SUPLICA, *The University of Chicago*, WILLIAM THYER, *The University of Chicago*, ED AWH, *The University of Chicago* — Working memory (WM) is subject to sharp capacity limits, but memory performance can be substantially enhanced via associative learning. For example, with predictably paired colors, observers can handle twice as many colors at a time in a WM task. Here, we discriminated between two distinct explanations of this finding. According to a “memory compression” account, associative learning enables a larger number of items to be stored by compressing the resource demands of learned colors. By contrast, a chunking account predicts a reduction in the total number of items stored due to the integration of each color pair into a single item. We used a multivariate EEG analysis that provides a precise index of the number of individuated items stored in WM, and found a clear reduction in WM load after subjects had learned specific pairs of colors, consistent with the chunking explanation. This reduction in WM load only occurred following successful learning of the color pairs. Moreover, multidimensional scaling analyses revealed that successful learning showed a shift in neural activity that was orthogonal to the WM load axis, possibly revealing contributions from long term memory encoding.

Email: William Ngiam, william.ngiam@adelaide.edu.au

Cognitive Control

Friday, November 22, 2024, 3:30-5:50 PM US EST

Chaired by Andrew Heathcote, *University of Newcastle*

3:30-3:50 PM (116)

Joint Modeling of the Dual Mechanisms of Cognitive Control Task Battery. ANDREW HEATHCOTE, *University of Newcastle*, GUY E. HAWKINS, *University of Newcastle*, TODD BRAVER, *Washington University in St. Louis* — We report the results of modeling the latent structure in a large data set of tasks from the Dual Mechanisms of Cognitive Control (DMCC) battery (N=128). Each participant performed the DMCC battery in a test-retest design, conducted via on-line testing across two three-week cycles. The battery is designed to probe individual differences in two cognitive control modes, proactive (anticipatory) and reactive (choice-stimulus-driven). Participants provided data from multiple sessions performing two replications with optimized versions of the Stroop, AX-CPT, Task Switching, and Sternberg paradigms. We apply evidence accumulation models (EAMs) to each task individually in a hierarchical Bayesian modeling framework, developing parameterizations that balance parsimony, theoretical informativeness, and descriptive adequacy. We then fit the EAMs simultaneously in order to quantify correlations in model parameters across tasks. This “joint-modeling” approach allows us to examine the reliability with which reactive and proactive control are measured, compare the outcomes with descriptive measures, and quantify parsimonious characterizations of relationships among task parameters using exploratory and confirmatory factor analyses.

Email: Andrew Heathcote, ajheathcote@gmail.com

3:50-4:10 PM (117)

Complementary Benefits of Multivariate and Hierarchical Models for Identifying Individual Differences in Cognitive Control. MICHAEL FREUND, *Brown University*, TODD BRAVER, *Washington University in St. Louis* — Establishing high test-retest reliability in behavioral and neural measures of cognitive control has proven to be a major, currently unresolved challenge, because commonly used measures, such as fMRI BOLD activity, are subject to a vast amount of trial-level variability. Even when using frameworks such as hierarchical Bayesian modeling (HBM), the presence of high trial-level variability

produces estimation uncertainty, complicating interpretation. Here we explored whether HBM can be combined with known multivariate-pattern-analysis (MVPA) decoding advantages in suppressing fMRI trial-level variability. Using conditions from a test-retest fMRI Stroop dataset (N=28) in the Dual Mechanisms of Cognitive Control battery, we found that, relative to standard intra-class correlation, HBM estimates revealed near-maximal reliability, particularly in frontoparietal regions associated with cognitive control. Critically, while MVPA decoding yielded reliability estimates that were similar in magnitude to those of univariate HBM, the estimates were frequently more precise. Thus, HBM combined with MVPA decoding methods provide a powerful framework for individual differences analysis of fMRI data.

Email: Michael Freund, michael.freund@brown.edu

4:10-4:30 PM (118)

Distractor-Specific Control Adaptation In Multidimensional Environments. DAVIDE GHEZA, *Washington University in St. Louis*, THEA ZALABAK, *Washington University in St. Louis*, WOUTER KOOL, *Washington University in St. Louis* — Humans can manage and switch between multiple conflicting sources of information. Models of cognitive control assume that conflict is detected between one task and one source of distraction but are agnostic on how the brain manages multiple distractors simultaneously. To address this gap, we developed a novel multidimensional task-set interference paradigm, requiring individuals to manage distraction from three independent dimensions. A set of behavioral experiments demonstrates that people adapt to prior conflict through selective suppression of task-irrelevant dimensions, and based on their specific conflict history. To capture this dimension-specific adaptation, a neural network model is proposed that measures multivariate conflict as energy within each dimension’s pathway. At the neural level, we confirm the selective suppression of distractors’ representations utilizing representation similarity analysis of the human EEG. In sum, this work highlights the striking human ability to simultaneously adjust attention to multiple sources of information. Model predictions converge with recent hypotheses that neural signals of conflict emerge from the integration of diverse task variables within the medial prefrontal cortex.

Email: Davide Gheza, davide.gheza@gmail.com

4:30-4:50 PM (119)

New Developments in Examining Cognition as Embedded and Extended. WILLIAM HIRST, *The New School for Social Research* — There has been an increased desire among psychologists to break away from methodological individualism and adopt what has been called 4E cognition (Newen et al., 2018): Embodied, Embedded, Enactive, and Extended. The papers presented here engage two of these E's—embedded and extended cognition. Meyer investigates a quintessential internal state, loneliness. Usually thought to arise because of impoverished relations, she demonstrates how loneliness is also embedded within the way we communicate with others. Coman's and Fuentemilla's research examines extended cognition. They underscore that the way people remember, forget, and falsely recollect depends critically on the way memories are transmitted across social networks. The memory is not just a reflection of what goes on in the head, but also what transpires in the social networks in which we live. Chang investigates the social nature of something as basic as personhood, showing that people remember others in terms of their social interactions rather than person- or situation-specific attributes. The present research compellingly underscores the need to go beyond the study of internal processing and embrace the 4E's.

Email: William Hirst, hirst@newschool.edu

4:50-5:10 PM (120)

Changes in the Relationship Between the Geometry of Control Representations in dlPFC and Behavior During Practice. APOORVA BHANDARI — The human dorsolateral PFC (dlPFC) encodes control representations that are important for context-dependent behavior. Recent work shows that during context-dependent tasks, dlPFC representational geometry is organized into separated subspaces based on each context, with only context-relevant stimulus dimensions encoded in each subspace. Here, we examine how these features of the geometry of dlPFC control representations relate to behavior, and how this relationship changes with practice. We investigated representational geometry in dlPFC using fMRI and pattern analysis as participants (N=20) performed a context-dependent categorization task across 5 sessions. Trial-by-trial variance in response time was explained by the strength of task context coding and relevant stimulus

feature coding. Further, context coding facilitated behavior through its positive effect on relevant feature coding. However, strong dlPFC context coding was increasingly associated with slowing at the later stages of practice. We interpret these results within a representational framework of cognitive control and automaticity.

Email: Apoorva Bhandari, apoorva_bhandari@brown.edu

5:10-5:30 PM (121)

A Dynamic Interplay Between Mind Wandering and Attention: The Impact of Task Difficulty and Time Course in a Flanker Paradigm. ZOE D. HUGHES, *University of Central Lancashire*, LINDEN J. BALL, *University of Central Lancashire*, JEANNIE JUDGE, *University of Central Lancashire* — Attentional lapses can negatively impact inhibitory control due to our propensity to mind wander. We examined mind-wandering tendencies over time and task difficulty using a flanker paradigm. Experiment 1 used a standard flanker task with congruent and incongruent trials and also incorporated mind-wandering probes. There was no main effect of congruency on accuracy. However, significant congruency effects emerged in RTs over time, improving from Blocks 1 to 2 (as mind wandering increased) and remaining stable from Blocks 2 and 3 (as did mind wandering), indicative of facilitated attentional control. In Experiment 2, we increased task difficulty by also including reversed flankers. Accuracy and RTs improved on reversed trials over time but worsened on congruent and incongruent trials, indicating a trade-off in attentional resources. Mind wandering was also seen to increase over time. Overall, the findings highlight a facilitatory effect of mind wandering on congruent and incongruent trials, with this enhancement then shifting to reversed trials when they are introduced, resulting in a decline in performance on congruent and incongruent trials. Analyses of congruency effects and mind wandering subtypes will also be discussed.

Email: Zoe Hughes, zdhughes1@uclan.ac.uk

5:30-5:50 PM (122)

Can't Wait to Relax: Prospective Relaxation of Control as Revealed by a Future-Based Congruency Sequence Effect. LUCA MORETTI, *RWTH Aachen University*, GIACOMO SPINELLI, *University of Milano-Bicocca* — In recent years, a growing literature has investigated how cognitive control

is regulated when explicit knowledge about upcoming conflict is available. In interference tasks, this work has been conducted by cueing whether the distractor and the target in an upcoming trial will be congruent or incongruent. To date, however, it is unclear whether control is adapted upon cue presentation in a prospective fashion or rather upon presentation of the cued stimulus. We examined this issue with a novel cueing paradigm in which the trials of an interference task were presented in pairs and the congruency of Trial 2 was either cued or uncued before the trial pair. Consistent with previous research, a cueing benefit emerged in Trial 2, albeit restricted to congruent trials. More importantly, although Trial 1 was never cued, across two experiments we observed a larger congruency effect when a congruent Trial 2 was cued. This congruency-effect modulation based on future congruency resembles that based on past congruency and suggests that the control state evoked by congruent cues is implemented upon cue presentation, with control being relaxed even before it should be.

Email: Luca Moretti, luca.moretti@psych.rwth-aachen.de

Psycholinguistics II

Friday, November 22, 2024, 3:30-5:50 PM US EST

Chaired by Eleonora Rossi, *University of Florida*

3:30-3:50 PM (123)

Behavioral and Electrophysiological Signatures of Novel Language Learning in the Earliest Stages. MEGAN NAKAMURA, *University of Florida*, ELEONORA ROSSI, *University of Florida* — This study investigates the neurocognitive underpinnings of early language learning in adults, emphasizing individual differences in bilingual experience and cognitive capabilities. Using a short-term longitudinal design with a 10-day Dutch language training via Rosetta Stone, event-related potentials (ERPs) tracked neurophysiological changes, while a semantic categorization task (SCT) measured novel word lexicalization. Results showed significant reductions in N400 amplitude across all words at post-test, indicating rapid neural adaptation and enhanced semantic integration (McLaughlin et al., 2004; Bakker et al., 2015). Higher bilingual experience led to more reduced N400s for cognates, suggesting bilingualism aids in lexicalizing similar words across languages. Better inhibitory control predicted smaller N400s for cognates but larger N400s for non-cognates, suggesting individuals with higher inhibitory control may manage

cross-linguistic interference better for cognates, though it may create a processing cost for non-cognates. This research highlights the importance of individual differences in early language learning and advances understanding of the interplay between language experience and neuroadaptation (Pliatsikas, 2020).

Email: Megan Nakamura, mnakamura@ufl.edu

3:50-4:10 PM (124)

Confirmation or Surprise? How Predictable Language Supports Young Children's Fast-Mapping New Word-Referent Pairs.

KIRSTEN READ, *Santa Clara University* — Young learners can make lexical predictions and readily map new words to referents, particularly within highly structured (i.e., rhyming or repetitive) or constrained speech—making guesses about upcoming words. In this study, we tested whether the accuracy of such lexical predictions impact 3- to 5-year-old children's word mapping ability. Children (n=60) were randomly assigned to either a prediction-inviting rhyme condition or control condition where 12 new animal names were presented in a digital story-like context. By manipulating the likelihood of each target animal within subjects, children's accuracy of predictions was encouraged or discouraged. Video recordings of participants were coded to measure whether children looked to the target animals before they were named, and children's subsequent retention of the 12 name-animal pairs was tested. Results suggest that children better retained the animal names for the likely animal targets that they predicted (as evidenced by their anticipatory looking). This demonstrates an advantage of predictable regularity over surprise or error-driven learning in this type of early childhood language learning task, and has implications for approaches for supporting language development.

Email: Kirsten Read, kread@scu.edu

4:10-4:30 PM (125)

Working Memory and Cognitive Flexibility Contribute to Novel Language Learning.

ANAT PRIOR, *University of Haifa*, ASSAEL RAVEH, *University of Haifa*, LIHI CHARCON, *University of Haifa*, TAIR SIEGELMAN, *University of Haifa* — Language learning is a critical academic and social task for most global citizens, and there is great variability in outcomes and achievements. Here we examine how previous language learning experience and the executive

functions of working memory (WM) and cognitive flexibility (CF) contribute to success in grammatical and semantic comprehension and production of a novel artificial language (AL). Sixty-four Hebrew-English bilingual adults studied an AL, and were tested immediately and after a 3-day consolidation period. In immediate testing, previous success in language learning predicted more accurate performance across comprehension and production; CF predicted higher accuracy and fluency in grammatical and semantic comprehension; WM predicted higher accuracy and fluency in grammar comprehension. None of the examined variables was associated with consolidation outcomes. These results suggest that language learning recruits domain general cognitive mechanisms, and highlight the advantages of studying artificial language learning as a research model.

Email: Anat Prior, aprior@edu.haifa.ac.il

4:30-4:50 PM (126)

The Role of Grammatical Gender in Shaping Implicit Gender Attitudes: an Investigation into Pashto and Dari Languages. ALI SHAHIDY, *Southern Illinois University Carbondale*, USHA LAKSHMANAN, *Southern Illinois University Carbondale* — The current research explores the link between language and cognition, focusing on the impact of grammatical gender on implicit gender-attitudes, an issue not hitherto addressed. Adult Afghans ($N=101$) comprising native-speakers of Dari (a genderless language; $N=59$) and Pashto (a language with grammatical gender; $N=42$) completed an on-line background questionnaire, religiosity scale, and the Gender-Career Implicit Association Test (IAT), in their L1. Sequential Hierarchical Regression was conducted to determine whether adding L1 gender-type (1=Pashto; 0=Dari), after controlling for Age, Sex and Religiosity, would contribute significant explanatory power in accounting for the variation in implicit gender-bias scores. The results confirmed our overall prediction that the Model that includes L1 gender-type would have the strongest explanatory power. However, contrary to our expectations, speakers of Dari (a genderless language) and not speakers of Pashto (a grammatical gender language) had significantly higher implicit gender bias. Implications from a conceptual and methodological perspective are discussed.

Email: Ali Shahidy, muhammadali.shahidy@siu.edu

4:50-5:10 PM (127)

Validity of Gamified Statistical Learning Task as a Measure of Children's Real-World Language Learning. BRYNN SILES, *Northeastern University*, ANQI HU, *University of Delaware*, KELLY CHAN, *Cornell University*, ANNA CIRIELLO, *Northeastern University*, MORTEN H. CHRISTIANSEN, *Cornell University*, ZHENGHAN QI, *Northeastern University* — It is not clear whether the artificial language learning paradigms in traditional statistical learning (SL) tasks relate to children's real-world language learning capabilities. The current study investigates the relationship between a statistical learning task and a phonemic serial recall (PSRT) task designed to reflect children's sensitivity to natural statistical patterns in language inputs. In the SL task, children were first exposed to a five-minute stream of speech syllables with embedded triplets and then asked to repeat sequences containing either familiar or unfamiliar triplets. In the PSRT task, children were asked to repeat sequences consisting of either high-frequency or low-frequency bisyllable combinations, based on the CHILDES database. The difference score for the average number of correct syllables for SICR ([familiar - foil]/[familiar + foil]) and PSRT ([high-frequency - low-frequency]/[high-frequency + low-frequency]) were significantly positively correlated ($R=0.31$, $p=0.0072$). This provides a mechanistic link between statistical learning tasks and real-world language learning capabilities in children.

Email: Brynn Siles, b.siles@northeastern.edu

5:10-5:30 PM (128)

Word Learning Declines in Aging: A Role for the Hippocampus? JOSHUA BUFFINGTON, *Georgetown University*, MICHAEL ULLMAN, *Georgetown University*, JANA REIFEGERSTE, *Georgetown University* — Although most word learning occurs during childhood, it continues throughout our lives (e.g., Ozempic, axolotl). Accordingly, it is important to understand how aging and associated neural declines impact word learning. We examined these issues in a large cross-sectional study ($n=191$) of healthy adults across the adult lifespan, aged 18-85. Subjects were given a word-picture learning task under intentional learning conditions, followed by recall (name a picture) and comprehension (word-picture matching) tests. Recall but not comprehension declined with age. Preliminary analyses suggest that the recall declines may be mediated by age-related declines of hippocampal volumes but not

of various control structures (e.g., Broca's area, entorhinal cortex). We discuss implications regarding the neural bases of word learning.

Email: Joshua Buffington, joshua.buffington@georgetown.edu

Recognition I

Friday, November 22, 2024, 3:30-5:50 PM US EST

Chaired by Timothy Brady, *University of California, San Diego*

3:30-3:50 PM (130)

A Rapid Selective Retrieval Account of

Intentional Forgetting at Encoding.

PELIN TANBERG, *University of Waterloo*, MYRA A. FERNANDES, *University of Waterloo*, COLIN M. MACLEOD, *University of Waterloo* — Intentional remembering and forgetting are adaptive processes that ensure that memory preserves goal-relevant information and that goal-irrelevant information is discarded. For decades, the idea that in item-method directed forgetting only the to-be-remembered (R) items are rehearsed, with to-be-forgotten (F) items left to decay, has been captured in the single-process selective rehearsal account. Across four experiments, we test a novel, two-step account that a quick retrieval check is applied only to R items, accompanied by rapid removal of F items from working memory. We demonstrate consistent evidence supporting this retrieval-based explanation, an explanation that does not rely on cumulative rehearsal. In addition, we provide no support for an active inhibitory mechanism responsible for removing irrelevant F items from working memory. We propose that rapid selective retrieval of R items and rapid removal of F items from working memory constitute the fundamental mechanisms underlying intentional forgetting at encoding.

Email: Pelin Tanberg, pelin.tan@uwaterloo.ca

3:50-4:10 PM (131)

A Remedy to the Measurement Crisis? The

Surprising Effect of Number-of-Trials on da and d' in Empirical Recognition Data.

ADVA LEVI, *Tel Aviv University*, YONATAN GOSHEN-GOTTSTEIN, *Tel Aviv University*, CAREN ROTELLO, *University of Massachusetts Amherst* — We previously presented empirical data to test the validity of several common sensitivity measures such as d' . We also tested the validity of the lesser-known measure da, which (unlike d') is not premised on the assumption of equal-variance

of the lure and target distributions. Using an implied base-rate manipulation, we created two iso-sensitive conditions that varied only in bias. The empirical data were used to gauge Type-I error rates (T1ER), revealing acceptably low T1ERs for da (approximately 5%), in contrast to alarmingly high T1ERs for common measures (d' , H-F, and A'). However, in large-sample experiments ($N=96/192$), da showed T1ERs somewhat higher than 5%. We predicted that increasing the number of trials would reduce the T1ERs for da, but not for other common measures. This is because the data would more closely resemble the true data-generating model of recognition memory manifested in da. Both simulations and empirical data revealed that even for large samples, increasing the number of trials indeed decreased T1ERs to 5%. We advocate using da and running many trial experiments.

Email: Adva Levi, advalevi@mail.tau.ac.il

4:10-4:30 PM (132)

Recognition Does Not Induce the Forgetting of

Similar Objects.

JAMAL WILLIAMS, *Yale University*, TIMOTHY BRADY, *University of California, San Diego* — Recent work has proposed that testing items in memory (e.g., a specific mug) causes the forgetting of related items (other mugs) when compared against a baseline of items from untested categories. Across six experiments, we replicate this recognition-induced forgetting effect and examine its cause. We find that the standard analyses in this literature inflate the effect size of this effect by conflating response bias with the true effect. We also find that participants have strong memories for the foils used in the intermediate tests (e.g., the additional mugs used as lures) and that this lure memory, not inhibition, is the core explanation for the effect. We show that the REM model of memory predicts all of the “recognition-induced” effects without any modifications—with no notion of inhibition or suppression—because memory for foils increases the set size of studied categories and induces cue overload. Empirically, we then use this insight to show we can create a reversal of the effect by increasing the size of baseline categories. Overall, our results suggest that differences observed in recognition-induced studies do not stem from inhibition or suppression but from category-size and measurement concerns.

Email: Jamal Williams, jrw002@ucsd.edu

4:30-4:50 PM (133)

Recognition Memory Response Bias Varies with Stimulus Materials and (Perhaps) Culture.

STEVE LINDSAY , *University of Victoria*, MAJD A. HAWILY, *Association of Canadian Studies*, YUKIO ITSUKUSHIMA, *University of Human Environments*, SATOSHI MORIIZUMI, *Nanzan University*, SHINJI KITIGAMI, *Nagoya University*, ZAHRA HUSSAIN, *University of Plymouth* — On an old/new recognition memory test with equal numbers of old and new items and equal costs/benefits for misses, false alarms, hits and correct rejections, performance is optimized if response bias is neutral (i.e., FA rate comparable to miss rate). Yet in many experiments with Canadian participants, we have observed a tendency toward conservative bias on recognition tests of that sort when the stimuli were novel and complex visual images such as scans of obscure masterwork paintings or photos of faces. In two studies, black and white line drawings of common objects yielded neutral bias, but black and white photos of those same objects in natural settings yielded conservative bias. Completely abstract visual novel stimuli, in contrast, did not produce a tendency toward conservative response bias in Canadian participants. Fascinatingly, we observed conservative bias across a range of stimuli (Japanese words, scans of Western paintings, and abstract diffeomorphs) among Japanese participants. There may be more than one mechanism at play.

Email: Steve Lindsay, slindsay@uvic.ca

4:50-5:10 PM (134)

Recognition-Memory Asymmetries Predicted from Item Memorability. IGOR UTOCHKIN, *The University of Chicago*, NICHOLAS CHIANG, *The University of Chicago*, WILMA A. BAINBRIDGE, *The University of Chicago* — In two-alternative forced-choice (2-AFC) memory tests, target-foil similarity is a strong determinant of confusions. We hypothesize that confusions can be driven by intrinsic memorability properties of test items, the likelihood for each item to be correctly or falsely recognized individually. We tested old-new recognition for 240 images in two groups of 100 observers swapping target-foil roles between the groups, which yielded hit (H) and false alarm (FA) rates for each image. We z-transformed H and FA to locate both roles of all items in a signal-detection “memorability space” and predicted 2-AFC discriminability (d') between arbitrary targets and foils. Critically, for some 2-AFC

pairs we predicted strong d' asymmetries when items swap their target-foil roles. These predictions were confirmed in a 2-AFC experiment with the same set of images and two new groups of observers studying either one or another set of targets but tested on the same target-foil pairs. The d' asymmetries between identical pairs with swapped roles highly correlated with the asymmetries predicted by our model ($\rho=.73$). These asymmetries cannot be explained by simple inter-item similarity and require incorporating memorability to the existing models.

Email: Igor Utochkin, isutochkin@gmail.com

5:10-5:30 PM (135)

The Benefit of Multisensory Memory. DIANE PECHER, *Erasmus University Rotterdam*, RENÉ ZEELENBERG, *Erasmus University Rotterdam* — Is memory better for items that are studied as multimodal items than for items that are studied as unimodal items? Some researchers have found a benefit for multimodal items and have argued that this benefit is due to multisensory integration. We investigated the role of multisensory integration, replicating Thelen et al.’s (2015) method. Items were presented as unimodal (picture or sound) or bimodal (picture and sound) items in a continuous recognition task. We obtained no difference in memory performance between items studied as unimodal or bimodal stimuli. We found a benefit of repeating an item in a different modality. This benefit without temporal alignment questions the multisensory integration explanation. We argue that the “multisensory” memory benefit is more likely explained by item repetition and encoding variability.

Email: Diane Pecher, pecher@essb.eur.nl

5:30-5:50 PM (136)

The REM model of Shiffrin & Steyvers (1997) Predicts Recognition in 2AFC and Four-Way Classification (4WC). RICHARD M. SHIFFRIN, *Indiana University*, ZAINAB R. MOHAMMED, *Indiana University*, CONSTANTIN MEYER-GRANT, *University of Freiburg* — We use a novel paradigm to test models of long-term recognition memory: After studying lists, tests are made with two items, both OLD, both NEW, or one of each. Some tests used two-alternative forced choice (2AFC) in which Ss were asked to choose the item more likely OLD (Experiment 2 asked Ss to choose the item more likely NEW); other tests used



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four-way classification (4WC) in which Ss were asked to classify the two items as 1) both old, 2) both new, 3) left old, right new, or 4) left new, right old. Each S studied lists containing 12 words, 24 words, 12 pictures, 24 pictures, or lists of 12 words randomly mixed with 12 pictures (so tests were both words, both pictures or one each). All the choice probabilities were predicted well by the retrieving effectively from memory model (REM) of Shiffrin and Steyvers (1997) using the 1997 parameter values, and the REM decision threshold of odds of 1.0. Signal-detection modeling (unequal variance Gaussian strength distributions) predicted the choice probabilities with different parameters for different conditions. Initial analysis and modeling of Response times suggested that REM may be uniquely suited to predict differing accuracy and response time results for judgments of OLD and NEW.

Email: Richard Shiffrin, shiffrin@iu.edu

Statistics and Methodology

Friday, November 22, 2024, 3:30-5:50 PM US EST

Chaired by Richard D. Morey, *Cardiff University*

3:30-3:50 PM (137)

Attentional Control Data Collection: Using SQLite for Efficient Data Reuse. JULIA M. HAAF, *University of Potsdam*, MADLEN HOFFSTADT, *University of Amsterdam*, SVEN LESCHE, *University of Heidelberg* — Publicly available data are required (1) to assess the reproducibility of studies in the literature and (2) to promote the reuse of data for a more efficient use of participants' time and public resources. Current data-sharing efforts are well suited for the first goal, but do not sufficiently address the second goal. Here, we show how structured collections of open data help researchers to gain access to a large body of data from their own research area. We illustrate this process by introducing the Attentional Control Data Collection, an SQL database for attentional control experiments. We show how such a database can be structured, how it can be easily accessed using a Shiny app and an R-package, and how researchers can contribute data from their studies to the data base. We illustrate the utility of the database with a thorough reanalysis of reliability. The analysis highlights how an open database can aid meta-analytic efforts as well as methodological innovation.

Email: Julia Haaf, julia.haaf@uni-potsdam.de

3:50-4:10 PM (138)

Breathing Life into Meta-Analytic Methods.

PABLO GOMEZ, *Skidmore College*, DAVID ALLBRITTON, *DePaul University*, BERNHARD ANGELE, *Universidad Nebrija*, MARTIN VALISEV, *University College London*, MANUEL PEREA, *University of Valencia* — Meta-analyses have become indispensable in the behavioral sciences, combining and summarizing data from multiple studies. While they offer many advantages (e.g., increased power, higher generality, and resolving conflicting findings), they currently only provide a snapshot at a given time point. In active research areas, frequent meta-analytic updates are necessary to incorporate new evidence. We propose guidelines for live, dynamic meta-analyses and introduce an accessible tool using the R environment. Our app, powered by the Shiny package, enables the meta-analysis to integrate evidence interactively as an update of an existing meta-analysis or from scratch (i.e., a new meta-analysis). By embracing dynamic meta-analyses and leveraging modern tools, researchers can ensure up-to-date meta-analyses in their respective fields.

Email: Pablo Gomez, pgomez@skidmore.edu

4:10-4:30 PM (139)

Stabilized Effect Size as a Stopping Rule for Data Collection and/or as a Component of Power Estimation: An Example from An Example from Voting-Cognition Research.

RICHARD ANDERSON, *Bowling Green State University* — Recent work establishes that (i) statistical inference is distorted when researchers monitor p values (or alternatively, Bayes factor values) and halt data collection when those values reach a pre-established criterion and (ii) this distortion can be averted by employing effect-size stabilization as a stopping criterion (e.g., Anderson, Crawford, & Bailey, 2022). Using recent voting-cognition data as an example, the present work demonstrates the use of stabilized effect size as a stopping rule for an initial stage of data collection, or as a basis for estimating statistical power in either the current or a future sample. It is argued that this method has validity-advantages over a priori power methods that rely on effect sizes from previous similar but not-fully-analogous studies, or that rely on concepts such as 'minimally important effect size.'

Email: Richard Anderson, randers@bgsu.edu

4:30-4:50 PM (140)

Out-of-Sample Prediction and Replication:

Beyond Methodological After-Thoughts. MICHEL REGENWETTER, *University of Illinois Urbana-Champaign*, MARC JEKEL, *Universität zu Köln*, EMILY N. LINE, *University of Illinois Urbana-Champaign*, MEICHAI CHEN, *University of Illinois Urbana-Champaign* — Verbal hypotheses about proportions abound across behavioral science. Order-constrained modeling and data analytics provide a general framework to formalize verbally stated hypotheses, disambiguate them, and quantify their parsimony, hence refutability. We upgrade out-of-sample prediction and replication from mere methodological add-ons to mathematical models. This exposes them to the full-fledged scrutiny and rigors often at best extended to substantive theories. Order-constrained models disambiguate what it means for hypotheses to account for current data, for future data from different stimuli, or for data from different labs. They facilitate novel and nuanced theory-driven types of prediction and replication that are commensurate with the intended specificity of the theory and grounded in a deductive philosophy of science. By helping the scholar steer clear of over-specifying, over-fitting, and/or over-predicting, the framework opens new avenues of depth and nuance in the development and analysis of theories about multiple proportions.

Email: Michel Regenwetter, regenwet@illinois.edu

4:50-5:10 PM (141)

The Monotonic Linear Model: Testing for

Removable Interactions. JOHN C. DUNN, *The University of Western Australia*, LAURA ANDERSON, *Binghamton University, SUNY* — Loftus (1978) highlighted the distinction between a theoretical concept such as memory or attention, and its observed measure such as hit rate or percent correct. If the functional relationship between the concept and its measure is non-linear then only some interaction effects are interpretable. This is an example of the wider "problem of coordination" which pervades scientific measurement. Loftus drew on the principles of additive conjoint measurement to interpret interactions when the coordination function is only monotonic. This led to the distinction between removable interactions that are consistent with an additive effect on the underlying theoretical concept and nonremovable interactions that are not. However, the adoption of these ideas by

researchers has been greatly limited by the fact that no statistical procedure exists to determine if and to what extent an interaction is removable or otherwise. The aim of this presentation is to describe such a procedure.

Email: John Dunn, john.dunn@uwa.edu.au

5:10-5:30 PM (142)

The Myth of the Average Subject: Characterizing Population Distributions of Psychological Capacities and Behaviors. JOHN P. VEILLETTÉ,

The University of Chicago, HOWARD C. NUSBAUM, *The University of Chicago* — Studies often characterize the psychological capabilities and behavior of a population by reporting an average across subjects. But is there truly an average subject? When an effect differs between two populations, does that mean it is expressed more strongly (a difference in within-subject effect size) or do more people express it (difference in prevalence)? Approaches to testing group-level effects in cognitive psychology and neuroscience studies can fail to distinguish such possibilities—resulting in research oriented toward describing a “typical” subject who may not exist. We provide examples from our research in auditory, visual, and interoceptive perception in which better characterizing population distributions of a skill affords different interpretations of experimental findings than would reporting population means. We describe new methods (and software) that allow researchers to dissociate between within-subject effect size and population prevalence statistically, with minimal change to existing analysis workflows. A science of behavior should accommodate individual differences, rather than treat them as noise around a population mean; we discuss implications for the replicability and generalizability of our findings.

Email: John Veillette, johnv@uchicago.edu

5:30-5:50 PM (143)

The Statistical Properties of the P-Curve

Procedures. RICHARD D. MOREY, *Cardiff University*, CLINTIN P. DAVIS-STOBER, *University of Missouri* — The p-curve procedures (Simonsohn, Nelson, Simmons, 2014; Simonsohn, Simmons, Nelson, 2015) are a suite of forensic meta-analysis significance tests advertised as the "key to the file drawer," by revealing "whether a given set of significant findings is merely the result of selective reporting." Although the procedures have been assessed by small-scale



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simulations (Erdfelder & Heck, 2019; Ulrich & Miller, 2015; Simonsohn et al., 2014) under various conditions, the procedures have not been assessed by traditional theoretical criteria (e.g., test admissibility). If a test is inadmissible, it has lower power than another test under all conditions, indicating that it does not appropriately use the information in the data. We show that the "improved" p-curve test for "evidential value" is inadmissible, and the remaining tests have other poor properties as well. The inadmissibility stems from the use of meta-analytic combination methods (e.g. Stouffer's method) that are not tailored to the combined test statistics, as they must be.

Email: Richard Morey, moreyr@cardiff.ac.uk

Symposium III: Climate Change and Human Cognition (Symposium on Cognition, Behavior, and Society)

Friday, November 22, 2024, 3:45-5:45 PM US EST

Chaired by James Pomerantz, *Rice University, USA*, and Suparna Rajaram, *Stony Brook University, USA*

3:45-4:05 PM (SYM12)

Persuasion: How to Advance from Scientific Arguments on Climate Change to Results on Behavioral Change. ELKE WEBER, *Princeton University* —

4:05-4:25 PM (SYM13)

Psychonomes Believe in Human-Caused Climate Change, But How Do They Want to Address It? BEN R. NEWELL, *UNSW Sydney* —

Email: Ben Newell, ben.newell@unsw.edu.au

4:25-4:45 PM (SYM14)

Steps Individual Psychonomes Can Take to Shrink Their Own Carbon Footprints. —

5:05-5:25 PM (SYM15)

Synthesis and Remaining Points. MORTON ANN GERNSBACHER —

Email: Morton Ann Gernsbacher, magernsb@wisc.edu

Recall

Saturday, November 23, 2024, 8:00-10:00 AM US EST

Chaired by Dominic Guitard, *Cardiff University*

8:00-8:20 AM (144)

Context as a Unified Construct across Individuals, Groups, and Artificial Agents.

QIONG ZHANG, *Rutgers University* — Previous research has long recognized the important role of context in the encoding and retrieval of information. While context-based accounts have been successful in studying the memory of individuals, it remains elusive if they also explain recall behavior when an individual's memory interacts with environmental cues or with other people. Here, I present two studies demonstrating that an individual's memory performance in a free recall task can be influenced by the presentation of a reminder item or by collaborating with others. We propose that attending to a reminder item or another person's recall updates one's context to be more similar to the context of the information attended to. A computational model implementing this theory is presented, accounting for these effects. Lastly, I will demonstrate that context is an important construct not only in human memory but also in artificial agents. Neural network models for machine translation share strikingly similar architectural components with computational models of human context memory, despite being developed in separate communities. I will discuss the implications of these parallels.

Email: Qiong Zhang, qiong.z@rutgers.edu

8:20-8:40 AM (145)

EEG Signatures of Memory Encoding and Semantic Processing in Young and Older Adults.

ADAM BROITMAN, *University of Pennsylvania*, KARL HEALEY, *Michigan State University*, MICHAEL J. KAHANA, *University of Pennsylvania* — The current study investigates whether electroencephalogram (EEG) activity reflects age-related memory changes during encoding. We recorded scalp EEG in 151 young adults (aged 18-30) and 37 older adults (aged 60-85) as they memorized lists of words. Participants studied the word lists either under full attention or while performing a secondary task that required them to make semantic judgments about each word. Although the secondary task reduced recall among all participants, older adults were

less vulnerable to these disruptions. Older adults also exhibited distinct neural subsequent memory effects, characterized by reduced negativity in the alpha frequencies. Multivariate classifiers trained on neural features successfully predicted subsequent memory at the trial level and robustly captured the subtle interaction of age group and task demands on memory. The findings indicate that neural biomarkers of successful memory vary with both cognitive aging and attentional load.

Email: Adam Broitman, adamwb@sas.upenn.edu

8:40-9:00 AM (146)

Remindings Are Not Recursive. JONATHAN G. TULLIS, *University of Arizona* — Encoding novel stimuli can trigger access and retrieval of prior relevant episodes, and these prior episodes can help us navigate the novel stimuli. Remindings, retrievals of past specific episodes guided by current stimuli, help us link relevant prior episodes to our current problems. Across 3 experiments, I examined whether remindings bolster memory because learners embed prior episodes into the memory traces of later, related episodes, as described by the recursive theory of reminding. Learners studied lists comprised trios of words (P1, P2, P3) where the second (P2) and third (P3) words in each trio were systematically selected to be related to prior words in their trio or not. If learners build recursive representations of these items, having related P2s and P3s in each trio would provide an interactive boost to recall. Results show that related P2s and P3s enhanced recall for earlier words but did not provide interactive mnemonic benefits. The lack of interactive effects suggests that earlier episodes are not embedded in later traces. Results may align better with study-phase retrieval theories of reminding, in which later episodes trigger retrieval of prior ones, but create no special embedding in memory traces.

Email: Jonathan Tullis, jonathantullis@gmail.com

9:00-9:20 AM (147)

The Role of Central Cognitive Resources for the Survival Processing Effect. EDGAR ERDFELDER, *University of Mannheim*, MEIKE KRONEISEN, *RPTU University of Kaiserslautern-Landau*, MARKUS JANCZYK, *University of Bremen* — The survival processing effect refers to the robust finding that words judged for relevance in an ancestral survival scenario are remembered better than words judged for relevance in a control scenario. According to the richness-of-encoding

explanation of this effect, survival processing involves a particularly rich and distinct form of encoding that is effortful and requires limited cognitive resources. In two psychological refractory period (PRP) experiments, we therefore used the effect propagation and the locus of slack logic to assess the role of central cognitive resources for the survival processing effect in more detail. In line with previous research, our data demonstrate that the survival processing advantage indeed relies on the capacity-limited central stage of cognitive processing. Moreover, our results also shed light on the question whether survival processing is automatically prioritized whenever several cognitive tasks compete for central attentional resources. We discuss implications for theories of the survival processing effect.

Email: Edgar Erdfelder, erdfelder@uni-mannheim.de

9:20-9:40 AM (148)

A Transient Memory Lapse in Humans 1-3 Hours After Training. BEVERLY A. WRIGHT, *Northwestern University*, RUIJING NING, *Linköping University* — In humans, learning retention, as assessed by recall at different time points after training, typically remains constant or decreases, sometimes after initially increasing. In animals, however, an additional retention pattern is well documented in which retention initially decreases and then increases again, revealing a transient memory lapse. The apparently ubiquitous presence of transient memory lapses in animals has led to the proposal that these lapses are a fundamental aspect of memory formation, potentially reflecting transitions between functionally distinct memory forms, or temporary reductions in internal cues required for memory retrieval. If transient memory lapses are fundamental to learning, they also should be prevalent in humans, and should occur for learning types other than those for which lapses have been documented previously—predominantly conditioning. In line with these predictions, we report two cases of transient memory lapses in humans 1-3 hours after training on a perceptual task. The results indicate that transient memory lapses occur in perceptual learning, a form of skill learning, and suggest that transient memory lapses may be a common but overlooked facet of memory formation in humans.

Email: Beverly Wright, b-wright@northwestern.edu

9:40-10:00 AM (149)

Integrating Models of Semantic and Episodic Memory to Predict Extranlist Intrusions in Serial Recall. DOMINIC GUITARD, *Cardiff University*, NELSON COWAN, *University of Missouri*, JEAN SAINT-AUBIN, *Université de Moncton*, J. NICK REID, *University of Northern British Columbia*, RANDALL K. JAMIESON, *University of Manitoba* — Human memory is reconstructive and thus memory performance is inherently imperfect. One of the most compelling signatures of that fact is false recall, a phenomenon observed in the lab but with troublesome repercussions in the real world. Models of memory have struggled to predict word-specific erroneous recalls. We address this challenge with the Embedded Computational Framework of Memory (eCFM), a model that integrates semantic memory representations into the MINERVA-2 model of episodic memory. We demonstrate that the eCFM predicts patterns of correct serial recall while also capturing patterns in people's intralist and extralist intrusions (e.g., critical lures). We do this in simulations applied to six experiments, with lists of words related or unrelated semantically (Experiments 1 & 2), phonologically (Experiments 3 & 4), and orthographically (Experiments 5 & 6). This approach demonstrates the benefits and opportunities of working to integrate across the traditionally separate areas of semantic and episodic memory.

Email: Dominic Guitard, guitardd@cardiff.ac.uk

Decision Making III

Saturday, November 23, 2024, 8:00-10:00 AM US EST

Chaired by Debra Titone, *McGill University*

8:00-8:20 AM (150)

Identifying Similarity- and Rule-Based Processes in Quantitative Judgments: A Multi-Method Approach Combining Cognitive Modeling and Eye Tracking. AGNES ROSNER, *Leibniz University Hannover*, FLORIAN SEITZ, *University of Basel*, REBECCA ALBRECHT, *University of Basel*, BETTINA VON HELVERSEN, *University of Bremen*, JÖRG RIESKAMP, *University of Basel* — Quantitative judgments from multiple cues have been suggested to result from a mixture of rule- and exemplar-based processing. This study examined whether the reliance on exemplars identified through cognitive modeling is

mirrored by gaze patterns to exemplar locations. Two eye-tracking studies, one with a multiplicative and one with an additive task, were conducted. Participants learned values and criterions of four exemplars presented on different screen corners, then made judgments about new transfer stimuli. Eye tracking measured gaze proportions to the empty corners (looking-at-nothing), while cognitive modeling with the RulEx-J framework assessed exemplar reliance. The findings revealed greater exemplar retrieval in multiplicative compared to additive tasks. Specifically, in the multiplicative task, participants who relied more on exemplars also looked more at the emptied exemplar locations, and in particular at the location associated with the exemplar most similar to the transfer stimulus. These results enhance our understanding of exemplar retrieval in multiple-cue judgments through the synergy of cognitive modeling and eye tracking.

Email: Agnes Rosner, agnes.rosner@psychologie.uni-hannover.de

8:20-8:40 AM (151)

Is There a Description-Experience Gap in Loss Aversion? A Meta-Analysis with Cumulative Prospect Theory. NUNO BUSCH, *Technische Universität Munich*, THORSTEN PACHUR, *Technische Universität Munich* — Loss aversion is one of the most prominent concepts in the study of risky decision making. Traditionally, research on loss aversion has utilized paradigms in which participants choose between risky options whose payoff distributions are given as summary descriptions (decisions from description). But to what extent does loss aversion also emerge in situations in which the payoff distributions are learned from experiential sampling—that is, in decisions from experience? To address this question, we conducted a meta-analysis, re-analyzing and synthesizing all existing datasets (total n>430 per condition) that allow for a direct comparison of decisions from description and decisions from experience based on mixed gambles (i.e., where the options can lead to either a gain or a loss). Analyzing the choices with cumulative prospect theory in a Bayesian framework indicates a reliably higher level of loss aversion in decisions from experience than in decisions from description. Possible mechanisms leading to this novel description-experience gap, such as asymmetric reinforcement learning during the sampling phase, are discussed.

Email: Nuno Busch, nuno.busch@tum.de

8:40-9:00 AM (152)

Just Asking Questions: Can an Implication

Generate an Illusory Truth Effect? IRA E.

HYMAN, JR., *Western Washington University*,

JASMINE BALMELLI-MORALES, *Western*

Washington University, MACALLAN ENNS-FORD,

Western Washington University, ANNIKA FIALA,

Western Washington University, ZOE GADBOW,

Western Washington University, MACY KNEIPP,

Western Washington University, ISABEL NGUYEN,

Western Washington University, GWEN PANE, *Western*

Washington University, MADELINE JALBERT,

University of Washington — People do not always

directly state false information. Instead, they make an

implication and leave their audience to generate the false

claim. We present two experiments in which people

generated true or false answers to trivia questions. We

expected self-generated information to lead to false

beliefs for a few reasons. First, self-generated

information undergoes deeper processing and is easier to

recall than information that is read (Slamecka & Graf,

1978). Additionally, statements encountered more

frequently are reliably rated as more true than statements

people only see once (Hasher et al., 1977). In our

research, participants were asked to read and generate

both true and false trivia answers. They then made truth

judgments for items that were new to them, previously

read, and previously generated. We found that

participants rated their self-generated answers and

answers they read as more true than the new statements.

People came to believe implied false information even

though it was not directly stated.

Email: Ira Hyman, ira.hyman@wwu.edu

9:00-9:20 AM (153)

Models of Planning in Dynamic Decision Making

JARED HOTALING, *University of Illinois Urbana-*

Champaign, DAVID KELLEN, *Syracuse University*,

WILL DENG, *University of Illinois Urbana-Champaign*

— Although most research into risky decision making

has focused on simple scenarios—where isolated choices

are made independent of one another—many important

decisions in life play out across sequences of

interdependent events and actions. Despite the ubiquity

and importance of such decision problems, we know

relatively little about how people manage the

complexities of dynamic, multistage decisions. Our work

combines techniques from two lines of research to

investigate how people handle the challenges of dynamic

decision making (DDM). From the econometric tradition we rely on a family of truth-and-error models that can be used to estimate the distribution and stability of preference profiles, and the presence of errors. In a complementary analysis, we use cognitive modeling to investigate the psychological processes underlying DDM. Decision Field Theory-Planning provides a unified framework for testing competing hypotheses about how people collect information and plan for the future. Results from both sets of analyses identify distinct groups of individuals. We discuss the behavioral and cognitive factors distinguishing groups from one another, including degree of planning, biased information sampling, and strategy shifts.

Email: Jared Hotaling, hotaling@illinois.edu

9:20-9:40 AM (154)

Range-Frequency Encoding in Memory

Representations. DOUGLAS H. WEDELL, *University*

of South Carolina, WILLIAM HAYES, *Binghamton*

University, SUNY — When making judgments and

decisions, relevant information must typically be

retrieved from memory. We review conditions that

promote range-frequency value representation in

memory. One line of research demonstrates that when

one member of a pair of stimuli must be held in memory

for just a few seconds, similarity judgments switch from

being context independent to being dependent on range-

frequency values. A second line of research demonstrates

how category based contexts effects emerge when

stimulus labels are first learned and judgments are

prompted from these labels. A third recent line of

research reveals how range-frequency valuation may

underlie the memory representations guiding

reinforcement learning, as reflected in strong context-

dependent choice preferences. These combined results

are consistent with the general idea that memory for fine-

grain detail is fragile whereas memory for gist is robust.

Range-frequency valuation provides a meaningful

context-dependent gist representation that can be

sustained in memory.

Email: Douglas Wedell, wedell@sc.edu

9:40-10:00 AM (155)

Reading and Thinking about Negative and

Positive Morality in a First and Second

Language. ESTEBAN HERNÁNDEZ-RIVERA,

McGill University, MARIANNE DUBÉ, *McGill*

University, KARLA TARIN, McGill University, ECE BAŞOĞLU, McGill University, DEBRA TITONE, McGill University — People make negative and positive moral decisions about others' actions based on dynamically evolving information. Relatedly, work on the Foreign Language Effect suggests that second language (L2) moral decisions are more objective and less emotional than first language (L1) moral decisions (e.g., Costa et al., 2019). To investigate these issues in the context of reading, we examined how bilingual adults read, generated, and used subsequent context to update negative and positive moral decisions using linguistically controlled texts in English. Participants read and made an initial moral decision about specific actions (John pushed Paul), then reread the action in context and repeated the decision (...Because Paul threatened John). Initial moral decisions were driven purely by emotional valence, however, updated decisions given subsequent context exonerated negative actions and discounted positive actions to a lesser degree. Regarding the foreign-language effect, L1-English readers exonerated negative actions to a greater degree than L2-English readers. These data suggest an under-explored role of basic reading processes in moral decision making.

Email: Esteban Hernández-Rivera,
esteban.hernandezrivera@mail.mcgill.ca

Attention: Capture I

Saturday, November 23, 2024, 8:00-10:00 AM US
EST

Chaired by Richard A. Abrams, *Washington University in St. Louis*

8:00-8:20 AM (156)

Attentional Suppression of Dynamic Motion and Static Salient Distractors. NICHOLAS GASPELIN, *University of Missouri*, OWEN J. ADAMS, *Binghamton University, SUNY* — A longstanding debate has been whether salient stimuli can involuntarily capture visual attention. The signal suppression hypothesis proposes that salient distractors vie for attention, but can be suppressed via top-down control mechanisms to prevent capture. Although this account has garnered much support, most prior studies have utilized only one class of salient distractors: color singletons. It therefore remains unclear whether other types of salient distractors, such as motion singletons or other kinds of static stimuli, can also be suppressed. The current study used shifts of gaze to directly compare suppression of

various kinds of static and dynamic motion singletons. We found that a wide variety of stimuli could be ignored, but suppression was generally less effective for dynamic motion singletons than static singletons.

Email: Nicholas Gaspelin, ngaspelin@missouri.edu

8:20-8:40 AM (157)

Bias-Free Measure of Distractor Suppression in Visual Search. RICHARD A. ABRAMS, *Washington University in St. Louis*, XIAOJIN MA, *University of Missouri* — Can salient, irrelevant distractors really be suppressed during visual search? Or do people decide to behave like they ignored the distractors? Some behavioral results supporting distractor suppression came from probe tasks in which, during visual search, participants are sometimes probed with letters superimposed on each shape to remember and later recall. Such unconstrained reports of probe letters have been shown to reflect, in part, biases of participants against reporting letters on the to-be-ignored distractor. As a result, such methods may overestimate the magnitude of suppression. To assesses attentional suppression in the absence of decision-level biases, we designed a simple and efficient new method. Rooted in the classical flanker compatibility effect, our experiments assessed allocation of attention to non-target elements by the degree to which the congruence of those elements with the target affected judgments about the target. Salient distractors were found to cause significantly smaller compatibility effects than non-salient items. The findings support a true mechanism of salient distractor inhibition independent of decision-level biases.

Email: Richard Abrams, rabrams@wustl.edu

8:40-9:00 AM (158)

The Effect of the Environmental Context on Distraction by Unexpected Stimuli. FABRICE B. R. PARMENTIER, *University of the Balearic Islands*, LAURA GALLEGOS-MUNAR, *University of Balearic Islands*, MICHAEL ENGLISH, *The University of Western Australia*, ANTONIA MICUCCI, *University of Bologna*, ALICIA LEIVA, *Distance University of Madrid*, PILAR ANDRÉS, *University of the Balearic Islands*, MURRAY M. T. MAYBERY, *The University of Western Australia* — Evidence indicates that when a task-irrelevant stimulus feature deviates from a predictable pattern, participants performing a categorization task exhibit slower responses (deviance



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distraction). We examined whether these predictions can be incidentally modulated by environmental context through two studies. In Study 1, participants categorized left/right arrows while ignoring irrelevant sounds (A/B) and background pictures of forest and city scenes, with sounds A and B presented with different probabilities ($p=.112$, $p=.882$) in one context, and with the reverse probabilities in the other. In Study 2, participants categorized the duration of colored shapes while disregarding specific visual features and background sounds (two distinct chords), with one visual stimulus rare in one auditory context ($p=.112$) but frequent in the other ($p=.882$), and vice versa. In both studies, participants were significantly slower following an unexpected stimulus deviation within the current context, demonstrating that sensory predictions are context-specific. Sequential analyses revealed that participants reset their sensory predictions instantaneously upon a change of visual context and slightly slower upon a change of auditory context.

Email: Fabrice Parmentier, fabrice.parmentier@uib.es

9:00-9:20 AM (159)

Transfer of Attentional Suppression Across Tasks.

JAN THEEUWES, *Vrije Universiteit Amsterdam*, DIRK VAN MOORSELAAR, *Vrije Universiteit Amsterdam* — Recent studies reveal that observers can learn to suppress specific locations in the visual field that have a high probability of distractor presence. Here we investigated whether such learned suppression transfers to a different search task. Observers engaged in the additional singleton task, learning to suppress a location likely to have a color singleton distractor. Within a session, the task would switch to a T-among-Ls search task, where observers searched for a T among Ls, either in parallel or serially. The task switch was either unpredictable or cued in advance. Results indicate that implicit learned biases are rather inflexible and remain in place even when the task and the required search strategy are dramatically different and even when participants know that a change in the search required is imminent. This suggests that learned biases persist even when tasks and strategies change. This finding supports the idea that suppression is proactively applied, reducing competition for attention at the suppressed location, regardless of task specifics. The findings are remarkable as it is generally agreed that implicit statistical learning is highly task specific with little to no transfer across tasks.

Email: Jan Theeuwes, j.theeuwes@vu.nl

9:20-9:40 AM (160)

Reward vs. Emotional Capture: What Do We Prioritize Under Rapid Temporal Constraints, and How Does This Change as We Age?

LINDSAY A. SANTACROCE, *Toronto Metropolitan University*, JULIA SPANIOL, *Toronto Metropolitan University* — A task-irrelevant emotional distractor in a rapid stream of fillers hinders report of a subsequent target (emotional attentional blink; EAB), showing that emotional stimuli take attentional priority. In younger adults, the EAB is reduced for targets with high reward value, suggesting that reward can override emotional influences on attentional prioritization. Research has yet to examine this reward-emotion interplay in older adults, though studies have separately shown age-related differences both in the EAB (particularly for negative distractors) and reward processing. The current study tested the hypothesis that reward-based modulation of the EAB would be reduced in older adults, particularly in the context of positive distractors. Older and Younger participants learned to associate a target category (houses, buildings) with reward before completing an EAB task with a target (high or low reward value) and distractor (negative, positive, scrambled) in a stream of scrambled images. The EAB was reduced in older adults, consistent with previous studies. Surprisingly, target reward value did not affect the EAB, suggesting possible temporal constraints for reward-emotion interactions in early attention.

Email: Lindsay Santacroce, lsantacroce@torontomu.ca

9:40-10:00 AM (161)

Stronger Suppression of More Salient Distractors Makes Search Easier.

BRAD T. STILWELL, *Texas A&M University*, BRIAN A. ANDERSON, *Texas A&M University* — Physically salient stimuli have been argued to automatically “capture” attention. However, highly salient color singleton distractors can be suppressed. Further, these highly salient distractors (e.g., a red item among blue items) are suppressed (e.g., oculomotor suppression) more efficiently than less salient ones (e.g., a teal item among blue items). Is it more effortful to suppress the more salient distractors? Observers are more willing to exert physical effort (e.g., via a hand dynamometer) in exchange for less demanding visual search tasks (e.g., reducing the number of distractors). Using this physical effort technique, we assessed whether observers’ perceived effort of suppressing high- versus low-salience singleton distractors matched their observed

oculomotor suppression. We replicated the pattern of greater suppression for high- than low-salience distractors and showed that participants exerted more physical effort in exchange for the opportunity to search through displays with the high-salience distractors. These results suggest that observers prefer the conditions in which they search most efficiently, even when these conditions involve stronger recruitment of suppressive mechanisms of distractor processing.

Email: Brad Stilwell, brad.t.stilwell@gmail.com

Learning and Memory I

**Saturday, November 23, 2024, 8:00-10:00 AM US
EST**

Chaired by Scott D. Slotnick, *Boston College*

8:00-8:20 AM (162)

Aging and Prospective Memory Offloading.

HUNTER BALL, *The University of Texas at Arlington*, CONNOR DUPRE, *The University of Texas at Arlington*, PHIL PEPER, *University of California, Riverside*, MATTHEW K. ROBISON, *University of Notre Dame* — Prospective memory (PM)—the process of remembering planned actions at the appropriate time in the future—is crucial for many daily activities and for maintaining functional independence with increased age. Offloading PM demands onto the environment (e.g., setting an alarm to take medication) offers an easy and effective way to mitigate age-related PM declines. However, a lack of basic knowledge about the cognitive and metacognitive processes that drive offloading decisions presents barriers to successful implementation. We address these issues by examining age differences in PM for offloaded (i.e., with reminders) and non-offloaded (i.e., without reminders) intentions. When given the choice to offload, older adults show the typical age-related deficits in PM performance relative to younger adults. This may in part reflect that older adults are overconfident in their own memory abilities and do not offload as frequently as they should. Critically, age differences in performance are eliminated when participants are forced to offload. These findings suggest that metacognitive errors may result in an underutilization of reminder systems that may otherwise circumvent cognitive capacity limitations and improve PM for older adults.

Email: Hunter Ball, hunter.ball@uta.edu

8:20-8:40 AM (163)

The Roles of Working Memory and Time Monitoring for Prospective Memory Performance.

WIEBKE B. HEMMING, *Heidelberg University*, KATHRIN SADUS, *Heidelberg University*, JAN RUMMEL, *Heidelberg University* — Time-based prospective memory (PM) refers to the ability to remember to execute an intended action at a predefined future time. Previous research suggests that both general cognitive abilities (working memory) and task specific abilities (time monitoring) underly time-based PM performance. In two studies, we investigated the relevance of specific WM processes (binding, updating) for time-based PM and unravel their interplay with task specific abilities. In Experiment 1 (N=132), we found that, in addition to strategic time monitoring, specifically WM updating abilities to be associated with PM performance. In Experiment 2 (N=148), we manipulated updating load in a new experimental design. We found PM performance to suffer when updating demands were increased but the effect vanished after controlling for strategic time monitoring. These findings emphasize the complex interplay between general cognitive ability and task specific abilities in time-based PM.

Email: Wiebke Hemming, wiebke.hemming@psychologie.uni-heidelberg.de

8:40-9:00 AM (164)

How Does Repeated Reading Work? Intervention Effects on Eye Movements and the Eye-Voice Span.

ATHANASSIOS PROTOPAPAS, *University of Oslo*, ANGELIKI ALTANI, *University of Maryland*, LAOURA ZIAKA, *Oslo University Hospital*, VASSILIKI DIAMANTI, *University of Oslo*, KRISTIN SIMONSEN, *University of Oslo*, DZAN ZELIHIC, *University of Oslo*, DAVID BRAZE, *independent scholar*, JOCHEN LAUBROCK, *University of Potsdam* — Repeated reading is an intervention where in each session a passage is read aloud several times, leading to increased fluency on trained passages and eventually modest transfer to unrelated passages. The origin and nature of the improvement remain unknown. Here we investigate the effects of a 24-session intervention on reading efficiency. We tracked eye movements and recorded vocal responses by 91 Norwegian fifth-graders as they read a near-transfer (NT) and a far-transfer (FT) passage for 1 minute each before and after intervention. Gaze and voice onset and offset per word were aligned to calculate latencies and eye-voice span. Preliminary

analyses indicate significant effects of intervention on onset latency, articulation duration (greater for NT passages), and go-past time; but not on first or single fixation duration or spatial onset and offset eye-voice span. Effects on gaze may have been more pronounced for challenging words encountered during intervention (present in NT passages). In sum, results suggest that the immediate effect of a brief repeated reading intervention is mediated by experience with reading specific words, primarily affecting late processing stages; the role of sentence context remains unclear.

Email: Athanassios Protopapas, protopap@gmail.com

9:00-9:20 AM (165)

Curiosity and Discrepancy Detection. JANET METCALFE, *Columbia University*, WILLIAM JAMES JACOBS, *University of Arizona* — Although curiosity is an essential component of cognition, the dominant theory of curiosity is hampered by a contradiction. On the one hand, curiosity is characterized by people's feeling that they "almost know" and want to reduce their uncertainty by getting the answer. On the other hand, exploration—choices to ignore any proximal goals and strike out into new territory—is considered to be the essence of curiosity. The curious individual, in a play-like manner, is eager to dabble in anything and everything, regardless of metacognitive proximity to an answer. Curiosity is defined by increasing uncertainty. Perhaps, though, human curiosity is not, fundamentally, about either increasing or decreasing uncertainty. We propose that curiosity is a mental propensity or set, an attentional filter that is tuned to highlight discrepancies. This mental set—to find the flaws—can occur both when the individual feels they are close to the solution and when they are playfully exploring. This view of curiosity has consequences for error detection, for critical thinking, for creativity, and for scientific progress.

Email: Janet Metcalfe, jm348@columbia.edu

9:20-9:40 AM (166)

Untangling the Threads of Motivated Memory: Independent Influences of Reward and Emotion. HOLLY J. BOWEN, *Southern Methodist University*, CHRISTOPHER R. MADAN, *University of Nottingham* — Despite the close link between reward motivation and emotion, their effects on memory are studied in separate lines of research. In the current studies, we manipulated motivational and emotional influences orthogonally, in the same task, to test their interplay on intentional

encoding. If emotion and motivation are tightly linked, they may rely on overlapping mechanisms, thus we would not expect emotion and reward to interact. Alternatively, they could be distinct constructs and therefore would boost memory when both are included in the same experimental trial, above and beyond additive effects. To test these competing predictions, in Experiment 1, participants completed a recognition task with emotional and neutral words intentionally encoded with high or low reward anticipation cues. In Experiment 2, participants encoded emotional and neutral words with a high or low reward cue, but memory was tested with free recall using study-test blocks. In Experiment 3 words were replaced with pictures. Across studies, there were main effects of emotion and reward in hypothesized directions, but no significant interaction. Their combination within a trial does not boost memory above either factor alone, in line with the former hypothesis of similar mechanisms.

Email: Holly Bowen, hbowen@smu.edu

9:40-10:00 AM (167)

Sex Differences in Signal Detection Measures of Spatial Memory. SCOTT D. SLOTNICK, *Boston College*, HALEY A. FRITCH, *Broad Institute, Massachusetts Institute of Technology & Harvard University*, SARA CORDES, *Boston College* — It is widely assumed that females and males use the same cognitive processes during a given task. We tested this assumption in two spatial memory experiments using signal detection analyses. In Experiment 1 (163 females, 138 males), during encoding, 20 objects were presented to the left or right of fixation. During retrieval, old objects were presented at fixation, where the left-right ratio was varied in 5 run types (5:1, 2:1, 1:1, 1:2, 1:5), and participants made "left"- "right" decisions. Females had higher d' values and the C value difference between the sexes was negatively correlated with run type. Of note, exclusion of participants at ceiling (of which there were more females) eliminated memory strength sex differences. Experiment 2 (185 females, 103 males) used the same protocol, but participants made 6-point confidence ratings during retrieval. Collapsing over confidence, the same pattern of results was observed. An unequal variance model analysis further revealed that males had a relatively greater C value range and target vs. lure distribution standard deviation ratio. These results show that females and males differ on all signal

detection measures of spatial memory and challenge the null sex differences assumption.

Email: Scott Slotnick, sd.slotnick@bc.edu

Semantics

Saturday, November 23, 2024, 8:00-10:00 AM US EST

Chaired by Penny M. Pexman, *The University of Western Ontario*

8:00-8:20 AM (168)

Simulation in the 'Blind' Mind: Do People with Aphantasia Show Sensorimotor Effects During Language Processing? EMIKO MURAKI, *University of Calgary*, PENNY M. PEXMAN, *The University of Western Ontario* — Multidimensional theories of semantic processing propose that word meaning involves unconscious simulation of sensory, motor, emotional, and linguistic experience. To date the mechanisms of simulation have been underspecified. It has been proposed that mental imagery may share mechanisms with sensorimotor simulation, but evidence to support this proposal is mixed. In the present study we examined whether individuals with aphantasia (i.e., no mental imagery) show sensorimotor effects during semantic processing. We recruited 104 aphantasics and 104 age-, gender-, and education-matched controls who completed two semantic processing tasks and a series of mental imagery questionnaires. We observed sensorimotor effects (i.e., faster responses to words associated with more sensorimotor experience) with both aphantasia and control participants. Our results suggest that unconscious sensorimotor simulation during semantic processing can occur in the absence of conscious mental imagery. The findings limit the extent to which mental imagery and sensorimotor simulation are likely to share underlying mechanisms.

Email: Emiko Muraki, ejmuraki@ucalgary.ca

8:20-8:40 AM (169)

Priming Is Consistent But Different Across Languages: The Data Release and Results from the Semantic Priming Across Many Languages Project. ERIN M. BUCHANAN, *Harrisburg University of Science and Technology*, PSYCHOLOGICAL SCIENCE ACCELERATOR, *Psychological Science Accelerator* — We will present details from the first version of the data released for the Semantic Priming

Across Many Languages Project and results of the priming analyses across languages. The dataset includes more than 35,000 participants who completed a lexical decision task priming study with more than 35 million total trials across 30 languages/dialects available for reuse. This study represents the largest semantic priming study to date in both the number of languages and participants studied. We will discuss how to access the data and related materials with the new semanticprimeR package. The results from pre-registered hypothesis testing indicated consistent, non-zero priming effects in all languages. Even though languages showed consistent patterns of item-level priming effects, we found variability in the average priming effect by language: Simplified Chinese, Japanese, and Serbian showed the largest priming effects with English, Greek, and Portuguese showing the smallest priming effects. These results provide evidence for cross-linguistic similarity and variation in priming covering multiple writing systems and cultures.

Email: Erin Buchanan, ebuchanan@harrisburgu.edu

8:40-9:00 AM (170)

Cumulative Semantic Interference Within Social Groups: Naming One Group Member Slows Down Naming Others. ANNA K. KUHLEN, *RWTH Aachen University*, MIRIAM MUSCATI, *RWTH Aachen University* — When naming related objects, naming latencies increase for each additional member named within a given taxonomic category (cumulative semantic interference). We capitalize on this effect to investigate representations of social groups, testing whether interference occurs when naming members of a common social group (e.g., characters from the same TV series). In an online experiment (N=38), participants typed out names of people and objects presented in a mixed sequence of photos representing 12 social and 12 taxonomic categories, each with five members. Naming latencies increased by about 70 ms with each additional member within social and taxonomic categories alike. Our results suggest that social categories are represented similarly to taxonomic categories. Activating the name of one group member appears to co-activate the names of other group members. Co-activated members may compete for selection during lexical retrieval or may need to be suppressed prior to articulation.

Email: Anna Kuhlen, anna.kuhlen@psych.rwth-aachen.de

9:00-9:20 AM (171)

Semantic and Pragmatic Violations Differentially Affect Memory for Sentence Final Words.

JESSICA E. D ALEXANDER, *Centenary College of Louisiana*, MACKENZIE G. WILLIAMS, *Centenary College of Louisiana* — When encountering spoken language, we predict how sentences might end based on the preceding words and the broader context. Previous research has shown that memory for expected and unexpected words differs based on the type of linguistic or social context and the level of processing. The present study examines the effects of semantic and pragmatic expectations on recognition memory. Participants read and heard sentences that aligned with semantic or gender expectations and sentences that violated semantic or gender expectations. For semantic trials, participants remembered unexpected words better. For gender trials, participants remembered expected words better. As hypothesized, in both semantic and gendered sentences, false alarms were committed most for expected lure words. Participants had better overall performance on the gendered sentences. The current study compares linguistic and social expectations and demonstrates a robust difference between the effects of semantic expectation and gender stereotypes on recognition memory.

Email: Jessica Alexander, alexander.jed@gmail.com

9:20-9:40 AM (172)

Structural and Processing Equivalences Between Graphical and Vector-Based Models of Knowledge Representation.

SHUFAN MAO, *University of Illinois Urbana-Champaign*, JON WILLITS, *University of Illinois Urbana-Champaign* — Graph and vector spaces are two representational forms commonly used in modeling knowledge structures and processes, but their relationship has not been extensively explored. In this work, we conceptualize and formally show that these two types of models can be related in terms of both structure and process. In particular, both traditional and "higher order" cosine similarity in vector spaces are mathematically equivalent to computing the "intersecting activation" on nodes in a network after the activation traversing direct and indirect paths. We use this equivalence and recent work in modeling of semantic memory to show that traditional cosine similarity in vector space may not fully exploit the information embedded in "higher order" representational

space. Inspired by the equivalence, we transfer vector space metrics to graphical processes and demonstrate that the "higher-order" information embedded in the vector space can be used to create more powerful representations of categories and accelerate learning in neural networks. Our result may have profound implications for both cognitive representational theory and machine learning practice.

Email: Shufan Mao, smao9@illinois.edu

9:40-10:00 AM (173)

Understanding the Unknown: Predicting Semantic Judgments for Novel Words Through a Computational Model.

MARCO MARELLI, *University of Milano-Bicocca*, DANIELE GATTI, *University of Pavia*, FRANCESCA RODIO, *University of Pavia*, LUCA RINALDI, *University of Pavia* — Pseudowords offer a unique opportunity to investigate how humans deal with novel verbal information. Previous studies have shown that, at the implicit level, humans are affected by systematic associations in the form-meaning interface, hence activating semantics on the ground of sub-lexical information. However, whether speakers exploit such processes in explicit judgements about the meanings elicited by unfamiliar words remains an open question. Here, we tested this relying on a computational model that is able to induce semantic representations for out-of-vocabulary stimuli by tracking the distributional history of sublexical units (i.e., character ngrams). Two two-alternative-forced-choice experiments were run, asking participants to estimate the semantic associations between novel and familiar words. Participants' guesses in both experiments consistently align with the model predictions (Experiment 1: prob=66%, p<.001; Experiment 2: prob=58%, p=.01) and is independent from surface-level similarity or morphological information. This indicates that the distributional history of sublexical units convey semantics and that the ability to extract meaningful knowledge from complex statistical patterns can affect explicit decisions.

Email: Marco Marelli, marco.marelli@unimib.it

Cognition: Neural Mechanisms

Saturday, November 23, 2024, 8:00-10:00 AM US
EST

Chaired by Arnold L. Glass, *Rutgers University—New Brunswick*

8:00-8:20 AM (174)

A Tale from the X-Files of Psychology: Spatial Location of Response Key Selects the Neural System for Visual Recognition.

ARNOLD L. GLASS, *Rutgers University—New Brunswick* — An observer had to respond rapidly whether a test consonant had just appeared in the study string by pressing one of two response keys, labeled "same" and "different". When the "same" response was assigned to the right response key, there was no effect of study-string position on target RT, indicating that test item was not compared with the study string. When the "same" response was assigned to the left response key, same RT was an increasing function of the left-to-right position of a target in the study string and different RT was slower than same RT, indicating that during test the study string was compared from left to right with the test item. fMRI confirmed that right caudate and left hippocampus were active when "same" was assigned to the left location but only the right hippocampus was active when "same" was assigned to the right location. Therefore, two completely different computational processes performed by two different brain systems performed the task depending on whether the right response key was assigned the "same" or "different" response.

Email: Arnold Glass, aglass@rutgers.edu

8:20-8:40 AM (175)

Active and Passive Forgetting Processes: Evidence from Directed Forgetting.

LILI SAHAKYAN, *University of Illinois Urbana-Champaign*, JONATHON WHITLOCK, *University of Illinois Urbana-Champaign* — The mechanisms engaged in directed forgetting (DF) have been the topic of continuous debate, particularly concerning the role of additional processes beyond selective rehearsal of to-be-remembered (TBR) material. These additional mechanisms include the role of inhibitory processes, and/or the unbinding of items from their context, in order to further downgrade unwanted information beyond passively forgetting. In this talk, we provide evidence in item-method DF using concurrent measures such as eye-

tracking, delayed testing, and fMRI, that successful intentional forgetting engages different processes than incidental (accidental) forgetting. Collectively, the evidence across several domains suggests that active and passive forgetting processes are dissociable from those that involve strong and weak memories, indicating that differences in rehearsal do not fully explain the pattern observed in intentional forgetting. We propose an updated view of directed forgetting mechanisms that contribute to our understanding of intentional forgetting of unwanted information.

Email: Lili Sahakyan, lsahaky@illinois.edu

8:40-9:00 AM (176)

Converging Theories of Mind and Brain.

CHAD DUBÉ, *University of South Florida*, KENNETH MALMBERG, *University of South Florida* — Over the past 60 years, different researchers have developed mathematical models of cognitive processing, on the one hand, and neural processing, on the other. The models are frequently viewed as separate entities aimed at different phenomena and different levels of Marr's taxonomy. We demonstrate that in fact the models are formally equivalent members of a family of models that descend from the Hodgkin-Huxley equations that describe the action potential. We show that, though not a necessary condition for membership in the family, non-trivial models in the family share a dependence on a Luce strength function. Hence, these findings indicate that Luce's Existence Theorem provides a key link between mind and brain. We conjecture that conscious and neural states obey a shared functional form that can be mathematically characterized.

Email: Chad Dubé, chaddube@usf.edu

9:00-9:20 AM (177)

Pause or Cancel? The Role of Intracortical Inhibition in Stopping an Action.

EVAN J. LIVESEY, *The University of Sydney*, YUAN DING, *The University of Sydney*, HAZEL HUYNH, *The University of Sydney*, DOMINIC M. D. TRAN, *The University of Sydney* — Successfully stopping a prepotent action (response inhibition) is considered a goal-driven process that requires cognitive control, and is closely associated with GABA-mediated intracortical inhibition in motor cortex. Recent evidence suggests that response inhibition involves two distinct processes, a fast "pause" process automatically elicited by any unexpected salient stimulus, and a slower "cancel" process that selectively



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disengages the prepared action. For instance, research using transcranial magnetic stimulation (TMS) to probe the motor system suggests that a sudden stimulus onset temporarily suppresses corticospinal excitability, even when the stimulus does not signal stopping, raising questions about the precise role played by inhibitory mechanisms in controlled stopping. In this study, we used TMS with a modified stop signal task in which a go and either stop or ignore signals were presented on every trial. Across multiple experiments, we found evidence of rapid modulation of GABAergic inhibition that cannot be attributed to sudden stimulus onset and is specific to the goal of stopping. The results have implications for both the speed of goal-directed action cancellation and the role of intracortical inhibition.

Email: Evan Livesey, evan.livesey@sydney.edu.au

9:20-9:40 AM (178)

Conscious Awareness Hanging by a Thread—A Study of the Disconnection Syndrome. MICHAEL B. MILLER, *University of California, Santa Barbara*, SELIN BEKIR, *University of California, Santa Barbara* — Six decades of split-brain research have revealed striking effects of hemispheric severance on cognition, resulting in a disruption of the unity of conscious experience, known as the disconnection syndrome. In this study, we investigate a new cohort of split-brain patients, four with complete and two with partial callosotomies. Notably, one of the partial callosotomy patients retained only a 1 cm segment of the splenium. As expected, all complete callosotomy patients exhibited disconnection syndrome across a range of sensory-motor lateralized tasks. Surprisingly, both partial callosotomy patients, including the patient with only a small segment of the splenium intact, exhibited no discernible disconnection syndrome. Moreover, post-surgery resting-state functional connectivity analyses showed a profound decrease in inter-hemispheric connectivity in complete callosotomy patients as opposed to the preservation of such connectivity in partial patients. Our novel findings suggest that even a remarkably small intact segment of the posterior corpus callosum can integrate conscious experience across hemispheres. These results challenge traditional conceptions and highlight the need for a nuanced understanding of hemispheric integration.

Email: Michael Miller, miller@psych.ucsb.edu

9:40-10:00 AM (179)

Distinct Impairments in Sensorimotor

Integration Mediate Auditory Hallucinations in Schizophrenia. XING TIAN, *NYU Shanghai*, FUYIN YANG, *NYU Shanghai* — Distinguishing reality from hallucinations requires efficient monitoring of agency. It has been hypothesized that a copy of motor signals, termed efference copy (EC) or corollary discharge (CD), suppresses sensory responses to yield a sense of agency; impairment of the inhibitory function leads to hallucinations. However, how can the sole absence of inhibition yield positive symptoms of hallucinations? We hypothesize that selective impairments in functionally distinct signals of CD and EC cause the positive symptoms of hallucinations. In an EEG speaking experiment in schizophrenic patients with (AVHs) and without (non-AVHs) auditory hallucinations, we found that preparing to speak without knowing the contents did not suppress auditory responses in both groups. Whereas, preparing to speak a syllable enhanced the auditory responses to the prepared syllable in non-AVHs, but AVHs showed enhancement for unprepared syllables. "Broken" CD plus "noisy" EC causes erroneous monitoring on the imprecise internal auditory representation and yields hallucinations.

Email: Xing Tian, xing.tian@nyu.edu

Symposium IV: New Frontiers in the Cognitive Sciences of Music and Health

Saturday, November 23, 2024, 10:00 AM-12:00 PM
US EST

10:00-10:20 AM (SYM16)

Cognitive Scientific Models of Music Processing.

DANIEL J. LEVITIN, *Minerva University* — This talk presents a framework for music processing, arguing that it builds upon fundamental perceptual-cognitive abilities that evolved for threat detection, prediction, and emotional communication. While past research has focused on isolated musical features like pitch, duration, and loudness, I posit a holistic and configural approach, akin to Gestalt psychology. This framework explains the seemingly paradoxical universality of music's emotional impact—from Bach to Keith Jarrett, and Snoop Dog to Selena Gomez, listeners report similar feelings and exhibit similar brain activity despite stylistic differences. Music's power lies in its unique ability to synergistically activate a range of neurological, neurochemical, and bodily systems. However, music's therapeutic potential

(mood regulation, pain relief, disorder treatment) stems from its inherent ambiguity. This lack of a single "correct" interpretation allows for individual engagement and fosters a powerful, personal connection, ultimately contributing to its efficacy as a therapeutic tool.

Email: Daniel Levitin, dlevitin@minerva.edu

10:20-10:40 AM (SYM17)

The Brain's Crescendo: How Music Training Enriches Neurocognitive Development Across the Lifespan—Evidence from Longitudinal and Cross-Sectional Studies.

ASSAL HABIBI, University of Southern California — Musically trained individuals demonstrate superior performance in various domains of auditory and cognitive function, encompassing language, working memory, and executive control. Neuroimaging investigations have revealed notable distinctions in the neural engagement of auditory and executive networks between musicians and non-musicians. Here, we share findings from a series of longitudinal and cross-sectional studies exploring the impact of musical training over the lifespan. The results from the first two studies demonstrate that music training in children leads to enhanced speech perception accompanied by neuroplastic structural and functional changes in the auditory regions, as evidenced by MRI and event-related potentials. Additionally, we highlight music training's positive association with executive function, manifesting as differences in both behavioral and neural responses. The third study provides evidence that participating in short-term musical activities leads to better speech in noise perception accompanied by differences in auditory evoked potentials in older adults without prior music training. Findings suggest that brain-to-behavior changes induced by music training can support well-being across the lifespan.

Email: Assal Habibi, ahabibi@usc.edu

10:40-11:00 AM (SYM18)

Evolutionary Basis of Music.

PSYCHE LOUI, Northeastern University — Why do humans have music? The evolutionary origins of musicality (the ability to produce and appreciate music) have been under debate since Darwinian times, but recent advances in music cognition, using citizen science approaches, have reinvigorated this classic conundrum. Referencing work from sociology, anthropology, developmental and cross-cultural psychology, and neuroscience perspectives, we

have recently advanced the overarching hypothesis that musicality is a product of gene-culture coevolution that serves the purpose of social bonding. Here I review recent results from my lab and others that translate this theoretical model into testable hypotheses in cognitive neuroscience as well as clinical studies of music-based interventions. Results shed light on the theoretical model at proximate and ultimate levels. At a proximate level, acoustical features of music can be manipulated to inform predictions that tap into the brain's reward network, creating a musical system that is unfamiliar but rewarding. At an ultimate level, these musical features inform the design of interventions that bring humans closer together through shared imaginations that may shape the evolution of cultures.

Email: Psyche Loui, p.loui@northeastern.edu

11:00-11:20 AM (SYM19)

Music and Memory.

PETR JANATA, University of California, Davis — Involuntary musical mental imagery (INMI) and music-evoked remembering count among the ubiquitous experiences of the human mind. Tapping procedural and episodic memory systems, respectively, the two phenomena may seem unrelated at first. I will link these phenomena functionally by presenting evidence that INMI serves as a consolidation mechanism both for the music and for associated non-musical information. Persistent INMI can be elicited by modest amounts of concentrated exposure to 8-second musical loops. The amount INMI predicts performance on a mental imagery task used to assess the quality of a loop's memory representation. Experiments utilizing sets of loops as soundtracks for 2-minute silent movies reveal better retention of plot details from those segments uniquely associated with loops with the greatest amounts of INMI. Further experiments suggest that the memory consolidation benefits of INMI are restricted to sequentially, rather than statically, presented information. In sum, these findings provide a possible explanation for the efficacy of music as a retrieval cue for remote autobiographical memories, even under conditions of diminished mnemonic functioning, as in mild cognitive impairment and Alzheimer's disease.

Email: Petr Janata, pjanata@ucdavis.edu

11:20-11:40 AM (SYM20)

Musical Preferences and a Theory of Musical Aesthetics.

PETER J. RENFROW, University of Cambridge — Music is an integral part of the human

experience. It moves us to sing, dance, laugh, and cry. We listen to when we're alone and when we're with others. But music is more than just a form of entertainment. It is deeply entwined with our social and psychological worlds. Recent research in the social psychology of music has begun to cast light on the role music plays in shaping and reflecting our identities, emotions, and social connections. Drawing upon research across various disciplines, this presentation will highlight recent work on the psychological basis of musical preferences, the various ways in which individuals use music in their daily lives, and how music serves as a vehicle for self-expression. By considering the multiple functions of music, from emotional regulation to social bonding, this presentation aims to highlight the relevance of social psychology for developing a more complete understanding of our relationship to music.

Email: Peter Renfrow, pjr39@cam.ac.uk

Language

**Saturday, November 23, 2024, 10:00 AM-12:00 PM
US EST**

Chaired by Ying Li, *Chinese Academy of Sciences*

10:00-10:20 AM (180)

**Coordination While Speaking or Texting:
Managing Medium Constraints in a Referential
Communication Task.** CATHERINE APGAR,
University of Pennsylvania, DELPHINE DAHAN,
University of Pennsylvania — Conversational partners have methods to maintain joint coordination with the least effort possible. Fast-paced texting resembles spoken conversation but a lack of co-temporality makes coordinating turns and repairs more effortful. Do language users adjust to the constraints of their medium? In a referential communication task, two participants faced a 4x4 grid with a set of cards displaying everyday objects. One participant, the director, instructed the other to reorganize their grid to match the director's. They then repeated the task, thus referring to each card twice. Participants interacted orally across a divider or in two separate rooms using a text chat. When speaking, directors almost always proceeded card by card with matchers briefly acknowledging their understanding or, albeit rarely, initiating a repair. In text, by contrast, directors tended to proceed by rows, thereby reducing turns but increasing effort necessary for repairs. In examining the words used for each object's repeated

reference, texters were less likely to diverge from the words they had used before than were speakers, perhaps to minimize the need for repair. Thus, people appear to be exquisitely attuned to the constraints of their medium.

Email: Catherine Apgar, capgar@sas.upenn.edu

10:20-10:40 AM (181)

Frontal Cortex Response During Processing of Novel Metaphors in Creative and Analytical Tasks. DANIEL MIRMAN, *University of Edinburgh*, MELISSA THYE, *University of Edinburgh*, NICOLA BURNS, *University of Edinburgh*, PATRICK ERRINGTON, *University of Edinburgh* — Figurative language, such as metaphors and poetry, serves both communicative and aesthetic functions. Novel metaphors are more difficult to process than their literal and familiar counterparts, but people often find them pleasurable. Following theoretical work predicting a U-shaped relationship between difficulty and pleasure, we found that, as novelised metaphors became more distant from the familiar metaphor, they were judged more difficult to comprehend (a monotonic relationship), but those of intermediate difficulty were rated most pleasurable (a U-shaped relationship). This study used functional near-infrared spectroscopy to measure frontal cortex activation during processing of these novel metaphors in two task conditions: an analytic task and a creative task. Intermediate-difficulty high-pleasure metaphors tended to have lower activation during the analytic task, particularly in dorsolateral and ventrolateral prefrontal cortex, but higher activation during the creative task, particularly in ventrolateral prefrontal cortex and the frontal pole. These results form a foundation for further research on aesthetic aspects of language processing and the effects of reader task set.

Email: Daniel Mirman, dan@danmirman.org

10:40-11:00 AM (182)

Competition or Cooperation? Lexical Coactivation in Action Naming. GARY M. OPPENHEIM, *Bangor University*, ZENZI GRIFFIN, *The University of Texas at Austin* — Naming a picture with a less probable modal name is slower (the classic name agreement effect), a strong and replicable finding usually attributed to competition in the name selection process. Complicating this explanation, a recent object naming study showed similar "facilitation" from strong secondary names: producing the modal name for a

picture with a stronger alternative name (i.e., competitor) is faster, not slower, than one with only weaker alternatives (Oppenheim, submitted). We replicate and extend this finding to action naming, using a novel multi-site, multi-dialect design to assess within-item variations in lexical coactivation. Action words (~verbs) are acquired later than object words and thought to differ in cognitive and neural processing. Analyses of keystroke RTs for 101 participants (50 UK; 51 US) naming 424 images via a web-based timed typing task confirm the presence of both effects in action naming, and show for the first time that using the same modal name for the same picture is faster when one has better alternatives. Thus, alternatives do not detectably hinder lexical selection in either object or action naming, but rather "cooperate" in the sense of filling in for the modal name as needed.

Email: Gary Oppenheim, g.m oppenheim@bangor.ac.uk

11:00-11:20 AM (183)

Emotional Valence of Phonemes: Application to Brand Names. JAMES S. ADELMAN, *University of Warwick*, ZACHARY ESTES, *Bayes Business School*, ELENA BOCCHI, *Bayes Business School* — Some phonemes are more likely to occur in positive words, while others are more common in negative words. Here, we investigated whether this distribution has behavioral consequences for novel items in the form of brand names. We show that (i) brand names with more positive phonemes and fewer negative phonemes are associated with greater willingness to buy (bottled water); (ii) that this association is mediated by the emotional evaluation of the brand name (of a taxi app); and (iii) that the association is moderated by the positive or negative connotations of the product (plant food vs. weed killer). It appears that consumers are sensitive to the emotional distribution of phonemes and it affects their preferences.

Email: James Adelman, j.s.adelman@warwick.ac.uk

11:20-11:40 AM (184)

Tap, Tap, Don't Tell Me: Benefit of Movement to Lexical Retrieval Increases with the Number of Phonemes. SUSAN RAVIZZA, *Michigan State University* — Attempting to retrieve a word in a tip-of-the-tongue state is often accompanied by beat gestures, and these repetitive movements can aid lexical retrieval. Three potential explanations of this effect were tested. Experiment 1 tested whether beat gestures distract from

active retrieval attempts to allow interfering information to decay. Participants were presented with definitions and asked to retrieve the corresponding word. If the word was not recalled immediately, they were given 20 seconds to retrieve the word while either tapping, tracking a visual stimulus, both or neither. More words were retrieved in the movement conditions, but no advantage was observed when the secondary task lacked a motor component. Experiment 2 investigated if beat gestures were related to motor representations.

Participants were asked to retrieve words that varied in number of phonemes and the degree to which the word was associated with hand actions (e.g., croquet vs, jurisdiction). Movement was more beneficial to words with a higher number of phonemes but was unrelated to the strength of hand action associations. These results suggest that beat gestures aid resolution of words in a TOT state by increasing activation of motor speech representations.

Email: Susan Ravizza, ravizzas@msu.edu

11:40 AM-12:00 PM (185)

Struggle for Life Among Words: How Cognitive Selection Shapes Language Change. YING LI, *Chinese Academy of Sciences*, FRITZ BREITHAUPT, *Indiana University*, THOMAS HILLS, *University of Warwick*, ZIYONG LIN, *Max Planck Institute for Human Development*, YANYAN CHEN, *Chinese Academy of Sciences*, CYNTHIA S. Q. SIEW, *National University of Singapore* — Like biological species, words in language must compete to survive. It has been shown that language changes in response to cognitive constraints and over time becomes more learnable. Here, we use two complementary research paradigms to demonstrate how the survival of existing word forms can be predicted by psycholinguistic properties that impact language production. In the first study, we analyzed the survival of words in the context of a serial-reproduction experiment in which stories were passed down along a transmission chain over multiple participants. The results show that words that are acquired earlier in life, more concrete, more arousing, and more emotional are more likely to survive retellings. We reason that the same trend might scale up to language evolution over multiple generations of natural language users. Indeed in study 2, we found the same trend in two large historical language corpora spanning the past 200 years: Early acquisition, concreteness, and high arousal all predict increasing word frequency over the past 200 years. By bridging

micro-level behavioral preferences and macro-level language patterns, our investigation sheds light on the cognitive mechanisms underlying word competition.

Email: Ying Li, liying@psych.ac.cn

Decision Making IV

Saturday, November 23, 2024, 10:00 AM-12:00 PM
US EST

Chaired by Chris Donkin, *Ludwig-Maximilians-Universität München*

10:00-10:20 AM (186)

Rushed Decisions Rely on Confirmation Bias,

Not Less Caution: A New Account of the Speed-

Accuracy Trade-Off.

CHRIS DONKIN, *Ludwig-Maximilians-Universität München*, JIASHUN WANG, *Ludwig-Maximilians-Universität München*, NATHAN EVANS, *University of Liverpool* — That accuracy gets worse when decisions are made under time pressure is a well-established property of human cognition. For simple decisions, it is practically unquestioned that this result is because participants collect less evidence when forced to make quick decisions. We show that an alternative model, in which evidence accumulation is self-excitatory when fast decisions are emphasized, provides a better account of the speed-accuracy trade-off across six existing data sets. We highlight the behavioral phenomenon that the self-excitation account better captures than the traditional evidence-threshold model, and we show that the self-excitation model is more parsimonious than a collapsing-evidence-threshold model that is also capable of capturing this data pattern. We finish by suggesting that the self-excitation emerges from a confirmation bias in attention-allocation, such that initially promising evidence is preferentially attended when a fast decision must be made.

Email: Chris Donkin, christopher.donkin@gmail.com

10:20-10:40 AM (187)

The Effect of Inoculation Interventions on Older Adults' Belief in Repeated News Headlines.

JESSICA UDRY, *Texas A&M Commerce*, SARAH BARBER, *Georgia State University* — Inoculation interventions can improve discernment between true and false information. This study tested whether these interventions differ in effectiveness between younger and older adults and across new versus repeated information. Some research has shown that older adults engage more

with online misinformation, but may benefit less from misinformation interventions, particularly over a delay. Research has also shown that repetition increases belief, and this illusory truth effect may be more pronounced for older adults. Given that online misinformation is often repeated, we tested whether inoculation intervention efficacy varies between new and repeated misinformation. To evaluate these aims, younger and older adult participants first viewed an inoculation intervention video, and then viewed misleading and non-misleading social media posts. Both immediately and after a two-week delay participants rated the perceived truth of repeated and new headlines. Contrary to prior results, the inoculation intervention was not effective in improving discernment between true and false information for either younger or older adults. Although repetition increased belief, the inoculation intervention did not reduce the magnitude of this effect.

Email: Jessica Udry, jessicaudry@gmail.com

10:40-11:00 AM (188)

Timing and Prior Experience: Combining Descriptive and Experiential Information in

Risky Choice. EMMANOUIL KONSTANTINIDIS, *University of Warwick*, LEONARDO WEISS-COHEN, *University of Nottingham*, TIM RAKOW, *King's College London* — When making decisions, people learn about choice options in two fundamental ways: reading descriptive summaries and direct personal experience. We investigate decisions when both description and experience are available concurrently, evaluating the effect of the order in which they are presented, in comparison to decisions from experience or description alone. The task required participants to make 18 decisions between lottery pairs. Each lottery pair had an option favoured by typical parameterisations of cumulative prospect theory and overweighting of rare events (CPT-Choice). Results showed that both sources of information were used when they were concurrently available. The order of presentation influenced decisions, with participants choosing the CPT-Choice more frequently when they were shown descriptions before experience, and less frequently when descriptions followed experience. In addition, reaction to rare events was stronger when descriptions were presented after experience. This research extends our understanding of how different sources of information (i.e., description and experience) are integrated. We discuss how prior



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information influences the way in which later information about risk is interpreted.

Email: Emmanouil Konstantinidis, em.konstantinidis@gmail.com

11:00-11:20 AM (189)

Trapped by Selective Attention: The Role of Attentional Processes in Learning Traps. BRETT K. HAYES, *University of New South Wales*, POPPY WATSON, *University of Technology Sydney*, YANJUN LIU, *University of New South Wales*, WON JAE LEE, *University of New South Wales*, JAIME LEE, *University of New South Wales*, BEN R. NEWELL, *UNSW Sydney* — Learning traps are cycles of suboptimal decision-making where a false belief about reward structure leads to avoidance of rewarding options. Three experiments examined the role of selective attention in these traps. Participants learned to approach or avoid members of two categories, associated with gains or losses respectively. A rule involving visual features on two dimensions always predicted category membership. Outcome feedback was provided only when an item was approached. All studies found that many participants fell into the trap of using a single dimension to predict outcomes and consequently missed rewards. Eye tracking in Experiment 1 confirmed that these participants narrowed their attention to a single dimension, neglecting other predictive features. In Experiment 2, feature salience was increased by highlighting all features with a colored ring. This reduced attention to a single dimension but did not improve learning of the correct rule. In Experiment 3, only predictive features were highlighted. This reduced both selective attention and trap prevalence. These results deepen insights into the psychological mechanisms that underlie learning traps and suggest how they can be prevented.

Email: Brett Hayes, b.hayes@unsw.edu.au

11:20-11:40 AM (190)

Understanding and Predicting Vaccination Hesitancy: A Fuzzy-Trace Theory Approach. V. F. REYNA, *Cornell University*, SARAH EDELSON, *Cornell University*, AADYA SINGH, *Cornell University*, DAVID GARAVITO, *University of Washington*, BRENDA KIM, *Cornell University* — According to fuzzy-trace theory, risk is mentally represented at multiple levels of precision—categorically, ordinally, and quantitatively—and the overall gist of risks and benefits

is then mapped onto core values to make vaccination decisions. We recruited vaccine hesitant (VH, N=250) and other community (C, N=755) participants to test whether these constructs account for substantial and distinct variance in vaccination intentions and behaviors, controlling for political ideology and trust in science. Categorical gist (only takes once), ordinal gist (low-high), and quantitative (0%-100%) risk measures were entered into PCAs with values and knowledge, yielding 3 orthogonal dimensions: overall gist and quantitative dimensions in both samples plus vaccination risk in VH and ordinal gist in C. These orthogonal dimensions predicted intentions (wanting, planning, and willingness to vaccinate) and behavior, controlling for politics and trust. Results confirmed predictions: Intentions and behavior were most strongly predicted by gist; when quantitative measures of risk contributed to vaccination intentions or behavior, they did so independently of gist; and perceived vaccination risk contributed unique variance for the vaccine hesitant.

Email: V. Reyna, vr53@cornell.edu

11:40 AM-12:00 PM (191)

Understanding Race Bias in the Decision to Shoot with an Integrated Model of Decision Making. TIMOTHY PLESKAC, *Indiana University Bloomington*, JOSEPH CESARIO, *Michigan State University*, TAOSHENG LIU, *Michigan State University* — The shooting of unarmed Black males by police officers is a critical issue in the United States today. We introduce the Attention-integrated Model-based Shooting Simulator (AiMSS) to examine how race, suspect behavior, and policing scenarios affect officers' decisions to shoot. To analyze these decisions, AiMSS integrates decision-making models, visual psychophysics, eye-tracking, social affective measures, and an immersive simulator. Results show that (a) policing scenarios and suspect behavior significantly influence decisions; (b) errors are higher for unarmed suspects, with some evidence of greater errors for Black vs. White suspects; (c) the race effect is partly due to an initial bias and decreased sensitivity linked to perceived threat; and (d) training significantly reduces these race effects. This work offers a new method to understand the decision-making process in shootings, showing how social and cognitive sources affect different decision components and stages.

Email: Timothy Pleskac, tpleskac@iu.edu

Attention: Capture II

Saturday, November 23, 2024, 10:00 AM-12:00 PM
US EST

Chaired by Mike Le Pelley, *University of New South Wales*

10:00-10:20 AM (192)

Uncertainty-Modulated Attentional Capture.

MIKE LE PELLEY, *University of New South Wales*, KELLY GARNER, *UNSW Sydney*, DANIEL PEARSON, *The University of Sydney*, JULIE CHOW, *UNSW Sydney*, JAN THEEUWES, *Vrije Universiteit Amsterdam* — It has been argued that the motivation to gain information (and hence reduce uncertainty) represents a primary driver of human cognition and behavior. However, in a challenge to this prevailing dogma of information-seeking, we will describe circumstances in which rapid and automatic attentional processes prioritize stimuli associated with reward uncertainty over those that provide diagnostic information. This pattern of uncertainty-modulated attentional capture (UMAC) is a quantitative function of the amount of uncertainty (in terms of both entropy and variance) signaled by stimuli, and requires direct experience of reward prediction error. Our findings suggest two possibilities: UMAC may reflect a process of “attention for learning” operating at an implicit level, or may evince an attentional system that is configured for rapid detection of sources of experienced uncertainty so that subsequent behavior can be tailored appropriately.

Email: Mike Le Pelley, m.lepelley@unsw.edu.au

10:20-10:40 AM (193)

What Can a Model of Guided Visual Search Tell Us About Attention Capture? RAUL GRIEBEN,

Ruhr-Universität Bochum, JOHN P. SPENCER, *University of East Anglia*, GREGOR SCHOENER, *Ruhr-Universität Bochum* — Whether task-irrelevant salient stimuli capture attention has been the subject of a longstanding and as yet unresolved debate (Luck et al., 2021). The debate has led to the introduction of different modes of attentional control (Bacon & Egeth, 1994), to the signal-suppression hypothesis (Gaspelin et al., 2015), and to the attentional window account (Theeuwes, 2023) as possible explanations. Here, we present a neural process model of visual search that accounts for 1) the unexpected efficiency of triple conjunction search (Nordfang & Wolfe, 2014), 2) the influence of a task-irrelevant size singleton on search (Proulx, 2007), and 3)

how a third correlated but task-irrelevant feature improves search efficiency (Found, 1998). Surprisingly, the model also accounts for critical findings in the attention capture literature (Theeuwes, 1992; Bacon & Egeth, 1994; Gaspelin et al., 2015; Gaspelin & Luck, 2018; Lien et al., 2021) without requiring free parameters or adding special-purpose mechanisms or modes. Revisiting the role of top-down and bottom-up guidance in visual search and uncovering the underlying neural processes, we demonstrate that attention capture and guided visual search overlap more strongly than previously expected.

Email: Raul Grieben, raul.grieben@ini.rub.de

10:40-11:00 AM (194)

What's 'Reactive' about Proactive Suppression?

HAN ZHANG, *University of Michigan*, DANIEL H. WEISSMAN, *University of Michigan*, JOHN JONIDES, *University of Michigan* — A salient distractor can be proactively suppressed based on a nonspatial feature such as color. Here we investigate whether this suppression involves encoding the distractor's location after display onset. To search for traces of such encoding, we examined inter-trial priming effects in published datasets that measured saccadic behavior. We found that the location containing a distractor in the previous trial continued to be suppressed in the next trial, indicating that the previous distractor's location was encoded. Importantly, this effect occurred only if there was no overt shift of attention toward the distractor on the previous trial. If such a shift occurred, reflecting a failure of proactive suppression, then attention was biased toward—not away from—the same location in the next trial. These results suggest that feature-based proactive suppression in fact has a “reactive” component, which rapidly identifies and then rejects a distractor's location after it appears.

Email: Han Zhang, hanzh@umich.edu

11:00-11:20 AM (195)

When Is Suppression Tuned to a Specific Feature Value? Distinct Suppression Strategies Tailored to Task Demands. ISAAC SAVELSON, *The Ohio State University*, ANDREW B. LEBER, *The Ohio State University*

— Humans have a robust ability to reduce distraction by irrelevant stimuli after repeated encounters. It has been argued that this is achieved via suppression of a specific feature value (e.g., red;



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Vatterott & Vecera, 2012), or suppression of a more abstract “feature-general” property, such as salience (i.e., “second-order suppression”; Won et al., 2019). The current study aimed to contrast feature-specific vs. feature-general suppression mechanisms, by manipulating the frequency of changes to the color of a salient distractor. Using a visual search containing a uniquely colored singleton distractor, we presented participants with short “fixed” runs of trials, which contained the same distractor color, or “mixed” runs of trials, in which the distractor color randomly changed from trial to trial. Based on trial-by-trial analyses of the runs, we found that feature-general suppression was used only in the mixed runs, while feature-specific suppression was used in the fixed runs. Both types of suppression yielded similarly effective reductions in distraction. These results suggest that individuals have access to a highly effective feature-general suppression strategy but will only use it when a feature-specific strategy is unavailable.

Email: Isaac Savelson, savelson.1@osu.edu

11:20-11:40 AM (196)

Salience, Distraction, and the Distractor

Positivity (PD). JOHN MCDONALD, *Simon Fraser University*, DANIEL TAY, *Simon Fraser University* — Salient visual distractors interfere with search for less-salient targets, but they seldom elicit the N2pc (an enlarged negative ERP component over the posterior contralateral scalp hypothesized to reflect attentional selection). In fact, when stimulus features are fixed, salient distractors often elicit an enlarged positive ERP component over the posterior scalp. This distractor-elicited positivity (PD) can occur in an early phase (100–200 ms) and in the time range of the N2pc (200–350 ms). Here, we asked (1) whether the early phase of PD reflects proactive suppression of the distractor or processing of the distractor’s salience and (2) whether people can suppress salient distractors without foreknowledge of their defining features. We show that an early “PD” occurs when the colour singleton is the target, indicating that it does not index suppression. Distractors (but not targets) elicited the latter PD even when their colours varied unpredictably. Finally, distant distractors did not impair search performance relative to no-distractor trials. These results indicate that salient distractors do not invariably capture attention and that suppression is not tied exclusively to first-order features.

Email: John McDonald, jmcd@sfsu.ca

11:40 AM-12:00 PM (197)

Memory as Tinted Lens: Working Memory

Contents Distort Perception. HYUNG-BUM PARK, *The University of Chicago*, WEIWEI ZHANG, *University of California, Riverside* — This study investigates the influence of visual working memory (VWM) on the perceptual appearance of ongoing sensory information processing. Participants performed a dual-task, where a perceptual continuous estimation task was integrated into the maintenance interval of a VWM change-detection task (Experiment 1) or a continuous recall task (Experiment 2). Using hierarchical Bayesian mixture modeling of the perceptual report error distribution, we observed that the reported perceptual color was systematically shifted towards the memory color on the color-wheel, indicating an attraction bias. Notably, both the change detection and continuous recall tasks exhibited a reliable attraction bias towards the preceding perceptual color, suggesting a bidirectional influence between VWM and perceptual processes. Mouse cursor trajectories during the continuous reports corroborated this representational shift, showing curvature towards the source of the attraction bias. Further modeling of the moment-by-moment trajectory patterns indicated a genuine representational shift, independent of attentional capture by distractor-matching colors.

Email: Hyung-Bum Park, hbpark@uchicago.edu

Recognition II

Saturday, November 23, 2024, 10:00 AM-12:00 PM US EST

Chaired by Rachel A. Diana, *Virginia Tech*

10:00-10:20 AM (198)

Variation in Encoding Context Benefits Item

Recognition. RACHEL A. DIANA, *Virginia Tech*, ERICA S. SHAFER, *Virginia Tech*, YE-LIM LIM, *Virginia Tech*, DEVYN E. SMITH, *University of Virginia*, JEFFERSON SALAN, *Virginia Tech* — Context variability/encoding variability has primarily been investigated as an encoding strategy by testing with free recall or cued recall tasks, with the results indicating that context variability is not necessarily beneficial for episodic retrieval. However, recent studies suggest that the effects of context variability depend on the nature of the retrieval task (e.g. Zawadzka et al., 2021; Zhang & Hupbach, 2023). A series of studies from our lab reveal

that varying the encoding context of a repeated event is a reliable strategy to improve recognition memory across retrieval contexts. This was true both when repetition spacing was controlled across variability conditions and when spacing was manipulated. The benefit of variable encoding contexts for recognition occurred both when retrieval context was arbitrary and when it matched one of the encoding contexts. The benefit of variable encoding contexts for recognition was found regardless of the delay between study and test (immediate, 24 hours, or 10 days). We argue that the current study and other recent findings indicate a need to re-evaluate the historical consensus on encoding variability as a beneficial strategy for learning.

Email: Rachel Diana, radiana@vt.edu

10:20-10:40 AM (199)

When Confidence Reveals More than Recognition Performance Does: The Case of Context Load. MACIEJ HANCZAKOWSKI, *Adam Mickiewicz University, SWPS University, BEATRICE G. KUHLMANN, University of Mannheim, KATARZYNA ZAWADZKA*

Context reinstatement effects in recognition memory are known to be fickle. One reason for this could be that context reinstatement affects only recollection of item-context associations, leaving item familiarity unchanged. This means that the recollective effect of context reinstatement could be revealed in any measure of recognition accuracy only when enhanced recollection yields additional hits over and above those already delivered by familiarity. A more sensitive measure of changes in recollection could be provided by confidence with which recognition decisions are rendered, as changes in confidence resulting from changes in recollection are not dependent on familiarity. Here we show this enhanced sensitivity of confidence judgments to changes in recognition context by examining the moderating role of context load on the effects of context reinstatement on recognition processes. Context reinstatement enhances recollection, which increases confidence in recognition decisions even when recognition accuracy remains unchanged.

Email: Maciej Hanczakowski, maciej.hanczakowski@gmail.com

10:40-11:00 AM (200)

The Role of Schema Precision in Episodic Memory: Do More Precise Schemas Lead to More Biased Memories? MICHELLE M. RAMEY, *University of Arkansas, GRANT S. SHIELDS, University of Arkansas, JAMES LAMPINEN, University of Arkansas* — Our memory responses are often biased by schemas (e.g., where objects tend to be). We previously found that more precise underlying memories reduced schema bias of memory responses, but it is not yet known how schema precision—that is, the precision of a schema's predictions—may influence these effects. In two studies, participants ($n=413$) first searched for target objects in schema-congruent and schema-incongruent locations within scenes, then in a subsequent test phase, they made spatial recall judgments for the objects and recognition memory judgments for the scenes. Each scene's schema precision was assessed via a separate group of participants ($n=145$) clicking the locations in each scene in which they would expect to find the target object in the real world. We found that more precise schemas predicted better congruent spatial recall accuracy, and did so via increased precision of schema-based responses rather than increased frequency of schema-based responses. Moreover, stronger memory—both recollection and familiarity—reduced the influence of schema precision on accuracy. Overall, underlying memory strength, rather than schema precision, appears to be the main determinant of how schemas are used in memory responses.

Email: Michelle Ramey, mmramey@uark.edu

11:00-11:20 AM (201)

Speaking to a Partner in a Shared-Memory Task Reduces the Production Effect. RACHEL M.

BROWN, *RWTH Aachen University, ANNA K. KUHLEN, RWTH Aachen University* — We often ask others to help us remember information, but how does speaking to others influence memory? Transactive memory theory predicts that exchanging information while learning allows partners to divide the memory load, such that each person can forget the partner's share of the information. Yet, producing information (e.g., speaking) is known to improve memory compared to perceiving (the production effect). We examined whether speaking to a partner in a shared memory context overrides the production effect. Participants ($N=45$) studied lists of words by reading them out loud or silently, once alone, and once with a partner

(confederate) who took responsibility for remembering the words the participant spoke out loud. A recognition test (always performed alone) followed each study condition. Speaking to a partner reduced the production effect: participants recognized more words spoken vs. silently read alone, but not with the partner, particularly for participants who rated the partner as helpful. Speaking may enable memory offloading in shared-memory tasks.

Email: Rachel Brown, Rachel.Brown@psych.rwth-aachen.de

11:20-11:40 AM (202)

Temporal Dynamics of the Pupillary Old-New Effect: Disentangling True and False

Recognition. JONATHON WHITLOCK, *University of Illinois Urbana-Champaign*, RYAN HUBBARD, *University at Albany, SUNY*, LILI SAHAKYAN, *University of Illinois Urbana-Champaign* — Pupil-size changes are more pronounced during successful recognition of previously viewed stimuli compared to rejecting novel stimuli, known as the pupillary old-new effect. The specific processes reflected in these changes, as well as the temporal dynamics of this response, are not well understood. This study investigated whether this effect reflects the actual old/new status of information in single-item and associative recognition, rather than subjective feelings of recognition (i.e., a “subjective old-new effect”). In two experiments (an item memory and a relational memory task), we used hierarchical linear regression and temporal principal component analyses to examine pupillary changes during recognition memory test trials. Pupil-size changes indicated a rapid “exact match” response reflecting the actual status of the item in an early time window, whereas later changes reflected decision-making processes and false recognition. Therefore, the pupillary changes observed during recognition reflect both veridical item status as well as subjective feelings regarding that status as a dynamic process that unfolds over time.

Email: Jonathon Whitlock, jsw6@illinois.edu

11:40 AM-12:00 PM (203)

The Self-Specificity of the Incidental Self-Reference Effect. KYUNGMI KIM, *Wesleyan University*, STEPHEN C. PHILIPPS, *Wesleyan University* — The incidental self-reference effect (iSRE) refers to a memory advantage for an item co-presented with a self- vs. other-referential cue (e.g., one's own vs.

another person's name) when the self/other-relevance of the cue is purely incidental to a given task. The iSRE is suggested to arise in part from preferential attentional responses to self- vs. other-relevant information that facilitate the encoding of items co-occurring with a self-relevant cue. Given previous mixed findings regarding attentional prioritization of the self over a close other, the present study investigated the extent to which the iSRE is self-specific. During encoding, participants judged the location of words appearing above or below the name of one of three referents (self, best friend, or stranger). Their memory for words was later tested in a surprise recognition test. The results showed that although words were better remembered when they were presented with the name of a best friend than with a stranger's name, memory was still better for words presented with one's own name than for those presented with the best friend's name. These results suggest that self-relevance per se beyond familiarity with a particular referent person contributes to the iSRE.

Email: Kyungmi Kim, kkim01@wesleyan.edu

Animal Learning

Saturday, November 23, 2024, 10:00 AM-12:00 PM US EST

Chaired by Michael J. Beran, *Georgia State University*

10:00-10:20 AM (204)

A Psychological-Scaling Approach to Predicting Pigeon Classification in a High-Dimensional Scientific-Category Domain. ROBERT NOSOFSKY, *Indiana University*, ODYSSEUS ORR, *University of Iowa*, EDWARD WASSERMAN, *University of Iowa* — Past research in comparative cognition has shown that pigeons can acquire multiple human-language categories in parallel via associative learning. However, the detailed nature of their category representations remains unknown. Here we pursue that question by testing whether pigeons can acquire multiple hard-to-discriminate rock-image categories as defined in the geologic sciences and we test a formal computational model of associative learning on its ability to account quantitatively for their performance. A prerequisite for applying the model is to embed the rock images in a pigeon psychological similarity space. We achieve that goal by modeling the pigeons' performance in an independently conducted same-different task involving the same to-be-classified rock images. The models provide a unified and accurate quantitative account of

intricate sets of same-different and classification-confusion data in this high-dimensional rock-categories domain. The psychological similarity space derived for the pigeons resembles to a surprising degree one derived previously for humans.

Email: Robert Nosofsky, nosofsky@indiana.edu

10:20-10:40 AM (205)

Contrafreeloading in Umbrella Cockatoos (*Cacatua alba*): Further Evaluation of the Play Hypothesis. IRENE M. PEPPERBERG, Boston University, ALANA CARROLL, University of St Andrews —

In nature, animals expend energy foraging, competing to access resources while avoiding predation. Hence, most aim to forage optimally—to obtain the highest caloric intake in the shortest period of time with the least effort. In captivity, however, we observe “contrafreeloading”—the choice to expend excess energy by, for example, extracting food from a puzzle box rather than eating what is freely available. Previous research suggested that contrafreeloading is more likely if the task involved is considered play rather than work. We tested cockatoos and compared results to those from kea and grey parrots. Kea ignored the task; at the group level, cockatoos and greys were not statistically different but more cockatoos than Greys engaged in contrafreeloading. However, results were affected by dominant/subordinate behavior and other individual differences. We acknowledge that our results are preliminary as a consequence of small sample sizes, but emphasize the importance of examining individual differences in both playful behavior and contrafreeloading.

Email: Irene Pepperberg, impepper@media.mit.edu

10:40-11:00 AM (206)

Monkeys Use Value and Number (Approximately) in a Symbolic Quantity Summation Task. MICHAEL J. BERAN, Georgia

State University, LAURA EAGAR, Georgia State University, KATARINA SYED, Georgia State University, KATHLEEN FRIEDEIN, Georgia State University — Monkeys can learn to choose the larger of two quantities, both when those options are presented as analog quantities (e.g., dots) or symbolic stimuli representing quantity (e.g., Arabic numerals). However, when quantity discrimination relies on using the number of items of a given symbol type, this generates a situation

with conflicting cues. For example, knowing that three 3s is a larger quantity than two 4s requires attending to more than just the larger value symbol (4s) and instead taking the larger quantity (the option with three items). Alternately, knowing that two 5s is more than five 1s requires inhibiting choice of the set with more physical items in it and also using symbol value. This project assessed whether monkeys could learn to make such judgments in a computerized task that presented two arrays, each of differing numbers of a specific quantity symbol. Although overall performance was not high, monkeys did exceed chance levels of responding, and performance followed Weber’s Law. There were individual differences in whether symbol value or number of items was a more preferred dimension, suggesting that selective attention to one dimension was typical of these monkeys.

Email: Michael Beran, mberan1@gsu.edu

11:00-11:20 AM (207)

Bonobo Spatial Exploration and Navigation in a Virtual Rainforest. FRANCINE L. DOLINS, University of Michigan, Dearborn, KARLINE JANMAAT, Universities of Amsterdam & Leiden

University, JOSEP CALL, University of St Andrews, CHARLES R. MENZEL, Georgia State University, JULIANNA WROBLEWSKI, University of Michigan, Dearborn, MATTHIAS ALLRITZ, Max Planck Institute for Evolutionary Anthropology, EMMA MCEWEN, University of St Andrews, KENNETH SCHWELLER, Buena Vista University & Ape Cognition and Conservation Initiative, LYDIA FLEMING, University of Michigan, Dearborn — How do captive apes' exploration, navigation, and route-learning in complex environments compare with wild apes who face multiple challenges (e.g., competitors, seasonality)? Does captivity impact how spatial cognitive abilities develop? Captive bonobo navigation in a virtual “rainforest” uniquely assesses spatial cognition, exploration, landmark use, and route generation. Bonobos explored the virtual rainforest's three regions: dense, moderate dense, and savannah-like. Region-specific virtual fruits (mango, cherry, and grapes) were associated with specific bird calls. Moving prey (e.g., red river hogs) shifted between regions. Three 12-minute trials/day presented daybreak-to-sundown. Individualized start locations began where trials previously ended. We discuss memory over time for routes based on features, landmarks, and navigation toward fruits, in order of

individual's preferences. Bonobos were observed turning toward items previously seen but not presently visible, demonstrating object permanence in virtual space. We compare results with wild ape navigation by route length/efficiency and route re-use and compare species/populations with different experiential and developmental trajectories.

Email: Francine Dolins, fdolins@umich.edu

11:20-11:40 AM (208)

Fifty Shades of Association. THOMAS CHARTIER, CNRS & Aix-Marseille University, ARNAUD REY, CNRS & Aix-Marseille University — Associations are a major concept at the crossroads of psychology, neuroscience, and AI, but also semantics, philosophy, biophysics, or computer science. So we all know what they are. Or do we? Confounding, for instance, a co-occurrence of external events and a mental link between internal representations is confounding different conceptual objects with different, possibly conflicting, properties. I will show that to refer to associations, over 50 terms are used across fields, including “cue-outcome,” “conditioned response,” “connection,” “sensory integration,” “co-occurrence,” “cued recall,” “Hebbian synapse,” “mapping,” and “input-output”—a wide lexical diversity that can be reduced to five similarity clusters. I will propose distinct names for these five meanings of associations and demonstrate their irreducible differences and how they refer to essentially different phenomena or levels of description. We deem it important for the community to bring to light, and discuss this underappreciated problem. Acknowledging this multiplicity of meanings, I will argue, enlightens a number of scientific controversies, for instance about language learning or about human-nonhuman cognitive discrepancies.

Email: Thomas Chartier, cft.psych@mailo.com

11:40 AM-12:00 PM (209)

Measuring Cognitive Flexibility and Decline Over a 10-Year Period in Aging Cotton Top Tamarins (*Saguinus oedipus*). JULIE J.

NEIWORTH, Carleton College, ELLA ROGERS — Aging tamarins (n=14, aged 8-24) were tested over a 10-year period from 2014-2024 on tasks requiring working memory, episodic memory, visual search, and flexible rule-shifting in a modified card sort task. In all tasks, accuracies and patterns of responses were measured, and

the data were analyzed to assess cognitive decline by age. In addition, common characteristics differentiating human aging and Alzheimer's Disease (AD) were used to construct predictive models, and data from individual monkeys is being tested to see which model best accounts for their pattern of results. Tamarins are closely related to marmosets, another NW monkey species in the Callitrichidae family which are becoming a prominent model in aging and AD work. Data from tamarins contribute to assessing cognitive decline with natural aging in a monkey species related to marmosets but which have a longer lifespan (16-20 years in captivity; 12-15 years in the wild), and with a common cardiovascular-related cause of death more similar to humans.

Email: Julie Neiworth, jneiwort@carleton.edu

Letter/Word Processing

Saturday, November 23, 2024, 10:00 AM-12:00 PM US EST

Chaired by Adrian Staub, *University of Massachusetts Amherst*

10:00-10:20 AM (210)

A Computational Model of Chinese Compound Word Processing. XINGSHAN LI, *Chinese Academy of Sciences* — Chinese has many distinct characteristics that differentiate it from alphabetic languages, making it necessary to develop specific theories and models for its study. Previous research on Chinese lacks systematic computational models for lexical and semantic processing. To address this gap, we built a computational model that simulates the processing of Chinese words presented in isolation. The model can process both single-character and multi-character words. Moreover, it can simulate orthographic, phonological, and semantic processing of words, as well as their interactions. These research findings will help clarify the cognitive mechanisms of Chinese reading and deepen our understanding of human language processing. The established model can guide experimental research and has significant theoretical significance.

Email: Xingshan Li, lixs@psych.ac.cn

10:20-10:40 AM (211)

Reduced Masked Orthographic Priming After Recent Exposure to Novel Word Primes Is Not a Marker of Lexical Learning. NICOLAS DUMAY,

University of Exeter — Qiao and Forster (2013) showed that repeated exposure to novel neighbours (e.g., "banara") leads to the disappearance of facilitation in masked priming when trained items are used as primes—a between-subject result taken as a sign that newly learnt primes had become competitors of their targets (e.g., "BANANA"). Here, I assess the long-term nature of this effect by exposing participants to some of the items 12 hours before the test instead of immediately before it. I also examine whether sleep play a role in the fate of this effect by teaching item Set 1 at either 08:00 or 20:00. In line with the prime-lexicality account, the facilitation is reliably reduced for 0-hr-old items compared to untrained items (23 vs. 32 msec). However, this is due mostly to unrelated targets becoming faster due to recent neighbor exposure; which only a within-subject design could show. In contrast, 12-hr-old items prime as much as untrained items, irrespective of sleep. In other words, the observed change dissipates within 12 hr. A 24-hr retest confirms. Given the sensitivity of masked priming to short-term effects of exposure, these results alter the interpretation of Qiao and Forster—newly learnt primes have not entered the lexicon as new neighbours.

Email: Nicolas Dumay, n.dumay@exeter.ac.uk

10:40-11:00 AM (212)

Statistical Learning of Frequency-Based Categories: Discrepancy between Neural Response and Behaviour. CLAUDIA RUZZA, *International School for Advanced Studies (SISSA)*, DAVIDE CREPALDI, *International School for Advanced Studies (SISSA)* — Humans use statistical cues to extract basic units of information from complex sensory input. Using a fast periodic visual stimulation (FPVS) paradigm coupled with EEG recordings, skilled readers were exposed to stimuli (words and pseudofont strings), which were arbitrarily divided into two groups of relatively high-frequency vs. low-frequency items. Previous work from the lab (De Rosa et al., 2022) showed strong grouping effects in the EEG signal. In one original study ($N=41$) and a conceptual replication ($N=42$), we tested whether this grouping effect also surfaces in behaviour. Frequency-domain EEG analyses replicated De Rosa's findings. However, participants' memory for frequent and infrequent items was similar, though a large degree of individual variability sat behind this null group effect. Subject-wise correlation analyses between the individual behavioural effect and the FPVS-EEG signal yielded mixed results. These findings

provide further support for frequency-tuned neural mechanisms that might underlie category bootstrapping and raise important questions regarding the possible multidimensional nature of statistical learning.

Email: Claudia Ruzza, cruzza@sissa.it

11:00-11:20 AM (213)

The Effect of Inter-Letter Spacing on the N170 During Visual Word Recognition: An ERP Experiment. TERESA CIVERA, *Universitat de València*, MANUEL PEREA, *University of València*, BARBARA LEONE, *Universitat de València*, MARTA VERGARA-MARTÍNEZ, *Universitat de València* — Previous behavioral studies have shown that inter-letter spacing affects visual word recognition and reading. While condensed spacing may hinder the early stages of letter encoding due to increased crowding effects, the impact of expanded inter-letter spacing is still unclear. Here, we presented words in three different inter-letter spacing conditions (default, condensed [-1.5 points], or expanded [+1.5 points]) in an Event-Related Potentials (ERPs) go/no-go semantic categorization task. Our focus was on the N170, an ERP component associated with the early encoding of orthographic information, which is also sensitive to crowding effects. The N170 reached larger values for the condensed condition than for the default and expanded spacing conditions, which did not differ. While increased crowding impacted the early encoding of orthographic information, extra letter spacing did not. This outcome is consistent with the Modified Receptive Field hypothesis, in which letter receptors adapt their size to cope with letter crowding. Hence, reducing the space between letters more than the default spacing impairs the ability to process written words, whereas slightly expanding the space between letters does not provide any additional benefit.

Email: Teresa Civera, teciba@alumni.uv.es

11:20-11:40 AM (214)

The Effect of Repetition Spacing on the Development of Multiword Memory Traces. ARNAUD REY, *CNRS & Aix-Marseille University*, LEONARDO PINTO ARATA, *CNRS & Aix-Marseille University*, YUSUF HELAL, *Centre National de la Recherche Scientifique (CNRS) & Aix-Marseille University*, CARLOS RAMISCH, *CNRS & Aix-Marseille University* — Repetition is critical to the formation of memory traces during language processing.

The more a sequence of words is repeated, the more likely it is to be reinforced and stored in memory. We conducted a series of experiments using a lexical decision task to investigate how repetition spacing influences the learning dynamics of multiword sequences. In this task, participants had to read strings of letters presented one at a time on a computer screen and classify them as words or pseudowords. Unknown to them, a triplet of words appeared systematically in the same order. Between each repetition of the repeated triplet, a variable number of random filler words and pseudowords were presented, depending on the spacing condition. We inserted either 4, 7, 10, 20, 30 or 60 filler items. We found that participants were able to learn the repeated triplet in all conditions, and that the decrease in the learning rate followed the dynamics of a power law. Overall, our results provide new evidence regarding the effect of repetition on the development of linguistic memory traces. They impose new constraints on current models of language processing and statistical learning.

Email: Arnaud Rey, arnaud.rey@cnrs.fr

11:40 AM-12:00 PM (215)

The 'Sentence Superiority Effect' Is Due to Guessing. ADRIAN STAUB, *University of Massachusetts Amherst*, ELLIE DEUTSCH, *University of Massachusetts Amherst*, JOHN GREENE, *University of Massachusetts Amherst*, JILLIAN HAMMOND, *University of Massachusetts Amherst* — Snell and Grainger (2017) reported a sentence superiority effect (SSE), analogous to the classic word superiority effect (WSE). In a free response task, four words were presented for 200 ms; the word at a post-cued position was reported more accurately when the string was grammatical than when it was scrambled. They interpreted the SSE as reflecting parallel processing of the four words and feedback from a syntactic representation to the word level. However, in a footnote Snell and Grainger reported that in a forced-choice version, grammaticality of the string did not affect accuracy. By contrast, the WSE appears in forced-choice, which is what rules out a guessing-based explanation. To further assess whether the SSE is due to guessing in free response, we conducted three on-line experiments (combined N>600), varying font size and the meaningfulness of the stimuli. Each participant completed both a free response block and a forced-choice block. We replicated an effect of the string's grammaticality in free response. However, we found no

effect on forced choice accuracy in any of the three experiments. Thus, unlike the WSE, the SSE appears to be due to guessing, rather than parallel interactive activation.

Email: Adrian Staub, astaub@psych.umass.edu

Symposium V: How Does Meaning Come to Mind? Advances in Understanding Conceptual Knowledge

Saturday, November 23, 2024, 1:30-3:30 PM US EST
1:30-1:50 PM (SYM21)

Revealing the Information Content of Conceptual Representation Using Neuroimaging and Behavior. LEONARDO FERNANDINO, *Medical College of Wisconsin* — Despite their strong association with words and verbal definitions, concepts ultimately refer to non-linguistic experiences. They contain information about the external world (as experienced through our perceptual apparatus) and about internal experiences originating from the body and from the brain itself. These experiences are constructed from a variety of qualitatively different types of information, conveyed by distinct input channels (e.g., visual, tactile, autonomic). However, rather than being tied to any particular kind of information, a concept can be learned from, activated by, and used to make predictions about, different sensory modalities. Furthermore, concepts can be learned from verbal as well as from direct experience. This talk will focus on neuroimaging and behavioral studies investigating the information content of lexical concepts, revealing how these representations relate to sensory-motor and affective experience in a context-dependent way, so that they can be used to guide behavior in the external world. The results are consistent with a neural model of conceptual representation implemented across all levels of the cortical hierarchy, from early sensory areas to the default mode network.

Email: Leonardo Fernandino, lfernandino@mcw.edu

1:50-2:10 PM (SYM22)

Social Experience Makes Unique Contributions to Conceptual Knowledge. VERONICA DIVEICA, *McGill University* — Within multiple representation accounts, concepts are mapped to the world, or grounded, by engaging the neural systems underpinning various experiential channels, including perception, action, emotion, and language. Recent influential proposals also posit a pivotal role for information

derived from social experience, termed “socialness”, in semantic representation. Here, I will present our recent efforts to quantify socialness and investigate its contribution to concept knowledge. Our findings show that social concepts, compared to non-social concepts, benefit from more efficient processing across lexical, semantic, syntactic, and memory tasks. They suggest that socialness captures aspects of word meaning that are distinct from those measured by established semantic dimensions, such as concreteness and emotional valence. Within the multidimensional semantic space, socialness is most closely associated with auditory stimulation and actions involving the mouth and head, perhaps indicative of a significant role for verbal social interactions in concept knowledge. I argue that these findings highlight the special status of social concepts and demonstrate that social experience makes unique contributions to semantic representation.

Email: Veronica Diveica, veronica.diveica@mcgill.ca

2:10-2:30 PM (SYM23)

Learning New Concepts in Naturalistic Social Interaction. GABRIELLA VIGLIOLLO, *University College London* — In everyday life we use—and learn—concepts in rich multimodal social contexts. For example, we can talk about the Roman Baths while visiting the British Museum with a friend and learn about a tool (the “strigil”) used in the baths by seeing a strigil on display and watching the friend describing it. But is this rich, dynamic and multimodal information used in learning the concepts and their labels? Understanding what factors impact learning in interaction provides a novel, different window into how conceptual information is processed in the moment. I will present results from analyses of an annotated multimodal corpus of dyadic interaction (ECOLANG) in which one (more knowledgeable) adult discusses objects that are known or unknown to the other adult (the learner). The learner is then tested for their knowledge of information about the novel objects and their names after the conversation. The analyses assessed whether multimodal variables such as the use of gesture, eyegaze and intonation by the more knowledgeable person support conceptual and lexical learning above and beyond the cognitive abilities of the learner and the amount and quality of the linguistic information provided by the teacher.

Email: Gabriella Vigliocco, g.vigliocco@ucl.ac.uk

2:30-2:50 PM (SYM24)

Tools in the Mind: Semantic Representations of Manipulable Objects and Their Actions. LAUREL J. BUXBAUM, *Moss Rehabilitation Research Institute & Thomas Jefferson University* — How do we recognize, describe, and produce meaningful actions? A diverse array of hierarchical neurocognitive representations has been proposed to subserve these capacities, united under the rubric “action semantics.” I review evidence that enriches our understanding of a subset of action semantics; namely, the cognitive characteristics and neural substrates of knowledge of manipulable objects and the actions associated with them. Based on data from priming, eyetracking, and EEG studies, we have learned that object manipulation knowledge exhibits a characteristic time course of activation that is highly similar to activation of other types of semantic knowledge. In addition, these representations are cognitively organized (and compete with one another) on the basis of sensorimotor similarity. Behavioral studies of response latency suggest that not all aspects of manipulation knowledge are retrieved every time an object is viewed; rather, this information is flexibly activated as a function of tasks and goals. Finally, we review evidence from neuroimaging and lesion studies indicating that manipulation knowledge is subserved by a left-lateralized neural network whose major hub is the posterior temporal cortex.

Email: Laurel Buxbaum, laurel.buxbaum@jefferson.edu

2:50-3:10 PM (SYM25)

The Necessity of Cross-Cultural Evidence for Understanding Conceptual Representation. ASIFA MAJID, *University of Oxford* — Data from prelinguistic infants suggest that babies have rich conceptual representations from their earliest days, from specific perceptual categories (e.g., color, sound) to more abstract notions (e.g., notions of object permanence, agency, solidity, etc.). Given this, we might expect to see the same concepts appear in the cross-cultural record, with certain categories or associations more privileged in the language and thought of adults worldwide. But how do we go about finding out these universals in conceptual representation? This talk will draw upon a range of cross-cultural studies across a variety of domains to illustrate some of the advances in methods for establishing universals of conceptual representation. Beyond considering the sampling of items and participants, I argue that psychologists need to pay

attention to their sampling of languages and cultures in order to make more robust generalizations about the nature of mind.

Email: Asifa Majid, asifa.majid@psy.ox.ac.uk

3:10-3:30 PM (SYM26)

Using Individualized Models of Semantic Memory to Determine the Relativity of Word Meanings.

BRENDAN JOHNS, *McGill University* — Distributional models of semantics acquire sophisticated representations of word meanings. The theoretical insight provided by these models is that they demonstrate the connection between the knowledge that people acquire and their lexical experience. However, experience is inherently variable and differs radically across people. Recently, Thompson et al. (2020) used distributional modeling to examine how word meanings vary across languages and it was found that there are considerable differences in the meanings of words across languages. The work here builds on this finding by examining how variable word meanings are across individuals in a single language. This was accomplished by assembling 500 individual user corpora attained from the online forum Reddit, and a count-based distributional model (Johns et al., 2019) was used to extract word meanings for each user. These representations were used to estimate the semantic alignment of word meanings across individual users. Significant levels of relativity in word meanings were found across individuals, and these differences are partially explained by other psycholinguistic factors, such as concreteness, semantic diversity, and social aspects of language usage.

Email: Brendan Johns, brendan.johns@mcgill.ca

Learning and Memory II

Saturday, November 23, 2024, 1:30-3:30 PM US EST

Chaired by David J. Frank, *Youngstown State University*

1:30-1:50 PM (216)

The Basic Cognitive Abilities Most Beneficial for Learning and Performance in Variably-Mapped Environments.

DAVID J. FRANK, *Youngstown State University*, ALEXANDER P. BURGOYNE, *Human Resources Research Organization (HumRRO)*, BROOKE MACNAMARA , *Purdue University* — Why do some people perform a task better than others? Influential theories of skill acquisition and expertise suggest that cognitive determinants of performance vary as a function

of practice and task features. For example, tasks with consistent stimulus-response mappings might demand fluid abilities at first but lend themselves to retrieval-based processing with practice (Fitts and Posner, 1967). However, on more complex consistently-mapped tasks (e.g., air traffic control), fluid abilities predict performance even after training (Ackerman & Cianciolo, 2001). Air traffic control tasks are complex, but also dynamic and require multitasking—features which have since been shown to increase reliance on cognitive abilities (Macnamara & Frank, 2018; Frank & Macnamara, 2021). In a large sample of university and community participants ($N>600$), we extend previous research by using an extensive cognitive ability battery and a novel complex task that affords experimental control over task features. Using multigroup structural equation modeling, our analyses shed light on how the unique contribution of various cognitive abilities to complex skill acquisition is moderated by practice and task characteristics.

Email: David Frank, djfrank02@ysu.edu

1:50-2:10 PM (217)

Sleep Incentives During Final Exams Week Promote Sustainable Habits and Improved Academic Performance.

MICHAEL SCULLIN, *Baylor University* — Late bedtimes and all-nighters are ingrained into student culture, especially during final examinations week. In 10 naturalistic, classroom-based studies, we investigated whether extra credit incentives to extend one's time-in-bed would encourage longer sleep durations during finals week. The interventions led to a clinically significant improvement in sleep duration in 72% of participants and provided a four-fold increase in the odds of students achieving sufficient sleep (≥ 7 hours). Students' sleep benefited regardless of age, gender, race/ethnicity, academic load, stress, baseline sleep difficulties, perceived sleep need, and amount of formal education in sleep. More than half of the initial benefit to sleep was maintained after the incentives were discontinued (measured 1-3 months later). Incentive-based changes in sleep duration and sleep timing (earlier bedtimes) were associated with improvements in academic performance (GPA) during the study semester and the following semester, controlling for prior GPA. Therefore, the late night culture of finals week is addressable and reversing sleep-restriction habits is favorable to academic success.

Email: Michael Scullin, michael_scullin@baylor.edu

2:10-2:30 PM (218)

How Semantic Ambiguity Affects Judgment and

Memory. C. J. BRAINERD, *Cornell University*, M. CHANG, *Trinity University*, DANIEL M. BIALER, *Cornell University*, X. LIU, *Cornell University*, V. F. REYNA, *Cornell University* — A classic procedure for studying the psychological effects of meaning is to vary the perceived intensity of the semantic attributes of encoded items (e.g., arousal, categorization, concreteness, valence), which produces various downstream effects on judgment and memory. However, we have found in several studies that manipulating a second dimension of attribute perception, ambiguity, also produces such effects. Concerning judgment, ambiguity levels (a) determine levels of correlation among intensity judgments of different attributes (e.g., arousal-valence, categorization-concreteness, and familiarity-meaningfulness), (b) determine the latency of intensity judgments, and (c) are quadratically related to judged intensity levels. On the memory side, Ambiguity \times Intensity factorial experiments have revealed that (d) increasing ambiguity improves recall and recognition, (e) such improvements are due to enhanced reconstruction and familiarity, and (f) the effects of ambiguity and intensity do not interact. The theoretical principle that unites these effects is that ambiguity stimulates more thorough processing during encoding.

Email: C. Brainerd, cb299@cornell.edu

2:30-2:50 PM (219)

Schema Effects in Temporal Order Memory.

AIDAN HORNER, *University of York*, ADAM CURTIS, *University of York*, MARIA WIMBER, *University of Glasgow* — Schemas should represent information about what you might experience (content) as well as when you might experience it (temporal order). Schematic temporal order might allow for temporal predictions that, in turn, modulate encoding. Memory retention might be enhanced when the temporal order of events is congruent or incongruent with existing schemas, relative to situations that are unrelated to a schema. We designed a temporal order memory paradigm where participants learnt the order of a series of exemplars from distinct categories. Participants were required to retrieve category- and exemplar-level information in a cued temporal order task. Participants pre-learnt ‘schemas’ that related to the order of categories in a sequence, allowing them to make predictions about the category of the next exemplar presented. Sequences of exemplars in

the main study were then either congruent, incongruent, or unrelated to the pre-learned schemas. We show clear effects of congruency, with greater memory accuracy in the congruent and incongruent relative to unrelated condition. However, these effects might be more related to violations in content than temporal order, providing insight into the representational content of schema.

Email: Aidan Horner, aidan.horner@york.ac.uk

2:50-3:10 PM (220)

The Inconsistent-Handedness Memory

Advantage May Extend to Complex Real-World

Events: Evidence from VR Training Studies.

KEITH LYLE, *Transfr Inc.* — There is great individual variability in episodic memory. Some people are better at remembering; some are worse. Studies have documented a surprising predictor of episodic memory performance: Consistency of hand usage. Individuals who are relatively inconsistent, tending to make use of both hands, perform better on episodic memory tests than individuals who exhibit highly consistent usage of a single hand. This has been dubbed the inconsistent-handedness memory advantage (IHMA). IHMA has been studied primarily in traditional laboratory studies under conditions that do not capture the complexity of real-world learning. The advent of high-fidelity VR provides the opportunity to study IHMA, and other cognitive phenomena, in remarkably realistic, albeit virtual, settings. Here, we show how consistency of handedness relates to memory for complex procedures—ones routinely performed in real workplace settings. These procedures are learned in VR but memory tests are conducted in the real world. Evidence for IHMA is discussed.

Email: Keith Lyle, keith.b.lyle@gmail.com

3:10-3:30 PM (221)

The von Restorff Effect in Free Recall,

Recognition, and Source Memory.

KENNETH MALMBERG, *University of South Florida*, KAMP SIRI-MAIA, *University of Trier* — Distinct items encountered in a sequence are better recalled than the less distinctive items (Von Restorff, 1933). There is rarely an effect for recognition, which is inconsistent with intuition and all known theories of memory. Two experiments extend prior findings to a multi-list procedure, confirming a free recall advantage for unexpected words, but no recognition advantage unless



2024 ABSTRACTS

of the PSYCHONOMIC SOCIETY

recall is tested before recognition. A somewhat ambiguous effect was observed when source memory was tested. Based on these results, we hypothesized that the lack of a von Restorff effect for recognition is due to uncontrolled factors during testing. In two additional experiments, the order in which items in recognition and source memory were tested was controlled, and the results revealed von Restorff effects for both recognition and source memory. Implications for models of memory and attention are discussed.

Email: Kenneth Malmberg, malmberg@usf.edu

Cognition I

Saturday, November 23, 2024, 1:30-3:30 PM US EST

Chaired by Timothy L. Hubbard, *Arizona State University*

1:30-1:50 PM (222)

Top-Down Reward Modulates Feature Interference Following Saccadic Eye Movements.

TZU-YAO CHIU, *The Ohio State University*, JULIE D. GOLOMB, *The Ohio State University* — Spatial attention must be remapped from its old retinotopic location following each saccade, introducing systematic feature interference (retinotopic swapping and mixing errors) to perception of goal-relevant objects. We investigated the effect of reward on post-saccadic feature perception. In a gaze-contingent eye-tracking experiment, participants were asked to report the color of an item appearing at a pre-cued spatiotopic location. Following the cue, participants completed a saccade, and then an array of colored items briefly appeared at the spatiotopic target location, retinotopic non-target location, and two other control non-target locations. Crucially, across blocks we provided different degrees of reward (monetary incentive) for accurate spatiotopic target reports. In addition to improving general performance, increased reward modulated systematic feature errors; reducing mixing but increasing swapping of the retinotopic color. These disparate influences of reward on feature errors in turn suggest differing effects of top-down control over distinct components of attentional remapping following saccadic eye movements.

Email: Tzu-Yao Chiu, chiu.315@osu.edu

1:50-2:10 PM (223)

Linking Cognitive Control Processes to General Intelligence through Midfrontal Theta

Connectivity. ANNA-LENA SCHUBERT, *Johannes Gutenberg University Mainz*, CHRISTOPH LÖFFLER, *Johannes Gutenberg University Mainz*, HENRIKE JUNGEBLUT, *Johannes Gutenberg University Mainz*, MAREIKE HÜLSEMANN, *Johannes Gutenberg University Mainz* — Understanding the neural basis of cognitive control and its link to general cognitive abilities is crucial in individual differences research. This study explores midfrontal theta connectivity as a neurocognitive marker for individual differences in cognitive control. Using electroencephalography, we examined midfrontal global theta connectivity across three cognitive control tasks in 148 participants. Our results show that midfrontal theta connectivity exhibits trait-like properties, being stable across tasks and measurement sessions. Moreover, we replicated previous results, finding a strong correlation ($r=0.64$) between midfrontal theta connectivity and cognitive abilities during stages of higher-order information processing. Notably, we disentangled the specific processes contributing to this relationship by using a task-cueing paradigm with distinct cue and target intervals. Cognitive abilities correlated with theta connectivity during target intervals, which are associated with response-related processes, but not during cue-evoked task-set reconfiguration. These insights significantly advance theoretical models of intelligence, highlighting the critical role of specific aspects of cognitive control in cognitive abilities.

Email: Anna-Lena Schubert, anna-lena.schubert@uni-mainz.de

2:10-2:30 PM (224)

Studies of Individual Differences in Cognitive Psychology: A Case for Making Four Major Shifts in Research Practice.

AKIRA MIYAKE, *University of Colorado, Boulder* — Studies of individual differences have been popular in cognitive psychology. Typical studies focus on inter-individual differences and assess them with simple experimental tasks in laboratory settings. Although recent critiques have centered around measurement issues, I propose that it may be more beneficial in the long run if the field makes fundamental shifts in basic assumptions and research practices. Specifically, I argue for the benefits of more deeply embracing the following research practices: (a) study individual differences in everyday, real-life settings; (b) study not only inter-individual but also intra-individual variations; (c) examine situational (contextual) factors contributing to such inter- and intra-individual

differences; and (d) explore idiosyncratic factors unique to each individual as potentially important sources of inter- and intra-individual differences (rather than ignore them as random noise). I discuss the rationale behind the suggested shifts and their theoretical and practical implications with illustrative examples from several research domains in cognitive, social, and clinical psychology (e.g., self-control, procrastination, habits, prospective memory, mind-wandering, ruminative thinking).

Email: Akira Miyake, akira.miyake@colorado.edu

2:30-2:50 PM (225)

Central Preference of Consumer Items and Eye-Tracking: Evidence for a Central Preference Heuristic.

VOLKER THOMA, *University of East London*, MARK R. HARWOOD, *University of East London*, PAUL RODWAY, *University of Chester* — Presented with similar options people prefer the central items (CPE) over peripheral ones in spatial arrays. We tested the "middle" heuristic versus the gaze explanation for the CPE by manipulating the top-down goal of the task and asked participants either to "think carefully" or "use gut feeling" whilst choosing one out of three similar consumer items. The CPE was found in the "gut" but not the "think" condition, yet eye-movement patterns were equivalent across both instruction conditions with more frequent and longer fixations on the middle. Choice was negatively correlated with self-reported reflective thinking disposition (Need-for-Cognition) in the "gut" but not "think" condition, also indicative of a heuristic thinking strategy. Two more experiments found similar results even when the initial fixation cross was randomly shown across the three positions and when the original instructions were replaced with "Which would you choose?" and "Which do you prefer?". These findings demonstrate the effect of instructions on the CPE for consumer items and provide novel evidence for a top-down cause of the CPE rather than bottom-up gaze allocation. The CPE may be modulated when people reflect on their decisions.

Email: Volker Thoma, v.thoma@uel.ac.uk

2:50-3:10 PM (226)

Cognitive Offloading, Value-Based Decision Making, and the Expected Value of Memory.

SAM GILBERT, *University College London* — This talk will present a simple computational model simulating

people's decisions between maintaining information in short-term memory vs offloading it to an external reminder. The model is based on two principles: A) items stored in brain-based memory occupy its limited capacity, generating an opportunity cost, and B) reminders incur a small physical-action cost but capacity is effectively unlimited. These costs are balanced against the value of remembering, which determines the optimal strategy. Simulations reproduce a wide variety of findings from the cognitive offloading literature. Therefore, value-based decision-making provides a unifying framework for understanding many phenomena in this field. These results are consistent with an opportunity-cost model of cognitive effort, which can explain why internal memory feels effortful but reminders do not.

Email: Sam Gilbert, sam.gilbert@ucl.ac.uk

3:10-3:30 PM (227)

Anisotropy Related to Representational Gravity.

TIMOTHY L. HUBBARD, *Arizona State University*, SUSAN E. RUPPEL, *University of South Carolina Upstate* — Two experiments examined whether

representational gravity, in which memory for the location of a previously viewed target is displaced in the direction of implied gravitational attraction, occurs uniformly across a target. Participants viewed stationary targets, and after a target vanished, participants indicated the remembered location of the top edge or bottom edge of that target. The remembered location of the top edge was displaced downward, but the remembered location of the bottom edge was not displaced; this anisotropy is consistent with the small downward displacement of the center of a target reported in previous studies. Larger targets and targets higher in the picture plane resulted in larger downward displacement. Displacement was not influenced by whether participants knew prior to target presentation which edge to remember. If the top edge and bottom edge of a target are considered analogous to the trailing edge and leading edge of a moving target, respectively, then anisotropy related to representational gravity is similar to anisotropy previously reported for representational momentum. Implications of such anisotropy for spatial representation and localization of stimuli in the environment are considered.

Email: Timothy L. Hubbard, timothylechubbard@gmail.com

False Memory

Saturday, November 23, 2024, 1:30-3:30 PM US EST

Chaired by Courtney A. Kurinec, *Washington State University*

1:30-1:50 PM (228)

Can You See It Clearly Now? The Effects of Perceptual Disfluency on the Integration of Misinformation into Eyewitness Memory. MIRI BESKEN, *Bilkent University*, EZGI MELISA YUKSEL, *University of Wisconsin-Madison* — In a series of three experiments, we investigated how individuals integrate information from a misinformation phase when exposed to visually fluent or disfluent content during the initial encoding of witnessed events. During encoding, participants were presented with both visually fluent and disfluent picture stories (followed by judgments-of-learning in only Experiment 1). In the subsequent misinformation phase, participants were again presented with the same stories in their fluent form, but with some details altered. Finally, participants completed a multiple-choice memory test to recall specific details from the encoding phase. The results revealed that participants were more accurate in retrieving details from fluent stories than disfluent stories. While the manipulation of misinformation led to the generation of false memories, the impact of perceptual disfluency on the integration of misinformation into the original story did not differ across fluent and disfluent conditions. Participants' memory predictions aligned with their actual memory performance. These findings have implications for circumstances in which eyewitnesses cannot clearly perceive the details of an event.

Email: Miri Besken, mbesken@bilkent.edu.tr

1:50-2:10 PM (229)

He Said, She Said: Misinformation Effects Among Victims and Perpetrators of Simulated Crimes. CIARA GREENE, *University College Dublin*, MARYANNE BRASSIL, *University College Dublin*, GILLIAN MURPHY, *University College Cork* — Many legal cases hinge on evaluating what happened during a particular event, given conflicting testimony from two parties; these are often referred to as "he said, she said" cases. In cases like this, expert witnesses are often called by the defence and cast doubt on the memory of the complainant. However, there are no theoretical grounds to believe that a complainant's memory is more prone to

distortion than that of the accused. This talk will describe findings from a series of experiments comparing susceptibility to misinformation among "victims" and "perpetrators" of simulated crimes and misbehaviours. In the first set of experiments ($n=2,010$), participants played the prisoner's dilemma game and were led to believe that either they or their opponent had betrayed the other. In the next set of ecologically valid experiments ($n=1,000$), participants took the role of either the complainant or accused in a sexual assault case, and viewed videos of the encounter before being exposed to misinformation. Across these studies, we demonstrate that both parties in "he said, she said" scenarios are equally likely to suffer from memory distortion. These findings have significant implications for how memory is discussed in the courtroom.

Email: Ciara Greene, ciara.greene@ucd.ie

2:10-2:30 PM (230)

Blind Implantation: Implanting False Memories for Implausible Events that Allegedly Occurred Repeatedly. HENRY OTGAAR, *Maastricht University*, MARA MOLDOVEANU, *KU Leuven*, AHMAD SHAHVAROUGHI, *KU Leuven* — In the present study, we examined whether false memories could be implanted for implausible events that allegedly occurred repeatedly. We used a new method to induce false memories called the blind implantation method. Participants first had to indicate whether they experienced certain events, including two critical events (losing a toy; plausible event) and almost drowning in the ocean; implausible event). One week later, participants were falsely told that they themselves indicated having experienced one of the critical events. Furthermore, one group was told that the event happened once while the other group was told it happened repeatedly. Participants had to provide belief and recollection ratings. Higher false belief ratings were given for the plausible than the implausible event but only when the event allegedly happened once. This pattern was not observed for false recollection ratings. The present study provides new perspectives on how false beliefs and memories can be implanted.

Email: Henry Otgaar, henry.otgaar@maastrichtuniversity.nl

2:30-2:50 PM (231)

Can Deepfake Media Effect Voters' Memories and Intentions? GILLIAN MURPHY, *University College Cork*, DIDIER CHING, *University College*

Cork, JOHN TWOMEY, University College Cork, CONOR LINEHAN, University College Cork — As a technology that can depict a person doing or saying things they never did, deepfakes pose a potentially grave misinformation threat. However, real-world evidence of widespread or consequential deepfake deception is rare and experimental evidence concerning their effects is in its infancy. Here, we report a series of studies examining the effects of deepfake media on voters in real-world political elections in Ireland and the USA (N=3,000). We compare deepfake misinformation effects to less technically advanced means of defaming politicians, such as simple misleading news stories. We critically consider what, if any, aspects of deepfake misinformation are novel and uniquely powerful, relative to established misinformation effects that are well defined in psychological literature. We also discuss the ethics of conducting misinformation experiments of this kind and report on the effectiveness of our debriefing procedures.

Email: Gillian Murphy, gillian.murphy@ucc.ie

2:50-3:10 PM (232)

Social Network Structure Shapes the Formation of True and False memories at Collective Level.

LLUÍS FUENTEMILLA, University of Barcelona — Societal structures and theoretical models of memory organization share network-like features, suggesting potential mutual insights into how information spreads and shapes collective memories. Here, we used experimental manipulations of the topological structure in lab-created community networks during a computer-mediated conversational recall task of lists of words from a DRM paradigm to test a central premise from the spreading of activation account in cognitive psychology: the emergence of true and false memories. We hypothesized that social network structure, whether clustered or not, would influence the formation of true and false memories. We found that information exchange promoted true memories in clustered networks by reinforcing the mnemonic convergence of the community members' memories. Conversely, nonclustered networks lead to a greater number of false memories by increasing widespread cross-activation of nonoverlapping memories, blurring the boundaries between true and false memories. Current findings provide empirical evidence that mnemonic spreading within the social network influenced the emergence of true and false memories and

highlight the dynamic interplay between network topology, memory dynamics, and collect

Email: Lluís Fuentemilla, l.fuentemilla@ub.edu

3:10-3:30 PM (233)

Individuals Experiencing Greater Social Jet Lag Are More Susceptible to the Continued Influence Effect of Misinformation.

COURTNEY A. KURINEC, Washington State University, ANTHONY R. STENSON, Eastern Oregon University, PAUL WHITNEY, Washington State University, JOHN M. HINSON, Washington State University —

Misinformation is recognized as a serious problem, and one that is difficult to combat, as it can continue to exert an influence even after correction. The purpose of the present study was to investigate the role of fatigue, which is known to affect memory and cognitive flexibility, in the continued influence effect of misinformation (CIEM). We asked participants to keep a diary of sleep and wake times for one week before reading fictional news articles and follow-up articles that did or did not correct misinformation. Participants were split into groups based on sleep duration and level of social jet lag, or difference between sleep onset on workdays and free days. People with greater social jet lag showed greater influence of misinformation even after correction, while shorter sleep duration by itself had no impact. These findings suggest that misalignment between endogenous and socially imposed sleep-wake times increases vulnerability to the CIEM.

Email: Courtney Kurinec, courtney.kurinec@wsu.edu

Concepts and Categories

Saturday, November 23, 2024, 1:30-3:30 PM US EST

Chaired by Steven M. Smith, *Texas A&M University*

1:30-1:50 PM (234)

Evidence of a Bias for Proximal Responses When Labelling Perceptually Closer Stimuli.

WESLEY LEONG, University of Connecticut, EILING YEE, University of Connecticut — Is our success at learning to label novel semantic categories affected by properties of the labels themselves? When given four options (e.g., 1, 2, 3, 4), do we have a bias to assign numerically/spatially closer labels (e.g., keyboard keys 1 and 2 vs. 1 and 4) to perceptually closer stimuli? We present evidence for this using open data from two auditory learning experiments (Roark & Chandrasekaran, 2023). Critically, for each

category (e.g., 1), two other categories (e.g., 2 and 4) were equidistant from it in stimulus space, allowing us to analyze preference for either number at the same stimulus distance. When two successive stimuli sounded similar, participants made numerically/spatially closer responses (e.g., 1-2) more often than numerically further responses (e.g., 1-4). This pattern reversed when stimuli were further apart, such that the interaction between stimulus distance and bias for the closer response was significant ($p < 0.001$), and was present even in the second half of the experiments ($p < 0.01$). This bias to map more numerically/spatially distant labels onto more distant stimuli suggests that how we label things can be influenced by (ostensibly irrelevant) dimensions of the space from which the labels are drawn.

Email: Wesley Leong, wesley.leong@uconn.edu

1:50-2:10 PM (235)

Generative Insight and Incubation in Category Production.

STEVEN M. SMITH, *Texas A&M University*, MATTHEW KIDD, *Texas A&M University*, VISHEETA CHANDOLIA, *Texas A&M University*, MORGAN PALADINO, *Texas A&M University* — A dichotomous view of creative cognition sees a sharp distinction between generating creative ideas via insight in problem solving versus creative ideation in the form of divergent thinking. Our findings show that insight moments are also experienced in generative tasks, including divergent thinking and category production, and that the proportion of responses experienced as aha! moments increases incrementally over the course of production. We examined the role of insight moments in generative incubation effects, using category generation tasks. Incubated reminiscence effects in recall, found primarily in the first moments after returning to a recall task, suggest similar effects in generative ideation. Our research indicates that neurocognitive theories of creative ideation must consider memory retrieval dynamics, including response dominance hierarchies and the build-up and dissipation of output interference.

Email: Steven Smith, stevesmith@tamu.edu

2:10-2:30 PM (236)

Representational Change from Perceptual Learning of Skin Lesion Classifications.

VICTORIA L. JACOBY, *University of California, Los Angeles*, CHRISTINE M. MASSEY, *University of California, Los Angeles*, PHILIP J. KELLMAN,

University of California, Los Angeles — Some studies have suggested that perceptual learning of categories can produce representational change. Discovery and selective extraction of perceptual information that differentiates members of different categories and unites members of the same category may alter category representations, measurable through changes in perceived similarity of instances. Most studies measuring representational change have focused on domains with few categories (often two) and highly controlled stimuli. In the present study, we measured changes in the similarity among instances of categories in a high-stakes, real-world task: classification of benign and cancerous skin lesions. Medically-naive participants rated the similarity of instances of 10 skin lesion categories before and after categorization training that consisted entirely of paired comparison trials. Results indicated that, post-training, items from the same category were perceived as more similar, whereas items from different categories were perceived as more distinct. These findings support the notion that perceptual learning can effectively induce representational change, promoting within-category compression and between-category distinctiveness in a difficult real-world domain.

Email: Victoria Jacoby, vjacoby@g.ucla.edu

2:30-2:50 PM (237)

The Role of Interoceptive Processing in the Representation of Emotion Concepts: Evidence from Functional Connectivity.

ALEXANDRA E. KELLY, *Drexel University*, EVANGELIA G. CHRYSIKOU, *Drexel University* — Conceptual knowledge about emotions is inherently associated with sensation, particularly interoceptive signals regarding physiological states (e.g. high heart rate, accelerated breathing). It is unknown whether and to what extent individual differences in the ability to sense and interpret these interoceptive signals affect the long-term representations of emotion concepts. In this study, we administered a semantic relatedness judgment task using emotion concepts and constructed semantic networks based on the participant-specific relatedness judgment ratings. These networks were statistically tested for differences based on participants' interoceptive sensibility as assessed by a self-report scale. Functional magnetic resonance imaging data during the relatedness judgments allowed us to assess how patterns of functional connectivity may mediate differences in the emotion-specific semantic network structure. In line with

a constructionist approach to emotion, our results provide tentative evidence that emotion concepts exhibit some modality-specificity in their grounding, as participants draw on the same neural resources used to process interoceptive signals to access and evaluate generalized knowledge about emotions.

Email: Alexandra Kelly, ak3859@drexel.edu

2:50-3:10 PM (238)

Procedural and Declarative Category Learning Form Overlapping Representations. PRIYA B.

KALRA, *The University of Western Ontario*, LAURA BATTERINK, *The University of Western Ontario*, JOHN PAUL MINDA, *The University of Western Ontario*, MARC F. JOANISSE, *The University of Western Ontario* — Studies of interaction between procedural and declarative learning have focused on largely on competition. Less attention has been paid to interactions between the representations created by each system. We have previously demonstrated that information from both declarative and procedural learning can simultaneously contribute to response selection using a category learning task with a declarative rule and a probabilistic color distribution. In the current study, we use fMRI-RSA to investigate whether separate or shared representations are formed by these forms of learning. Patterns of activation in regions of interest identified by univariate analysis (including inferior frontal gyrus, ventro-medial frontal gyrus, inferior parietal lobule, and striatal areas) were compared to theoretical matrices for each form of learning. Preliminary representational similarity analysis results suggest that multiple representations are formed across this network: some areas seem more sensitive to probabilistic color cues, while others are sensitive to rule diagnostic cues. Importantly, some areas seem sensitive to both, suggesting that both separate and combined representations may exist at multiple processing stages.

Email: Priya Kalra, pkalra7@uwo.ca

3:10-3:30 PM (239)

Comparing Supervised, Unsupervised, and Incidental Category Learning in Humans and a Neural Network Model. CASEY L. ROARK,

University of New Hampshire — Humans and machines can learn from the structure in environments such as how stimuli can be grouped into categories explicitly with feedback and implicitly without feedback. Category learning may also be incidental, such that supervision

comes not from overt corrective feedback, but from how the categories align with other regularities in the environment. It is not clear how category representations are affected by different training methods. We compared perceptual category learning and subsequent representations in supervised, unsupervised, and incidental training in human participants and a neural network model. Overall, the experiments and simulations demonstrated that different training methods result in similar category representations with some key differences in confusion patterns of categories that require integration across multiple dimensions. These results indicate that complex category learning is possible in a variety of tasks and highlight the importance of considering learning mechanisms beyond supervision in theories of category learning.

Email: Casey Roark, casey.roark@unh.edu

Cognition II

Saturday, November 23, 2024, 1:30-3:30 PM US EST

Chaired by Kirsten C. S. Adam, *Rice University*

1:30-1:50 PM (240)

Behavioral Signatures of the Rapid Collaboration of Working Memory and Long-Term Memory. KIRSTEN C.S. ADAM, *Rice University*, CHONG ZHAO, *The University of Chicago*, EDWARD VOGEL, *The University of Chicago* —

Working memory and long-term memory are often studied in isolation. However, in everyday life we seamlessly and continuously exchange information between working memory and long-term memory. Here, our goal was to characterize how long-term memory can be recruited to circumvent capacity limits in a typical visual working memory task (i.e., remembering colored squares). In two experiments ($N=50$ and $N=52$), we used a whole-report working memory task with explicit rather than incidental repetitions of arrays. In contrast to prior work with incidental repetitions, we found that explicit repetitions of arrays yielded robust improvement to working memory performance, even after a single repetition. Participants performed above chance at recognizing repeated arrays in a later long-term memory test, consistent with the idea that long-term memory was used to rapidly improve performance across array repetitions. Finally, we analyzed inter-item response times and found a response time signature of chunk formation that only emerged after the array was repeated (inter-response time slowing after 2-3 items); thus, inter-

item response times may be useful for examining the coordinated interaction of visual working memory and long-term memory in future work.

Email: Kirsten Adam, kirsten.cs.adam@gmail.com

1:50-2:10 PM (241)

Reevaluating Working Memory: Selective Reactivation of Long-Term Memories for Adaptive Behavior.

EREN GÜNSELI, Sabancı University — Working memory is traditionally viewed as a buffer for accessing long-term memories. However, recent research suggests that long-term memory can directly guide behavior, raising the possibility that long-term memories are selectively reactivated in working memory for specific settings. To investigate this, we used an electrophysiological index of working memory to assess the reactivation of long-term memories under various task demands. Compared to a recognition task baseline, we found stronger reactivation for task switching and context changes, equal reactivation when anticipating interference, and smaller reactivation when anticipating attentional guidance. These results highlight the crucial role of memory reactivation in adapting to novel environments. Our research challenges prevailing models that consider working memory the default buffer for accessing long-term memories and instead underscores a flexible and dynamic interplay between long-term and working memory.

Email: Eren Günseli, eren.gunseli@sabanciuniv.edu

2:10-2:30 PM (242)

How Do Representations in Working Memory and Long-Term Memory Interact in Guiding Attention?

RUHI BHANAP, University of Zurich, LEA M. BARTSCH, University of Zurich, RUHI BHANAP, University of Zurich — Research indicates that both working memory (WM) and long-term memory (LTM) can guide attention, but little is known about how they interact during search behavior. The current study investigated if attentional guidance benefits from the same representation being available in WM and LTM. Participants learned 120 object-color associations, then viewed the same objects one at a time in a WM phase with a search task, according to 3 conditions: consistent (WM & LTM color were the same), inconsistent (both WM & LTM colors present), only (only prompted color present). A prompt indicated whether to search for the color associated with WM or LTM. Overall participants

were slower for LTM prompts and search times did not differ across conditions. For WM prompts, they were slowest in consistent but similar in inconsistent and only conditions. When asked to reproduce associated colors, errors were smallest in consistent and similar in inconsistent and only conditions. Results suggest that holding a representation in both WM and LTM benefits recall but slows attentional guidance—reflecting on how a representation in memory is used differentially for ongoing processing and in line with the idea of a gate between LTM and WM.

2:30-2:50 PM (243)

Resolving Competition in Long-Term Memory-Guided Visual Attention.

SERRA E. FAVILA, Brown University, MARIAM ALY, Columbia University — Long-term memory can guide visual attention, improving our ability to quickly detect stimuli in complex environments. However, because many of our memories contain overlapping features, memories often compete to control attention. We hypothesized that hippocampal computations that resolve competition in memory also shape the precision of sensory representations that guide attention. To test this hypothesis, we leveraged fMRI-based pattern similarity, receptive field modeling, and eye tracking in humans performing a memory-dependent visual search task. In the hippocampus, differentiation of competing memories predicted the precision of saccades during search. In visual cortex, preparatory coding of remembered target locations predicted search success, whereas preparatory coding of competing locations predicted search failure due to interference. These effects were linked: stronger hippocampal memory differentiation was associated with lower competitor activation in visual cortex, yielding more precise preparatory representations. These results demonstrate a role for long-term memory systems in shaping the precision of sensory representations, highlighting links between mechanisms that overcome competition in memory and perception.

Email: Serra Favila, serra.favila@brown.edu

2:50-3:10 PM (244)

Discarding Irrelevant Action Plans Leads to Unbinding of Their Feature Codes.

VIOLA MOCKE, Julius-Maximilians-Universität Würzburg, BESTE CHRISTIAN, Technische Universität Dresden, PASTOETTER BERNHARD, University of Trier, WILFRIED KUNDE, Julius-Maximilians-Universität

Würzburg — Actions can be described by codes representing their relevant features (e.g., "short" and "right" for a brief press of a key on the right). Feature-based accounts of action control state that action planning entails the activation and binding of such feature codes into an 'event file'. Such binding becomes visible in the ease of executing more or less similar actions while the original action plan is kept in working memory. From time to time, action plans become irrelevant before they get to be executed. We investigated what happens to maintained action plans once they are discarded and tested four models regarding the fate of such plans: unbinding of the feature codes, the paradoxical strengthening of the plan, the selective suppression of the intact plan, and the global suppression of all subsequent action. Two experiments yielded evidence for a quick unbinding of action features after discarding. These findings suggest that action plan deconstruction relies on feature unbinding just as action plan construction relies on feature binding.

Email: Viola Mocke, viola.mocke@uni-wuerzburg.de

3:10-3:30 PM (245)

Thinking on Ice: Divergent Thinking Preserved Under Acute, Intense Cold Stress. MAX SMITH, *Leidos/Navy (contractor)*, TIMOTHY DUNN, *Naval Health Research Center*, NATHANIEL BARR, *Sheridan College*, DOUG JONES, *Naval Health Research Center* — Sudden cold-water immersion (CWI) triggers the cold shock response (CSR), which consists of cardiorespiratory responses that increase the chance of drowning. If CSR severity can be mitigated, life-saving actions must be taken within the first 10 minutes because after ~10 minutes, drowning occurs due to cold incapacitation. To date, research shows that executive functioning is impaired by acute stress. To evaluate whether the severity of the CSR impairs idea generation and evaluation, 29 active-duty Navy sailors completed the Divergent Association Task (DAT) individually and in groups (4–5 per group) prior to and during a 10-minute CWI (water temperature 1.3 °C). Results showed no relationship between CSR magnitude indexed by peak heart rate nor severity of cold stress indexed by skin temperature and DAT performance. It appears the ability to generate and evaluate ideas in an effort to increase chances of survival is relatively preserved in the critical ~10-minute window.

Email: Max Smith, max.k.smith3.ctr@health.mil

Reading I

Saturday, November 23, 2024, 1:30-3:30 PM US EST

Chaired by Gaisha Oralova, *University of Pittsburgh*

1:30-1:50 PM (246)

Do Deaf Readers Pre-Activate Phonology During Sentence Comprehension? ZED SEHYR, *Chapman University*, MANUEL PEREA, *University of València*, MAIRÉAD MACSWEENEY, *University College London*, MARTA VERGARA-MARTÍNEZ, *University of València*, EVA GUTIERREZ-SIGUT, *University of Essex*, DANIELLE MORAGA, *Chapman University* — We investigated the extent to which people who are deaf pre-activate semantic and phonological information during sentence reading for comprehension. We recorded EEGs from deaf and hearing participants reading high cloze-probability sentences, manipulating the sentence-final words across four conditions: congruent, semantically incongruent, pseudohomophone, and orthographic non-word. Preliminary data from 5 deaf and 8 hearing participants showed typical N400 responses for semantically incongruent words in both groups, indicating semantic pre-activation. Post-N400 responses diverged: hearing readers exhibited a positive-going late positive complex (LPC) for semantically incongruent endings, while deaf readers showed a negative-going LPC for incongruent endings. For hearing readers, the orthographic control differed from the congruent condition early on, while the pseudohomophone condition only differed after 400ms, indicating phonological pre-activation and a re-analysis of pseudohomophone as a misspelling. For deaf readers, both orthographic control and pseudohomophone differed from the congruent condition at the LPC stage.

Email: Zed Sehyr, sehyr@chapman.edu

1:50-2:10 PM (247)

Musical Advantage in Chinese Word Reading: The Role of Phonological Awareness But Not Tone Awareness. WILLIAM CHOI, *The University of Hong Kong*, ERIC SIU HANG KONG, *The Education University of Hong Kong*, VERONICA KA WAI LAI, *Manitoba University*, ALFREDO BAUTISTA, *The Education University of Hong Kong* — Music training improves word reading by enhancing phonological awareness. However, much of the evidence originated from alphabetical languages. In logographic writing systems such as Chinese, it remains unknown whether

music training can improve word reading, much less its underlying mechanism. To inform theory and practice, this correlational study investigated whether and how musicianship improves Chinese word reading. We tested Chinese children musicians and non-musicians on Chinese word reading, phonological awareness, tone awareness, and cognitive abilities. Musicians outperformed non-musicians on word reading, phonological awareness, but not tone awareness. Phonological awareness was a significant predictor of word reading, even after controlling for age, cognitive abilities, and tone awareness. However, tone awareness did not significantly predict their word reading. Collectively, these correlational findings suggest that music training may improve Chinese word reading, potentially through enhancing phonological awareness rather than tone awareness.

Email: William Choi, willchoi@hku.hk

2:10-2:30 PM (248)

Parafocal Preprocessing of Morphological Structure for Deaf and Hearing Readers. EMILY SAUNDERS, *San Diego State University*, ELIZABETH R. SCHOTTER, *University of South Florida*, KAREN EMMOREY, *San Diego State University* — Evidence of parafocal preprocessing of morphology is mixed for English readers. A preview benefit from morphology is observed for suffixed words, but not compound or prefixed words. English morphology may be particularly accessible for deaf readers due to consistent spelling-to-meaning mappings. Using a gaze-contingent display change paradigm, we tested whether deaf and hearing readers with varying morphological awareness (MA) showed differences in parafocal processing of morphology during sentence reading. Data from 24 deaf and 24 hearing readers revealed a significant interaction between group, MA skill, and preview condition ($p=0.02$). Deaf readers with high MA showed a graded priming effect, with shorter gaze durations on target words ("sadness") following a pseudomorphological preview ("sadment") compared to a nonmorphological preview ("sadnard"). Hearing readers were unaffected by the morphological preview regardless of MA skill. These results suggest that parafocal processing of morphology is impacted by MA for deaf readers, but not hearing readers.

Email: Emily Saunders, ecsaunder@sdsu.edu

2:30-2:50 PM (249)

The Saccadic Main Sequence in L1 and L2

Reading: Evidence from the MECO Database.

VICTOR KUPERMAN, *McMaster University* — The saccadic "main sequence" is a highly regular relationship between amplitude, duration and peak velocity of saccades in human eye movements. Saccades are rapid and their execution is generally considered to be largely devoid of cognitive influences. Under this perspective, characteristics of saccades executed during text reading should not vary as the function of the readers' experience with the language in which they read. The alternative perspective (Ming et al., 2024), derived from within-participant studies of vertical and horizontal reading, suggests that the reader's experience can affect saccadic properties. This study examines 20 samples of participants from the MECO database reading in their first language (L1) and English as second language (L2). In the participant groups with the lowest L2 comprehension, saccades that took the same time to execute are 5-10% longer in amplitude when reading in L1 than in L2. We conclude that cognitive factors like reading experience affect oculomotor control even deeper than commonly thought.

Email: Victor Kuperman, vickup@mcmaster.ca

2:50-3:10 PM (250)

Where and When Saccade Decisions Do Not Dissociate with Perceptual and Word Identification Spans: Evidence from the Eye Movements of Deaf and Hearing Readers.

ELIZABETH R. SCHOTTER, *University of South Florida*, CASEY STRINGER, *Milliman*, EMILY SAUNDERS, *San Diego State University*, FRANCES G. COOLEY, *Rochester Institute of Technology*, GRACE C. SINCLAIR, *University of South Florida*, KAREN EMMOREY, *San Diego State University* — Theories of reading posit that "where" and "when" saccade decisions are driven by visual and linguistic factors, extracted from the perceptual span (PS) and word identification span (WIS), respectively. We tested this hypothesized dissociation by masking, outside of a visible window, either the spaces between the words (to assess the PS) or the letters within the words (to assess the WIS). Analysis of reading rate suggested the PS extended to 10-14 characters and the WIS extended to 8 characters to the right of fixation, but the spans did not dissociate between where decisions (saccade length) or when decisions

(fixation duration). We also tested deaf readers, for whom neither dissociated span was larger than that of the hearing readers, suggesting their previously reported enhanced span requires integration of both types of information. Deaf readers did show a larger increase in reading rate when leftward text was available, suggesting a more symmetrical distribution of attention. Our results challenge the assumed dissociation between type of span and type of saccade decision, and indicate that reading efficiency requires access to both perceptual and linguistic information in the periphery, and bilaterally for deaf readers.

Email: Elizabeth Schotter, eschotter@usf.edu

3:10-3:30 PM (251)

Early Effects of Word Surprisal as Registered by Fixation-Related Potentials During Typical Reading. GAISHA ORALOVA, *University of Pittsburgh*, LIN CHEN, *University of Illinois Urbana-Champaign*, CHARLES A. PERFETTI, *University of Pittsburgh* — Co-registration of EEG and eye-tracking provides fixation-related potentials (FRPs) along with eye-tracking measures and allows for the exploration of the neural correlates of incremental reading processes, including their time-course, when text is displayed normally (typical reading). In this study, we co-registered EEG and eye-tracking to test the effects of word frequency and transformer-based word surprisal on N170 and N400. Two types of first fixations were explored: single fixations and first-of-multiple (first fixation followed by re-fixations on the same word). Overall, the results show that a word's surprisal affects both N170 and N400 in interaction with its frequency, which suggests that context affects early word processing phases and continues its influence during N400. Interestingly, during N170, surprisal affected lower frequency words in single fixations, whereas in first-of-multiple fixations it only affected higher frequency words. During N400, both types of first fixations were affected by word surprisal with the effect being more pronounced for lower frequency words. We provide evidence for early effects of surprisal during typical reading, which are modulated by word frequency in relation to the number of fixations on a word.

Email: Gaisha Oralova, gaishaoralova@gmail.com

Event Cognition

Saturday, November 23, 2024, 3:30-5:50 PM US EST

Chaired by Jeffrey M. Zacks, *Washington University in St. Louis*

3:30-3:50 PM (252)

Attention to Event Segmentation Improves

Memory for Actions. JEFFREY M. ZACKS, *Washington University in St. Louis*, MEREDITH G. MOORE, *Washington University in St. Louis*, MAVERICK E. SMITH, *Washington University in St. Louis* — How people segment their continuous experience into meaningful events affects how episodic memories are formed, stored, and organized. People who attend to how they naturally segment, compared to those who intentionally encode, have better memory up to one month later (Flores et al., 2017, JEP: General). Does attention to segmentation improve recall for actions, background details, or both? The attention to actions hypothesis states that orienting attention to event segmentation improves memory by encouraging attention to actions. This leads to improvements in memory for actions at the cost of memory for background details. Alternatively, the event model updating hypothesis states that orienting attention to event segmentation improves event memory by increasing resources devoted to prediction error monitoring. This leads to improvements in memory for both actions and background information. In two experiments, participants who segmented movies recalled more action-relevant information, whereas those who watched without segmenting recalled more background details. Thus, manipulating one's orientation to event segmentation encourages greater attention to the actions of actors at the cost of attention to the background.

Email: Jeffrey Zacks, izacks@wustl.edu

3:50-4:10 PM (253)

Education, Not Age, Linked to Narrative

Comprehension. MARKUS HUFF, *University of Tübingen*, NATALIA GAGARINA, *Leibniz-Zentrum Allgemeine Sprachwissenschaft*, EKATERINA VARKENTIN, *Leibniz-Institut für Wissensmedien*, IRINA BRICH, *Leibniz-Institut für Wissensmedien* — Understanding narratives is essential for societal participation. However, having insufficient literacy or age-related cognitive changes can limit narrative



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comprehension and create participation barriers. Our study investigates pictorial narratives to convey information beyond text and break down such barriers. Current research knows little about the adult comprehension of pictorial narratives. We addressed this gap by conducting a large representative (adult German sample, N=1,487) experimental online study assessing the influences of age and education on the comprehension of textual and pictorial narratives. Participants were tested on the generation of bridging inferences as a central aspect of narrative comprehension. Three main findings emerged: better comprehension within higher educated groups, stable narrative comprehension across the measured adult age span, and better comprehension for pictorial than textual narratives across all education and age groups. This lays the groundwork for better understanding the influences of age and education, as well as refining theories on narrative comprehension.

Email: Markus Huff, markus.huff@uni-tuebingen.de

4:10-4:30 PM (254)

Learning in One Room or Two. GABRIEL A. RADVANSKY, *University of Notre Dame*, NOAH CROCKETT, *University of Notre Dame*, DANI PARRA, *University of Notre Dame*, ABIGAIL DOOLEN, *University of Notre Dame* — Previous research has shown that the segregation of information into separate events can facilitate or worsen retrieval, depending on the nature of the information and how it is accessed. In Experiment 1, we assessed this with word lists as well as exploring the effect of delay on memory. In Experiment 2, we assessed if this also applies to more complex texts. In both experiments people navigated a virtual environment, learning word lists or texts in either 1 room (single room condition) or 2 rooms (multiple rooms condition). For Experiment 1, there was a delay (either 0, 1 or 2 rooms) between learning each list and recall. We found no effect of condition or delay. For Experiment 2, using recognition, we did find an effect of condition with event model memory being better in the single room than the multiple rooms condition. However, textbase and surface form memory were better in the single room condition. This may be due to how each of the three levels of memory is structured and how they interact with the structure of the experienced environment.

Email: Gabriel A. Radvansky, gradvans@nd.edu

4:30-4:50 PM (255)

Meaningful Moments During Film Viewing Are Represented and Remembered Similarly Across Participants. ZACHARIAH REAGH, *Washington University in St. Louis*, ADITYA UPADHYAYULA, *Washington University in St. Louis*, JEFFREY M. ZACKS, *Washington University in St. Louis*, JOHN M. HENDERSON, *University of California, Davis* — How do we represent complex experiences? Prior studies have characterized the way people segment continuous experiences into events, but far less is known about the internal structure of event representations. Here, we introduce a novel storyboard paradigm to investigate the importance of specific moments in event representations. Participants watched 50 video clips (1-2 minutes each) from an episode of BBC's *Sherlock*. They were then asked to create a storyboard by choosing a subset of individual frames from the clip to communicate the underlying story. Participants showed strong agreement on storyboard frames, and the moments chosen were distinct from event boundaries. In an open fMRI dataset featuring encoding and recall of the same *Sherlock* episode, intersubject pattern similarity in the posterior medial cortex (PMC) during each moment at encoding significantly correlated with that moment's probability of being a storyboard frame. During recall, storyboard moments strongly predicted event pattern reinstated within the PMC. These effects were not observed for event boundaries. These results indicate that storyboard moments capture important information about how we represent and remember the meaning of complex experiences.

Email: Zachariah Reagh, zreagh@wustl.edu

4:50-5:10 PM (256)

Reducing Uncertainty Alters EEG Signatures of External Processing Around Event Boundaries. KHENA M. SWALLOW, *Cornell University*, KAREN SASMITA, *Cornell University* — Event perception involves the integration of external information about the world with internal expectations about how experience unfolds over time. However, the relative balance between these two sources of information may shift toward external information when events change (event boundaries) and uncertainty about what is about to happen increases. Does reducing uncertainty about an experience change the effect of event boundaries on external information processing? To address this question

we measured EEG alpha band (8-12 Hz) power, which decreases with greater external attention, as participants viewed movie clips. We manipulated uncertainty in two ways: whether this was the first or second viewing of the clip (familiarity), and whether participants could freely move their eyes (unrestricted visual sampling) or maintained central fixation (restricted visual sampling). We found that alpha power decreased after event boundaries and that both familiarity with the clip and the ability to freely sample visual information modulated this effect. Uncertainty thus contributes to event processing, both through knowledge about what is happening when and by the ability to develop that knowledge through visual information sampling.

Email: Khena Swallow, kms424@cornell.edu

5:30-5:50 PM (258)

Longer Neural States with Increasing Age: A Marker of Reduced Event Model Updating?

KAREN L. CAMPBELL, *Brock University*, SELMA LUGTMEIJER, *University of Birmingham*, DJAMARI OETRINGER, LINDA GEERLIGS — Aging is associated with a reduced ability to inhibit recently attended information. As a result, older adults tend to carry the past with them, even as tasks or goals change. While age-related declines in inhibitory control have typically been shown using simple stimuli (e.g., words and objects), we recently showed that this effect extends to more complex movie stimuli. Older adults with poor attentional control seem to form associations across successive events, as indexed by relatively better cued recall across event boundaries. Here, I will present new neural data which suggests that older adults' propensity to carry the past with them is also reflected by longer neural states in the brain. Participants from the CamCAN cohort were scanned with fMRI while viewing an 8-min movie. To identify neural state boundaries, we used a data-driven state segmentation method, which identifies the optimal number of state boundaries based on correlations of brain activity over time. We observed longer neural states with increasing age, particularly in visual cortex, insula, and medial and lateral inferior frontal gyri. These longer states may reflect reduced event model updating with age, or a blurring of details across event boundaries.

Email: Karen Campbell, Karen.Campbell@brocku.ca

Attention

Saturday, November 23, 2024, 3:30-5:50 PM US EST

Chaired by Viola S. Stoermer, *Dartmouth College*

3:30-3:50 PM (259)

Experience-Driven Feature Attention Speeds Early Target Selection and Modulates Feature Representations Proactively. VIOLA S.

STOERMER, *Dartmouth College*, DOUGLAS ADDLEMAN, *Gonzaga University*, KEVIN ORTEGO, *Dartmouth College* — Statistical regularities in the environment shape how attentional resources are allocated. For example, if during visual search you experience that red items are frequently task-relevant, you become faster at finding red targets; similarly, if you experience that they are frequently task-irrelevant, you ignore red items more effectively. What are the underlying mechanisms supporting experience-driven feature-based attention? In this talk, I will present recent data from our lab showing that attentional selection—as indexed by the N2pc component of the event-related potential—occurs earlier for frequently experienced feature values, suggesting that experience-driven attention can speed the individuation of targets and distractors within the first 200ms of processing. Consistent with this, other behavioral studies from our lab demonstrate that frequently experienced features are proactively enhanced or suppressed for learned target and distractor features, respectively. Together, these data show that experience-driven attention provides an effective route to selecting and individuating task-relevant from irrelevant information.

Email: Viola Stoermer, viola.s.stoermer@dartmouth.edu

3:50-4:10 PM (260)

Extracting Attentional Control from Working-Memory Tasks: It Doesn't Solve the Problem!

ALODIE REY-MERMET, *Vinzenz Pallotti University*, NICOLAS ROTHEN, *UniDistance Suisse* — Attentional control—also called executive functions or cognitive control—refers to our ability to maintain goal and goal-relevant information in the face of distraction. There is growing evidence questioning the validity of the typical measures of attentional control, asking for other ways of measuring this construct. Early research has suggested to extract attentional control from tasks measuring working-memory (WM; i.e., the temporary maintenance and manipulation of information) and short-term

memory (STM; i.e., the temporary maintenance of information). Attentional control was modeled either as the residual variance of WM after controlling for STM or as the common variance across WM and STM measures. So far, the robustness of these models has not been systematically tested. In the present study, we did so by estimating the models on three datasets using the original correlation matrices and 5,000 correlation matrices bootstrapped from the original correlation matrices. The models were not fully replicated across the datasets. Moreover, they were not robustly observed across the 5000 correlation matrices. Therefore, using WM and STM tasks does not solve the difficulty of establishing valid measures of attentional control.

Email: Alodie Rey-Mermet, alodie.rey-mermet@fernuni.ch

4:10-4:30 PM (261)

Does Increased Alertness Improve Distractors' Rejection? TAL MAKOVSKI, *The Open University of Israel* — Increased phasic alertness is a useful mechanism that temporarily improves many aspects of behavior. The present study examined the effect of increased alertness after hearing a warning cue before the presentation of visual distractors, on the effectiveness of later rejecting these distractors. In three experiments, participants performed a color short-term memory task with three conditions: no-distractors, distractors, and distractors preceded by a warning cue. The warning cues expedited the detection of dots appearing infrequently and unexpectedly after the distractors, confirming that the cues effectively increased alertness. Importantly, however, memory performance was not improved following the cues, suggesting that increased alertness has a limited impact on filtering out irrelevant, distracting information. This finding further indicates that allocating attention to upcoming distractors is not part of an effective process for rejecting distractors, but rather a mandatory process that takes place when expecting any stimulus to appear.

Email: Tal Makovski, tal.makovski@gmail.com

4:30-4:50 PM (262)

The Effect of Social Exclusion on Self-Prioritization. ANNA PECCHINENDA, DR, *La Sapienza University of Rome*, LUCA CAMMISA, *Sapienza University*, FEDERICA GIOVANNIELLO, *Sapienza University*, ALLA YANKOUSKAYA, DR, *Bournemouth University* — Social exclusion hinders

some basic needs of human existence, the needs to belong and self-worth (Williams, 1997) and motivates attempts to reconnect with others, creating links between oneself and others. We assessed how social exclusion affects the self-prioritization effect, which refers the tendency to prioritize associations with oneself over those with familiar or unfamiliar others (Yankouskaya & Sui, 2022). To induce social exclusion, participants (N=116) played Cyberball (Williams et al., 2000) and completed an associative matching task, in which they learned to associate labels (self, friend, stranger) to geometric shapes (triangle, square, circle), and then assessed whether new pairings matched the learned associations. Findings showed that only participants in the exclusion group had faster responses on trials matching geometric shapes to strangers, ($F_2, 220=25.47, p<.001$, partial $\eta^2=.188$). The observed shift in prioritisation from the self to the stranger is the first demonstration of how deep social exclusion can penetrate the powerful behavioural driver such as self-relevance. This finding adds to the self-attention network model by demonstrating factors affecting the self-prioritisation in attentional context.

Email: Anna Pecchinenda, anna.pecchinenda@uniroma1.it

4:50-5:10 PM (263)

A Big Data Approach to Modeling the Joint Influences of Stimulus, Trial Hysteresis, and Individual Differences on Variability in Trial-by-Trial Visual Search Performance. AUDREY SIQI-LIU, *The George Washington University*, EMMA SIRITZKY, *The George Washington University*, CHLOE CALLAHAN-FLINTOFT, *U.S. Army Combat Capabilities Development Command (DEVCOM) Soldier Center*, JUSTIN GRADY, *The George Washington University*, SARAH MALYKKE, *The George Washington University*, KELVIN OIE, *US Army Research Laboratory*, STEPHEN MITROFF, *The George Washington University*, DWIGHT J. KRAVITZ, *The George Washington University & US National Science Foundation's Directorate of Social, Behavioral, and Economic Sciences (SBE) Division of Behavioral and Cognitive Science* — Individuals differ greatly and consistently from each other in their aptitude for particular tasks such as visual search, and their behavior is strongly affected by both short- (e.g., trial hysteresis) and long-term experience (e.g., practice). Predicting real-world behavior—which can involve a myriad of contextual factors—requires understanding the joint



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contribution of 1) stimulus effects (e.g., set size, salience), 2) prior experiences, and 3) individual differences, ideally at the level of single trials. Using a massive dataset (~3.8B trials, ~15.5M players) from a gamified airport security screening task (Airport Scanner, Kedlin Co.), this project examined all three factors and their interactions in determining trial-by-trial visual search performance. Model predictions revealed quantifiable effects of each factor, with individual differences being the strongest by far. These results provide insights for predicting real-world behavior. First, behavior is significantly influenced by even small changes in design (e.g., stimuli) and training (e.g., experience)—presenting challenges but also opportunities for optimization. Second, basing personnel selection on task efficiency may massively improve performance.

Email: Audrey Siqi-Liu, audrey.liu@email.gwu.edu

5:10-5:30 PM (264)

Are 'Look But Fail to See' (LBFTS) Errors Negligent? JEREMY M. WOLFE, *Brigham and Women's Hospital & Harvard Medical School*, JOHN BANJA, *Center for Ethics, Emory University*, STEPHEN WAITE, *SUNY Downstate Medical Center*, BRIAN SHEPPARD, *Seton Hall University*, ELIZABETH KRUPINSKI, *Emory University, Atlanta*, ROLF DIETER HOLLSTEIN, *Michigan State University*, MICHAEL BRUNO, *The Pennsylvania State University Health Milton S. Hershey Medical Center* — People fail to see clearly visible targets in a variety of situations from typos that are actively searched for in a manuscript to gorillas that unexpectedly appear in the midst of a ballgame. Some of these missed targets are important. For instance, radiologists sometimes miss tumors in mammograms that turn out to be “retrospectively visible” (i.e., clearly detectable when pointed out after the fact). Such errors can lead to lawsuits for negligent malpractice. Clearly, radiologists can be negligent when they miss abnormalities, but does it make sense for courts to allow jurors to use examples of what can be called “normal blindness” as the basis for a finding of negligence? This talk will briefly describe some causes of Look But Fail to See errors. We will argue that these errors would be treated differently by the legal profession if judges and lawyers better understood how someone can miss something “right in front of their eyes.”

Email: Jeremy Wolfe, jwolfe@bwh.harvard.edu

5:30-5:50 PM (265)

Categorically Distinct Subsets Allow Flexible Memory-Selection in Hybrid Search. NURIT GRONAU, *The Open University of Israel*, MAKALIA NARTKER, *Johns Hopkins University*, SHARON YAKIM, *The Open University of Israel*, IGOR UTOCHKIN, *The University of Chicago*, JEREMY M. WOLFE, *Brigham and Women's Hospital & Harvard Medical School* — In hybrid search, people look for one of several memorized targets among irrelevant distractors. Sometimes, only a subset of these targets is relevant to current task demands, requiring the restriction of memory search to a specific memory sublist. Can we partition memory into several sublists and shift between them on a trial-by-trial basis? While previous research failed to demonstrate flexible memory partitioning, we hypothesized that categorically defined subsets should still allow efficient memory selection within a dynamically changing environment. In three experiments, we showed that successful restriction of memory search can occur when the memory subsets are defined by clear semantic (but not visual) boundaries. Furthermore, memory-subset switching is costless and immune to visual search interference caused by the concurrent activation of multiple attentional subsets within the entire block. Our results underscore the importance of conceptual information in the organization of activated long-term memory (aLTM), which presumably provides a temporary store for the different memory subsets. We further discuss the factors guiding visual search versus memory search and their intricate relationships.

Email: Nurit Gronau, nuritgro@openu.ac.il

Metacognition

Saturday, November 23, 2024, 3:30-5:50 PM US EST

Chaired by Daniel M. Oppenheimer, *Carnegie Mellon University*

3:30-3:50 PM (266)

Evidence of Metacognitive Illusions in Prospective and Retrospective Judgements About the Distracting Effects of Music on Cognitive Performance. RAOUL BELL, *Heinrich Heine University Düsseldorf*, GESA FEE KOMAR, *Heinrich Heine University Düsseldorf*, LAURA MIETH, *Heinrich Heine University Düsseldorf*, AXEL BUCHNER, *Heinrich Heine University Düsseldorf* — Two



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experiments were conducted to examine how people metacognitively judge the distracting effects of music on cognitive performance. The direct-access account implies that people have direct insight into the cognitive processes underlying distraction by music. In contrast, the processing-fluency account implies that people rely on the processing-fluency heuristic to judge the distracting effects of music. To test these accounts, processing fluency was manipulated independently of acoustic complexity by reversing the playback direction of the music. When asked to provide both prospective and retrospective metacognitive judgments of distraction, participants judged only backward music, but not forward music, to be distracting even though, objectively, both types of music disrupted cognitive performance equally. This metacognitive illusion indicates that people do not have direct access to the cognitive processes underlying distraction by music and instead rely on processing fluency to form heuristic metacognitive judgments of distraction.

Email: Raoul Bell, raoul.bell@hhu.de

3:50-4:10 PM (267)

It's Time to Opt-Out: A Metacognitive Analysis of Time Regulation Under Uncertainty. RAKEFET ACKERMAN, *Technion–Israel Institute of Technology* — Prior metacognitive research has delineated stopping rules for effort allocation. However, the time invested before opting out has been overlooked. The present research introduces the 3-Stopping-Rules Model (3SRM), an extension of the Diminishing Criterion Model (DCM, Ackerman, 2014). The 3SRM incorporates an "opting-out criterion" alongside the DCM's confidence and time-limit criteria. The opting-out criterion predicts that people opt out when confidence falls below a specific threshold, regardless of the time invested till then. Three experiments confirmed lower confidence for opt-out vs. submission and that opting-out often occurred faster than DCM's time limit. Moreover, there was no effect of the time it takes before opting out on the confidence in the withheld responses. These opting-out characteristics remained consistent across demographics, task types, and motivational structures. Opt-out rate increased when framed as loss reduction, but its characteristics persisted, even across socioeconomic statuses. This study emphasizes opting out as a strategic time-saving behavior.

Email: Rakefet Ackerman, ackerman@technion.ac.il

4:10-4:30 PM (268)

Sleep Deprivation and Metacognitive Accuracy.

TINA SUNDELIN, *University of Stockholm*, ANDREAS JEMSTEDT, *University of Stockholm*, ALVIN GAVEL, *Karolinska Institutet*, JOHN AXELSSON, *University of Stockholm*, BENNETT L. SCHWARTZ, *Florida International University* — Sleep loss impairs many cognitive functions, ranging from simple attention to working memory. In the current study, we explored if individuals are aware of these impairments, an awareness known as metacognitive accuracy. Healthy participants ($N=182$) were randomised to one night of total sleep deprivation or three nights of sufficient sleep. The next day they performed several cognitive tests, for simple attention, cognitive throughput, working memory, episodic memory, and inhibition (using a Stroop task). After each test, participants rated how well they thought they performed. Using Bayesian methods, based on binomial regression, we estimated the difference between the two groups in probability of correctly rating oneself as performing above or below the median. This probability was 49.8% in the sleep-deprived group and 54.4% in the well-rested group. The probability that a difference due to amount of sleep is practically significant (i.e., exceeding 10 percentage points) is below 1%. Although cognitive ability generally declines during sleep deprivation, there does not seem to be a big difference in how people rate their performance. The question remains whether and how people compensate for the cognitive impairments.

Email: Tina Sundelin, tina.sundelin@psychology.su.se

4:30-4:50 PM (269)

Monitoring and Control Sensitivity in Two Reasoning Tasks. VALERIE THOMPSON, *University of Saskatchewan*, TAY SPOCK, *University of Saskatchewan*, KAILYN PHILLIPS, *University of Saskatchewan*, EMILIE MOELLENBECK, *University of Saskatchewan* — We investigated the hypothesis that the monitoring judgment Feeling of Rightness shows less monitoring accuracy than Feeling of Error judgments (Fernandez Cruz et al, 2016). A large number of participants ($N=184$) solved a syllogistic reasoning task using the two-response paradigm (Thompson et al., 2011), giving FOR or FOE judgments after both the first and second responses. The two judgments were equally sensitive to problem difficulty (monitoring sensitivity) and response accuracy (monitoring accuracy). Further analysis showed that they both predicted rethinking time

and answer changes to the same extent, i.e., showed similar control sensitivity. These results were replicated in a second large study using the base-rate neglect task, which also included a betting condition. While there was some evidence of reactivity (e.g., changes in probability judgments) between judgment types, the judgments nonetheless showed equal monitoring sensitivity (i.e., to problem congruency) and control sensitivity (measured in terms of answer changes).

Email: Valerie Thompson, valerie.thompson@usask.ca

4:50-5:10 PM (270)

Never Forget a Face? You Maybe Just Did: Extremely High Confidence in Eyewitness Identification Is Related to Less Accurate Identification.

JOHN PROTZKO, *Central Connecticut State University*, SEBASITAN LUNDMARK, *University of Gothenburg*, JAN WALLECZEK, *Phenoscience Laboratories*, JONATHAN SCHOOLER, *University of California, Santa Barbara* — People's confidence in their face memory, both generally and in specific cases, is somewhat calibrated to their ability—but not strongly. Investigating N=23,893 American adults, we show those most confident in their judgments (state confidence) are less accurate than those who are slightly less confident. This occurs due to a unique nonlinearity in the relationship between confidence and accuracy, not simply a miscalibration. Removing people with the most extreme state confidence improves overall accuracy in a mock crime scenario. Furthermore, people espousing the most extreme levels of overall face recognition ability (trait confidence) show no significant state confidence-accuracy relationship—whereas even those with the least trait confidence do. Taking the most trait confident people into account allows for more accurate suspect identification, stronger state confidence-accuracy associations in experimental eyewitness memory research, and perhaps a fairer criminal justice system. We then extend this analysis into four separate open datasets to test robustness. We discuss deviations across datasets.

Email: John Protzko, Protzko@ccsu.edu

5:10-5:30 PM (271)

Metacognitive Monitoring and Metacognitive Control in Subjective, Multi-Attribute Choice.

TRENT N. CASH, *Carnegie Mellon University*, DANIEL M. OPPENHEIMER, *Carnegie Mellon University* — Metacognitive processes can be divided

into two categories: Monitoring processes (by which individuals assess their cognition) and control processes (by which individuals direct their cognition). Here, we investigate the relative capacity of decision makers to engage in metacognitive monitoring and control in a heretofore untested domain: subjective, multi-attribute choice. To do so, we ask participants to make numerous multi-attribute decisions and either prospectively state the decision weights they want to place on each attribute (metacognitive control) or retrospectively state the decision weights they placed on each attribute (metacognitive monitoring). In Study 1, we demonstrate that decision makers achieve greater correlations between stated and revealed decision weights in the metacognitive monitoring condition ($r=.66$) than the metacognitive control condition ($r=.46$, $p=.001$). In Study 2, we demonstrate that decision makers achieve similar correlations when completing the metacognitive control task using others' decision weights ($r=.51$, $p=.43$). These results suggest that decision makers may be better at monitoring their reasoning processes than controlling them when making subjective, multi-attribute decisions.

Email: Trent Cash, Tcash@andrew.cmu.edu

5:30-5:50 PM (272)

Use of Everyday Memory Strategies Predicts Subjective Cognitive Abilities Across the Adult Lifespan.

LOUISE A. BROWN NICHOLLS, *University of Strathclyde*, JULIA-MARIE LUKAS, *University of Strathclyde*, LINZI F. CRAWFORD, *University of Strathclyde*, LAZARO H. JACKSON, *University of Strathclyde* — The relationship between cognitive strategy use and subjective cognitive difficulties suggests an active, compensatory process in response to experiencing difficulties. However, the available evidence tends to focus on specific age groups, and on general cognition or memory performance. While strategy use may be associated with better cognitive functioning in healthy older adults, findings are mixed. This pre-registered study investigated whether adult age moderates the relationship between strategy use and subjective cognitive difficulties. The sample comprised 606 United Kingdom-based adults aged 18-86 years. Participants completed a survey measuring specific, everyday cognitive difficulties (i.e., attention, language, visual-perceptual ability, and visuo-spatial and verbal memory) and strategy use (generalised and memory-specific). Covariates included gender, depression, anxiety, stress, and the strategy scale not used as a tested

predictor. Moderated regression models revealed memory-specific strategy use as a robust predictor of cognitive difficulties, but no interaction effect was observed. The relationship between memory strategies and cognition is therefore pervasive, regardless of stage in the adult lifespan.

Email: Louise Brown Nicholls, l.nicholls@strath.ac.uk

Cognition: Judgment I

Saturday, November 23, 2024, 3:30-5:50 PM US EST

Chaired by Guy E. Hawkins, *University of Newcastle*

3:30-3:50 PM (273)

A Solution to the Pervasive Problem of Response

Bias in Self Reports. GUY E. HAWKINS, *University of Newcastle*, JESSICA GRIMMOND, *University of Newcastle*, SCOTT D. BROWN, *University of Newcastle* — Self-report surveys are used ubiquitously to probe thoughts, feelings, and behaviors. Despite their pervasive use, self-report measures such as Likert scales have a profound problem: standard analytic approaches do not control for the confounding effects of idiosyncratic response biases. Here, we show the magnitude of the problem of response bias in self-report data and present a model-based solution. Our model disentangles response bias from latent constructs of interest to obtain de-biased scores of the true latent states of respondents. Inspired by Thurstonian approaches in the psychophysics literature, the model uses a data-driven approach to discover idiosyncratic response biases without the need to pre-specify bias types or response strategies. We demonstrate the model discovers the true degree of association between latent states and outperforms bias-affected standard scoring techniques. The model is thus a new tool which outperforms standard scoring methods and generates new insights into, and controls for, the potentially confounding effects of response bias on self-report Likert scale data.

Email: Guy Hawkins, guy.hawkins@newcastle.edu.au

3:50-4:10 PM (274)

Distinguished from Shinola: Signal Detection Analysis of Pseudo-Profound Bullshit

Discrimination. CHRISTOPHER R. WOLFE, *Miami University*, WYLIE BRACE, *Miami University* — Researchers have explored why people sometimes rate randomly generated buzzwords (i.e., pseudo-profound bullshit) as profound. However, little is known about

factors underlying the ability to discriminate pseudo-profound bullshit from that which is actually profound. Using signal detection theory (SDT), we explored people's sensitivity for discriminating actually profound statements from pseudo-profound bullshit. In Study 1, 215 participants rated 50 statements on profundity including those from Confucius, Corinthians, Piet Hein, Lao Tzu, Nietzsche, and Proverbs. Nineteen (19) statements were rated more highly profound than others, for example "bad company corrupts good character." These ratings had high internal consistency, Cronbach's Alpha=0.85. Study 2 participants made profundity ratings of these 19 profound statements, randomly generated grammatically correct buzzword (pseudo-profound bullshit) statements, matched pseudo-profound bullshit statements, and true but mundane statements. Using SDT, we calculated d' and β to assess pseudo-profound bullshit discrimination and those scores were predicted by individual difference measures. We conclude with theoretical implications.

Email: Christopher Wolfe, wolfecr@miamioh.edu

4:10-4:30 PM (275)

How People Interpret Projections of Future Climate Change Depends on What They Think Is Most Likely to Happen. BEN R. NEWELL, *UNSW Sydney*, ALICE MASON, *University of Bath* — Understanding the uncertainty inherent in climate projections is crucial for robust future planning and decision-making. In a series of behavioural experiments ($n=702$), we show that people interpret the distributions implied by identical projected future temperature ranges (e.g., 4°C to 7.2°C by 2100), differently as a function of their optimism or pessimism about the path that future emissions will take (current, best or worst-case). We also find that pessimists tend to be younger than optimists. Further predictors of these patterns (risk perception, climate anxiety) are also explored. The presence of these biases raises important implications for the communication of climate futures.

Email: Ben Newell, ben.newell@unsw.edu.au

4:30-4:50 PM (276)

Rethinking the rRole of Teams and Training in Geo-Political Forecasting: The Effect of Uncontrolled Method Variance on Statistical Conclusions. CLIFFORD E. HAUENSTEIN, *The Johns Hopkins University School of Medicine*, RICKY

THOMAS, *Georgia Institute of Technology*, DAVID A. ILLINGWORTH, *California State University, Long Beach*, MICHAEL DOUGHERTY, *University of Maryland* — Using data from a geo-political forecasting tournament, Mellers et al. (2014) concluded that forecasting ability improved when participants worked in teams and received probability training. In our presentation, we will describe our work, currently in press at *Psychological Science*, which re-evaluates the conclusions made by Mellers et al. (2014) using an Item Response Theory framework to model latent ability from forecasting judgments. We find that the relationship between latent ability estimates and forecast accuracy differs from the original findings once key extraneous variables are statistically controlled. The best-fit models across the first two years of the tournament included one or more extraneous variables, which substantially eliminated, reduced, and, in some cases, even reversed the effects of the experimental manipulations of teaming and training on latent forecasting ability. We also show that latent traits associated with strategic responding can discriminate between super and non-super forecasters, complicating the identification of the latent factors underlying the super forecasters' superior performance. We will conclude with recommendations for future research and improvements in design and analyses.

Email: Clifford Hauenstein, chauens2@jh.edu

4:50-5:10 PM (277)

Should We Change the Term We Use for 'Climate Change'? Evidence from a National U.S. Experiment. WANDI BRUINE DE BRUIN, *University of Southern California*, LAUREL KRUKE, *University of Southern California*, GALE M. SINATRA, *University of Southern California*, NORBERT SCHWARZ, *University of Southern California* — "Global warming," "climate crisis," "climate emergency," and "climate justice" each draw attention to different aspects of climate change. Psychological theories of attitude formation suggest that people's attitudes can be swayed by such variations in wording, but unfamiliar words may not resonate with people. In a national US survey, we randomized 5137 Americans to questions about "climate change," "global warming," "climate crisis," "climate emergency," or "climate justice." Overall, "climate change" and "global warming" were rated as most familiar and most concerning, and "climate justice" the least, with "climate crisis" and "climate emergency" falling in between. The latter two terms did not increase perceived urgency, as

compared to the familiar terms "global warming" and "climate change." Although effects of terms on rated familiarity, concern, and urgency varied by political leaning, "climate justice" was consistently rated the lowest by Democrats, Republicans, and Independents/others. Willingness to act or support policies was hardly affected by the terms. We recommend sticking with familiar terms, and suggest that changing terms is likely not a key solution for motivating climate action.

Email: Wandi Bruine de Bruin, wandibdb@usc.edu

5:10-5:30 PM (278)

The Impact of Context on Temporal Discounting. MARY KAY STEVENSON, *California State University, East Bay* — Temporal discounting describes the reduced impact of gains and losses that are delayed. Context effects (Parducci, 1965; Birnbaum & Rouvere, 2023) describe the impact of the range of values on the reactions to individual stimuli. The current studies assess temporal discounting for different delay ranges on the judged values of positive and negative consequences evaluated in isolation and in combination. The temporal discounting rates differ for gains and losses whether they are presented in isolation or as a combined consequence. The same delays were discounted differently as the shortest delays in a range as compared to the longest delays in a range. The discounting rates associated with gains and losses are not influenced by combining them, but the subjective values of gains and losses are influenced by judging them as a combined consequence. These results have implications for the problem of dealing with short-term gains leading to long-term losses.

Email: Mary Kay Stevenson, marykayste@gmail.com

5:30-5:50 PM (279)

Thinking and Utilitarian Behavior in Risky and Moral Scenarios. PETKO KUSEV, *London South Bank University*, JOSEPH TEAL, *London South Bank University*, ROSE MARTIN, *London South Bank University*, SIANA VUKADINOVA, *Sofia University* — Economic theorists traditionally propose that individuals are utility maximizers with stable and consistent preferences. However, empirical evidence suggests that when faced with risky and moral decisions, individuals' choices are influenced by the interplay between two distinct cognitive systems: intuitive and analytical thinking. Our research delves into this phenomenon

through two experimental studies that investigate how these modes of thinking shape decision-makers' utilitarian behavior. We will present not only the direct impact of analytical thinking on participants' decisions, but also identify the factors that mediate this relationship. Specifically, we will explore the roles of computational complexity, decision context, and content in shaping human utilitarian behavior. Our findings aim to provide a deeper understanding of the cognitive processes underlying decision-making in risky and moral contexts, challenging the classical economic view of stable preferences.

Email: Petko Kusev, kusevp@lsbu.ac.uk

Sensation and Perception II

Saturday, November 23, 2024, 3:30-5:50 PM US EST

Chaired by Mounia Ziat, *Bentley University*

3:30-3:50 PM (280)

Examining the Effects of Endogenous Cueing on

Audiovisual Integration Capacity. JONATHAN WILBIKS, *University of New Brunswick Saint John*, ABBY DALEY, *University of New Brunswick Saint John*, NATASHA TAYLOR, *University of New Brunswick Saint John* — The capacity of audiovisual integration can be quantified by exposing participants to situations where they are presented with numerous potential binding candidates before only one of these candidates is probed. Previous work has shown that integration capacity varies as a function of speed of stimulus presentation, stimulus factors (e.g., size and pitch), and previous experience. The current work examines the effect of endogenous visual cues on integration capacity. Participants completed an audiovisual integration task with eight visual stimuli arranged in a circle, with several stimulus polarity changes occurring rapidly. Some trials featured an endogenous visual cue that pointed towards the stimulus that would change on the critical trial, some included a cue that pointed to an invalid location, and others had no cue. Results indicate that there is no effect of cueing ($p=.187$, $\eta^2=.170$), with no significant differences between any cueing conditions. This lack of endogenous cueing effect suggests that audiovisual integration may be pre-attentive; however, future studies should examine the effect of validity rate of the cue being presented. Future work should also use the same methodology to examine exogenous cueing effects.

Email: Jonathan Wilbiks, jwilbiks@unb.ca

3:50-4:10 PM (281)

The Robustness of Audiovisual Correspondences

Depends on Context. LAURA M. GETZ, *University of San Diego* — My work centers around understanding interactions between auditory and visual processing, such as between an observer's matching of sensory features across modalities (like auditory pitch and visual elevation) or the mapping of lip movements onto speech sound. Here I argue that such audiovisual correspondences depend largely on context rather than being automatic pairings. As a first example, my work on the congruency of pitch with visual features shows that the response speed is based on how often we use the metaphor for pitch in English (e.g., pitch and elevation congruency improves reaction time, but pitch and size congruency has little impact). As a second example, pairing music of different pitches, tempos, and timbres with radio advertisements for various products impacts product perception only when active attention is drawn to the music. As a final example, a mismatch between lip movements and spoken sounds (i.e., the McGurk effect) is less likely to impact perception when using word stimuli compared to individual syllables. Together, these results show a strong top-down influence on the integration of the auditory and visual modalities and highlight the need for careful attention to stimulus creation and task design.

Email: Laura Getz, lgetz@sandiego.edu

4:10-4:30 PM (282)

Translating Colours to Materials: a Study on

Cross-Modal Correspondences Between Vision and Touch. KRISTA E. OVERVLIET, *Experimental Psychology & Helmholtz Institute, Utrecht University*, LOES BRUST, *Experimental Psychology & Helmholtz Institute, Utrecht University* — This study aims to investigate cross-modal correspondences between vision (hue of a colour) and touch (materials). Two studies were performed. First, a two-part vision-focused survey, in which—in the first part—participants were asked to give free associations to a range of colours. In the second part, they were asked to match grey-scale photographs of various non-organic materials to a range of colours. In the second study, a lab experiment was conducted in which participants tactually explored the most frequently matched materials from study 1 and were asked to match a colour to each material. Results show overlapping

colour-material combination patterns between both studies. Neutrals (black, white, grey) were more frequently and consistently matched than other colours. Additionally, the physical property of roughness seems to be associated with warmer and darker colours. These findings could be partially explained by implicit associations, but mostly through object identification and previously learned associations.

Email: Krista Overvliet, k.e.overvliet@uu.nl

4:30-4:50 PM (283)

Individual Differences in a Common Measure of

Sense of Agency. LAURA SAAD, *U.S. Naval*

Research Laboratory, PERNILLE HEMMER, Rutgers University — It is not well understood how people derive a sense of agency (SoA) over their actions and associated outcomes. The temporal binding (TB) effect, the most widely used implicit measure of SoA, is defined as the perceived subjective compression of the time interval between a voluntary action and its associated outcome relative to the perceived interval between two passively observed events. Recent evidence suggests TB is a methodological artifact, raising questions regarding its apparent link to SoA. We further contribute to this questioning by investigating whether the TB effect is consistently present at the individual level. To do so, we reanalyzed 10 TB data sets to reveal consistent individual variability in the empirical signature of the TB effect. To rule out measurement noise as an explanation, we implemented a Bayes factor mixed method modeling approach (Haff & Rouder, 2017) which simulated participant true effects (accounting for sampling noise) from 2 temporal binding data sets. This confirmed that up to 40% of individuals in the sample have true effects in the opposite of the theoretically predicted direction. These results implicate both the theories posed to describe TB as well as the use of TB in applied contexts.

Email: Laura Saad, laura.saad14@gmail.com

4:50-5:10 PM (284)

Sync and Swim! One-Second Body-Resonance

Model Exhibited by Elite Swimmers. MICHAEL

K. MCBEATH, *Arizona State University*, GABRIEL J. LEMBERES, *Arizona State University*, MATTHEW D. LANGLEY, *Arizona State University*, COREY M. MAGALDINO, *Arizona State University*, ERIC L. AMAZEEN, *Arizona State University*, SOPHIA R. BAIA, *Arizona State University* — Human timing

metrics include visual flicker-fusion and auditory beat-fusion (typically in 20-30 Hz range), cognitive-decision and reaction-timing rates (typically in 3-7 Hz range), and biorhythms (e.g. 24-hour circadian, and yearly circannual rhythms). Our study supports an additional notable body-resonance rhythm around 1 Hz that guides many human activities and thought processes. We sampled clean-swimming stroke-rates of 24 elite swimmers (eight each from Olympic, NCAA, and high school levels) in four classic strokes: breaststroke, butterfly, backstroke, and front crawl. We recorded both overall stroke-rates and breathing cycle-rates and found overall centroids for breaststroke and butterfly near 1 Hz stroke-rates, and for backstroke and crawl near 2 Hz stroke-rates, all of which correspond closely to a 1-second cycle-rate. We also found stroke-rate varied somewhat with expertise level. The general findings support a one-second body-resonance spring-model that appears related to breath-rate and possibly heart-rate, with human locomotive behavior like swimming constrained to sync at about 1 Hz to optimize speed. We suggest this body-resonance cycle-time may be an influential factor underlying origination of the unit of a second.

Email: Michael McBeath, m.m@asu.edu

5:10-5:30 PM (285)

Can Humans Identify the Content of a Container

by their Sense of Touch Alone? ILJA FRISSEN,

McGill University, GRACE SHIM, *Bentley University*, MOUNIA ZIAT, *Bentley University* — Humans use active touch to gain information about contained objects (e.g., shaking cereal boxes). Research on “container haptics” has documented an ability to estimate the number of objects inside a container using touch. Here we investigated people's ability to identify its content. Participants were handed boxes containing food items like flour and lentils with minimal contextual information and were only told that containers were filled with 10 grams of dry food items. Across three experiments participants 1) freely named the content, 2) were given a list of possible answers, and 3) were allowed auditory information. The task revealed the limitations of container haptics. Free naming produced more than 100 unique answers (the top 3 were salt, rice, and flour), which were rarely correct. Nevertheless, categorical similarity between content and answers showed a level of accuracy. For instance, while only seven out of 33 participants correctly offered “flour”, others offered “powdered sugar”, “milk powder”, or

"baking soda", which share similar properties in terms of texture, particle size, and flow characteristics. Providing a list and auditory information improved performance, while significant errors persisted.

Email: Ilja Frissen, ilja.frissen@mcgill.ca

5:30-5:50 PM (286)

Navigating Without Sight: The Role of Haptic Feedback in Trajectory Correction. MOUNIA ZIAT, *Bentley University*, SHUANGSHUANG XIAO, *Bentley University*, ABU BATJARGAL, *Bentley University*, MEHDI HOJATMADANI, *Bentley University* — Navigating without visual cues poses a significant challenge, particularly when maintaining a precise trajectory. Without visual information, individuals often become disoriented or inadvertently walk in circles, highlighting the need for alternative guidance systems like haptic feedback. This study investigates the minimal deviation threshold for haptic feedback to correct veering during blindfolded walking. Participants were instructed to walk in a straight line, with haptic feedback triggered at specific deviation intervals from the walking line. The findings indicate that haptic feedback significantly reduced veering, with the 1 m and 2.5 m deviation intervals proving the most effective. Variables such as leg dominance, left-right confusion, and gender did not significantly impact results. The cognitive workload remained consistent throughout the task, and participants rated the tactile feedback as "about right" across all conditions. These results suggest that haptic feedback is effective for correcting veering when visual cues are absent.

Email: Mounia Ziat, mziat@bentley.edu

Cultural/Social Influences on Cognition I Saturday, November 23, 2024, 3:30-5:50 PM US EST

Chaired by Jelena Ristic, *McGill University*

3:30-3:50 PM (287)

Age Differences in Value-Based Decision Making Are Modulated by Culture. YONG SHENG TAN, *National Taiwan University*, CHUN-YI LEE, *National Taiwan University*, LIN-HAN HUANG, *National Taiwan University*, CHI-CHUAN CHEN, *University of Illinois Urbana-Champaign*, ROSS MAIR, *Harvard University*, ANGELA GUTCHESS, *Brandeis University*, JOSHUA OON SOO GOH, *National Taiwan University* — Value-based risky decision making is affected by age and

cultural background. Previous studies have reported age-related declines of reward sensitivity in the striatum, which might induce older adults to increase risk taking in spite of declining expected values. East Asians accept stakes dichotomously (win vs. lose) compared to Westerners, who are more probabilistic, reflecting holistic and analytic cognitive biases, respectively. However, how cultural experience shapes age effects on decision-making remains an open question. To address this, we examine 110 Taiwanese (59 younger, 51 older) and 97 Americans (57 younger, 40 older) using a lottery choice task. Across lottery trials, participants accepted or rejected stakes of varying winning probabilities to maximize points gained. Younger Taiwanese categorically accepted stakes based on a $> .50$ win probability. Both American groups reduced acceptances following decreasing win probabilities. Critically, older Taiwanese disproportionately accepted more losing stakes than any group, indicating interactive effects of age and culture. Our findings underscore the need to consider cultural specificity when examining age-related effects in psychological processes such as decision making.

Email: Yong Sheng Tan, d12b49005@ntu.edu.tw

3:50-4:10 PM (288)

The Social Value of Faces. JELENA RISTIC, *McGill University* — Faces carry significant social value, which is facilitated by their distinctive morphology and features. Visual social cues from faces are central for human communication and interactions. I will present three lines of evidence in support of this notion. First, the visual occlusion of a face reduces its social value, demonstrating the importance of facial visibility. Second, biological motion within a face aids in communicating mental states, highlighting the role of facial expressions. Third, the dynamics of looks exchanged between individuals during naturalistic interactions serve as a vehicle for transmitting social messages, underscoring the reciprocal and interactive nature of communication via faces. Thus, faces carry large socio-informational value, which enables them to convey a wide range of complex social messages effectively.

Email: Jelena Ristic, jelena.ristic@mcgill.ca

4:10-4:30 PM (289)

Imaginary Worlds, Real Effects? Testing the Effects of a Narrative Fiction Diet on Social

Cognition. LENA WIMMER, *Julius-Maximilians-Universität Würzburg*, MARIE MESSOW, *University of Freiburg*, ANNIKA OLDACH, *University of Freiburg*, FIONA MEBELLI, *University of Freiburg*, JAN LENHART, *University of Bamberg* — Narrative fiction typically centers around story characters' social relationships. Hence, consuming narrative fiction has been thought to activate state social-cognitive skills. We tested the hypothesis that abstaining from narrative fiction for several days reduces state social cognition. Adult participants were randomly assigned to either refrain from narrative fiction across media (i.e., written, auditory, audiovisual; n=151) or keep up their reception habits (n=116) for seven days. At baseline, we measured trait social cognition and consumption habits as control variables. At posttest, we assessed consumption of narrative fiction during the intervention period, time spent on substitutional activities, and state social cognition. No significant negative effects of abstaining from narrative fiction on state social cognition emerged. Neither habitual nor current consumption acted as moderator. Regarding substitutional activities, a significant positive link with state social cognition was found for social interaction, whereas significant negative links emerged for nonfiction consumption, physical activity, and sleeping. In sum, a temporally limited narrative fiction diet does not seem to affect adults' state social cognition.

4:30-4:50 PM (290)

Exploring Spatial Frequency and Orientation Tunings for Face Recognition in Eight Cultural Groups. FRANCIS GINGRAS, *Université du Québec en Outaouais & Université du Québec à Montréal*, ALEX COUSINEAU, *Université du Québec en Outaouais*, ARIANNE RICHER, *Université du Québec en Outaouais*, JUSTIN DUNCAN, *Université du Québec en Outaouais*, DANIEL FISET, *Université du Québec en Outaouais*, FREDERIC GOSELIN, *University of Montreal*, CAROLINE BLAIS, *Université du Québec en Outaouais* — East Asians use lower spatial frequencies (SF) compared to Westerners while processing faces. These differences have been attributed to culture; however, the underlying mechanism remains unclear. While many hypotheses exist (e.g. social orientation, urbanisation), having data for only two cultural groups makes generalisation difficult/iffy at best. The present study addresses this limitation by measuring SF and orientation (SFO) tunings across eight cultural groups

(total n=587). Participants completed 600 trials of a same/different face matching task online using VPixx Pack & Go. Target stimuli were filtered using SFO Bubbles, allowing for the sampling of all combinations of SF and orientations. A weighted sum of all filters was computed to reveal SFO use for each participant as a 2D classification image. Bayesian prevalence analyses revealed significant differences between all eight groups. An artificial neural network model correctly predicts culture from SFO tunings significantly above chance. Potential underlying mechanisms for these differences such as social values, urbanization and interpersonal distance will be discussed.

Email: Francis Gingras, ginf03@uqo.ca

4:50-5:10 PM (291)

How Do Pictures Impact Attention and Memory for Abortion Information? KATHERINE C. MOEN, *University of Nebraska at Kearney*, MEGAN L. STRAIN, *University of Nebraska at Kearney* — Most Americans believe that abortion should be legal in all or most cases; however abortion restrictions continue to increase across the United States. Research suggests that images accompanying text impact memory, and images can also impact moral conviction about abortion. Thus, given the divisiveness and politicization of abortion in the United States, it is possible that inaccurate abortion images, which often accompany news articles and political propaganda, are impacting the public's attitudes on abortion. The goal of the current study was to determine how images accompanying abortion information impact attention and memory for the presented information. Participants read an article about abortion, paired with either accurate or inaccurate images, while their eye movements were tracked, followed by a test on the content of the article and an abortion attitudes survey. Results revealed that anti-abortion participants looked at accurate images longer than pro-abortion participants, but there were no differences for inaccurate pictures. These results suggest that the pictures accompanying abortion information impact attention and may impact memory.

Email: Katherine Moen, moenk@unk.edu

5:10-5:30 PM (292)

Information Visualization and the Construction of Social Meaning. AMY R. FOX, *Massachusetts Institute of Technology*, MICHELLE MORGENSTERN, *Massachusetts Institute of Technology*, GRAHAM

JONES, *Massachusetts Institute of Technology*, ARVIND SATYANARAYAN, *Massachusetts Institute of Technology* — What meaning might derive from visualizations that are not about the data they encode? Drawing on theory from linguistic anthropology and sociolinguistics, we show that just as people listening to spoken language construct social meanings (drawing inferences about speakers from formal properties of speech), so do readers of visualizations construct social meanings: inferences about artifact provenance beyond encoded data. Through semi-structured interviews and an attitude elicitation survey we demonstrate that readers draw rich and varied inferences about the identity, characteristics, intentions, and values of an artifact's makers, its channels and modes of distribution, and the tools used to produce it. We observe that these social meanings are constructed in response to the structural and aesthetic features of a visualization design. Most importantly, these attributions have the power to influence readers' judgments and behavior. We position these findings in relation to ongoing work in public data communication, and argue that the construction of social meaning may reveal mechanisms by which the design features of a visualization can dramatically affect socially situated graphical behavior.

Email: Amy Fox, amyraefoxphd@gmail.com

5:30-5:50 PM (293)

National Goals and Collective Future Thinking:

Structural Influences. MEYMUNE N. TOPCU, *MEF University* — This study investigates how national goals influence collective future thinking and the generation of future events. Participants listed significant national goals, people, and institutions for America's future and then generated related future events. The results reveal a positivity bias in responses across all conditions, with economy, climate change, and human rights emerging as the most frequently cited goals. Additionally, there were significant associations between perceived agency and valence, with higher valence ratings for goal-oriented events. These findings suggest that national goals significantly shape how people imagine future events and their appraisal of perceive agency. Follow-up studies will explore the role of media and the impact of past events on future thinking.

Email: Meymune Topcu, topcum@mef.edu.tr

Cognitive Development

Sunday, November 24, 2024, 8:00-10:00 AM US EST

Chaired by Daniel M. Bernstein, *Kwantlen Polytechnic University*

8:00-8:20 AM (294)

A Longitudinal Study of Hindsight Bias Across the Lifespan. DANIEL M. BERNSTEIN, *Kwantlen Polytechnic University*, RUBY DHILLON, *Kwantlen Polytechnic University*, DANIEL G. DERKSEN, *Simon Fraser University*, KIRAN K. DOGRA, *Western Washington University* — Hindsight bias occurs when learning outcomes to uncertain events (e.g., elections, wars, gambles) changes how we remember our naïve beliefs about those outcomes (e.g., "I knew it!"). We studied hindsight bias across the child to adult lifespan (age range: 3–84 years) across three time points from 2015–2023. At each time point, participants completed a Baseline phase in which they identified blurred objects that slowly clarified. Later in a Hindsight phase, participants first learned the object's identity and then estimated when a naïve peer would be able to identify the object as it clarified. We calculated hindsight bias as the difference between the average identification point in the Baseline phase and Hindsight phase. Our results replicated cross-sectional studies showing that preschoolers exhibited more hindsight bias than older children and younger adults. Longitudinal results revealed that hindsight bias improved among preschoolers and remained relatively stable thereafter.

Email: Daniel Bernstein, daniel.bernstein@kpu.ca

8:20-8:40 AM (295)

Memorial Consequences of Cognitive Offloading

in Late Childhood. HAGIT MAGEN, *Hebrew University*, ESHKOL GOLDBERG, *The Hebrew University* — When adults offload information into external stores, they refrain from actively encoding the same information internally, leading to the loss of its internal trace. We asked if a similar effect of offloading on internal memory would be observed in late childhood. Forty 10-11-year-old children and 40 adults participated in the study. Participants studied 3 lists of 20 words each, which they saved externally by writing them down on paper. In the first two blocks, participants used the lists they created to retrieve the words at test. In the third block, the list was unavailable to the participants at test, so they relied on their internal memory. Only half of the

participants were informed that the list would be unavailable at test, while the remaining participants assumed that the list would be available. The results revealed that when the list was available at test, children used it efficiently to retrieve the studied words. In the third block, children and adults who trusted the list, remembered fewer words compared to the participants who relied on internal memory. By late childhood, children benefit from the availability of an external store that they trust, and disengage from actively encoding a copy of the saved information.

Email: Hagit Magen, msmagen@mail.huji.ac.il

8:40-9:00 AM (296)

Nonlinear Growth in Word Reading Ability

Among Dyslexic Children. DANIEL KLEINMAN, *Yale Child Study Center*, BRITTANY LEE, *University of Connecticut*, MARIA JOSE MACIAS ZUNIGA, *Yale Child Study Center*, LEE BRANUM-MARTIN, *Georgia State University*, NICOLE LANDI, *University of Connecticut* — Reading disability (RD) is a common neurodevelopmental disorder, and many children with RD make limited gains even after receiving reading interventions. To better understand the factors that predict reading trajectories in this population, we conducted a longitudinal study with students enrolled at schools that administer intensive, evidence-based reading interventions. 112 participants (8-16 years old at study enrollment; M=10.7 years) completed an assessment battery every 6 months (M=3 sessions over 12 months) comprising tasks of word reading ability, and tasks of phonological awareness (PA) that required the manipulation of speech sounds within words. Nonlinear growth models were used to estimate the upper asymptote of reading scores for each participant (their reading “capacity”), with PA treated as a time-varying covariate. Results showed that greater PA was associated with higher word reading capacity on both timed and untimed assessments. Even at ages when PA and reading ability were unrelated, gains in PA predicted higher reading ability in the future. Separately from the implications for reading, this modeling approach could prove useful to researchers studying skill development in other areas of psychology.

Email: Daniel Kleinman, kleinman@gmail.com

9:00-9:20 AM (297)

Tracing the Child Development of Working Memory Capacity for Features within Complex

Objects. CHENYE BAO, *University of Missouri*, YU LI, *University of Missouri*, NELSON COWAN, *University of Missouri* — What aspects of working memory capacity develop over time? These could include the number of objects remembered, the richness of features within each object, or both. We examined these factors across three age groups: children aged 8-9, 10-12, and young adults, totaling 101 participants. Participants were asked to remember two arrows, each with four features (orientation, color, stalk shape, and pattern in the arrowhead), mirroring the complexity found in everyday objects. Memory for one object was tested after simultaneous presentation, with each feature requiring selection from eight options. Results showed an increase in both the estimated proportion of objects partially remembered and the number of features retained as age increased. The data support a capacity-limit theory with objects registered in parallel in working memory, and features encoded near independently, consistent with Treisman and Gelade’s feature map theory (1980). However, lapses in attention, more prevalent in younger children, can disrupt this process. Based on our findings, we proposed a two-stage encoding model for complex objects into working memory.

Email: Chenye Bao, cbvm5@missouri.edu

9:20-9:40 AM (298)

Infant Distributional Learning of Object Categories from Natural Visual Input Statistics.

JON WILLITS, *University of Illinois Urbana-Champaign* — Can children learn objects’ categories from distributional learning? We tested this question by building a distributional semantic model from the visual experiences of 2-year-old children, captured from head-mounted cameras worn during their everyday experiences. From these videos, we built a statistical model of object representations consisting of the objects’ pattern of co-occurrences with other objects. We computed the similarity of the different objects’ co-occurrence vectors, finding that objects easily cluster into semantic categories based on these representations. We also show that these representations can easily be used by a classifier model to learn the semantic categories of the objects. This work demonstrates that objects’ co-occurrence statistics are very structured and can support easy and fast learning of semantic categories.

Email: Jon Willits, jwillits@illinois.edu

9:40-10:00 AM (299)

Reduced Dissociation Between Perception and Action in Individuals with Autism. EREZ FREUD, *York University*, ZOHA AHMAD, *York University*, TZVI GANEL, *Ben-Gurion University of the Negev*, BATSHEVA HADAD, *University of Haifa* — Perceptual alterations observed in autism may reflect reduced cortical specialization. To test this notion, we examined the effect of contextual information on perception and action that are supported by dissociable cortical systems. In Experiment 1(spatial context), we placed objects on the “close” and “far” surfaces of the Ponzo illusion. Neurotypicals showed a perception-action dissociation with a robust effect of the illusion during an estimation task, but not during a grasping task. In contrast, autistics were equally affected by the illusion under both tasks. In Experiment 2 (context over time), we presented a standard stimulus (40mm) in two temporally distinct blocks. In each block the stimuli used as flankers included a wide (20-60mm) or a narrow range (35-45mm). Neurotypicals showed a perception-action dissociation with an effect of the context only for the perceptual task, with larger JNDs for the standard stimulus presented during the “wide” block. In contrast, autistics showed a consistent effect of the context under both tasks. These results provide converging evidence for a reduced dissociation between perception and action in autism, such that perceptual representations intrude and modulate visuomotor behaviors.

Email: Erez Freud, efreud@yorku.ca

Bilingualism Comprehension and Production

Sunday, November 24, 2024, 8:00-10:00 AM US EST

Chaired by Angela de Bruin, *University of York*

8:00-8:20 AM (300)

Bilingual Language Switching During Production: The Impact of Exposure to Another Bilingual's Switching Patterns.

ANGELA DE BRUIN, *University of York*, JUNLAN WANG, *University of York*, ROMY DARYANANI, *University of York*, MARION COUMEL, *University of York* — Bilinguals often communicate in different types of contexts, varying in their degree and type of language switching. Following the adaptive control hypothesis, the control processes involved in switching are argued to adapt to the context. This study examined how a bilingual's own switching can be affected by exposure to

other bilinguals' switching patterns. Experiment 1 (30 Mandarin-English bilinguals) examined the impact of exposure to bilinguals who used two languages but either switched only once or frequently. Immediately following each context, participants completed a cued picture-naming task. We measured the participant's switching costs (time needed to switch languages), which were smaller after exposure to a frequently switching bilingual compared to the no-switch condition. The frequently switching bilingual used different types of switches. Experiment 2 (90 French-English bilinguals) therefore compared exposure to between-sentence and within-sentence switching. Relative to the no-switch condition, reduced switching costs were only observed after exposure to within-sentence switching. This suggests that language switching and control can be adaptive, but this adaptation depends on the type of switching exposure.

Email: Angela de Bruin, angela.debruin@york.ac.uk

8:20-8:40 AM (301)

Bilinguals Suppress a Task-Irrelevant Language at the Lexical and Semantic Levels During Comprehension. LIV J. HOVERSTEN, *University of California, Santa Cruz*, CLARA D. MARTIN, *Basque Center on Cognition, Brain & Language (BCBL)* — Previous studies suggest that bilinguals can quickly identify the language to which a word belongs and use this information to suppress a task-irrelevant language during comprehension. The current study aimed to establish whether this nontarget language suppression occurs at the lexical and/or semantic levels and whether language activations depend on the amount of each language present in the input. We recorded EEG while 40 Spanish-Basque bilinguals simultaneously classified words by language membership and animacy. ERP results demonstrated that task demands to attend to a single target language reduced N400 frequency effects and eliminated concreteness effects for words belonging to the nontarget language, with no effect of the proportion of each language presented. These results provide support for a partially selective mechanism of bilingual language control based on task demands such that words belonging to the nontarget language are only partially processed at the lexical level and are not processed at a deeper semantic level. These findings enhance our understanding of the locus of bilingual language control in comprehension and call for revisions to current models of bilingual visual word recognition such as BIA+.

Email: Liv Hoversten, lhoverst@ucsc.edu

8:40-9:00 AM (302)

Contribution of Prior Linguistic Knowledge to L3 Phonological Perception and Production.

TAMAR DEGANI, *University of Haifa*, TAL NORMAN, *University of Haifa*, ANAT PRIOR, *University of Haifa* — Adult phonological processing may be affected by previous linguistic knowledge. Here, we examine how phonological comprehension and production in a third-language (L3) are affected by multilinguals' first- (L1) and second-languages (L2). To this end, 41 Arabic-Hebrew-English trilinguals completed an oddity (comprehension) task on word pairs and a word repetition (production) task in English (the L3). Critically, word pairs targeted phonological contrasts that overlap between English and Arabic (L1), English and Hebrew (L2), English and both Arabic and Hebrew (both), or exist uniquely in English (none). Results showed that words including phonological contrasts that exist in L1 Arabic (L1 & Both conditions) were comprehended and produced more accurately than those that do not exist in the L1 (L2 & None conditions). Using the same items, a control group of 40 Hebrew-English bilinguals responded more accurately when phonological contrasts overlapped with Hebrew (their L1). Thus, in contrast to syntactic processing, in phonology, multilinguals appear to draw on their L1 knowledge, but not on their L2 knowledge, while processing an L3.

Email: Tamar Degani, tdegani@research.haifa.ac.il

9:00-9:20 AM (303)

Language-Wide Control of Activation During Bilingual Reading Comprehension: Recruitment of Inhibitory Control and General Cognitive Control.

COLIN SCHOLL, *The University of Texas at El Paso*, ANA I. SCHWARTZ, *The University of Texas at El Paso* — Across a series of eye-tracking experiments we provide evidence for language-wide modulation of the activation level of the nontarget language during bilingual reading comprehension. Highly-proficient bilinguals read sentences that were either language pure or contained a sentence-medial full switch from either the L1 to L2 or reverse direction. Language switch conditions were either intermixed or blocked and sentences were either contained a font color language cue or no cue. Processing times, evident throughout the eye-tracking record of the first switched words were inflated

relative to non-switched words across all conditions, and this switch cost was significantly greater for L2-to-L1 switches, suggesting reactive inhibitory control of the non-target language. Switch costs were significantly reduced in the presence of color cues, suggesting engagement of cognitive-general control. In contrast, the magnitude of switch costs was not affected by the blocking manipulation, thus not providing evidence for proactive language control.

Email: Colin Scholl, cascholl@miners.utep.edu

9:20-9:40 AM (304)

Discrepancies Between Self-Ratings of Bilingual Proficiency Level vs. the Gold Standard.

TAMAR GOLLAN, *University of California, San Diego*, ANNE NEVEU, *University of California, San Diego*, DALIA GARCIA, *San Diego State University & University of California, San Diego* — Psychologists often measure bilingualism by asking participants to self-rate their proficiency level though they would not rely on self-reports to measure other psychological constructs. We measured language proficiency in 80 Spanish-English bilinguals with a gold-standard Oral Proficiency Interview (OPI; averaged across 5 trained judges), multiple brief measures (picture naming, fluency, lexical decision), and a detailed questionnaire. Objective measures explained 50%-70% of the variance in OPI scores, while subjective measures explained only 23%-43%. Over half of bilinguals rated themselves as perfectly balanced, though no bilingual was unanimously judged as such, just 5%-25% were balanced according to a majority of judges, and 9% mismatched judges in saying which language is dominant. Exploratory analyses suggested that some bilinguals confused language use with proficiency and underestimated robust effects of immersion on bilingual proficiency level. Self-reports are important for characterizing bilingual populations, but more precise proficiency measures are needed to develop accurate theories of bilingualism.

Email: Tamar Gollan, tgollan@ucsd.edu

9:40-10:00 AM (305)

Bilingual Language Production: Impact of Heritage Speaker Experience.

JASMIN HERNANDEZ SANTACRUZ, *University of California, Irvine*, JUDITH F. KROLL, *University of California, Irvine*, XIN XIE, *University of California, Irvine* — Although it is widely known that bilinguals, even from



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an early age, are able to differentiate two phonetic systems, evidence suggests that the articulation of speech is affected by switching between language contexts. As an understudied group, heritage bilinguals may be uniquely required to manage the demands of using their home language (e.g., Spanish) versus societal language (e.g., English) differently within the course of a day, drawing on cognitive control to enable production in each language. Bilingual speech has been studied through switching paradigms that manipulate language context to reflect everyday language use where bilinguals flexibly adapt to using one or both languages. What can the articulation of spoken words tell us about language experience? We used picture naming to examine whether heritage speakers of Spanish exhibit shifts in the realization of acoustic properties of initial stop consonants as a function of language switching and production in different language contexts. Preliminary data suggest an effect of language context on voice onset time (VOT), a primary cue for voicing distinction. Our results will reveal the impact of language switching on the dynamic relationship between speech and cognitive control.

Email: Jasmin Hernandez Santacruz, jasmih10@uci.edu

Cultural & Contextual Effects

Sunday, November 24, 2024, 8:00-10:00 AM US EST

Chaired by Tori Peña, *Stony Brook University*

8:00-8:20 AM (306)

Perceived Impressions of Socially Bound Individuals from a Third-Person Perspective.

YOSHIYUKI UEDA, *Kyoto University* — The face serves as a cue to infer other's state and personalities. Previous experiments investigating this have involved situations where the observer directly faces others (i.e., a single-person situation). However, in our group-based society, we often observe person-to-person interactions from a third-person perspective. In such situations, a social binding process occurs: an automatic stage representing interacting individuals as a single entity, followed by a stage where individual characteristics are separately represented. This study investigated whether different perspectives change perceived impressions of faces and facial expressions. Results showed that happy expressions, regarded as least dominant in single-person situations, are judged as most dominant in third-person perspective situations. Additionally, in third-person perspectives, happy expressions were associated with

trustworthy in brief judgments, but not in longer judgments. Cultural differences in perceived impressions were observed only in third-person perspectives. These findings suggest that perceived impressions of others should be re-examined including third-person perspectives.

Email: Yoshiyuki Ueda, ueda.yoshiyuki.3e@kyoto-u.ac.jp

8:20-8:40 AM (307)

Are We What We Eat? Cross-Cultural Self-Prioritization Effects for Food Stimuli.

MARIO DALMASO, *University of Padova*, MICHELE VICOVARO, *University of Padova*, TOSHIKI SAITO, *Waseda University*, KATSUMI WATANABE, *Waseda University* — Food represents a fundamental part of an individual's identity. Previous research has indicated that the self is flexible and can be associated with various arbitrary stimuli. This study explored whether the self can be associated with pictures of food typical of one's own or a different country. We compared two samples, Italian and Japanese individuals, as both cultures have a strong and rich food heritage. Depending on the block, participants completed a perceptual matching task where they were asked to associate themselves with either Italian or Japanese food. They also completed self-reported questionnaires related to eating habits, including the disgust-related Food Neophobia Scale. The main results revealed that for participants in both groups, the self could be extended to incorporate food stimuli from both categories. This suggests the great flexibility of the self.

Email: Mario Dalmaso, mario.dalmaso@unipd.it

9:20-9:40 AM (310)

A Computational Linguistic Analysis of US Congressional Speeches Reveals a Shift from Evidence to Intuition.

STEPHAN LEWANDOWSKY, *University of Bristol*, SEGUN T. AROYEHUN, *University of Konstanz*, ALMOG SIMCHON, *Ben-Gurion University of the Negev*, FABIO CARRELLA, *University of Bristol*, JANA LASER, *University of Graz*, DAVID GARCIA, *University of Konstanz* — Pursuit of honest and truthful decision-making is crucial for governance and accountability in democracies. However, people sometimes take different perspectives of what it means to be honest and how to pursue truthfulness. Here we explore a continuum of perspectives from evidence-based reasoning, rooted in



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ascertainable facts and data, at one end, to intuitive decisions that are driven by feelings and subjective interpretations, at the other. We analyze the linguistic traces of those contrasting perspectives in Congressional speeches from 1879 to 2022. We find that evidence-based language has continued to decline since the mid-1970s, together with a decline in legislative productivity. The decline was accompanied by increasing partisan polarization in Congress and rising income inequality in society. Results highlight the importance of evidence-based language in political decision-making.

Email: Stephan Lewandowsky, stephan.lewandowsky@bristol.ac.uk

9:40-10:00 AM (311)

Do Emotional and Social Primers Change the Pessimism in Collective Future Thinking? Testing the Robustness of the Collective

Negativity Bias. TORI PEÑA, *Stony Brook University*, SUPARNA RAJARAM, *Stony Brook University* — People are not optimistic about the future of the United States. When reporting their thoughts about the future, people report more worries than excitement, a phenomenon known as the collective negativity bias. We tested whether prior exposure to valenced examples of collective future projections—attributed to an unknown source or a social source—shifts the valence of collective future thinking. First, we sought to replicate the collective negativity bias in two baseline conditions involving an unrelated task or viewing neutral examples before reporting future projections (Experiment 1). Next, we tested the influence of valenced primers attributed to an unknown (i.e., nonsocial) source or to peers (Experiments 2–4). The collective negativity bias persisted to a comparable extent across experiments regardless of the valence or source of the primers presented. This consistency is striking given that collective future projections are unbounded by reality, yet they seem resistant to primers. Our findings suggest that people likely rely on cultural scripts to imagine the future of their country rather than a purely accessible account for the collective negativity bias.

Email: Tori Peña, tori.pena@stonybrook.edu

Eyewitness Identification I

Sunday, November 24, 2024, 8:00-10:00 AM US EST

Chaired by Curt Carlson, *Texas A&M University, Commerce*

8:00-8:20 AM (312)

Comparing the Strength of the Confidence-Accuracy Versus Response Time-Accuracy Relationship for Eyewitness Identification.

CURT CARLSON, *Texas A&M University, Commerce*,

ROBERT LOCKAMYEIR, *SUNY Oneonta*, MARIA

CARLSON, *Texas A&M University, Commerce*,

CHARLES GOODSELL, *Canisius University*, ALYSSA

JONES, *Tarleton State University*, ALEX WOOTEN,

Hollins University, ZANE BRAND, *Texas A&M*

University, Commerce — Research indicates that

eyewitness identification (ID) accuracy increases with faster IDs and those supported with immediate high confidence, but it is not clear which measure, confidence or response time (RT), is the better reflector of accuracy. It is also not known how well these patterns hold up across important factors affecting eyewitness ID accuracy such as memory strength for the perpetrator's face. We conducted four pre-registered experiments to investigate these issues across different levels of target memory strength (via encoding time or image quality) and ID procedure (showups vs lineups of different filler quality). Correct IDs were faster than false IDs regardless of memory strength, and this difference was greater for lineups than showups. There was a consistently strong positive CA relationship for those who made an ID, but the RTA relationship was significantly weaker. Both relationships were weaker for those who made a rejection decision, but the CA relationship remained stronger than the RTA relationship. We conclude that immediate confidence may be a more important reflector of accuracy than response time, regardless of the quality of the memory for the perpetrator's face.

Email: Curt Carlson, curt.carlson@tamuc.edu

8:20-8:40 AM (313)

Eyewitness Metamemory Does Not Predict

Culprit-Presence or Culprit Absence Detection.

AXEL BUCHNER, *Heinrich Heine University*

Düsseldorf, MARIE LUISA SCHAPER, *Heinrich Heine University Düsseldorf*, NICOLA MARIE MENNE,

Heinrich Heine University Düsseldorf, RAOUL BELL, *Heinrich Heine University Düsseldorf*, CAROLIN

MAYER, Heinrich Heine University Düsseldorf — It is known from metamemory research with standard memory tasks that people's predictions of their memory performance are notoriously poor. Nonetheless, it has recently been suggested that eyewitness metamemory predicts eyewitness identification performance. We tested this proposition in two experiments. In Experiment 1, 1,627 participants responded to either several metamemory questionnaires or, in the control condition, a personality questionnaire, watched a video of a staged crime and were then presented with four lineups. In Experiment 2, 1,467 participants first watched the staged-crime video, then responded to the questionnaires and finally were presented with the lineups. Using hierarchical multinomial modeling we measured culprit-presence detection at an individual level. Consistent with dominant metamemory theories in which metamemory is conceptualized as inferential and, therefore, fallible, metamemory did not predict culprit-presence detection. Additionally, there was some evidence suggesting that metamemory assessment before, but not after, the staged-crime video may reactively enhance culprit-presence detection.

Email: Axel Buchner, axel.buchner@hhu.de

8:40-9:00 AM (314)

The Curious Asymmetric Confidence-Accuracy Relationship for Positive Identifications and Lineup Rejections. JOHN WIXTED, *University of California, San Diego*, ANNE S. YILMAZ, *University of California, San Diego* — The confidence-accuracy relationship for identifications made from a lineup is strong, but the relationship is weaker for lineup rejections. Why is that? When a face is identified from a lineup, it is presumably the face that generates the strongest memory signal, and the strength of that signal theoretically determines confidence. However, when no face generates a memory signal strong enough to be identified, the faces in the lineup are collectively rejected. One longstanding idea is that confidence in a lineup rejection is determined by the average strength of the memory signals generated by the faces in the lineup (i.e., the weaker the average signal is, the more confidently the lineup is rejected). If so, it might explain why the confidence-accuracy relationship for lineup rejections is weak. However, using a model-fitting approach, we found that the face that generates the strongest memory signal still determines confidence even when a lineup is rejected. Lineup rejections are important

to understand because, in many wrongful conviction cases, the eyewitnesses correctly rejected the lineup on the initial test of their uncontaminated memory and only later confidently misidentified the innocent defendant at trial.

Email: John Wixted, jwixted@ucsd.edu

9:00-9:20 AM (315)

Why Are Eyewitness Lineups More Effective at Demonstrating Guilt than Innocence? ANDREW M. SMITH, *Iowa State University*, JAMES LAMPINEN, *University of Arkansas*, REBECCA C. YING, *Iowa State University*, NYDIA T. AYALA, *Washington and Lee University* — Eyewitness lineups are more effective at incriminating guilty suspects than they are at clearing innocent suspects. This is evidenced by three patterns: (1) suspect identifications are more diagnostic of guilt than lineup rejections are of innocence, (2) the confidence-accuracy relation is stronger for suspect identifications than for lineup rejections, and (3) receiver operating characteristic curves are positively skewed. The asymmetric value of suspect identifications and lineup rejections is partly attributable to a measurement flaw. When a witness identifies a suspect, confidence reflects the degree of match between that person and the witness' memory for the culprit, which is an excellent proxy for suspect guilt. But when a witness rejects a lineup, confidence typically measures match to memory for a non-suspected filler, which is a poor proxy for suspect innocence. When lineups are modified to rectify this measurement flaw, the asymmetry is reduced but not eliminated. We examined whether dual-process or unequal-variance signal detection theories could account for this asymmetry. Both models provided adequate fit to lineup data and offered significant improvements over and above the equal-variance signal detection model.

Email: Andrew Smith, amsmith@iastate.edu

9:20-9:40 AM (316)

Children and Adults Eyewitness Identification Accuracy and Choosing Using Virtual Reality. KARA N. MOORE, *University of Utah*, DARA ZWEMER, *University of Utah*, JAMES LAMPINEN, *University of Arkansas*, PIA PENNEKAMP, *University of Arkansas*, THOMAS NYMAN, PEKKA SANTTILA, JAN ANTFORK, JULIA KORKMAN — Children and adults witness crimes. Eyewitness misidentification is a piece of evidence in most wrongful convictions. Yet



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there is little comprehensive research on how age influences eyewitness identification and choosing. We recruited hundreds of participants ages 5 years and older to watch an innocuous but realistic 360-degree crime video in a virtual reality headset. We manipulated lineup type (target present or absent) and exposure duration (short or long). We examined how age, lineup type, and exposure duration impacted identification accuracy and choosing. Young children (5-8 years) were less likely to make a correct rejection of target-absent lineups than adults. Additionally, children (5-13 years) had lower discriminability than adults.

Email: Kara Moore, karamoorephd@gmail.com

9:40-10:00 AM (317)

Interpersonal Metacognition: Can Outside Observers Discriminate Between Accurate and Inaccurate Eyewitnesses? NYDIA T. AYALA, *Washington and Lee University*, ANDREW M. SMITH, *Iowa State University* — At trial, outside observers (jurors) have difficulty discriminating accurate from inaccurate witnesses. Witnesses typically prepare for trial by rehearsing questions that are likely to be asked during direct- and cross-examinations, but these preparations might undermine the cues observers use to judge accuracy. However, during the initial lineup, there are several cues that should facilitate discriminability (e.g., confidence, fluency). We evaluated observer discriminability with a two-phase experiment. In phase 1, witness-participants ($N=114$) completed a video-recorded target-present or target-absent lineup, engaged in pretrial rehearsal, and provided video-recorded testimony. In phase 2, we randomly assigned participants ($N=350$) to a 2(Witness accuracy: accurate, inaccurate) x 3(Evidence: lineup-video-only, testimony-video-only, lineup-video-plus-testimony-video) mixed-design. Observers judged witness accuracy and rated their confidence in their decision. Signal-detection analyses revealed that discriminability did not differ across evidence conditions and was generally poor. Post-hoc analyses suggest that observers are influenced by reliable cues (witness confidence/fluency) but also unreliable cues (description quality).

Email: Nydia Ayala, nayala@wlu.edu

Reading II

Sunday, November 24, 2024, 8:00-10:00 AM US EST

Chaired by Matthew Traxler, *University of California, Davis*

8:00-8:20 AM (318)

Word Position Coding in Reading: Roles for Attention and Memory. JOSHUA SNELL, *Vrije Universiteit Amsterdam* — Readers may fail to notice the error in "Do love you me?" This is the recently established transposed-word (TW) phenomenon. Word position coding is a novel construct, and researchers are presently debating the underlying mechanisms. In this talk I reflect on the potential roles of attention and memory. In particular I highlight a study in which participants made grammaticality judgments to sequences that formed correct sentences ("The man can run," "The dog was here"), TW sentences ("The can man run," "The was dog here"), or ungrammatical control sentences ("The man dog run," "The was can here"). Sequences were replaced by post-masks after 200 ms, and that post-mask was accompanied by a 50 ms retrocue presented at a critical location (where one could have locally inferred grammaticality) or a non-critical location. TW-sentences were harder to reject than control sentences—the classic TW effect—and this effect was modulated by cue validity, with valid cues attenuating TW effects compared to invalid cues. These results suggest that focused attention aids the process of binding words to locations. Furthermore, as cues appeared after sentence offset, these results suggest that word position coding may take place in memory.

Email: Joshua Snell, j.j.snell@vu.nl

8:20-8:40 AM (319)

Attention Dynamics During Natural Reading Measured by Rapid Invisible Frequency Tagging (RIFT). YALI PAN, *University of Birmingham*, KARA FEDERMEIER, *University of Illinois Urbana-Champaign*, STEVEN FRISSON, JOSHUA SNELL, *Vrije Universiteit Amsterdam*, OLE JENSEN — During natural reading, our attention constantly shifts from word to word. However, how this attention shift interacts with reading processes remains unclear. Here we explored how parafoveal information attracts attention and how foveal information retains attention. We co-registered MEG and eye movements in a one-line sentence reading task. The lexical frequency of the target word in each

sentence was manipulated (low/high, e.g., “waltz” vs. “music”). Simultaneously, we tagged the target word at 60Hz and the post-target word at 65Hz. This method allowed us to measure the dynamics of attention influenced by both parafoveal processing (the parafoveal lexical effect) and foveal processing (the foveal load effect). We observed that when previewing a low-frequency target word, more attention shifted towards the parafovea (indexed by 60Hz tagging responses during pre-target fixations, a replication of Pan et al., 2021); however, after fixating on this target word, less attention shifted to the post-target word (indexed by 65Hz tagging responses during target fixations). These results suggest that attention is distributed across multiple words simultaneously and is flexibly modulated by both foveal and parafoveal processing.

Email: Yali Pan, Y.Pan.1@bham.ac.uk

8:40-9:00 AM (320)

Psychophysical Paradigms to Distinguish Parallel and Serial Processing of Written Words. ALEX WHITE, *Barnard College, Columbia University* — As you read this abstract, many words are visible simultaneously. Can you take advantage of that by processing multiple words in parallel? This question has been investigated with many approaches, which have yielded inconsistent answers. This talk will demonstrate the utility of two psychophysical paradigms that test quantitative models of parallel and serial processing. One is a “dual-task” paradigm that measures the loss of accuracy caused by dividing attention between two words, when the time available for processing them is strictly controlled. The other is the redundant target paradigm, a variant of visual search that compares response times between displays that contain one target and displays that contain two targets. While these tasks differ from natural reading, they reveal the inherent processing capacity limits that readers cope with. They have been used to investigate how capacity limits for word recognition vary across the visual field and how linguistic context may facilitate parallel processing. Furthermore, there is potential for individual differences captured by these tasks to elucidate differences in reading skill.

Email: Alex White, alwhite@barnard.edu

9:00-9:20 AM (321)

A Co-Registered Eye-Tracking and Fixation-Related Potentials Investigation of Word Order

Violation Effects in Sentence Reading. PETAR ATANASOV, *University of Central Lancashire*, SIMON P. LIVERSEDGE, *University of Central Lancashire*, FEDERICA DEGNO, *Bournemouth University* — Mirault et al. (2018) found that readers sometimes fail to detect the ungrammaticality created by transposing two adjacent words in a sentence—a transposed-word effect. This finding has been interpreted as evidence in favour of the parallel processing OB1 Reader model (Snell et al., 2018). The model posits that readers rely on word length and syntactic cues to determine what positions words are assigned to in a sentence. In this talk I will present data from two co-registered eye-tracking and fixation-related potentials (FRPs) experiments which utilised the boundary paradigm (Rayner, 1975) to investigate how sensitive to word transpositions in parafoveal vision readers may be. In the first experiment, the order of two target words was orthogonally manipulated in the fovea (transposed versus not transposed) and in the parafovea (transposed versus not transposed). In the second experiment, two target words were manipulated, such that one or both targets were substituted by strings of letters or were transposed in preview. Findings from both experiments will be discussed in relation to the transposed-word effect and the ongoing serial versus parallel lexical processing debate in the eye movement reading literature.

Email: Petar Atanasov, PAtanasov@uclan.ac.uk

9:20-9:40 AM (322)

Early Readers’ Implicit Prosody Development of Metrically Regular Rhymed Language. KATERINA DRAKOULAKI, *Mount Holyoke College*, YANG DI, *Mount Holyoke College*, XI YANG, *Mount Holyoke College*, MARA BREEN, *Mount Holyoke College* — Children’s literature cross-linguistically includes metrically regular rhymed language (MRRL), as in nursery rhymes and poetry. MRRL may contribute to children’s acquisition of phonological awareness and reading comprehension by enhancing implicit prosodic representations. We recruited 43 typically developing 6-10-year-olds divided into four 15-month cohorts and 31 young adults. Participants read the popular American children’s book *The Cat in the Hat* while eye movements were recorded with an Eyelink 1000+. All words in the book were annotated according to a five-level metric hierarchy. Results reveal a developmental trajectory across age: Older children and adults spent more time on words at the highest metric level, realizing implicit



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metric structure, while younger children also fixated longer at lower metric levels, showing grouping in smaller metric units. All participants showed a rhyming effect, fixating more on rhyme targets than rhyme primes. Ongoing work will connect children's eye movement patterns with reading skill and explicit prosody.

Email: Katerina Drakoulaki, adrakoulaki@mtholyoke.edu

9:40-10:00 AM (323)

Eye-Movement Control and Text Comprehension in Deaf and Hearing Bilingual Readers.

MATTHEW TRAXLER, *University of California, Davis*, DAVID CORINA, *University of California, Davis*, KATHERINE SENDEK, *University of California, Davis*, TAMARA Y. SWAAB, *University of California, Davis* — Deaf readers in the United States come to the processing of written English with a wide variety of language and educational experiences. Deaf readers resemble, in some respects, hearing second-language learners, but often differ in regard to the nature and timing of first-language learning. To develop a better understanding of how deaf readers process and interpret English text, we conducted a series of studies focusing on potential effects of (1) visual information processing differences, (2) first-to-second language transfer, and (3) individual differences in cognitive abilities, experience, and linguistic knowledge on the processing and interpretation of English. We used eye-tracking to investigate word-skipping behavior in deaf readers involving two samples of 80 deaf participants, as well as native English and Chinese-English bilingual comparison groups. Our results align with prior studies indicating that deaf readers have larger perceptual spans than comparably skilled hearing bilingual readers, may access lexical representations more efficiently, and use linguistic information in the planning and execution of saccades.

Email: Matthew Traxler, mjtraxler@ucdavis.edu

Discourse Processes and Language Production/Writing

Sunday, November 24, 2024, 8:00-10:00 AM US EST

Chaired by Sarah Bibyk, *Air Force Research Laboratory*

8:00-8:20 AM (324)

A Cognitive Process Annotation Scheme for a Collaborative Skill Acquisition Task. CVETOMIR

DIMOV, *University of Geneva* — We present a cognitive process annotation scheme for speech in a collaborative skill acquisition task. The annotation scheme relates an utterance to a cognitive process in such a task. Specifically, skill acquisition tasks depend on the processes of task knowledge discovery, planning, plan execution and skill acquisition. In an individual task, these processes are non-verbal and internal to each individual. In a collaborative setting, these processes can be further supported by the collaboration partner in two ways. First, the partner can directly provide any knowledge, thus circumventing the need to discover it. Second, each process is subject to distributed control, which makes its execution more reliable. In addition to making the help of the partner available, collaborative tasks place a requirement not present in individual tasks, namely to reach a joint commitment on a shared plan. Reaching joint commitments is another use of language in such a task. Our annotation scheme assigns each utterance to a specific subprocess, belonging to the four larger process. We apply the annotation scheme to speech data from an experiment with the dynamic collaborative task Co-op Space Fortress.

Email: Cvetomir Dimov, cvetomir.dimov@unige.ch

8:20-8:40 AM (325)

Alignment of Information Packaging Across Conversational Participants. SARAH BIBYK, *Air Force Research Laboratory*, JESSICA TUTTLE, *University of Dayton Research Institute* — Linguistic alignment—the reuse of linguistic material and representations by conversational participants—has been proposed as a key component of successful communication (Pickering & Garrod, 2004). Prior research on phonetic, lexical, and syntactic alignment suggests that alignment may be predicated on a number of conversational factors and may manifest differently across various kinds of representations (e.g., Duran et al., 2019). We sought to investigate the potential role of alignment in information packaging, or how information is structured within an utterance, separate from syntactic alignment. To disassociate packaging and syntactic alignment, we had participants play a cooperative, text-chat card game where they had to describe cards that had features (shapes, letters, and numbers) randomly positioned upon each. Participants thus needed to choose a particular order in which to mention the features of a card. We found that many pairs settled on a single order for describing card features across the entirety of the

game, sometimes through explicit negotiation. Notably, however, some pairs did not settle on a single dominant order. We will discuss the implications of these findings for theories of linguistic alignment.

Email: Sarah Bibyk, sabibyk@gmail.com

8:40-9:00 AM (326)

Contributions of Spreading Activation to

Pseudoword Processing. ROBERT W. WILEY,
University of North Carolina at Greensboro, SHYAWN
MANSHOORY, *University of North Carolina at
Greensboro*, BRENDAN BANYAI, *University of North
Carolina at Greensboro*, ABIGAIL WAY, *University of
North Carolina at Greensboro* — Pseudoword tasks are often used to isolate sublexical from lexical processes. However, some lexical items can prime specific responses (e.g., “zeaf” more likely following “leaf”, “zeef” following “beef”). Here we present a computational account of both pseudoword reading ($N=45$) and spelling-to-dictation ($N=100$) data, in which activation spreads from targets to lexical neighbors, increasing the rate at which individuals select mappings consistent with those neighbors (e.g., target /raɪ nə/ activates “rhino”, leading to a high rate of “rhina”). Using the English Sublexical Toolkit (Wiley et al., 2024) to quantify spelling-sound consistency within lexical neighborhoods, we find that (1) pseudoword responses are significantly restricted to include only mappings found within those neighborhoods, even if they are atypical within the English lexicon as a whole, and (2) the mappings of lexical neighbors with high imageability/concreteness are especially likely to be selected, even if they diverge from those of higher frequency neighbors. These findings have implications not only for processing pseudowords, but more broadly for the relationship between sublexical and lexical processes in written language.

Email: Robert Wiley, rwwiley@uncg.edu

9:00-9:20 AM (327)

On Idle idols and Ugly Icons: Do Homophones Create Interference in Typing? MEREL MUYLLE,
Ghent University, ROBERT J. HARTSUIKER, *Ghent University*, NAZBANOU NOZARI, *Indiana University Bloomington* — Most of us have experienced replacing words with a homophone (e.g., "there" and "their") when typing, yet past research has not established a clear interference effect for homophones beyond poor spelling

knowledge. We compared the typing of homophone pairs in single vs. double homophone sentences (i.e., sentences containing only one or both homophone pair mates) in a sentence dictation task (Experiment 1) and in a question-answering task (Experiment 2). The homophone pairs either belonged to the same (e.g., SON [noun]-SUN [noun]) or different syntactic categories (e.g., LOAN [noun]-LONE [adjective]). Based on computational simulations, we predicted more competition in double vs. single homophone sentences and a possible modulation by syntax. After excluding spelling-knowledge errors, we found a homophone interference effect on typing speed and accuracy in both tasks, independent of syntactic category. Participants were also slower in double vs. single homophone sentences, although this effect was more pronounced in Experiment 2. These results reveal a robust homophone interference effect that is sensitive to lexical competition, but not to syntactic category, in particular when the task requires deeper processing of the sentence.

Email: Merel Muylle, merel.muylle@ugent.be

9:20-9:40 AM (328)

Serial Order Mechanism in Word Production

and Working Memory. YINGXUE TIAN, *Moss Rehabilitation Research Institute*, MARJA-LIISA MAILEND, *Moss Rehabilitation Research Institute*, ERICA L. MIDDLETON, *Moss Rehabilitation Research Institute* — Serial order is important in verbal behavior, such as sequencing words in a working memory (WM) list or arranging phonemes while producing a word. In both WM and language production, distinct processes are found for item identity and their serial order. Here, we investigated whether a common system is responsible for the serial order of verbal items (phonemes or words) across cognitive functions (WM and production) and tasks (repetition and naming). We analyzed phonemic sequencing performance in single-word repetition and naming of 30 participants with aphasia and examined how its variability relates to the WM capacity of maintaining item and serial order information. Our findings reveal that (1) serial order, but not item, WM capacity was significantly associated with the severity of serial order impairment in repetition, indicating a common serial order system for WM and repetition, and (2) item, but not serial order, WM significantly correlated with serial order impairment in naming, suggesting an item WM buffer for phonemic sequencing in naming. These results suggest distinct sequencing processes for

repetition and naming, each linked to different WM mechanisms. Implications for language production models will be discussed.

Email: Yingxue Tian, yingxue.tian@jefferson.edu

9:40-10:00 AM (329)

Word Frequency Affects Message Choices.

ARELLA E. GUSSOW, *University of Richmond*,
JENNIFER S. TRUEBLOOD, *Indiana University Bloomington*, NAZBANOU NOZARI, *Indiana University Bloomington* — Language production research

has often focused on turning a definite message into linguistic representations. But is the choice of the message itself affected by linguistic properties? To test this, we had participants view two pictures on each trial and name one of them. In the forced-choice condition, the to-be-named picture was cued. In the free-choice condition, participants chose the picture to name. Frequency and length were orthogonally manipulated between the two picture names. A control motor task was also administered with forced- and free-choice conditions. As expected, frequency and length had no effect on choice in the motor task. Also in keeping with prior findings, high frequency facilitated naming in the forced-choice condition. Critically, frequency also drove choice in the free-choice naming condition. Length did not significantly affect naming in either condition. These findings show that the same lexical indices that affect lexical retrieval affect selection at the message level.

Email: Arella Gussow, agussow@iu.edu

Cognitive Aging

Sunday, November 24, 2024, 10:00 AM-12:00 PM US EST

Chaired by Ian M. McDonough, *Binghamton University, SUNY*

10:00-10:20 AM (330)

A Dual Mechanisms of Control Account of Working Memory Differences Between Healthy Young and Older Adults with Alzheimer's Disease Biomarkers: An EEG Decoding Study.

NATHAN ROSE, *University of Notre Dame*, JUSTINE FRAGETTA, *University of Notre Dame*, CHANG-MAO CHAO, *University of California, Riverside*, ZENGBO XIE, *Vanderbilt University*, DANIEL HENRECKSON, *Western Michigan University*, CHENLINGXI XU, *University of Notre Dame* — Working memory declines

as a function of age and neurodegenerative conditions such as Alzheimer's disease and related dementias (ADRD); however, the nature of the declines are unclear. In this study healthy young and older adults with various ADRD biomarkers including 1) deficiencies on neuropsychological tests, 2) the APOE-e4 allele, 3) the cortical thinning signature on MRI, and 4) levels of amyloid and tau in blood plasma were compared on behavioral performance on a 1- and 2-back WM updating task and EEG decoding analyses during task performance. Results show significant decoding of stimulus category (a scene, object, or face) during stimulus presentation and retrieval for both groups, but not throughout the delay period, for both the 1-and 2-back tasks, consistent with the phenomenon of "activity-silent"/passive retention. ADRD biomarkers predicted memory decoding within the older adults differently based on task phase (encoding, maintenance retrieval), and EEG feature (voltage/ERPs, theta, alpha, beta power). Results are interpreted within the dual mechanisms of control account of age differences in WM and the dynamic processing model of WM.

Email: Nathan Rose, nrose1@nd.edu

10:20-10:40 AM (331)

Adult Age Differences in Value-Based Remembering: The Role of Loss and Gain Incentives.

SEBASTIAN S. HORN, *University of Zurich*, JASMIN BRUMMER, *University of Zurich*, ALEXANDRA M. FREUND, *University of Zurich* — Lifespan research suggests that motivation shifts across adulthood from a primary gain orientation towards maintenance- and loss-avoidance orientation. From a motivated-cognition perspective, these changes likely influence how well people remember things: We suggest that older adults' performance is driven more strongly by avoiding the negative consequences of memory failure (loss-avoidance goals) than by the positive consequences of successful remembering (gain-related goals), whereas younger adults' performance shows a reversed pattern. In this presentation, we present research on retrospective and prospective memory that examined these propositions in younger, middle-aged, and older adults (18-85 years) in laboratory studies and a field study (with daily assessments of intended actions and memory performance on mobile devices). The findings indicate that the magnitude of age differences in memory performance depends on whether negative (loss-related) or positive (gain-related) consequences are emphasized.

Thus, the consideration of motivational orientation can help to better understand age-related differences in memory performance.

Email: Sebastian Horn, horn@psychologie.uzh.ch

10:40-11:00 AM (332)

Age-Related Episodic Memory Deficits: Exploring the Role of γ -Aminobutyric Acid.

TEAL EICH, *University of Southern California* — Episodic memory loss is the core clinical hallmark of Alzheimer's disease (AD). Studies using both AD-animal models and humans have shown that episodic memory deficits correlate neuronal hyperactivity that is localized to the DG/CA3 regions of the hippocampus. Animal models have further shown that γ -aminobutyric acid (GABA) dysregulation may foster such hyperactivity. Here, we will present interim analysis from the SAGE study, in which we combined *in vivo* measurement of hippocampal GABA with task based fMRI to measure hippocampal activity as community dwelling, cognitively normal participants ($n > 100$, aged 50-80) completed an episodic memory-based pattern separation task.

Email: Teal Eich, teich@usc.edu

11:00-11:20 AM (333)

Impact of Individual Differences in Cognitive Reserve, Stress, and Busyness on Episodic Memory: An fMRI Analysis of the Alabama Brain Study on Risk for Dementia. IAN M.

MCDONOUGH, *Binghamton University, SUNY*, SARA B. FESTINI, *University of Tampa* — Cognitive reserve (CR) and busyness can boost memory, whereas stress can impair memory. Extant research has not yet examined busyness in conjunction with CR and stress, nor whether CR or stress moderate the relationship between busyness and episodic memory. Here, adults aged 50-74 ($N=71$; 31% African-American) answered lifestyle questionnaires and completed a visual paired-associate memory fMRI task. Two CR factors (personal and parental) and two stress factors (personal and external) and their interactions with busyness were cast into multiple regressions on memory performance and brain activity during retrieval. Better episodic memory was associated with higher busyness, lower external stress, and both CR factors. More efficient brain activity was associated with higher CR and lower personal stress in regions subserving episodic memory. Thus, although

busyness was associated with superior episodic memory, busyness did not modulate neural activity during episodic memory retrieval, nor did CR or stress moderate the relationship between busyness and associative memory.

Email: Ian McDonough, imcdonough@binghamton.edu

11:20-11:40 AM (334)

Mechanisms of Age-Related Changes in the Representational Quality of Episodic Memories.

NATHANIEL R. GREENE, *University of Pennsylvania*, MICHAEL J. KAHANA, *University of Pennsylvania*, MOSHE NAVEH-BENJAMIN, *University of Missouri* — The qualitative representational nature of episodic memories changes as we age. Memories for past events become fuzzier or less detailed in older relative to younger adulthood, but the mechanisms underlying these qualitative representational shifts remain to be fully elucidated. We propose a computational modeling approach, rooted in retrieved context theories of memory, to disentangle the roles of distinct encoding and retrieval processes underlying age-related differences in the specificity of episodic memories. We fit our computational model to data from a recognition mnemonic similarity task capturing key adult age-related differences in episodic memory specificity. Our modeling aims to characterize the unique and interactive roles of various processes, such as fluctuations in attention and slowing in processing speed, that disrupt the formation or subsequent retrieval of detailed memory representations among older adults.

Email: Nathaniel Greene, nrgreene@sas.upenn.edu

11:40 AM-12:00 PM (335)

Protective Effects of Multilingualism on Cognitive Aging Among Older Adults within the Context of Socioeconomic Status and Urbanicity.

IRIS STRANGMANN, *Columbia University Irving Medical Center*, SARAH PETROSYAN, *University of Southern California*, ERIK MEIJER, *University of Southern California*, EMMA NICHOLS, *University of Southern California*, SHRIKANTH NARAYANAN, *University of Southern California*, JINKOOK LEE, *University of Southern California*, MIGUEL ARCE RENTERÍA, *Columbia University Irving Medical Center* — Multilingualism may protect against cognitive aging, but it is unclear under which circumstances such benefits may be derived. We examined the association between

multilingualism and cognition across levels of individual socioeconomic status (SES) and environmental contexts (i.e., urban vs rural) among community-dwelling older adults residing in India ($N=3,918$, 35% multilingual, 54% female, M age=69.6). Participants completed a comprehensive cognitive battery evaluating executive functioning, memory, language, and visuospatial abilities. Multiple-group modeling was used to compare the magnitude of associations between multilingualism and cognition by SES and urbanicity. Across the entire sample, multilingualism was positively associated with performance in all cognitive domains. The association of multilingualism and cognition differed across SES and urbanicity. Multilingualism was associated with better performance among older adults with high SES residing in urban settings, while it was not associated with performance among older adults with low SES residing in rural settings. Our results suggest that the protective effects of multilingualism may not apply equally across different levels of SES and environmental contexts.

Email: Iris Strangmann, ims2168@cumc.columbia.edu

Multimodal Cognition & Mind Wandering

Sunday, November 24, 2024, 10:00 AM-12:00 PM US EST

Chaired by Melanie Mack, *Centre for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva*

10:00-10:20 AM (336)

Effects of Attentional Control Demands in Processing Speed Training Across the Adult Lifespan: First Findings. CLAUDIA C. VON BASTIAN, *University of Sheffield*, ALICE REINHARTZ, *Medical School Hamburg*, ELEANOR R. A HYDE, *University of Sheffield*, SHUANGKE JIANG, *University of Zurich*, JEFF FERRERI, *Institut Universitaire de Gériatrie de Montréal*, SYLVIE BELLEVILLE, *University of Montreal*, TILO STROBACH, *Medical School Hamburg* — Evidence for cognitive training-induced far transfer of improvements to untrained cognitive abilities is mixed. A notable exception are speed of processing training interventions. However, the mechanisms underpinning these training effects are yet unclear. In this preregistered, multisite training study, we tested the hypotheses that (a) training tasks with stronger attentional control demands will induce larger transfer effects and that (b) gains in the rate of information accumulation (i.e., drift rate) will be positively associated with these effects. For this purpose,

we recruited 476 healthy participants spanning the adult lifespan from three sites in the United Kingdom, Germany, and Canada, who were randomly allocated to one of four groups practising tasks with increasing attentional control demands. Transfer to working memory, executive functions, reasoning, and everyday cognitive functioning was assessed before, immediately after, and 3 months after 10 training sessions. Participants ($N=388$) ranging from 18 to 85 years in age completed the study. The first results from this study will be presented in this talk.

Email: Claudia von Bastian, C.C.vonBastian@sheffield.ac.uk

10:20-10:40 AM (337)

Designing Cognitive Interventions to Maximize Participant Engagement and Learning.

SUSANNE M. JAEGGI, *Northeastern University*, AARON R. SEITZ, *Northeastern University*, ANJA PAHOR, *University of Maribor*, MARIYA

VODYANYK, *Northeastern University* — While there is accumulating evidence for the efficacy of targeted interventions, there have been persistent inconsistencies, some of which have been attributed to a lack of participant engagement and failures to consider individual interests and abilities. I will summarize the results of several studies completed by our group targeting older adults. These studies aimed to maximize participant motivation and persistence in cognitive training. First, we tested the influence of gamification on completion, engagement, and learning. While we observed limited effects on learning, individual differences impacted engagement and transfer. Second, I will demonstrate the benefits of adding motivational coaching to cognitive training to maximize persistence, and ultimately, learning and transfer. Finally, I will present pilot work where we embed cognitive training within visual arts and music activities to create meaningful experiences that might impact domains beyond cognition, including well-being and quality of life. Collectively, our studies illustrate ways how cognitive interventions could be designed to captivate participants' interests, capitalize on individual differences, and ultimately, promote real-world outcomes.

Email: Susanne Jaeggi, s.jaeggi@northeastern.edu

10:40-11:00 AM (338)

Effects of Piano Practice on Cognitive Flexibility in Healthy Older Adults: Results of a

Randomized Controlled Trial. MELANIE MACK, *Centre for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva*, DAMIEN MARIE, *University of Applied Sciences and Arts of Western Switzerland HES-SO, Geneva School of Health Sciences, & Geneva Musical Minds lab (GEMMI lab)*, FLORIAN WORSCHECH, *Hanover University of Music, Drama and Media*, TILLMANN KRUEGER, *Hannover Medical School*, CHRISTOPHER SINKE, *Hannover Medical School*, ECKART ALTEMÜLLER, *Hanover University of Music, Drama and Media*, CLARA JAMES, *University of Applied Sciences and Arts of Western Switzerland HES-SO, Geneva School of Health Sciences, & Geneva Musical Minds lab (GEMMI lab)*, MATTHIAS KLIEGEL, *Centre for the Interdisciplinary Study of Gerontology and Vulnerability, University of Geneva* — We examined the effects of piano practice on cognitive flexibility (CF) in healthy older adults.

Participants (N=153, 69.5 ± 3.5 YOA, 57.5% f) were randomly assigned to a piano practice (PP) or a control group engaged in music listening (MC). Both groups underwent a year-long intervention. We assessed switch and mixing costs with a number switch and a perceptual switch task. We employed MIDI-based Scale Analysis to assess pianistic performance. Tests were conducted at baseline, after 6 months, post-intervention (12 months), and at follow-up (18 months). Results revealed more pronounced improvements in pianistic performance in the PP compared to the MC group. Both groups exhibited gains in several CF outcomes which originated primarily in the latter half of the intervention. For mixing costs the PP group showed partly greater improvements compared to the MC group. Results further showed a compensation account in both groups, which was partially more pronounced in the PP group. This study suggests that piano practice enhances CF, particularly in sustained control mechanisms. Piano practice potentially requires longer than 6 months to induce behavioral transfer effects and is especially beneficial for individuals with lower CF.

11:00-11:20 AM (339)

Wandering Near and Far: Eye Movement Correlates of Stimulus-Dependent Mind

Wandering. MYRTHE FABER, *Tilburg University* — Mind wandering is often defined as task-unrelated, stimulus-independent thought. However, several studies have shown that around half of our mind wandering is triggered by stimuli in our external environment—e.g., a word that we read or something that we see in a movie.

In this study, we looked at the eye movement correlates of such stimulus-dependent mind wandering thoughts. 89 participants read a literary short story for about 45-60 minutes. They received 19 thought probes asking to what extent they were focused on reading vs mind wandering (1-7 scale), what they were thinking about, what (if anything) triggered that thought, and how absorbed they were in the story. In line with previous work, we found that mind wandering was associated with a decrease in fixations and an increase in blinks in the 15 seconds before the probe. However, we also found that thoughts that were triggered by something in the text were accompanied by more fixations than their stimulus-independent counterparts, suggesting that during stimulus-dependent mind wandering, people might be less perceptually decoupled from the task. Implications for how we measure and conceptualize mind wandering will be discussed.

Email: Myrthe Faber, myrthe.faber@gmail.com

11:20-11:40 AM (340)

The Element of Surprise in Involuntary Thought.

CAITLIN MILLS, *University of Minnesota*, CATI POULOS, CHRISTOPHER STEADMAN, *University of Minnesota*, ANNE M. CLEARY, *Colorado State University* — Involuntary thinking is thought to occur when mental states arise without intention. Such thoughts can take many different forms, such as involuntary autobiographical memories, *déjà vu*, and unexpected thoughts (i.e. thoughts that come to us "out of the blue"). Despite these mental states sharing a common thread of feeling involuntary in nature, it is nevertheless unclear what separates them phenomenologically. In my talk I will describe results from studies that aimed to understand the appraisal dimensions underlying different forms of involuntary thought. I will also discuss post-hoc analyses that suggest many of the reported unexpected thoughts involved simulating a future improbable action, and how engaging in more of these thoughts are correlated to symptoms of anxiety. These findings will then be discussed in light of recent theories related to spontaneous thought and the "high place phenomenon."

Email: Caitlin Mills, cmills@umn.edu

11:40 AM-12:00 PM (341)

Self-Reports of Ongoing Thoughts: Idiographic vs Nomothetic Approach. JULIA KAM, *University of Calgary* — Experience sampling is commonly used for

capturing ongoing thoughts. While studies typically collect data from many participants (nomothetic approach), some studies acquire more data from a given participant (idiographic approach). The current study aimed to compare the patterns of self-reported ongoing thoughts between two independent studies. One study consisted of a single dataset from 49 participants, whereas the other study consisted of 7 datasets per participant for 7 participants. The experimental design in both studies was identical such that participants were asked to complete whatever task they wish on the lab computer while occasionally prompted to report their ongoing thoughts using multi-dimensional experience sampling. Our results indicated that most thought dimensions were similar across studies; however, some thought dimensions were more task-dependent than others and differed as a function of the amount of data available for a given participant. These findings have implications for methodological decisions in future studies that aim to examine self-reports of ongoing thoughts.

Email: Julia Kam, julia.kam@ucalgary.ca

Bilingualism: Development and Individual Differences

Sunday, November 24, 2024, 10:00 AM-12:00 PM US EST

Chaired by Justin W. Bonny, *Morgan State University*

10:00-10:20 AM (342)

Cognitive Profiles of Bilingual and Monolingual Immigrant and Non-Immigrant Latinx Adults.

MIGUEL ARCE RENTERÍA, *Columbia University Irving Medical Center*, IRIS STRANGMANN, *Columbia University Irving Medical Center*, SARA WALKER, *Columbia University Irving Medical Center*, ALICIA PACHECO, *Columbia University Irving Medical Center*, ADAM BRICKMAN, *Columbia University Irving Medical Center*, JENNIFER MANLY, *Columbia University Irving Medical Center* — Bilingualism is associated with both advantages and disadvantages on neuropsychological assessment. However, it remains unclear how factors such as immigration and language of testing confound the association of bilingualism on cognitive test performance. Participants were 980 Latinx community-dwelling middle-aged adults ($n=230$ monolingual immigrant/Spanish, $n=398$ bilingual immigrant/Spanish, $n=163$ bilingual immigrant/English, $n=198$ bilingual U.S.

born/English) who completed a comprehensive cognitive battery assessing the domains of memory, language, and attention/executive functioning. Models adjusted for sociodemographic confounders. Bilingualism was associated with better auditory attention, semantic and letter fluency, visual working memory, and set-shifting, but this differed across group. Bilinguals tested in English outperformed monolinguals on auditory attention, semantic fluency, visual working memory, and set-shifting. Immigrant bilinguals tested in Spanish performed better than monolinguals on letter fluency and set-shifting. Our results suggest that sociocultural factors such as immigration and language of evaluation are significant drivers of differences in cognitive test performance across bilingual adults.

Email: Miguel Arce Rentería, ma3347@cumc.columbia.edu

10:20-10:40 AM (343)

Degree of Bilingual Engagement Modulates Resting State Oscillatory Activity Across the Lifespan.

TOMS VOITS, *University of Gothenburg*, VINCENT DELUCA, *UiT The Arctic University of Norway*, JIZHOU HAO, *UiT the Arctic University of Norway*, KIRILL ELIN, *UiT the Arctic University of Norway*, JUBIN ABUTALEBI, *Vita-Salute San Raffaele University*, JON ANDONI DUÑABEITIA, *Universidad Nebrija*, GAUTE BERGLUND, *UiT the Arctic University of Norway*, ANDERS GABRIELSEN, *UiT the Arctic University of Norway*, JANINE ROOK, *University of Groningen*, HILDE K. THOMSEN, *Université Côte d'Azur*, PHILIPP WAAGEN, *UiT the Arctic University of Norway*, JASON ROTHMAN, *UiT The Arctic University of Norway & Universidad Nebrija* — Bilingualism has been demonstrated to lead to a more favorable trajectory of neurocognitive aging, yet our understanding of its effects on neurocognition across the lifespan remains limited. Here, we collected resting state EEG recordings from a sample of bi-/multilingual individuals across a wide age range. Additionally, we obtained data on participant language background and bilingual language use patterns. Language experience was operationalized via a modified multilingual diversity (MLD) score, an entropy-based continuous measure of multilingualism. Generalized additive modeling was employed to examine the effects and interactions of age and MLD on resting state oscillatory power and coherence. We report a modulatory effect of bilingualism on age-related decline in whole brain resting state power across alpha and theta bands, and an interaction between age and MLD on

resting state coherence across alpha, theta, and low beta frequency bands. These results provide evidence of bilingual engagement as a factor that modulates age-related decline in resting state EEG power and reinforces the interpretation of bilingualism as a protective factor in neurocognitive aging.

Email: Toms Voits, toms.voits@psy.gu.se

10:40-11:00 AM (344)

How Translation Experience May Affect Speech Connectedness in Bilinguals. NICOLE A. VARGAS FUENTES, *University of California, Irvine*, GUADALUPE A. A. MENDOZA, *University of California, Irvine*, PRISCILLA CASTILLO-MADRIGAL, *University of California, Irvine*, JANAINA WEISSHEIMER, *Federal University of Rio Grande do Norte*, JUDITH F. KROLL, *University of California, Irvine* — Speech connectedness, the degree to which words are put together to form sentences and communicate thoughts, is an important characteristic of fluent organized speech. By measuring long-range connectedness in speech samples, prior research has examined the growth of L2 fluency in bilingual speakers. The present study examines speech connectedness in heritage bilinguals who speak Spanish at home while immersed in an English-dominant environment. In particular, we focused on their experience with language brokering, the informal act of translating. Many bilinguals act as linguistic and cultural mediators between their families and society without any formal training. There is limited research on the effects of language brokering on speech production but prior studies (e.g., López & Vaid, 2018) point to stronger convergence of semantic representations across brokers' two languages. We predict this overlap in semantic representations may also reflect greater connectedness at the discourse level across the two languages. We tested this hypothesis by examining long-range connectedness in a picture description task using speech graph analysis in Spanish-English bilinguals with different language brokering experiences.

Email: Nicole Vargas Fuentes, nvargasf@uci.edu

11:00-11:20 AM (345)

Investigating the Role of Individual Differences in Bilingual Language Experience on Code-Switching Processing Ability: Preliminary ERP Results. ANNIE C. GILBERT, *McGill University*

Centre for Research on Brain, Language and Music, LOUIS FRIEDLAND-YUST, McGill University Centre for Research on Brain, Language and Music, CASSANDRA SORIN, McGill University Centre for Research on Brain, Language and Music, SHARI R. BAUM, McGill University Centre for Research on Brain, Language and Music — Bilinguals vary widely in their ability to process utterances containing code-switches. The present study uses event-related potentials to investigate how they process lexical insertions, a specific type of code-switch in which a word from a different language is inserted into an utterance. To date, 51 English-French bilinguals have listened to 116 pairs of utterances (58 per language) containing either an utterance-consistent target word (same language) or a lexical insertion (other language) produced by a native speaker of both languages. Preliminary analyses of French trials suggest that lexical insertions trigger an N400-like negativity compared to utterance-consistent target words, the amplitude of which varies as a function of listeners' own code-switching habits. Namely, participants who reported avoiding code-switching in their own speech presented greater N400-like effects when hearing lexical insertions (greater integration difficulty) compared to participants who reported producing code-switching on a regular basis. Results will be discussed in terms of language-specific (English/French) versus acquisition-order effects, emphasizing the role of individual differences in language experience on bilingual speech processing.

Email: Annie Gilbert, annie.c.gilbert@mcgill.ca

11:20-11:40 AM (346)

Linguistically Diverse Children's Spoken Word Recognition Patterns Show No Delay. ETHAN KUTLU, *University of Iowa*, BOB McMURRAY, *University of Iowa* — Up to 20% of children in the US come from linguistically diverse households (U.S. Department of Education, 2019). However, current language development models are mostly based on single language benchmarks where age of acquisition plays an integral role in language development. However, recent studies show monolingual language development continues to develop until the age of 17 (McMurray et al., 2018). This is challenging because for communities like heritage speaker children, their first language becomes their less dominant language as they age (often when schooling begins), and their second language eventually becomes dominant, despite a delayed start.

Here, we ask how heritage speaker children become more automatic language processors in their second language. Critically, our study targets spoken word recognition, as the ability to efficiently recognize words paves the way for higher level language abilities. We also capture all children's language environments with a social network questionnaire. Our findings show that both heritage speaker children and monolingual children show the same exact developmental progress such that their ability to detect target words significantly develops from the age of 6 to 10.

Email: Ethan Kutlu, ethankutlu@gmail.com

11:40 AM-12:00 PM (347)

Using Latent Variable Analysis to Capture Individual Differences in Bilingual Language Experience. ESTER NAVARRO, *St. John's University*, ELEONORA ROSSI, *University of Florida* — Bilingualism is an experience that varies across a continuum and can change across the lifespan. Psychometric research is an underexplored avenue with the potential to further our understanding of the mechanisms and traits underlying bilingual experiences. Here, we developed and validated a social network questionnaire to measure sociolinguistic features in 212 individuals via personal social network analysis. Confirmatory factor analysis examined the measurement model of the network structural variables. Compared to a one-factor model, the best fitting model was a two-factor model in which the language experience of the individual (i.e., ego) and the language experience of the individual's network (i.e., alters) were correlated latent factors under which aspects of the bilingual experience loaded. Additional analyses revealed other potential ways to examine the data in future analyses. We present the first measurement model of bilingual experience, and provide support for theoretical accounts suggesting differential neuropsychological outcomes based on individual bilingual variability. The results also support the use of social network tools to capture differences in bilingualism.

Email: Ester Navarro, navarre1@stjohns.edu

Human Learning and Instruction II

Sunday, November 24, 2024, 10:00 AM-12:00 PM US EST

Chaired by Leamarie Gordon, *Assumption University*

10:00-10:20 AM (348)

A New Approach to the Flipped Classroom: Replacing Lecture Time with Asynchronous Spaced Retrieval. LEAMARIE GORDON, *Assumption University*, GREGORY HUGHES, *U.S. Army Combat Capabilities Development Command (DEVCOM) Soldier Center*, AMY SMITH, *Blank Slate Technologies* — Spaced retrieval practice offers a promising way to maximize students' study efforts outside of the classroom and better prioritize limited classroom time. In the present study, we examined whether delivering traditional lecture content via spaced retrieval practice could sufficiently teach learners a new topic in the absence of a lecture. Participants watched a recorded lecture and then used an AI-driven app for four weeks to answer a set of questions about the lecture and a set of questions about a new topic not accompanied by a lecture. They were then tested on the ability to apply their knowledge of each topic on a final test featuring novel multiple-choice and short-essay questions. During the app usage phase, participants took longer to review non-lectured questions and started off with significantly lower accuracy on non-lectured questions. However, after just a week the difference in accuracy disappeared and participants performed equally well on lectured questions and non-lectured questions on the final test. These results suggest that in a traditional lecture-based classroom, some lecture time may be replaced by efficient asynchronous learning tools.

Email: Leamarie Gordon, lt.gordon@assumption.edu

10:20-10:40 AM (349)

Error Exposure: What Happens When Learners Are Exposed to Prior Guesses? KELSEY K. JAMES, *University of Houston-Clear Lake* — Guessing the answer to a question prior to learning the correct information has been demonstrated to be beneficial. This phenomenon is known as the pretesting effect. However, what happens when someone else is exposed to the (often incorrect) guesses? In this project, benefits and detriments of exposure to prior guesses are explored as well as potential mechanisms for these effects. In a first experiment, participants were shown trivia questions

along with a “guess” answer. These were either shown (1) in blocks of only correct guesses or incorrect guesses or were shown (2) with both guess types mixed together. A benefit to being exposed to the prior guesses (correct and incorrect) was found only in the mixed condition. These data seem to suggest support for a covert retrieval mechanism behind benefits of error exposure. Data collection for a second experiment is underway. In this study, participants are either exposed to the correct answer (1) on the same page as the guess answer or (2) on the subsequent page. If the correct answer is on the same page, this should reduce the likelihood of participants engaging in covert retrieval and therefore may reduce performance for guess items in these conditions.

Email: Kelsey James, jamesk@uhcl.edu

10:40-11:00 AM (350)

Healing by Learning: Mechanisms of Placebo and Nocebo Effects. PRZEMYSŁAW BĄBEL, *Jagiellonian University* — While placebos are typically inert, their substantial impact, demonstrated in experimental studies and meta-analyses, sometimes rivals that of active treatments. This impact can influence various symptoms and conditions (e.g., pain, depression) both positively (placebo effect) and negatively (nocebo effect). This talk delves into the conceptualization of placebo effects as learning phenomena and synthesizes recent evidence on the involvement of classical conditioning, observational learning, and operant conditioning in inducing placebo and nocebo effects. Importantly, it extends beyond the traditional expectancy mediation of placebo and nocebo effects induced by learning processes, underscoring their independent influences. The talk further explores factors that moderate and mediate placebo and nocebo effects, highlighting the nuanced role of expectancies in their induction. Finally, it identifies the inconsistencies between leading theoretical accounts of placebo effects and research findings and highlights the gaps in knowledge that need to be addressed.

Email: Przemysław Bąbel, przemyslaw.babel@uj.edu.pl

11:00-11:20 AM (351)

Overcoming Science Misconceptions: When Does Refutation Work? CLAIRE MASON, *University of California, San Diego*, EMMA H. GELLER, *University of California, San Diego* — Studies of knowledge

revision show that refutation texts are effective tools for helping readers to correct inaccurate understandings. While refutation shows immediate benefits in group comparisons, it is unclear whether these benefits are restricted to particular retention intervals, topics, or individuals. In this study, we examined the durability of knowledge revision over time, variability across topics, and variables that might predict for whom refutation is most effective. Participants evaluated misconceptions across various science topics, then read a mix of refutation and expository texts related to those statements, rating their surprise and confusion after reading each text. Participants re-evaluated the statements immediately after reading the texts, and again at a two-week delay. Refutation texts were significantly more effective than expository texts at reducing misconception endorsement on the immediate posttest, replicating previous findings. These patterns were broadly maintained at a two-week delay, and did not vary significantly across topics. Exploratory analyses suggest that ratings of surprise partially mediated the effect of text type on knowledge revision, but ratings of confusion and confidence did not.

Email: Claire Mason, clmason@ucsd.edu

11:20-11:40 AM (352)

Practice with Feedback vs. Lecture: Consequences for Learning, Efficiency, and Motivation. MICHAEL W. ASHER, *Carnegie Mellon University*, FARIA SANA, *McMaster University & Athabasca University*, KENNETH R. KOEDINGER, *Carnegie Mellon University*, PAULO F. CARVALHO, *Carnegie Mellon University* — Decades of research show that students learn more effectively through active practice than passive listening, yet instructors often devote substantial time to lecture. Must students learn from direct instruction before they can try things themselves and learn by doing? In a laboratory experiment, undergraduate participants ($N=338$) were randomly assigned to learn about linear regression by (1) watching a recorded lecture or (2) completing a matched set of practice problems with elaborated feedback. Compared to lecture, the practice-based instruction was just as effective at preparing students for a posttest, it was more effective at promoting performance on generalization questions, and it was more than twice as efficient. However, although the practice-based instruction promoted interest in statistics for confident students (who may have appreciated the challenge of

practicing and learning from mistakes), it undermined interest for less-confident students who may have been overwhelmed by this instructional approach. This research suggests that students may be able to learn more efficiently when lectures are replaced with practice and feedback, but further study is needed about how to implement this in a way that is motivating.

Email: Michael Asher, masher@andrew.cmu.edu

11:40 AM-12:00 PM (353)

Schemas of Science: Does Understanding How Science Works Impact Science Learning? RIAN E. DREXLER, *University of California, San Diego*, CELESTE PILEGARD, *University of California, San Diego* — How does understanding the nature of science (NoS) impact learning science? The current study investigates whether inducing a schema about the provisional nature of science impacts learning a lesson that involves theory evolution. College students in the experimental condition ($n=105$) watched a lesson about how knowledge in science develops and evolves, followed by a lesson about the evolution of selective attention theories; those in the control condition ($n=106$) simply watched the selective attention lessons. After the lessons, subjects in the experimental condition had a better understanding of the NoS, but this did not impact learning the target content or NoS beliefs. Future studies will test how multiple NoS lessons, instead of one, throughout a psychology course impacts learning, NoS beliefs, and trust in science. This study has implications for integrating NoS instruction throughout science content classes.

Email: Rian Drexler, r.drexler@ucsd.edu

Cultural/Social Influences on Cognition II

Sunday, November 24, 2024, 10:00 AM-12:00 PM US EST

Chaired by Anna Blumenthal, *Marist College*

10:00-10:20 AM (354)

Physical, Social, and Sociocultural Contexts as Dynamical Constraints on Interpersonal Coordination. VERONICA ROMERO, *Colby College*, ALEXANDRA PAXTON, *University of Connecticut* — Experimental psychology often focuses on the individual processes that shape cognition and behavior. A dynamical systems view of psychology recognizes that these processes shape and are shaped by sociocultural

processes at larger scale levels. The slow pace of sociocultural change poses a challenge to empirically studying how these forces can impact behavior. Here, we present work focusing on the way in which a sudden and dramatic sociocultural shift—that is, the COVID-19 pandemic's abatement measures—changed interpersonal dynamics. Specifically, we compare how interpersonal coordination dynamics were affected not only by the physical and social features of the social interaction but also by the sociocultural landscape in which the interaction occurred. Both during and after the COVID-19 pandemic abatement measures, we asked dyads of strangers to hold three different conversations (affiliative, argumentative, and cooperative) either face-to-face or over videoconference while sometimes wearing a mask. The current work explores how the same physical and social contexts interact with the broader sociocultural context to better understand human interaction as a complex dynamical system.

Email: Veronica Romero, vromero@colby.edu

10:20-10:40 AM (355)

The Evolution of Participant Diversity in Psychological Research. ANNA I. THOMA, *Max Planck Institute For Human Development*, RUI MATA, *University of Basel*, RALPH HERTWIG, *Max Planck Institute for Human Development*, DIRK U. WULFF, *Max Planck Institute For Human Development* — How diverse are the participant samples studied in psychological research, and how has diversity evolved over its history? Previous attempts at characterizing participant diversity were limited to selected demographic factors, research subfields, or specific timespans. Despite its relevance for the generalizability of empirical findings, psychological research is yet missing an encompassing account of participant diversity and its evolution. Using natural language processing, we analyze more than 230,000 full texts of articles published in psychological journals between 1894 and 2022 across different research subfields. Specifically, we use state-of-the-art large language models to investigate the reported composition of participant samples considering age, gender, ethnicity, language, region, education, and socioeconomic status. Our findings help to develop a better understanding of the empirical history of psychological research, highlight the relationship between diversity and scientific reporting conventions, and provide new insights into the validity of using large

language models to characterize diversity in academic publishing.

Email: Anna Thoma, thoma@mpib-berlin.mpg.de

10:40-11:00 AM (356)

The Interactive Effects of Gender and Status on Social Attention. FRANCESCA CAPOZZI, *Université du Québec à Montréal*, JONATHAN LEBLANC, *Université du Québec à Montréal*, MARIO DALMASO, *University of Padova* — Human attention is spontaneously drawn by other humans' social cues, like their gaze direction. The so-called gaze-cueing effect is a well-established example of such social attention. This effect is experimentally investigated with a computerized paradigm in which participants are asked to respond rapidly to a response target while instructed to ignore the gaze shifts of a stimulus face. Despite these instructions, participants typically respond faster to targets appearing in the direction of the gaze shifts (vs. the opposite direction), indicating that their attention was spontaneously drawn by the stimulus face's gaze cues. Although this effect is robust across various contexts, it is nevertheless modulated by social factors that remain relatively unknown. Here, we investigated the individual and joint contribution of gender and social status. Female and male participants were presented with female and male faces randomly associated with high- and low-status CVs. Results showing interactive gender x status effects will be discussed according to neuro-evolutionary theories on the importance of social information for the attentional system.

Email: Francesca Capozzi, capozzi.francesca@uqam.ca

11:00-11:20 AM (357)

Universal Perception But Cultural Differences in Color Lexicons? There Is More Than Meets the Eye. MATHILDE JOSSERAND, *CERVO Brain Research Centre, Université Laval*, DAN DEDIU, *University of Barcelona*, FRANÇOIS PELLEGRINO, *Laboratoire Dynamique du Langage (UMR CNRS 5596 & Université Lyon 2)*, SERGE CAPAROS, *Laboratoire DysCo, Université Paris 8* — While color is fundamentally continuous, language categorizes it into a small number of distinct categories. Across different languages, there are notable differences in the way colors are categorized, largely due to differences in communicative needs, but also notable similarities, attributed to a shared human perceptual system. In this

study, we challenge the idea of a universally uniform perceptual structure by comparing participants from two distinct populations: French individuals from France and Himba individuals from Namibia. These groups differ in their exposure to ultraviolet radiation, which affects color perception by influencing eye physiology over their lifetimes. Even after accounting for various factors at the individual, color-naming, and cultural levels, we found that age significantly influences color perception among the Himba participants, suggesting that perceptual structure, in addition to communicative needs, plays a dual role in shaping both universal aspects and differences in color categorization across languages. This research contributes to our understanding of the intricate interplay between perception and language.

Email: Mathilde Josserand, mathilde.josserand@gmail.com

11:20-11:40 AM (358)

Visual Expertise Improvements in Reading Social Cues from Occluded Faces Are Context-Specific. SARAH D. MCCRACKIN, *McGill University*, ADELE GALLANT, *Université de Moncton*, JELENA RISTIC, *McGill University* — Visually occluding faces (e.g., by face masks) significantly impairs emotion perception. It remains unclear if our ability to extract emotional information from occluded faces can improve with visual exposure. Here, we recruited healthcare workers (i.e., with increased face mask exposure) and matched controls without healthcare experience. To measure emotion recognition, participants recognized happy, sad, fearful, surprised, disgusted, angry, and neutral expressions from masked and unmasked faces. To quantify expertise with face occlusion, participants reported overall mask exposure including questions about diversity in masked face encounters and exposure to masked emotional situations. Face occlusion impaired recognition of all emotions for both groups equally and did not vary with time in profession. Importantly however, the masked emotion recognition impairment was reduced for participants who reported increased mask exposure in emotional situations. Thus, the ability to extract social information from faces is modulated by expertise in context-specific interactions rather than increased visual exposure alone.

Email: Sarah McCrackin, sarah.mccrackin@mail.mcgill.ca

11:40 AM-12:00 PM (359)

ZolaBongo: An Open-Source Offline Tablet-Based App for Psychopy. ANNA BLUMENTHAL, *Marist College, ERFAN GHALIBAF, Université du Québec à Trois-Rivières, ALAIN PITIOT, University of Nottingham; Ludwig Boltzmann Institute for Experimental and Clinical Traumatology; & Open Science Tools Ltd. (PsychoPy), REBECCA J. HIRST, Trinity College Dublin, CAYLEE COOK, University of Witwatersrand, BLAISE BALUME, Université de Goma & Université Laval, JEAN-PIERRE AKILIMALI KANANE-MUZINGE, Université de Goma & Université Laval (Observatoire Psycavi), CATHERINE DRAPER, University of Witwatersrand, ISABELLE BLANCHETTE, Université Laval & Cervo Brain Research Center, HLELIWE MAKUALA, University of Witwatersrand, NONKULULO SIKWEYIYA, University of Witwatersrand* — Diversifying psychology by including understudied populations is a well agreed upon goal within the field. This requires testing participants in their communities, unlike lab-based or online studies typical in high-income settings. In our work with different populations in Africa, touchscreen tablets are an excellent tool for enabling data collection in the community. However, the effectiveness of these tools is limited by the fact that there is no open-source software for creating experiments on tablets that does not require programming, and that runs without internet. To fill this gap we teamed up with Psychopy to create ZolaBongo, a tablet-based app that does not require internet. We piloted ZolaBongo with children (age 4+) and adults (N=230) at two sites, in the Democratic Republic of the Congo and in South Africa. We tested a set of short cognitive tasks voted on by The African Brain and Cognitive Development Network (AfriBCD). We show that collecting data on these tasks using ZolaBongo works. Our hope is that ZolaBongo will make it easier to translate, adapt, or create new measures, to facilitate research with diverse populations more broadly.

Email: Anna Blumenthal, blumenthal.anna@gmail.com

Cognition: Judgment II

Sunday, November 24, 2024, 10:00 AM-12:00 PM US EST

Chaired by Justin W. Bonny, *Morgan State University*

10:00-10:20 AM (360)

A Room with a Better View: The Impact of Environment and Location on Perceived Fire Danger. JUSTIN W. BONNY, *Morgan State University*, MICAH D. RUSSELL, *Morgan State University* — An essential component of understanding how humans behave in fire emergency situations is to identify their initial reactions. The present study examined how the environment and placement of an individual within a room affected perceptions of the danger posed by a burning fire. Studies suggest that the environment, the type of building structure, and relative position to the occupant can affect whether a fire is perceived as more dangerous. To test this, we simulated incipient room fires growing in various residential rooms. Then, using these videos, we positioned the person viewpoint in the room at different distances from the simulated fire. Participants were asked to watch portions of these videos and rate the danger posed by the fire. Significant effects of room and viewpoint were observed, with fires viewed in the living room and bedroom environments rated as being more dangerous than those viewed in the kitchen. Additionally, we found that when participants viewed the fire when positioned closer to the fire, those fires were also rated as more dangerous. This indicates that fires of the same intensity are perceived as less dangerous depending on the environment and distance from which they are observed.

Email: Justin Bonny, justin.bonny@morgan.edu

10:20-10:40 AM (361)

Accessibility to Perspective Taking Informs Peoples' Moral Utilitarian Behavior. ROSE MARTIN, *London South Bank University*, PETKO KUSEV, *London South Bank University*, RENATA M. HEILMAN, *Babeş-Bolyai University*, SIANA VUKADINOVA, *Sofia University* — Social dilemmas arise when individuals would like other people to cooperate to achieve a shared goal but do not want to bear the cost of doing so themselves. Behavioral scientists have utilised moral scenarios in experimental settings to exemplify this effect in the context of climate change mitigation, resource scarcity, and the

implementation of autonomous vehicle crash algorithms. In the present work, we present evidence that social dilemmas arise as a consequence of partial accessibility to perspective-taking presented in common moral scenarios. When participants have access to all situational perspectives in a moral scenario, they are more likely to engage in prosocial utilitarian behavior compared to when access to situational perspectives is partial. Crucially, this effect remains regardless of the method in which participants process scenario details, providing further evidence for the importance of scenario construction in informing participants' utilitarian judgments and behaviors (Kusev et al., 2016; Martin et al., 2021).

Email: Rose Martin, rose.martin@lsbu.ac.uk

10:40-11:00 AM (362)

An Illusory Consensus Effect: Repeated Exposure to Health Information from Both Expert and Non-Expert Sources Increases Estimates of Scientific Consensus. MADELINE JALBERT, *University of Washington*, PRAGYA ARYA, *University of Southern California*, NORBERT SCHWARZ, *University of Southern California* — We investigated the impact of repetition on perceptions that health-related claims have scientific support. Participants first read a series of true and false health claims. In Experiment 1 ($N=150$), the claims were not attributed to any source. In Experiments 2-3 ($Ns=200, 600$), participants were either told that the claims came from an expert source (a medical experts Facebook group) or from a non-expert source (a parent support Facebook group). After a delay, participants judged the extent to which there was scientific consensus in new and previously viewed claims. In each experiment, a significant effect of repetition on perceptions of scientific consensus in both true and false information emerged—an illusory consensus effect. This effect was observed when the delay between exposure and judgment was a few minutes (Exp. 1-3) and when it was 3-5 days (Exp. 3). While the effects of repetition were larger when prior exposure came from an expert (vs. non-expert) source, even seeing claims repeated a single time from a non-expert source was sufficient to increase perceptions of its scientific consensus. These findings have important implications for public health, science communication, and journalistic practices.

Email: Madeline Jalbert, mjalbert@uw.edu

11:00-11:20 AM (363)

Can How We Think Influence People and Algorithms? MATTHIEU RAOELISON, *LaPsyDE (UMR CNRS 8240 & Université Paris Cité)*, WIM DE NEYS, *LaPsyDE (UMR CNRS 8240 & Université Paris Cité)* — Human decision making is often conceived as the interplay between intuition and deliberation, which allowed influential dual process models to gain popularity in fields such as psychology, computer science, economics, and philosophy. While most research usually investigates the role of these processes in actual decision-making, we focus on layman evaluation of these processes to develop a folk theory of decision making. We investigated the role of the nature and accuracy of a partner's decisions on our evaluations in several studies by asking participants ($n=240$ for each) to rate several profiles on three separate scales (how good at reasoning the reasoner was, how smart he was, and to what extent we would trust his advice). Our results with online participants showed a strong preference for deliberation overall, whether information about previous accuracy was disclosed or not. Interestingly, chatGPT evaluations followed the same trends as human participants.

Email: Matthieu Raoelison, matthieu.raoelison@ensc.fr

11:20-11:40 AM (364)

Cognitive Processes Underlying the Repetition-Based Truth Effect: A Diffusion Model Study. ANNIKA STUMP, *University of Freiburg*, LUKAS SCHUMACHER, *University of Basel*, ANDREAS VOSS, *Heidelberg University*, KARL CHRISTOPH KLAUER, *University of Freiburg* — People are more likely to judge repeated information as true compared to new information. This so-called truth effect can be mainly attributed to the experienced fluency during the processing of repeated (vs. novel) information and is substantially moderated by the retention interval length between information presentations. In the present research, we systematically manipulated (a) the repetition status of the presented information and (b) the length of the retention interval between first exposure and the judgment phases within participants. During the judgment phases, we measured response times from the information onset until participants provided a binary judgment ("true" vs. "false"). This allowed us to analyze our data using a hierarchical diffusion modeling approach to estimate effects of repetition on specific cognitive processes during truth evaluations. Our results indicate that information repetition results in faster

encoding and enhanced speed of information accumulation supporting the veracity of a statement—both of which are reduced with increased interval length.

Email: Annika Stump, annika.stump@psychologie.uni-freiburg.de

11:40 AM-12:00 PM (365)

Reasoning about Robot Abuse. SYLVIE BORAU,
*TBS Education & Institute for Advanced Study in
Toulouse, TOBIAS OTTERBRING, University of Agder*

— Social robots are increasingly present in education, health care, homes, and public spaces, and so is their abuse by users. Robot abuse would present humans as bad agents and robots as harmed patients, potentially leading to augmented attribution of mind and moral concern for robots. However, because they are not sentient, feeling moral concern for social robots could be considered a cognitive misjudgment. Here we build on moral psychology and dual-process theories to examine

whether (i) robot abuse increases moral concern for robots and (ii) deliberative thinking (i.e., manipulated deliberation triggered by working memory load and strict response time in the intuitive condition) mitigates such concern. Two preregistered experiments with US representative samples ($N=377$ and $N=775$) reveal that exposure to robot abuse and reasoning about this issue increase perception of robots' moral standing. This reaction is automatic and intuitive, correlated to moral identity, and immune to cognitive deliberation, as this judgment holds under the demands of deliberation. In fact, reasoning increases moral concern for abused robots. We discuss the theoretical contributions and offer guidelines for policymakers to navigate this novel moral landscape.

Email: Sylvie Borau, s.borau@tbs-education.fr

Poster Abstracts

Poster Session I

Thursday, November 21, 2024, 7:30-9:00 PM US EST

7:30-9:00 PM (1001)

Attentional Guidance in Visual Search: Target Enhancement or Distractor Suppression? JOLIE O'DELL, *Oregon State University*, ERIC RUTHRUFF, *The University of New Mexico*, MEI-CHING LIEN, *Oregon State University* — Chang and Egeth (2019) argued that both target enhancement and distractor suppression guide visual search. However, Kawashima and Amano (2022) failed to replicate these findings. To critically evaluate enhancement and suppression, we replicated their study using a modified capture-probe paradigm, a sensitive and well-established approach for assessing proactive suppression. Participants performed either a search task (70% of trials) or a probe recall task (30% of trials). Critically, the probe display contained either one target color and three neutral colors (assessing target enhancement) or one distractor color and three neutral colors (assessing distractor suppression). In this paradigm, we found neither target enhancement nor distractor suppression when the probe letters appeared simultaneously with search display onset (Experiment 1). This finding replicated even when the letters appeared 200 ms after search display onset to allow more time for suppression to develop (Experiment 2). We discuss the conditions necessary for observing enhancement and suppression.

Email: Jolie O'Dell, jolie.odell@oregonstate.edu

7:30-9:00 PM (1002)

Color Singletons and Abrupt Onsets in a Forced-Response Paradigm. ALXANDR K. YORK, *University of Michigan, Ann Arbor*, HAN ZHANG, *University of Michigan*, JOHN JONIDES, *University of Michigan* — Visual attention is susceptible to distractions. Two prominent examples of distraction are items with a unique color in the display (color singletons) and items that abruptly appear (abrupt onsets). How do people process and reject these distractors? Using a novel forced-response method, we compared the time course of attentional deployment in a feature-search task with color singletons, abrupt onsets, and a combined color onset singleton as distractors. This method trains participants to initiate a saccade on a fixed "go" signal while systematically varying the stimulus display duration, therefore revealing the full time-scale of visual processing. A pure onset distractor elicits a

larger and more sustained attentional bias compared to the other two distractors. But such bias dissipated as saccades were delayed. A computational model further explains how a distractor priority signal was suppressed differently in the three conditions. The combination of the forced-response method and the computational model reveals the ever-evolving temporal landscape of attention and the underlying distractor rejection mechanisms.

Email: Alexandr York, kaneyork619@gmail.com

7:30-9:00 PM (1003)

Delineating the Effects of Memory-Guided and Imagery-Guided Attentional Capture in a Visual Search. ALYSSA M.L. THIBEAULT, *Brock University*, MAHA ALI, *Brock University*, STEPHEN EMRICH, *Brock University* — Although visual working memory (VWM) and visual imagery content have been individually shown to guide attention towards matching stimuli, it is unclear to what extent these effects reflect the same underlying mechanism. We compared if individual differences in imagery strength influenced VWM-guided and imagery-guided attentional capture. Subjects (N=40) performed a VWM and an imagery task, each of which included a visual search. Trials began with a colored square or color name cue. In the visual search, subjects indicated the gap direction of a target. Trials were valid (target matches cue), neutral (cue color absent) or invalid (distractor matches cue). The Vividness of Visual Imagery Questionnaire/VVIQ indexed imagery strength. Within-subjects, imagery RTs were slower than VWM RTs ($\eta^2 = .182$). Cueing effects (invalid > neutral > valid) also emerged across tasks ($\eta^2 = .108$). VVIQ correlated with only cost in the imagery task (i.e., invalid-neutral imagery RTs increased as did VVIQ score). Overall, results revealed a dissociation between imagery-guided and VWM-guided attention. Whereas imagery strength related to the magnitude of imagery-guided attentional costs, no relationship with VWM-guided capture effects were observed.

Email: Alyssa Thibeault, wy20rd@brocku.ca

7:30-9:00 PM (1004)

Distraction by Unexpected Sounds: Modulated by Visual Context and Uncorrelated with ADHD Symptomatology. LAURA GALLEGOS-MUNAR, *University of Balearic Islands*, FABRICE B. R. PARMENTIER, *University of the Balearic Islands* — Recent evidence showed the effect of the visual



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environmental context on distraction by unexpected sounds. In this study, we explored whether such distraction is influenced by ADHD symptomatology in a non-clinical sample. Forty-nine young adults completed the BAARS-IV questionnaire and performed a visual categorization task while ignoring task-irrelevant sounds (A, B, or C) and background pictures (forest or city scenes). The critical manipulation centered around the probability of the sounds in relation to the visual context. Sound A was rare in the forest context and frequent in the city context, while the opposite was true for sound B. Sound C was rare throughout the task. Thus, sounds A and B were deviant sounds within specific contexts but not at the task level, while sound C was deviant at both task and context levels. We examined (1) whether distraction varied based on whether sounds violated predictions at both task and context levels versus task level only and (2) whether distraction correlated with BAARS-IV scores. The results revealed task- and context-level deviance distraction, which did not differ from each other. We found no correlation between our measures of distraction and ADHD symptomatology.

Email: Laura Gallego-Munar, lauragallego92@gmail.com

7:30-9:00 PM (1005)

Does a Temporally Predictable Distractor Facilitate Visual Search? ESHA BRAR, *University of Michigan, Ann Arbor*, HAN ZHANG, *University of Michigan*, JOHN JONIDES, *University of Michigan* — Statistical regularities in a visual environment have been known to influence visual attention. Here, we investigated whether a temporally predictable distractor can facilitate visual search. Participants were asked to count the number of unique-shape targets among five rapidly presented search frames while ignoring a salient distractor. Critically, the distractor had a higher probability of appearing in one frame than the other frames. We found that distractor temporal regularity facilitated visual search, as indicated by more accurate reports of the number of targets. However, this effect only occurred when the distractor appeared without a target on the same frame. When the distractor did appear together with a target, a temporally predictable distractor did not facilitate performance. These results suggest that a temporally predictable distractor still captured attention, but perhaps observers were faster to disengage from the capture when the distractor was temporally predictable.

Email: Esha Brar, eshabrar@umich.edu

7:30-9:00 PM (1006)

Feature-Specific Learning in Distractor Suppression: A Replication and Extension.

SOJUNG YOUN, *Texas A&M University*, BRIAN A. ANDERSON, *Texas A&M University* — Mechanisms of distractor suppression help resolve attentional competition by suppressing attentional processing of task-irrelevant stimuli. From the work of Vatterott and Vecera (2012), under conditions conducive to distractor suppression, a newly introduced color singleton distractor initially captures attention but can be efficiently ignored after a relatively small number of exposures. In the present study, we measured distractor processing when the same color singleton distractor could be reintroduced later in the task. Participants searched for a diamond target among three circle distractors, one of which could be a unique color. The color of the distractor changed each mini-block of trials, cycling between four different colors. We were able to replicate the pattern in which attentional capture was observed in the first half of mini-blocks but not in the second. However, this was the case only when a new color was introduced for the first time. Our result suggests that participants can learn to suppress specific distractor features and that this first-order suppression can carry over to instances in which the suppressed feature is later reintroduced.

Email: Sojung Youn, syoun@tamu.edu

7:30-9:00 PM (1007)

Relating Aversive Conditioning and Emotional Valence in the Control of Attention.

JUSTIN FRANDSEN, *Texas A&M University*, FRANCESCA CANTURI, *University of Parma*, VERA FERRARI, *University of Parma*, BRIAN A. ANDERSON, *Texas A&M University* — To facilitate the avoidance of aversive events, the attentional system has evolved mechanisms that prioritize threatening stimuli. Threatening stimuli include arbitrary stimuli that have been paired with an aversive outcome (e.g., pairing a picture of a landscape with shock) as well as emotionally salient stimuli containing aversive information (e.g., a picture of mutilation). Attentional capture by both types of stimuli has been extensively studied, and it is often assumed that such stimuli are preferentially processed via a common underlying mechanism of enhanced priority assignment. We directly tested this assumption using a task in which emotional valence (i.e., negative vs. neutral) and previous shock-associations of images

were fully crossed, and stimuli were compared against each other. Contrary to the often-held assumption of increased priority for all threatening stimuli, we found evidence for prioritization of emotional valence yet suppression of shock-associated stimuli, with little evidence for an interactive effect. This suggests that, at least under certain task conditions, aversively conditioned stimuli and negative emotionally salient stimuli are processed differently by the attentional system.

Email: Justin Frandsen, justin.frandsen@tamu.edu

7:30-9:00 PM (1008)

Self and Reward Affects Human Motor Movement in a Value Modulated Attentional Capture (VMAC) Task. TESSA CLARKSON, *The University of Queensland*, SHEILA CUNNINGHAM, *Abertay University*, CATHERINE HASLAM, *The University of Queensland*, ADA KRITIKOS, *The University of Queensland* — Existing research investigates the overlap of meaningful stimulus properties like the self and reward. A key gap is how individuals adapt their responses to self and rewarding stimuli when the associative stimulus is a distractor. Using attentional capture, we explored the differentiation in timing and spatial responses to stimuli associated with self and/or reward. Across three experiments (total N=137), we showed that high-reward distractors slowed down target identification and movement times, causing longer movement trajectories compared with low-reward conditions (Experiment 1). When coloured distractors only represented the self or the other ("You" or "Sam") without reward, timing and trajectory measures were comparable, indicating that self-relevance alone does not significantly impact attentional capture. Experiment 3 re-introduced rewards, where rewards could be earned for self or "Sam", based on coloured distractors. Response times did not differ between conditions, but trajectories were longer and curvatures more deviated when participants were earning for themselves than for "Sam", suggesting self-relevant stimuli may have an impact on decision making mechanisms not captured alone by response times.

Email: Tessa Clarkson, t.clarkson@uq.edu.au

7:30-9:00 PM (1009)

The Effect of Search Mode on Distractor Suppression: The Distractor Positivity (PD) as an

Index of Reactive and Proactive Suppression.

CHRISTOPHER HAUCK, *Riot Games*, DOMINICK TOLOMEO, *Oregon State University*, EMILY BURGESS, *Oregon State University*, KRISTINA-MARIA REITAN, *Oregon State University*, CASSIDY ZAMPERIN, *Oregon State University*, ERIC RUTHRUFF, *The University of New Mexico*, MEI-CHING LIEN, *Oregon State University* — Previous electrophysiological studies have found that salient distractors elicit a PD component, considered an index of distractor suppression. We examined whether the PD reflects proactive suppression (preventing capture by distractors in the first place) and/or reflects reactive suppression of a distractor (disengagement from distractors after already being captured). Participants engaged in either feature search mode, assumed to encourage proactive suppression, or singleton search mode, assumed to encourage reactive suppression. Behavioral results replicated prior studies, showing that when participants engaged in singleton search mode, salient distractors captured attention. But when they engaged in feature search mode, distractor suppression occurred instead. Results support the distractor-based suppression view, as increased salience in feature search did not enhance proactive suppression. Furthermore, electrophysiological data showed that search mode modulates the time window (early vs. late) in which the PD occurs.

Email: Christopher Hauck, christopherjhauck@gmail.com

7:30-9:00 PM (1010)

Value-Driven Attentional Capture in a Continuous Performance Task With Real-Time Triggering. SHIVANG SHELAT, *University of California, Santa Barbara*, BARRY GIESBRECHT, *University of California, Santa Barbara* — Our attention fluctuates between optimal and suboptimal states. An open question is whether attentional capture, especially by a previously-rewarded feature, is modulated during lapses of attention. Here, we used a real-time triggering procedure in a continuous performance task where subjects (n=50) repeatedly searched an array of shapes for a target line placed inside a shape singleton. Rare trials with an uncommon line orientation were triggered based on especially slow or fast response time windows, which reflect good or bad attentional state. In these trials, there was a colored distractor that was either value-associated, selection-associated, novel, or neutral. Value- and selection-associated colors were determined from a

previous task. Value-associated and novel distractors enhanced accuracy relative to neutral distractors on rare trials regardless of attentional state. These distractors also produced greater response time slowing upon rare trial onset. The effects of these distractors on accuracy and RT decreased over time. The evidence suggests that some distractors conferred a benefit to performance whether the real-time triggering procedure indicated that they were lapsing or not.

Email: Shivang Shelat, sshelat@ucsb.edu

7:30-9:00 PM (1011)

What Really Determines Distractor Location Suppression: Salience or Task Relevance?

KRISTINA-MARIA REITAN, *Oregon State University*, DOMINICK TOLOMEO, *Oregon State University*, ERIC RUTHRUFF, *The University of New Mexico*, MEI-CHING LIEN, *Oregon State University* — Wang and Theeuwes (2018) suggested that people learn statistical regularities regarding distractor locations, resulting in suppression of high-probability distractor locations. We examined this claim by manipulating the frequency with which a color singleton distractor appeared in various display locations (low vs. high), as in Wang and Theeuwes. Experiment 1 revealed evidence of statistical learning even with feature search displays. Experiment 2 examined whether people avoid being captured by the salient color singleton distractor because of statistical learning of distractor locations or because singleness is a cue that the target will not be in that location. To make a strategy of avoiding the color singleton impractical, we made the target itself a color singleton on some trials. Here we found no evidence of statistical learning of high-frequency distractor locations. These results suggest that participants suppression locations not due to salience but rather due to perceived task irrelevance.

Email: Kristina-Maria Reitan, reitank@oregonstate.edu

7:30-9:00 PM (1012)

Quorum-Like Evaluation of Visual Information Consistency

JESSICA SAVOIE, *McGill University*, JELENA RISTIC, *McGill University* — Humans spontaneously follow where others are looking. Research shows that such gaze following behaviour is modulated by the number and consistency of cues. In crowds of 10 or more, a majority of consistent cues are needed to facilitate gaze following. In contrast, in small groups of five or less, even a minority of cues can facilitate gaze

following, following a so-called quorum evaluation principle. It remains unknown if such evaluation is unique to social cues like gaze. Here we tested this idea by measuring performance when groups of three faces or arrows indicated the target location with zero, one, two, or three consistent cues. For arrows, the majority of consistent cues were needed to elicit target facilitated performance. For gaze however, increased numerosity contributed to target performance, such that both two and three consistent cues elicited target facilitation. Thus, there seem to be differences in how consistency of directional information is evaluated for social gaze relative to directional arrows, with consistency in arrows affecting responses based on an averaging principle, and consistency in gaze affecting responses based on a quorum-like evaluation.

Email: Jessica Savoie, jessica.savoie2@mail.mcgill.ca

7:30-9:00 PM (1013)

Validating a New Measure of Vigilant Attention.

GIOVANNA C. DEL SORDO, *New Mexico State University*, MEGAN H. PAPESH, *University of Massachusetts Lowell* — Sustained attention involves remaining alert and task-focused without letting distractors impact performance. This multifaceted attentional construct can be explored through various methodologies, including tasks of vigilant attention and dynamic tasks such as the multiple object tracking (MOT) task. Vigilant attention tasks assess one's ability to maintain alertness and detect rare stimuli while MOT tasks evaluate the continuous allocation of cognitive resources to track multiple moving objects amidst distractors. Because sustained visual attention often requires both active deployment of attention and sustained vigilance, we developed a novel method that can measure both constructs within a single paradigm. We created a new version of the MOT task intended to measure sustained vigilance. Across three experiments, we demonstrated the efficacy of this new method, revealing a positive correlation between vigilance tasks, equivalent effects on accuracy between the original MOT task and the modified vigilant MOT task, and consistent behavioral responses despite additional cognitive loads. These findings provide methodological insights for future research aiming to investigate different aspects of sustained attention.

Email: Giovanna Del Sordo, delsordo@nmsu.edu

7:30-9:00 PM (1014)

'Now See What Good Turns Eyes for Eyes Have Done': Detection of Gaze Following and Gaze Meeting by Human Observers.

MARIA FALIKMAN, *Sewanee: The University of the South*, ROB SULLIVAN, *Sewanee: The University of the South* — Human gaze perception evolved to support social interactions and co-operation. However, there is lack of evidence of what is easier to detect in an observed person's partner: following or meeting the gaze. A modified gaze cueing paradigm was used to address this question. Participants performed a speeded peripheral visual target event detection task. They were shown three faces on a screen, 1 in the center and 2 to the right and left of it, and asked to respond to the gaze shift of one of the peripheral faces while fixating on the central face. The central face executed a gaze shift towards the left or right peripheral face. After 150 ms, the corresponding peripheral face executed a gaze shift towards or away from the central face. Participants provided a motor response about the location and direction of a peripheral face's gaze shift. Our results imply that detection of gaze following in others is more efficient than the detection of gaze meeting. This might have evolutionary relevance, since the human gaze acts as a spatial cue towards vital information. Still, we observed individual variability in the speed of detection of following or meeting gazes with a lack of correlation between objective and subjective ease of detection.

Email: Maria Falikman, maria.falikman@gmail.com

7:30-9:00 PM (1015)

Covert Spatial Attention and Oculomotor Control of Saccades and During Incremental Intensity Exercise.

CHARLOTTE J. W. CONNELL, *University of Auckland*, YASMIN KESSNER, *University of Auckland*, VICTOR BORGES, *University of Auckland*, PHILIP TURNBULL, *University of Auckland*, NICHOLAS GANT, *University of Auckland* — Eye movement kinematics degrade following prolonged strenuous exercise¹, suggesting oculomotor control and attention are sensitive to exercise-induced fatigue. Here we explore the impact of short-duration, incremental-intensity exercise on prosaccades and covert spatial attention before, during, and after exercise. In study one, participants completed an incremental exercise test to exhaustion on a cycle ergometer. A virtual reality oculography system (VR headset) presented a

prosaccade task and tracked eye movements. In study two, a pyramidal load exercise protocol was performed while a Posner cueing task was presented in the VR headset. In study one, saccade velocity scaled linearly with exercise intensity. From 40% to 90% of VO₂ max, saccade velocity increased by $86 \pm 27^{\circ} \cdot s^{-1}$ ($p < 0.01$). In study two, there was no effect of exercise intensity on Posner task response times, suggesting that the alterations to saccades kinematics seen in study one are not due to exercise-related changes in spatial attention. Based on these findings, it appears that the oculomotor system is sensitive to alterations in brain metabolism that occur with changing exercise intensity.

Email: Charlotte Connell, c.connell@auckland.ac.nz

7:30-9:00 PM (1016)

Creative or Not Creative? A Comparison of Measures in Scoring Uniqueness of Answers in a Creativity Task.

QICHEN ZHAO, *University of Georgia*, BEVERLY ROSKOS, *The University of Alabama*, DEVONTE DADE, *The University of Alabama* — Divergent thinking (DT) tasks have been frequently used to measure creativity. One of the most frequently used indices of creativity in DT tasks is uniqueness, which is usually decided using a cutoff number of 5% (of the sample). Yet, little discussion has been given on the appropriateness of this method and the possibility of other methods to obtain uniqueness scores. We present a database of answers of five items that are commonly used in the instances task (e.g., think of as many things as you can that are round). Using this database, we examine and compare 3 methods for determining uniqueness of these answers. One is the traditional method, the second is based on the answer categories that are rare, and the last is based on concept categories within each answer category that are rare. The scoring of divergent thinking tasks in measuring creativity in general is discussed.

Email: Qichen Zhao, islychen@foxmail.com

7:30-9:00 PM (1017)

Spatial Representations of Food Items' Healthiness and Calorie Levels.

AHU GOKCE, *Kadir Has University*, BETÜL OKUR, *Kadir Has University* — Spatial placement of foods influences the healthiness and caloric density perception. The current study investigates spatial representations of foods belonging to distinct categories of healthy low-calorie,

unhealthy high-calorie, healthy high-calorie, and unhealthy low-calorie items. Using computerized placement task, participants placed food items from four categories across eight spatial locations along horizontal, vertical, and diagonal axes. A central anchor item from each category was presented to investigate inter-item spatial associations and how each food item from one category is represented relative to another by measuring the placement frequencies of food items. Correspondence analyses revealed that spatial associations were formed between different food items and these varied depending on the anchor item's category. Furthermore, vertical bias was observed for the healthiness but not calorie domain. Healthy items were placed at top and unhealthy at bottom locations more frequently regardless of the calorie level. The results present evidence on the spatial representations of distinct food categories which can be used in applied settings by taking into account the spatial arrangements of the distinct food items.

Email: Ahu Gokce, ahu.gokce@khas.edu.tr

7:30-9:00 PM (1018)

A Machine Learning Approach for Predicting Single Subject Performance from Eye Metrics.

ALEXIS S. TORRES, *Arizona State University*, GENE BREWER, *University of California, Riverside* —

Sustained attention is an increasingly challenging task as attention failures become imminent and increase with time on task. Eye metrics, such as prestimulus pupil size, stimulus evoked pupil responses, and gaze stability have been used as indices of task engagement and have been used to predict impending attention failures at the group level. This study examines the predictive power of various eye metrics for attention failures using machine learning algorithms in single subjects. Over 220 undergraduate students performed the psychomotor vigilance task. Eye metrics such as mean stimulus-evoked pupil response amplitude and latency from the previous trial, mean prestimulus pupil size and variability, and preparatory gaze stability were extracted during each trial. Multiple machine learning algorithms predicted and classified response times from eye metrics preceding response. Although group-level predictions were robust, single-subject predictions require further improvement. Future work will explore richer datasets and additional psychophysiological markers to enhance model accuracy.

Email: Alexis Torres, alexit@asu.edu

7:30-9:00 PM (1019)

Gaze During Naturalistic Conversations:

Thinking and Looking Produce Distinctive Eye Movement Patterns. MANLU LIU, *The University of British Columbia*, VERONICA DUDAREV, *The University of British Columbia*, JAMES T. ENNS, *The University of British Columbia* — Systematic differences in eye gaze patterns emerge when attention is directed externally versus internally (Walcher et al., 2017). Here we asked whether these differences apply to more naturalistic conversations. Gaze aversion during conversations may occur because partners are referencing an object in their environment (an externally directed looking gaze) or because they are thinking and want to reduce visual information from the other person's face (an internally directed thinking gaze). We measured eye movements in 38 participants while prompting these two types of gaze aversion. Consistent with previous findings, thinking gaze aversion involved scanning a larger spatial area with shorter fixations compared to looking gaze aversion. Two novel findings in this more naturalistic setting were that (a) head and eye movements were more strongly coupled during looking than thinking gaze aversion and (b) participants exhibited more consistent individual variation in thinking than in looking gaze aversion patterns.

Email: Manlu Liu, manlu.liu@psych.ubc.ca

7:30-9:00 PM (1020)

Modeling the Effects of Norepinephrine on

Visual Processing. NICKOLAS J. PATERNOSTER, *Cornell University*, KHENA M. SWALLOW, *Cornell University* — Attentional arousal is one mechanism through which the brain prioritizes or suppresses information depending on relevancy. Norepinephrine, produced and released by a small nucleus in the brainstem called the locus coeruleus (LC-NE), plays a pivotal role in this process by increasing the signal to noise ratio in neuronal processing. The effects of LC-NE on visual processing, however, are unlikely to be a simple binary of "on" or "off." Instead they may vary by the magnitude of LC-NE activity as well as across visual processing layers. To better characterize these dynamics, we integrated a computational model of the visual system with models of LC-NE effects on neuronal processing. This analysis included manipulations of signaling strength and the visual layer at which LC-NE activity is initiated. Our findings suggest that LC-NE

may significantly modulate the sizes of receptive fields in individual layers and the rate at which they increase along the visual stream.

Email: Nickolas Paternoster, njp66@cornell.edu

7:30-9:00 PM (1021)

Eveningness Is Associated with Lower Morning Alertness, Worse Sleep Quality, and More Severe Internalizing Symptoms in Middle-Aged and Older Adults. XINRAN NIU, *University of Notre Dame*, JESSICA PAYNE, *University of Notre Dame*, ELIZABETH A. KENSINGER, *Boston College* — Eveningness, characterized by a preference for later circadian timing and feeling more alert at night, can present challenges in societal activities oriented toward morning schedules. The current study examines how eveningness is linked to alertness, sleep quality, and symptoms of depression and anxiety. Healthy middle-aged and older adults ($N=711$) completed a 3-minute version of the Psychomotor Vigilance Test, where the median reaction time served as a measure of behavioral alertness. Additionally, participants completed self-report questionnaires: the Standard Sleepiness Scale, the Pittsburgh Sleep Quality Index, and the Mood and Anxiety Symptom Questionnaire to measure subjective alertness, sleep quality, and internalizing symptoms of depression and anxiety. Eveningness was significantly associated with lower subjective alertness in the morning, worse sleep quality, and more severe common and depression-specific internalizing symptoms. However, eveningness was not linked to subjective alertness in the evening, behavioral alertness in the morning or evening, or anxiety-specific internalizing symptoms. Evening chronotype in middle-aged and older adults may be associated with worse psychological well-being.

Email: Xinran Niu, xniu2@nd.edu

7:30-9:00 PM (1022)

An Empirical Test of Model Predictions for a Chase Detection Task. MARIA KON, *U.S. Naval Research Laboratory*, SANDEEP KHEMLANI, *U.S. Naval Research Laboratory*, ANDREW LOVETT, *U.S. Naval Research Laboratory* — Chase detection is an attentionally demanding task in which participants determine whether one object is pursuing another in a visual scene. Although this task is valuable for exploring how humans make inferences about agent intentions, the

mechanisms of chase detection remain poorly understood. We (CogSci, 2024) introduced a new chase detection paradigm that measured response time and accuracy while varying set size. Additionally, we fit the data using a computational model, which made concrete claims about how humans detect pursuit and predicted the timing of specific errors made by the participants. Here we present the results of a follow up study in which (a) more complex chasing patterns were used and (b) we ran model simulations prior to collecting empirical data. We compare model predictions about response time, accuracy, and specific problematic videos, which were preregistered, with empirical results to evaluate the model's account of chase detection.

Email: Maria Kon, maria.r.kon.civ@us.navy.mil

7:30-9:00 PM (1023)

Music, Memory, and Second Language Grammar: An EEG Study. VICTORIA TKACIKOVA, *University of Pittsburgh*, GABRIELA TERRAZAS, *University of Pittsburgh*, L. ROBERT SLEVC, *University of Maryland*, NATASHA TOKOWICZ, *University of Pittsburgh* — Learning a second language (L2) as an adult is challenging, and individual differences (IDs) can influence learning outcomes. We investigated the relationship between L2 grammar learning, musical ability, and working memory updating (WMU) using a semi-longitudinal training study. Over six weeks, naïve learners of Swedish were trained on grammatical constructions of varying degrees of distinction from their first language, English. Learners completed musical ability and WMU batteries and were tested on their sensitivity to Swedish grammatical violations using EEG and a grammaticality judgment paradigm. We used mixed-effects modeling analyses to detect relationships between IDs and violation sensitivity during 50ms, 150ms, 400ms, and 600ms time windows. Individual differences in musical ability and WMU predicted sensitivity to grammatical violations. Exploring these relationships further will be helpful for understanding the cognitive and neural mechanisms that underlie L2 learning.

Email: Victoria Tkacikova, vat17@pitt.edu

7:30-9:00 PM (1024)

The Influence of Free Sentence Production on Bilingual Language Control During Cued and Voluntary Switching. LUZ MARÍA SÁNCHEZ, *Vrije*

Universiteit Brussel, DAVID PEETERS, Tilburg University, ESLI STRUYS, Vrije Universiteit Brussel, MATHIEU DECLERCK, Vrije Universiteit Brussel — Language control is the process that manages cross-language interference, helping multilinguals to successfully adapt their language choice to a given linguistic environment. Traditionally, language control has been investigated using language switching experiments that rely on cued picture naming. However, in real life settings, language choice is not always externally imposed (cf. cued), and language production involves complex and varied syntactic constructions beyond the single word level (cf. picture naming). Here, we present findings with French-English bilinguals who switch between languages in a sentence context parting from an action description task. We compare findings from two linguistic contexts: one where participants can choose when to switch (voluntary language switching), and one where they are told when to switch (cued language switching). Overall, our RT and filled pauses analyses show no significant switch costs in the cued version of the task. In the voluntary version, we observe significant switch costs in L2 and a repetition cost in L1. Our findings contrast with those encountered in single-word experiments and highlight the impact of ecological validity on bilingual language control.

Email: Luz María Sánchez, luz.maria.sanchez.ramirez@vub.be

7:30-9:00 PM (1025)

Bilingual Language Production: Investigating the Time Course of Cross-Language Facilitation and Interference Effects. EVE HIGBY, *California State University, East Bay*, HANNAH EVANS, *California State University, East Bay*, MONSERRAT PADILLA, *California State University, East Bay* — Cross-language co-activation of words in the bilingual mental lexicon can result in facilitation and/or interference (Bailey et al., 2024). Higby et al. (2020) proposed that both processes occur simultaneously but have different time courses: cross-language facilitation has a lasting effect whereas cross-language interference is transient. The current study tested this proposal using three blocked language-switching picture naming tasks across two consecutive days of testing, manipulating whether pictures were named in both languages or in only one. First, pictures named in both languages demonstrated greater interference than those named in only one language. Interference was greater when the pictures were named four consecutive times in the other language (38 ms

slower) compared to just once (4 ms slower). More importantly, we found evidence that interference effects dissipated with a 30-minute delay between switches (68 ms faster) and even more overnight (117 ms faster), revealing facilitation of previously named items in both languages when participants returned the second day. These results contribute to a more nuanced understanding of interference and facilitation effects of cross-language co-activation.

Email: Eve Higby, evehigby@gmail.com

7:30-9:00 PM (1026)

Bilingual Speakers Are Less Affected by Gender Stereotype Violations in Their Foreign Language.

KATARZYNA JANKOWIAK, *Adam Mickiewicz University*, MARCIN NARANOWICZ, *Adam Mickiewicz University*, JOANNA PAWELCZYK, *Adam Mickiewicz University*, DARIUSZ DRAŻKOWSKI, *Adam Mickiewicz University* — Event-related potential (ERP) research has demonstrated that gender stereotypes are accessed in a highly automatic manner when processing a native language (e.g., Siyanova-Chanturia et al., 2015). However, research has yet to explore the automatic activation of gender stereotypes in bilingualism. The present ERP study investigates gender stereotype activation in Polish (L1: native language)-English (L2: foreign language) bilinguals, as evidenced by masked and unmasked priming effects. Sixty-one male and female participants performed a stereotype congruity judgement task with L1 and L2 stereotypically laden words preceded by personal pronouns, which were either congruent or incongruent with the stereotypical association of the target word. The ERP results showed reduced N400 (in females) and late positive complex (in males) amplitudes for gender stereotype violations in L2 relative to L1. This indicates reduced cognitive resources allocated to processing stereotype violations in L2 than L1, suggesting a decreased sensitivity to gender stereotypes when operating in L2.

Email: Katarzyna Jankowiak, katarzyna.jankowiak@amu.edu.pl

7:30-9:00 PM (1027)

Cognate Facilitation on Verb-Based L2 Prediction Depends on Proficiency.

AINE ITO, *National University of Singapore*, ANA BAUTISTA, *Basque Center on Cognition, Brain & Language (BCBL)*, CLARA D. MARTIN, *Basque Center on*

Cognition, Brain & Language (BCBL) — People regularly predict upcoming language during comprehension, but prediction tends to be reduced in second language (L2) relative to first language (L1). A possible reason is that L2 speakers co-activate their L1, which interferes with prediction, but co-activation may facilitate prediction when it can be generated based on a cognate. We tested this hypothesis in 34 L1 Spanish-L2 English speakers and 32 L1 Chinese-L2 English speakers (control) by measuring their prediction based on a Spanish-English cognate and non-cognate verb using the visual world eye-tracking paradigm. Both groups predicted upcoming referents based on a verb. Crucially, lower-proficient L1 Spanish speakers showed a greater and faster prediction effect when a cognate (vs. non-cognate) verb cued prediction. This effect was absent in higher-proficient L1 Spanish speakers or L1 Chinese speakers, suggesting that proficiency modulates the cognate facilitation effect, in line with prior findings. Our findings extend prior work by showing that cognate facilitation extends to the processing of upcoming words and co-activation affects prediction in L2 speakers.

Email: Aine Ito, aine.ito@nus.edu.sg

7:30-9:00 PM (1028)

Effects of Exposure to Phonetic Variability and Vocabulary Size on Adaptation to New Talkers in Spanish-English Bilingual and English

Monolingual Children. TIANA COWAN, Boys Town National Research Hospital, ANNE OLMSTEAD, The Pennsylvania State University, LORI LEIBOLD, Boys Town National Research Hospital, EMILY BUSS, University of North Carolina at Chapel Hill — It has been posited that exposure to systematic phonetic variability in second language (L2) accented speech supports efficient adaptation to unfamiliar talkers. However, word familiarity might influence how effectively children leverage prior exposure to adapt to new talkers. In two experiments, we evaluated how exposure to L2-accented speech and target language vocabulary size predict adaptation in Spanish-English bilingual and English monolingual children. In Experiment 1, participants were presented with Korean-accented English words produced by either a single talker or multiple talkers. Bilingual children, who have more L2-accented speech exposure, are predicted to adapt more efficiently to the multi-talker block than their monolingual counterparts. In experiment 2, participants heard Hindi-accented English words that were either

high or low familiarity. English vocabulary size was assessed by a standardized test. It was predicted that adaptation to the Hindi-accented English would be slower for low familiarity blocks, but that this effect would be modulated by English vocabulary size. Findings and implications are discussed.

Email: Tiana Cowan, tiana.cowan@boystown.org

7:30-9:00 PM (1029)

How Do Language Experience and Task Demands Modulate Typed Language Production in Bilingual Adults?

ANTONIO INIESTA, McGill University, MARCO S. G. SENALDI, McGill University, MICHELLE YANG, McGill University, DEBRA TITONE, McGill University — Typing is a primary mode of interpersonal, professional, and societal human exchange. Yet our understanding of typed communication is limited, particularly in multilingual people. We thus investigated how language dominance, task demands, and language usage modulated top-down lexical and bottom-up sublexical typed language production. Ninety-five English- or French-dominant bilingual adults copy-typed sentences composed of English words or pseudowords under high demands (prioritizing accuracy and speed) or low demands (prioritizing accuracy alone). Results indicated less accurate and slower typing times for pseudowords compared to words. This was amplified when task demands were high and when typing in a non-dominant language: pseudoword accuracy was further compromised (bottom-up sublexical effect) and word typing speed was further accelerated (top-down lexical effect). They were also modulated by increased English usage, particularly when task demands were high. These preliminary findings underscore the complex nature of typed language production, prompting further exploration of both top-down and bottom-up processes.

Email: Antonio Iniesta, antonio.martineziniesta@mcgill.ca

7:30-9:00 PM (1030)

Interlocutors Modulate Language Plan and Production in Semi- and High-Literate

Bilinguals: Evidence from Eye Movements. V. KEERTHANA KAPILEY, University of Hyderabad, RAMESH MISHRA, University of Hyderabad — In a socio-interactional context, bilinguals effortlessly plan their language to be appropriate in such contexts. This study explores how high-literate and semi-literate

bilinguals plan their language when interacting with interlocutors with varied L2 proficiency when presented in an interactive context. The participants named objects in the presence of interlocutors with varied L2 proficiency and were presented in the background as a visual word. The results indicate that participants' language choices and proportion of looks were modulated by participants' level of literacy and the interlocutors' language profile. The high-literate bilinguals chose to name the objects in L2, and while doing so, they looked at high L2 proficient interlocutors. Meanwhile, semi-literate bilinguals made more looks to the low-L2 proficient interlocutor and named the objects in L1 a higher number of times than in L2. This indicates that high and semi-literate bilinguals make referral gazes to the interlocutor who facilitated their language plan.

Email: V. Keerthana Kapiley, kapileyk@gmail.com

7:30-9:00 PM (1031)

The Role of Confidence in Predicting Others' Vocabulary in a Second Language. DORIT

SEGAL, *The Open University of Israel*, YAEL SIDI, *The Open University of Israel* — Estimating the vocabulary of our linguistic partners is essential for everyday communication, especially when conversing in a non-native language. Three studies examined the cues participants used when estimating their own and others' vocabulary. In these studies, bilingual participants, whose second language was English, predicted their own and others' performance in an English vocabulary test and rated their confidence in each test item. The English proficiency of the others was either defined as similar to that of the participants (Study 1, N=98), not defined (Study 2, N=89), or defined as different from that of the participants (Study 3, N=106). Results indicated that participants were biased in estimating their own and others' vocabulary. Furthermore, they based their predictions of others' vocabulary on their confidence in their own vocabulary, but only when the linguistic background of the others was assumed to be similar to their own. Understanding how confidence in one's own vocabulary affects estimates of others' vocabulary may allow us to predict errors in estimations and offer ways to improve them.

Email: Dorit Segal, doritse@openu.ac.il

7:30-9:00 PM (1032)

Automated Face-Recognition Systems in Eyewitness Identification: Human in the Loop

Bias. HEATHER M. KLEIDER-OFFUTT, *Georgia State University*, BETH B. STEVENS, *Ewha Womans University*, LAURA MICKES, *University of Bristol* — A facial recognition system (FRS) is a tool used by law enforcement for suspect searches and when presenting photos to eyewitnesses for identification. Recent work comparing FRS and human accuracy in face recognition-type tasks found that FRS is superior when matching video images to suspects (Kleider-Offutt et al., 2024). However, not all FRS perform equally, and humans are responsible for making the final decision regarding whether the probe image (from the video) and a suspect are a match (i.e., human in the loop). This study tested whether similarity/match scores from an FRS presented to a human decision-maker influences the likelihood of them endorsing a match, even if the FRS match score is incorrect and the reliability of the system varies. FRS reliability (stated) and presented match score accuracy was varied in a mixed model design. Results suggest that lineup identification decisions may be influenced by scores presented via FRS.

Email: Heather Kleider-Offutt, hoffutt@gsu.edu

7:30-9:00 PM (1033)

Deciphering Decision-Making Efficiency: The Interplay of Reliability and Credibility in Automated Information Processing. CHENG-TA YANG, *National Cheng Kung University*, SHANG-SHU HUANG, *National Cheng Kung University*, CHENG-YOU CHENG, *National Cheng Kung University*, HANSHU ZHANG, *Central China Normal University* — This study examines how the credibility of automated information affects decision-making, especially when individuals turn to automation for help. Participants were assigned to use automated aids of varying credibility and reliability for tasks of differing difficulty. The study utilized the single-target self-terminating (STST) rule from Systems Factorial Technology to measure decision efficiency, comparing performance with and without the automated aid. The findings reveal a significant validity effect, where valid automated cues improved response times and accuracy, especially with high-reliability automation in challenging tasks. The effect of credibility became more pronounced in difficult tasks, but reliability, not credibility, was key to processing efficiency. High-reliability automation led to efficient decision-making in tough tasks with valid information. The results highlight that while credibility affects the validity effect when relying on reliable automation, it

doesn't influence processing efficiency. This research sheds light on the importance of automation credibility and its interplay with reliability in processing automated information.

Email: Cheng-Ta Yang, yangct@mail.ncku.edu.tw

7:30-9:00 PM (1034)

How Surprising Is 'Possible to Win 100,000 Yen'?: An Information Theoretic Analysis of Probability Expressions. KUNINORI NAKAMURA, *Seijo University* — Keren and Teigen (2001) demonstrated that people's perception of the informativeness of probability phrases such as "10%" follows the principle of searching for definitive predictions. The present study proposes that this principle aligns with information theory and predicts that people's judgments of informativeness will vary according to their prior beliefs. This study aimed to examine this prediction. To do so, participants were asked to estimate the informativeness of probability phrases expressing the winning probabilities of gambles. To manipulate prior beliefs about winning a gamble, the study created four conditions where the winning amounts varied. Results indicated that participants' estimations of the informativeness of the probability phrases changed in accordance with predictions from the information theoretic analysis.

Email: Kuninori Nakamura, nakamura.kuninori@gmail.com

7:30-9:00 PM (1035)

Negating Versus Repeating Myths Leads to Greater Confidence in Belief Updating. AMANDA NYAKWADA, *Seton Hall University*, MARIANNE LLOYD, *Seton Hall University* — Previous research on belief updating using feedback learning often repeats the myths intended to be updated during the baseline phase. In this study, we compared negating to repeating myths in a feedback-learning task. Participants were presented with 60 trivia statements containing 40 myths and 20 general knowledge truths. They rated each statement as true or false, gave a confidence score from 1-100, and were then provided feedback on the accuracy of each statement. During the testing phase, the statements were presented again for participants to rate as true or false and make confidence judgments, this time without feedback. There was a higher increase in confidence in the negated myth group for items updated during the

testing phase. Implications for belief updating methodology will be discussed.

Email: Amanda Nyawkwada, amanda.nyawkwada@student.shu.edu

7:30-9:00 PM (1036)

Risk and Discounting in the Time of COVID. DANA CHESNEY, *St. John's University*, JORDAN HOWELL, *St. John's University*, ANNA GIANNICCHI, *St. John's University*, RINA RADOLA, *St. John's University*, MICHAEL T. BIXTER, *Montclair State University* — Two well-known phenomena in the field of judgment and decision making are temporal discounting (preferring a smaller immediate reward to a larger delayed reward; i.e., \$100 now vs. \$101 next week) and risk aversion (preferring a smaller, certain reward to an uncertain greater reward; i.e., a certain \$50 vs. a coin flip for \$101). One factor thought to influence people's willingness to wait or take risks for a greater reward is the current uncertainty or "risk" level in the day-to-day environment. When a person's day-to-day environment is riskier, they tend to be less willing to wait or take risks. In this ongoing study, we are investigating how changing risk levels associated with COVID-19 influence temporal discounting and risk aversion. For the past four years, we have had undergraduate students at St. John's University complete surveys assessing their hypothetical willingness to wait or take risks for greater rewards. We are evaluating if participants' temporal discounting and risk aversion changes over time as the threat of COVID-19 recedes.

Email: Dana Chesney, DLCHESNEY@GMAIL.COM

7:30-9:00 PM (1037)

Viewer Preferences for Next-Generation Media Content During Severe Weather: Evidence from Eye Movements. CAROLINE M. RAFIZADEH, *University at Albany, SUNY*, MICHAEL S. MICHAUD, *University at Albany, SUNY*, HEATHER SHERIDAN, *University at Albany, SUNY*, GREGORY E. COX, *University at Albany, SUNY*, JEANNETTE SUTTON, *University at Albany, SUNY* — Understanding how individuals attend to and interpret on-screen warning messages used in severe weather alerts is critical for designing warnings that efficiently convey relevant information that enables viewers to take protective action. We used eye tracking to monitor attention to mock weather alerts that systematically varied in visual complexity. Dwell-based analyses showed that in

complex displays containing several visual elements typical of real-world alerts (e.g., multiple headlines, radar maps, crawling text), participants spent significantly less time attending to the text crawl than in less complex displays. The current findings suggest that excessive visual complexity may distract the viewer from important text warning information presented within the display. This highlights the need for a balance between informative text content and graphic content which contains highly relevant information about the hazard, such as radar maps, in order to inform viewers of the threat while not distracting from real-time alerts presented within the text.

Email: Caroline Rafizadeh, crafizadeh@albany.edu

7:30-9:00 PM (1038)

Capturing Value and Covariance in Choice, With an Application to Context Effects. SEAN P.

CONWAY , *University of Massachusetts Amherst*, ANDREW L. COHEN, *University of Massachusetts Amherst*, JEFFREY J. STARNS, *University of Massachusetts Amherst* — Context effects demonstrate that choice can be influenced by the choice set and are typically interpreted as deviations from rational choice behavior. For example, in the attraction effect, the choice share of a target option is increased in the presence of a decoy option, which is similar, but inferior to the target, in violation of notable choice principles (e.g., regularity and independence of irrelevant alternatives). Although traditionally studied in preferential choice, these effects can also occur in perceptual choice tasks, in which, for example, participants select which of a set of rectangles has the largest area. Any measurement of context effects within a perceptual task, however, should incorporate the effects of perceptual noise and confusability inherent in such tasks. In this project, we seek to disentangle stimulus magnitude from stimulus confusability by directly measuring option value (perceived area) in a psychophysical judgment task. The estimated variance-covariance structure allows us to incorporate such variability into the choice process, which may naturally account for certain context effects without assuming additional processes.

Email: Sean Conway, spconway@umass.edu

7:30-9:00 PM (1039)

Consequential Inconsistency in Dynamic Decision Making. LUKE SZTAJNKRYCER,

University of Illinois Urbana-Champaign, JARED HOTALING, *University of Illinois Urbana-Champaign* — This project evaluates changes in risk-seeking behavior across multistage decision tasks. Decision-makers were presented with two-stage decision trees. At each stage, participants chose between a sure reward or a risky gamble with equal expected value. Individuals who chose the gamble option continued to the second decision stage, where they again chose between a sure reward or a gamble. Rational choice theories require that behavior at the second stage be consequentialist, meaning that choices should only depend on the possible future outcomes. Accordingly, participants should display a consistent risk preference across all consequentially equivalent decision nodes. However, our findings indicate widespread violations of consequential consistency, with previous, but consequentially irrelevant, chance events significantly affecting participants' willingness to gamble at the second decision stage. Specifically, participants made riskier choices after experiencing bad outcomes than they did after good outcomes. We examine two alternative explanations for observed inconsistencies: one based on changing subjective probabilities in line with the gambler's fallacy, and another based on shifting reference points.

Email: Luke Sztajnkrycer, lss5@illinois.edu

7:30-9:00 PM (1040)

Decisional Conflict and Confidence in Logical and Moral Reasoning. ALICYN AGER , *Idaho State University*, ERIKA FULTON, *Idaho State University* — People differ in how conflicted they are between potential responses to reasoning problems, which can impact metacognitive processes. The current study investigated the relationship between decisional conflict and confidence and how decisional conflict differs between intuitive and deliberative responses to logical and moral reasoning problems. A sample of 398 participants completed a series of logical and moral reasoning problems, rating their experienced decisional conflict and confidence for each answer. Higher decisional conflict was associated with decreased confidence for logical and moral problems, but the relationship was stronger for moral reasoning problems at high levels of decisional conflict. There was no difference between decisional conflict for consequentialist and deontological responses to moral reasoning problems. However, deliberative responses to moral reasoning problems were associated with

significantly more decisional conflict than intuitive responses. Surprisingly, deliberative responses to logical reasoning problems were associated with lower levels of decisional conflict than intuitive responses. Results are discussed in the context of previous findings and theories of metacognition and reasoning.

Email: Alicyn Ager, alicynager@isu.edu

7:30-9:00 PM (1041)

Lévy Versus Wiener: Assessing the Effects of Model Misspecification on Diffusion Model Parameters.

TUGBA HATO, *Heidelberg University*, **LUKAS SCHUMACHER**, *University of Basel*, **STEFAN T. RADEV**, *Rensselaer Polytechnic Institute*, **ANDREAS VOSS**, *Heidelberg University* — Individuals exhibit diverse decision-making patterns: some prioritize accuracy, while others act swiftly. The Lévy Flight (LF) model addresses these by incorporating a heavy-tailed mechanism for evidence accumulation. While the Diffusion Decision Model (DDM) is common in binary decision-making, the LF model may offer a more accurate representation in certain scenarios. Our aim is to investigate the Diffusion Decision Model's (DDM) parameter estimation performance when approximating Levy Flight (LF) mechanisms, employing simulation based inference as in BayesFlow. Our simulation study revealed biases: non-decision time and boundary separation parameters were underestimated, with drift rates showing slight underestimation. Our findings suggest that DDM exhibits bias in parameter estimation when the data approximates the LF model. This raises concerns about the interpretation of DDM when experimental data closely resembles the LF model, prompting careful consideration of model choice.

Email: Tugba Hato, tuba.hato@gmail.com

7:30-9:00 PM (1042)

Children's Inferences from Statements About Opportunities for Novel Groups.

HILARY BARTH, *Wesleyan University*, **CAMERON BOURASSA**, *Wesleyan University*, **ADDIE DEFEO**, *Wesleyan University*, **SELENA DELGADO**, *Wesleyan University*, **ANNIE FABIAN**, *Wesleyan University*, **MOLLY FUNG**, *Wesleyan University*, **SARAH HAMMOND**, *Wesleyan University*, **EMILY HAUSER**, *Wesleyan University*, **RACHEL HSU**, *Wesleyan University*, **JINJIA HU**, *Wesleyan University*, **ERIN KIM**, *Wesleyan University*, **COURTNEY LITTS**, *Wesleyan University*, **ELIA**

MATRICIAN, *Wesleyan University*, **ELLIE PAN**, *Wesleyan University*, **JESSICA PORDY**, *Wesleyan University*, **SHANTHI SOANS**, *Wesleyan University*, **SUCHITA SRIDHARA**, *Wesleyan University*, **LEAH VAIDYA**, *Wesleyan University & LSU Health*, **ABBY WOLK**, *Wesleyan University* — How we talk about groups can support existing stereotypes or even create new ones. Previous work shows that children may draw conclusions both about groups that are explicitly mentioned and about groups that aren't, under some conditions. Here we ask if statements about opportunities for particular groups lead to inferences about both a mentioned and an unmentioned group. In two experiments, children were introduced to a pair of novel social groups and heard a statement about a special "activity day" targeted to one group. They then rated new members of both the mentioned and unmentioned groups for their ability at that activity. In both studies, children rated the mentioned group's ability for the activity positively and rated the unmentioned group's ability negatively. This finding provides evidence for another case in which statements that may seem neutral or positive might lead listeners to draw inferences that the speaker did not intend.

Email: Hilary Barth, hbarth@wesleyan.edu

7:30-9:00 PM (1043)

Playing with Cognition: Investigating How Children Learn to Tell Time Within a Large-Scale Online Learning Environment.

SEYMA NUR ERTEKIN, *University of Amsterdam*, **LILIAN YE**, *Prowise Learn*, **ABE HOFMAN**, *University of Amsterdam*, **JULIA M. HAAF**, *University of Potsdam* — This study investigates clock reading, an essential cognitive skill, employing data from an online adaptive learning environment used by thousands of Dutch primary school children (grades 1 and 5). We analyze a clock reading game with 11 million responses providing a means for studying cognitive development in students' regular practice environments. The game consists of items including reading and setting digital and analog clocks. Additionally, we obtained data from two working memory games (WM; verbal and spatial simple span tasks) and two math games (addition and subtraction). We used psychometric and Bayesian multilevel modeling of item difficulty and student ability. Our analysis of item difficulty provides novel insights into the development of clock reading skills, for instance, the effect of day-time information (AM/PM) on digital clock reading.

Moreover, we identify common errors like switching hour and minute hands. Finally, we assessed the relationship between clock reading and the WM and math games. We find strong correlations between these games which increase for each school year, indicating that maturation strengthens their link. In sum, our results highlight the complexity of clock reading as a cognitive skill.

Email: Seyma Nur Ertekin, ertekin.seymanur@gmail.com

7:30-9:00 PM (1044)

A Longitudinal Analysis of Low-to-Moderate and Low-to-High Prenatal Alcohol or Tobacco Exposure on Executive Function and School Grades. DAWN MICHELE MOORE, *New Mexico State University* — Using data collected in the Adolescent Brain Cognitive Development (ABCD) Study, the current project included a diverse group of adolescent participants ($n=2,079$; ages 8.9 to 13.8 years; 48.73% female) and explored whether low-to-moderate prenatal alcohol or tobacco exposure was associated with subsequent cognitive development, examining executive function (EF) task performance and school grades at two data collection periods. Further, low-to-moderate and low-to-high exposure models were analyzed for comparative purposes. Path model analyses revealed no significant associations between low-to-moderate prenatal alcohol or tobacco exposure and EF and school grades. In contrast, low-to-high path analyses showed significant associations between alcohol (positive) and tobacco (negative) and EF and school grades. Additional research is needed to understand these complex associations.

Email: Dawn Michele Moore, dmm@nmsu.edu

7:30-9:00 PM (1045)

Cognitive Flexibility and its Contribution to Originality in Divergent Thinking and Adaptive Behaviour Under Uncertainty During Adolescence. NASTASSJA L. FISCHER, *Nanyang Technological University*, KASTOORI KALAIVANAN, *Nanyang Technological University*, RYUTARO UCHIYAMA, *University of Tübingen*, KE TONG, *Nanyang Technological University*, WEI LI FU, *Nanyang Technological University*, SHILPI TRIPATHI, *Nanyang Technological University*, TIMOTHY LEE, *Nanyang Technological University*, GABRIELLE ONG SHUE TING, *Nanyang Technological University*,

VICTORIA LEONG, *Nanyang Technological University*, TREVOR W. ROBBINS, *University of Cambridge*, BARBARA J. SAHAKIAN, *University of Cambridge*, PETER S.K. SEOW, *National Institute of Education*, CHEW LEE TEO, *National Institute of Education*, DAVID W.L. HUNG, *National Institute of Education*, MICHELLE R. ELLEFSON, *University of Cambridge* — Cognitive flexibility is the ability to adaptively shift between mental sets in response to environmental cues. It includes task-switching, set shifting, and efficient responding to error feedback. Divergent thinking is the ability to generate creative ideas by exploring many possible solutions. These skills have a protracted development, with adolescence considered a “critical period” for their refinement. This study examined cognitive flexibility in a large sample of adolescents ($N=344$) and its influence on originality in divergent thinking and adaptability under uncertainty. Our results indicate that cognitive flexibility significantly contributes to originality in divergent thinking, surpassing the effects of abstract reasoning and working memory and suggesting a major role for cognitive flexibility in this form of creativity. We also found that the adolescents’ adaptability to uncertainty was directly influenced by cognitive flexibility, with abstract reasoning partially mediating this relation. These findings have implications for how creativity and adaptive thinking is nurtured in the classroom, and how methods of teaching and learning must evolve to assist students to create novel solutions to complex problems.

Email: Nastassja L. Fischer, nastassja.lf@ntu.edu.sg

7:30-9:00 PM (1046)

Family Economic Deprivation and Self-Esteem Among Preschoolers. AGATA TRZCIŃSKA, *University of Warsaw*, WOJCIECH PODSIADŁOWSKI, *University of Warsaw*, PATRYCJA GOLUS, *University of Warsaw*, JOWITA WIELESZCZYK, *University of Warsaw* — Previous studies have established a negative correlation between economic deprivation and self-esteem; however, limited insights exist regarding the onset of children linking self-esteem to economic status. To investigate this, we examined 198 preschoolers (96 girls, 102 boys) and their parents (170 mothers, 28 fathers). Children self-reported implicit and explicit self-esteem, while parents reported personal relative deprivation and economic objective deprivation of the family. Additionally, we explored children’s money knowledge as a moderator. Our findings reveal that

preschoolers may connect their implicit self-esteem with family economic status; however, such connections require basic knowledge about money. We discuss potential explanations for the influence of family economic deprivation, specifically on the implicit, not explicit, self-esteem of preschoolers.

Email: Agata Trzcińska, atrzcinska@psych.uw.edu.pl

7:30-9:00 PM (1047)

Spatial Cognitive Training to Improve Japanese Hiragana Reading in Children. AYAKO H.

SANEYOSHI, Teikyo University, NAOKO INADA, Taisho University — Recent research highlights a notable correlation between young children's ability to read Japanese hiragana and various cognitive skills, such as recognizing spatial relationships, distinguishing figures from backgrounds, and identifying left-right reversals. This study investigates whether app-based training to nurture these skills can enhance hiragana reading acquisition. Forty-six preschoolers were divided into a training group and a control group to determine if targeted spatial cognition training using a specialized app could improve hiragana learning outcomes. The month-long training included exercises to refine spatial relationships, left-right discrimination, and figure-background separation. After the training, hiragana learning was initiated. The effectiveness of the training was assessed by measuring hiragana reading ability before the training, immediately after, and following the hiragana learning period. Results showed that the training group significantly outperformed the control group in hiragana learning proficiency. These findings suggest that developing cognitive skills, especially in spatial understanding and figure-background discrimination, is crucial for early literacy acquisition.

Email: Ayako Saneyoshi, a-sane@mail.teikyo-u.ac.jp

7:30-9:00 PM (1048)

From Stagnation in Cognitive Development to Conspiratorial Belief: The Relationship Between Piaget and Conspiratorial Beliefs. ELIAS M.

GHAZAL, Grand Valley State University, MYA HANNA, Grand Valley State University, TESSA KRAMER, Grand Valley State University, BRIAN F. BOWDLE, Grand Valley State University, MARIO FIFIC, Grand Valley State University — Conspiratorial beliefs pervade various societal levels and domains, emerging as a potent social force. Despite extensive

research, understanding their cognitive underpinnings remains elusive, with paradoxical findings in correlational studies of the phenomenon. Exploring less-traveled paths, we investigated the potential role of cognitive development. Focusing on Piaget's theory of cognitive development, we examined transitions from preoperational to formal thinking, assessing individuals' adherence to key developmental stages. Our research probes whether differing levels of conspiratorial beliefs correlate with failure to fully transition from earlier to later stages. Through Piagetian tasks designed for adults, we find a pronounced connection between conspiratorial beliefs and stagnation in animism, suggesting incomplete cognitive development. This partial development may foster susceptibility to conspiratorial beliefs later in life. Our findings underscore the importance of cognitive frameworks in understanding the formation and perpetuation of conspiratorial thinking, offering insights into potential intervention strategies.

Email: Elias Ghazal, ghazale@mail.gvsu.edu

7:30-9:00 PM (1049)

The Role of Uncertainty in Children's Statistical Learning: Unveiling the Dynamics of

Exploration and Exploitation. SU YAN, The University of Hong Kong, PUYUAN ZHANG, The University of Hong Kong, SHELLEY XIULI TONG, The University of Hong Kong — This study investigated the impact of global and local uncertainties on attentional processing in children aged 4 to 12 during visual statistical learning. Utilizing a probabilistic cue-validation program, we assessed global and local uncertainties on a trial-by-trial basis and examined their influence on children's attentional preferences towards cues of varying predictability. Seventy-five Hong Kong children participated in the study. The results revealed that the impact of local uncertainty on attentional bias was moderated by global uncertainty, and this moderation varied between younger and older children as learning proceeded. When global uncertainty was high, high and low local uncertainty gradually triggered attentional bias towards high and low predictive cues, respectively, suggesting a strategy of certainty-exploration and uncertainty-exploitation. Conversely, with global uncertainty decreased, the strategy shifted to certainty-exploitation and uncertainty-exploration. Importantly, as learning progressed, these patterns were amplified in older children but attenuated in younger

ones, indicating age-related variations in learning strategies.

Email: Su Yan, 1652821625@qq.com

7:30-9:00 PM (1050)

Recognizing Emotions in Others' Faces: Electrophysiological Correlates of Intensity Effects in Static and Dynamic Presentations.

BIRGIT STUERMER, *International Psychoanalytic University Berlin*, MARIE MÜCKSTEIN, *International Psychoanalytic University Berlin*, MARINA

PALAZOVA, *International Psychoanalytic University Berlin* — Most research on emotion recognition from facial expressions has utilized static images showing the apex of the emotional display. Evidence suggests that the intensity of emotional expressions and dynamic information modulate their processing. However, both factors have not been studied simultaneously yet. In the present study we seek to replicate intensity and dynamic information effects on emotion recognition and examine the factors simultaneously while recording the EEG. Participants (n=124) performed emotion categorization on static and dynamic images of four facial expressions (anger, fear, happiness and neutral) in two intensities (60%, 100%). Recognition was modulated by intensity and dynamic information. While emotion effects in the N170 were reduced in the dynamic condition, they were augmented in the EPN, specifically for the 60% intensity condition. Such a visual processing boost compared with static expressions might explain why dynamic expressions are often rated to be more intense than static expressions. Since in everyday life emotional expressions are genuinely dynamic and more subtle than static images used in experiments, the study of less intense dynamic facial expressions might increase ecological validity.

Email: Birgit Stuermer, birgit.stuermer@ipu-berlin.de

7:30-9:00 PM (1051)

The Role of Alexithymia and Impulsivity in Predicting Internet Addiction: A Study of Personality Traits and Emotional Regulation

Among Adults. NABEEL EUSUFZAI, *The University of Texas at Arlington*, DANIEL LEVINE, *The University of Texas at Arlington* — This study explored the relationship between internet addiction, personality traits, and emotional regulation in 250 adults recruited via Mturk and The University of Texas at Arlington SONA

system. Participants completed measures assessing internet addiction (Young, 1998), alexithymia (TAS-20; Bagby et al., 1994), impulsivity (BIS-brief; Patton et al., 1995), and intellectual humility (CIHS; Krumrei-Mancuso & Rouse, 2016). Multiple regression analysis revealed that alexithymia ($\beta=1.47$, $p<0.001$) and impulsivity ($\beta=1.24$, $p<0.001$) were significant predictors of internet addiction, while intellectual humility ($\beta=0.06$, $p = 0.34$) was not. The model explained 38.4% of the variance in internet addiction scores ($R^2=0.38$). These findings suggest that difficulties in recognizing and describing emotions, as well as impulsive behaviors, significantly contribute to internet addiction. Intellectual humility did not show a significant relationship with internet addiction. This highlights the importance of targeting alexithymia and impulsivity in interventions aimed at reducing internet addiction.

Email: Nabeel Eusufzai, nabeel.eusufzai@mavs.uta.edu

7:30-9:00 PM (1052)

Transformative Experiences in the Art Gallery.

ALEKSANDRA SHERMAN, *Occidental College*, VIE MCCOY, *Occidental College* — Although people highly value art experiences, they often spend relatively short periods of time with a single artwork in a museum context. Similarly, lab-based studies within psychology of art typically employ short viewing times and primarily focus on examining preferences. We thus conducted a study at our campus gallery investigating how slow, mindful looking impacts emotional experiences and facilitates learning about the art and its context—i.e., about yourself, others, and the world. After engaging with an artwork, participants completed a series of questionnaires about the art encounter (including emotions felt, art appraisals, and perceived understanding). We then conducted a semi-structured interview to better assess learning outcomes and the transformative potential of the experience. Our preliminary analysis indicates that understanding is associated with experiencing learning emotions (interest, awe, inspiration), with increased connection to self and nature, and to physiological markers including chills. We are also investigating the efficacy of large-language-models to analyze our interview data, including the possibility of an agent-based framework to replicate the process of a team of thematic analysts.

Email: Aleksandra Sherman, asherman@oxy.edu

7:30-9:00 PM (1053)

Understanding Binaural Beats Through the Cognitive-Affective Processing Systems Framework.

SPENCER CAMPBELL, Lewis University, CRISTIAN DAVILA, Lewis University — The cognitive penetrability of perception (CPS) theory posits that beliefs and expectations can influence experiences, serving as a framework to understand how auditory stimuli like binaural beats may affect cognitive processes. Binaural beats are created by presenting two slightly different frequencies separately to each ear and are thought to induce relaxation. Within the cognitive-affective processing systems (CAPS) framework, the induced relaxation alters the emotional response, which is integral to reframing cognitive-affective units (CAUs) that impact cognitive encoding and beliefs (Ayduk & Gyurak, 2008). Building on research by Jirakittayakorn et al. (2017), which examined the effects of binaural beats on mood using the Brunel Mood Scale (BRUMS) at a theta brain wave frequency, our study extends these findings by incorporating the Profile of Mood Scales (POMS) and The State-Trait Anxiety Inventory (STAII). This design aims to uncover evidence supporting the hypothesis that binaural beats influence different emotions, particularly anxiety.

Email: Spencer Campbell, scampbell4@lewisu.edu

7:30-9:00 PM (1054)

Detecting Cognitive Load and Negative Arousal Using Electromyographic Signals.

BROOKE CHARBONNEAU, Montana State University, BRANDON SCOTT, Montana State University, FRANK MARCHAK, Montana State University, KEITH A. HUTCHISON, Montana State University — We examined Pison Industries' wrist-based device measuring EMG signals in response to emotional distress and cognitive load during the psychomotor vigilance task (PVT). EMG signal-derived pre-motor time (PMT), heart rate patterns, and skin conductance for 29 participants were measured during a baseline, cognitive load, and emotional distress PVT. Moreover, participants completed an attentional control task and self-reported measure of state/trait anxiety. Results showed that PMT was slower in the distress and load conditions compared to the baseline condition, indicating greater effort and this corresponded to our other traditional physiological responses (i.e., less resting heart rate variability and greater skin conductance). Additionally, PMT in the

distress condition was more variable for those with greater trait anxiety. Furthermore, there was a positive skew and greater variability for the PMT distribution under cognitive load, especially for those lower in attentional control, which suggests load caused greater attentional lapses. Pison's EMG signal was sensitive to distress and load, aligned with well-established physiological measures, and may be a less cumbersome research tool to collect physiological data.

Email: Brooke Charbonneau, brookezc96@gmail.com

7:30-9:00 PM (1055)

Failure to Find Effects of Suboptimal Affective Priming on Film Perception.

LUCY E. TINDEL, Washington University in St. Louis, JEFFREY M. ZACKS, Washington University in St. Louis, ZACHARY STERN, Washington University in St. Louis — Previous research on suboptimal affective priming has demonstrated that responses to a target stimulus can be influenced by the valence of a priming stimulus, even when participants are not consciously aware of this influence because the priming stimulus occurs beneath the threshold for conscious awareness. However, it remains to be seen whether this effect occurs in complex, dynamic, naturalistic contexts, where priming might affect experience of a continuous stream of information such as in real life. In the present study, we spliced either smiling or frowning faces into the cuts of eight comic film clips. Participants were asked to rate their amusement, excitement, fear, and sadness on a scale from 1 to 7 before and after viewing the film clips. We found that these sub-optimally presented faces did not affect participants' post-clip emotion ratings, suggesting that priming stimuli do not influence perceptions of complex target stimuli.

Email: Lucy Tindel, LucyTindel@gmail.com

7:30-9:00 PM (1056)

Applying Computational Modeling to Ascertain the Role of Emotions in Goal Setting and Performance.

WY MING LIN, Hector Research Institute for Education Sciences and Psychology, Eberhard Karls Universität Tübingen, LILY FITZGIBBON, University of Stirling, MARIA THEOBALD, University of Trier, JASMIN BREITWIESER, DIPF | Leibniz Institute for Research and Information in Education, GARVIN BROD, DIPF | Leibniz Institute for Research and Information in

Education, KOU MURAYAMA, *Hector Research Institute for Education Sciences and Psychology*, *Eberhard Karl Universität Tübingen*, MICHIKO SAKAKI, *Hector Research Institute for Education Sciences and Psychology*, *Eberhard Karl Universität Tübingen* — In self-regulated learning (SRL), students set goals and adjust how they perform on tasks. In addition, emotions are considered to play a key role, yet the findings on their exact effects on goals and performance have been inconsistent. To understand their effects, we use computational modeling to investigate the interactions between goals, performance, and emotions to ascertain the nature of emotions in SRL. We applied our model to data from an online math task (Study 1). Results from Study 1 showed that emotions influenced both goal setting and performance. Specifically, goals were set higher with positive emotions and lower with negative emotions. However, performance was lower with positive emotions and higher with negative emotions, in line with control theory. We next applied the model to data from students studying for a high-stakes exam (Study 2). Contrary to Study 1, performance was higher with positive emotions and lower with negative emotions in Study 2. There were also no effects of emotions on goals. These results suggest that the effects of emotions on goals and performance depend on context. Our work also highlights the value of computational modeling to analyze complex dynamic data in education research.

Email: Wy Ming Lin, wy-ming.lin@uni-tuebingen.de

7:30-9:00 PM (1057)

Asymmetry in Cognition-Emotion Interactions for Attentional Scope. REBEKA C. ALMASI, *The George Washington University*, MYEONG-HO SOHN, *The George Washington University* — Cognition and emotion are intertwined, but the directionality and mechanism of their relationship is unclear. The present research investigated whether emotional stimuli can modulate attentional scope and whether varying attentional scope affects emotion perception. Navon hierarchical stimuli were used, with participants prioritizing either configural/global information or local/parts-based information. Using the Navon task as a prime for a target task requiring valence categorization of emotional faces, we corroborated and extended existing literature's findings that exertion of cognitive control modulates emotion perception, even when prime and target features differ significantly. Local attentional

scope significantly narrowed the positivity bias for response time. However, when using emotional faces as primes and Navon letters as targets, we found no evidence for a significant effect of emotional valence on attentional scope. These results suggest that emotional valence makes for a better diagnostic than inducer stimulus.

Email: Rebeka Almasi, almasi@gwu.edu

7:30-9:00 PM (1058)

Cognitive After-Effects of Emotion Reappraisal and Acceptance: Mouse-Cursor Tracking Study.

DAVID BRIAN ROMPILLA, JR., *Texas A&M University*, SAVITHA SITHARTHA, *Texas A&M University*, KATHERINE A. HEIMER, *Texas A&M University*, CONNOR J. BAZAR, *Texas A&M University*, AAYAN F. ALI, *Texas A&M University*, TAKASHI YAMAUCHI, *Texas A&M University* — Reappraisal (reframing a situation in a different light) and emotional acceptance (taking a nonjudgmental approach to emotional experience) are known for their positive impacts on emotional well-being. However, cognitive benefits (e.g., cognitive flexibility) or liability (e.g., mental exhaustion) that result from these emotion regulation strategies are unknown. Across two studies ($N_s=164$ and 152), we examine whether instructing participants (Male = 19.05, Female = 64.47%) to reappraise or accept their responses to sad film clips impacted performance on attention network (Study 1) and Stroop (Study 2) tasks. The results for both studies evidenced slower responses and more random deviation (high entropy) in cursor-response trajectories after acceptance in comparison to reappraisal. Our findings suggest that reappraising and accepting emotion likely incur different cognitive costs/benefits, potentially undergoing separate cognitive resources or processes.

Email: David Rompilla, djrompilla@tamu.edu

7:30-9:00 PM (1059)

Craved Food Dominates Perceptual Competition in Rapid Serial Visual Presentations. JAMES A. Q. PHAM, *University of New South Wales*, JESSICA R. GRISHAM, *University of New South Wales*, STEVEN B. MOST, *University of New South Wales* — Cravings are a core human experience, addressed by both Western and Eastern traditions. Buddhism suggests that cravings cause tunnel vision, impairing awareness of other things. We tested this by modifying the emotion-induced



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blindness task, where an emotional distractor in a rapid serial presentation (RSVP) stream impairs awareness of a target appearing two items later in the stream. In the present study, distractors were instead pictures of chocolate. Craving for chocolate was induced by having participants abstain from chocolate and, upon arriving at the lab, unwrap and smell chocolate without eating it. The more that people reported craving the chocolate, the more their perception of targets in the RSVP streams was impaired when the targets were preceded by a picture of chocolate. Mechanistic accounts suggest that emotion-induced blindness reflects spatiotemporal competition between distractors and targets. If accurate, the current results suggest that craved food may induce “tunnel vision” by dominating competition process in visual perception.

Email: James Pham, jamesaq.pham@gmail.com

7:30-9:00 PM (1060)

Neural Correlates of Adjacent and Nonadjacent Dependency Learning in Visual Nonlinguistic Sequences. LEYLA EGHBALZAD, *Emory University*, JOANNE DEOCAMPO, *Emory University*, CHRISTOPHER CONWAY, *Grinnell College* — Across many cognitive domains, including language and visual perception, it is necessary to learn and process both adjacent (i.e., proximal) and nonadjacent (i.e., distal) dependencies. In this study, we used fMRI to investigate the neural correlates of processing visual adjacent and nonadjacent dependencies. Twenty-one adults participated in two sessions of an incidental perceptual sequence learning task involving the reproduction of sequences of visual nonlinguistic stimuli containing both adjacent and nonadjacent regularities. Participants' BOLD activation during a familiarity task was measured. Two contrasts were examined: sequences with and without violations of the adjacent regularities (Adjacent Ungrammatical compared to Adjacent Grammatical, AU>AG) and sequences with and without violations of the nonadjacent regularities (Nonadjacent Ungrammatical compared to Nonadjacent Grammatical, NU>NG). We found greater activation for [AU>AG] and [NU>NG] in both sensory-perceptual regions (B19) and frontal regions (right frontal pole, left SFG, and MFG). These results suggest that a perceptual-frontal brain network supports the processing of both adjacent and nonadjacent nonlinguistic sequential dependencies.

Email: Leyla Eghbalzad, leyla.eghbalzad@emory.edu

7:30-9:00 PM (1061)

Nonlinear Dynamics Shaping the Effect of Corticosterone on Anxiety-Related Behaviors in Sprague-Dawley Rats. DAMIAN KELTY-STEPHEN, *SUNY New Paltz*, STEPHAN CERNEK, *Grinnell College*, MARISSA YETTER, *University of Missouri-St. Louis*, TOM EARNEST, *Washington University in St. Louis*, NANCY REMPEL-CLOWER, *Grinnell College* — Ecological psychological approaches to neuroscience have aimed to understand nervous function in terms of nonlinear correlations spanning a whole organism's embodied engagement in a task environment. A relevant hypothesis from this perspective is that estimates of nonlinear correlations across scales in neurons might moderate effects of stimulation on behavioral response. We present a reanalysis of Golgi/Cox stained slices of orbitofrontal cortex from rats injected with either saline or with corticosterone, a stress hormone whose behavioral effects can depend on dendritic spine density. Following injection, rats completed elevated-plus maze and open-field task, and anxiety-related behaviors were observed. We estimated nonlinear spatial correlations in neuron slices at two objective magnifications using multifractal analysis of dark pixel distribution. Regression of anxiety-related behaviors found significant interactions among corticosterone injection and nonlinearity of neurons. At finer scales where dendritic spines were more apparent, nonlinear correlations of neural tissues was associated with a reduced anxiety following corticosterone injection. Nonlinear dynamics of neurons may constrain corticosterone's effects on behavior.

Email: Damian Kelty-Stephen, foovian@gmail.com

7:30-9:00 PM (1062)

Over-Recruitment of Cognitive Control Circuits Linked to Rumination Intensity. HEEKYEONG PARK, *University of North Texas at Dallas & Laureate Institute for Brain Health*, RAYUS KUPLICKI, *Laureate Institute for Brain Research*, MARTIN P. PAULUS, *Laureate Institute for Brain Research & University of Tulsa*, SALVADOR M. GUINJOAN, *Laureate Institute for Brain Research & Oklahoma State University* — Rumination is associated with cognitive dysfunction and treatment resistance in major depressive disorder (MDD), yet its underlying neural mechanisms are not well understood. The present study investigated whether rumination is associated with aberrant cognitive control

in the absence of negative emotional information using functional MRI. Individuals with MDD ($n=172$) and healthy volunteers ($n=56$) completed the Stop Signal Task with varied stop signal difficulty. In the task, a longer stop signal asynchrony made stopping difficult (Hard-stop) while a shorter stop signal asynchrony allowed more time for stopping (Easy-stop). In MDD participants, rumination intensity was associated with greater neural activity in response to difficult inhibitory control (Hard>Easy) in frontoparietal regions ($R^2=0.09$, $p<.001$). Greater activation for difficult inhibitory control related to rumination intensity was also positively related to state fear ($R^2=0.07$, $p<.005$) but not to behavioral accuracy. These results provide evidence for the neural basis of inhibitory control difficulties with rumination and implicate treatment targets for interventions aimed at improving inhibitory control and reducing rumination in the MDD population.

Email: Heekyeong Park, hpark@laureateinstitute.org

7:30-9:00 PM (1063)

Mind-Wandering and Neurochemistry. KARA B. PARSONS, *The University of Queensland*, HANNAH L. FILMER, *The University of Queensland*, SHANE E. EHRHARDT, *The University of Queensland*, MATILDA GORDON, *The University of Queensland*, REUBEN RIDEAUX, *The University of Sydney & Queensland Brain Institute*, *The University of Queensland*, PAUL E. DUX, *The University of Queensland*, NATASHA MATTHEWS, *The University of Queensland* — Mind-wandering occurs frequently in daily life, often without awareness. Recent studies suggest that mind-wandering subtypes, such as meta-awareness and intentionality, may have distinct neural correlates. However, the role of neurotransmitters in mind-wandering have remained unexplored. We investigated associations between excitatory (glutamate) and inhibitory (GABA) neurotransmitters, their balance (excitation/inhibition balance), and mind-wandering subtypes during three executive tasks ($n=46$). Ultra-high field 7T magnetic resonance spectroscopy revealed that in one task, lower glutamate and higher glutamate/GABA+ ratio in the left prefrontal cortex were related to probe-caught mind-wandering. Higher GABA+ in the right primary motor cortex was related with self-caught intentional mind-wandering. These findings provide novel insights into the neurochemical basis of mind-wandering, suggesting that excitatory-inhibitory balance in specific brain regions may influence different mind-wandering experiences.

Understanding these mechanisms could inform strategies to modulate mind-wandering in clinical and educational settings.

Email: Kara Parsons, Kara.Brienne.Parsons@gmail.com

7:30-9:00 PM (1064)

A Walking Electroencephalography Study of Attention Restoration in Urban and Natural City Environments. ANNALISA SETTI, *University College Cork*, JOY HURLEY, *University College Cork*, JASON S. CHAN, *University College Cork* — Abundant evidence shows that nature exposure restores attention and relieves stress. However, only a few studies have looked at restoration-related brain activity in real-life environments. In the present study, we recorded brain activity when the same participants walked in an urban environment or in a nearby urban park, one month apart in counterbalanced order. The walk duration was approximately 15 minutes. Before and after the walk they performed the Attention Network Test. Nine participants have taken part to date (25, $SD=1.83$), 6 males and 3 females. Brain activity was recorded with Emotiv EPOC 32-channels Flex EEG headset. Results showed that high and low beta were significantly greater during the urban walk, while theta oscillations were decreased during the urban park walk. Reduced beta oscillations in the urban park walk confirmed the hypothesis that nature reduces stress and attention load. However, no variation in the Attention Network Test was found depending on the type of environment, with a reduction of errors from pre-walk to post-walk in both environments, which could be due to practice or to the positive effects of walking.

Email: Annalisa Setti, a.setti@ucc.ie

7:30-9:00 PM (1065)

Inhibiting and Extinguishing Conditioned Action Tendencies: Measuring Elevation and Suppression of Corticospinal Excitability using Transcranial Magnetic Stimulation. YVONNE Y. CHAN, *The University of Sydney*, EVAN J. LIVESEY, *The University of Sydney*, DOMINIC M. D. TRAN, *The University of Sydney*, JUSTIN A. HARRIS, *The University of Sydney* — Learning to associate stimuli with a specific response can result in action tendencies that prime the motor system for responding. Although these action tendencies can be advantageous when performing motivationally relevant responses, this

automaticity can be counterproductive when the response is in conflict with task goals. We used transcranial magnetic stimulation (TMS) to investigate the neurophysiological signatures of conditioned action tendencies in the motor system to understand how automatic motor preparation can be brought under control via 1) explicit instruction and 2) extinction. Despite the absence of a response requirement, stimuli associated with responding increased corticospinal excitability within the motor cortex shortly before the timepoint at which a response would have been made, but resulted in suppression of excitability shortly afterwards. Moreover, this conditioned excitability was abolished after extinction training. These results suggest that conditioned motor preparation can be inhibited via both cognitive control and extinction of the stimulus-response association.

Email: Yvonne Chan, yvonne.chan@outlook.com

7:30-9:00 PM (1066)

Smartphone Presence Influences

Electrophysiology of Attention in Association with Phone Usage. IZZY RIZZO, *University of Wisconsin–Eau Claire*, CHARLIE WENZEL, *University of Wisconsin–Eau Claire*, SAMANTHA ROBARGE, *University of Wisconsin–Eau Claire*, EVAN SCHMIDT, *University of Wisconsin–Eau Claire*, ERIN WALKER, *University of Wisconsin–Eau Claire*, EMILY KERR, *University of Wisconsin–Eau Claire*, MEGAN BLIEK, *University of Wisconsin–Eau Claire*, DAVID LELAND, *University of Wisconsin–Eau Claire* — We are investigating whether smartphone presence influences attention-related EEG activity. Using a standard oddball task, we replicate the classic finding of a larger attention-related P3 response to targets than non-targets, but not the expected attenuation of this oddball effect in the presence of one's phone. However, during passive viewing of one's phone (vs. a control object), we observe increased EEG beta (13-32 Hz) activity over posterior electrode sites and decreased alpha (8-13 Hz) over anterior and posterior sites. Since beta is associated with an aroused/attentive mental state and alpha with a more relaxed, inwardly-focused state, these findings may reflect the phone's engagement of attention resources. The posterior beta difference is positively correlated with amount of phone use, phone reliance, and fear of lacking functional phone access, suggesting that more (or more problematic) phone use may be associated with a greater impact of phone presence on attention.

Email: Izzy Rizzo, rizzoim4749@uwec.edu

7:30-9:00 PM (1067)

The Breadth of Mindful Breath: Modulating Cognitive Performance and Oscillatory EEG Activity through Repeated Mindfulness. KARA E. STUART, *University of North Texas*, ANTHONY J. RYALS, *University of North Texas*, NATALEE SIDORCHUK, *University of North Texas*, EMILY TERRETT, *University of North Texas*, MEGAN ONDARI, *University of North Texas*, STEPH CAMACHO, *University of North Texas*, PENELOPE TRAMMELL, *University of North Texas*, DIANA TOWE, *University of North Texas* — Mindfulness-based intervention (MBI) research shows promise for improving mood, health, and cognition. Specifically, MBI has been linked to changes in episodic source memory, working memory, and inhibition in separate studies. Corresponding electrophysiology (EEG) suggests MBI is associated with modulations in alpha (α) and theta (θ) oscillations underpinning learning and memory. In the present study, we tested behavioral and neural responding during episodic memory (source memory), working memory (O-span), and inhibition (Stroop) tasks before and after repeated daily remote MBI using a novel smartphone application (N=35) for three weeks compared to a non-MBI relaxation control condition (N=35). Preliminary behavioral results suggest source memory performance is improving significantly for MBI compared to controls. We also observed a marginally significant effect of condition on Stroop inhibition performance and an emerging effect of condition on O-Span behavioral performance. Electrophysiological analyses testing modulation of (and hemispheric differences in) α and θ oscillations are forthcoming.

Email: Kara Stuart, kareneestuart@my.unt.edu

7:30-9:00 PM (1068)

The Influence of Gender Stereotypical Primes on the Neural Processing of Words and Faces.

FRANCESCA PESCIARELLI, *University of Modena and Reggio Emilia | San Diego State University*, LUANA SERAFINI, *University of Modena and Reggio Emilia* — The present study aims to extend our previous priming works on the neural correlates of gender stereotypes in language to human face processing. We recorded Event-Related Potentials (ERPs) to a pronoun (lui “he” or lei “she”) or face (male, female), preceded by

grammatically marked or stereotypically associated words (e.g., amica “friend”, badante “caregiver”). Participants were asked to categorize the gender of the pronoun or face. The ERPs showed a larger LPP for male participants to feminine pronouns preceded by grammatically masculine than feminine primes and larger N400, P300, and LPP (limited to women for female faces) for faces when preceded by grammatically incongruent than congruent primes. Interestingly, faces showed a gender stereotype asymmetry: a larger N400 to male faces, and a larger P300 to female faces, when preceded by stereotypically incongruent than congruent primes. The present results reveal that faces are influenced by gender stereotypes more strongly than linguistic stimuli. These results could provide new insights for future research in the context of biased communication.

Email: Francesca Pesciarelli, francesca.pesciarelli@unimore.it

7:30-9:00 PM (1069)

The Predictive Validity of Raven’s Advanced Progressive Matrices Is Stable Across Multiple Administrations. ERIN R. NEATON, *Michigan State University*, DAVID Z. HAMBRICK, *Michigan State University*, ERIK M. ALTMANN, *Michigan State University* — Tests of fluid intelligence such as Raven’s Advanced Progressive Matrices (RAPM) are used to predict criterion outcomes such as job performance and academic potential. With multiple administrations, as is common in large research pools, scores may change due to practice. The question addressed here is whether the predictive validity, the ability for a test to predict criterion performance, also changes with multiple administrations. In the current study, all participants completed two RAPM administrations and Letter Sets and Number Series as criterion tasks. Participants either completed these tasks all in one session (Group 1) or completed RAPM 1 at Session 1 and RAPM 2 and criterion tasks at Session 2 (Group 2). The Group 2 correlation between RAPM and the criterion tasks increased from Session 1 to Session 2, but the Group 1 correlation did not change across administrations. The finding that the correlation did not change in Group 1 provides evidence that RAPM is stable across multiple administrations. Additionally, the finding that the correlation increased only in Group 2 provides evidence that this increase is due to self-similarity in state during testing conditions within one session as compared to across two sessions.

Email: Erin Neaton, neatoner@msu.edu

7:30-9:00 PM (1070)

True Discernment or Blind Skepticism? Comparing the Effectiveness of Four Conspiracy Interventions. CIAN O’MAHONY, *University College Cork*, GILLIAN MURPHY, *University College Cork*, CONOR LINEHAN, *University College Cork* — Researchers have developed several promising methods for challenging unreasonable conspiracy beliefs but have yet to directly compare their effectiveness. We compared the effectiveness of four promising interventions (Priming, Inoculation, Active Inoculation, and Discernment), on a range of measures of conspiracy thinking. Across two studies (total N=1,766), we found that the priming and inoculation-based interventions were effective at reducing susceptibility to implausible conspiracy theories but had the unintended consequence of promoting unwarranted scepticism of plausible conspiracy theories. Encouraging discernment was key to improving critical appraisal of both plausible and implausible conspiracy theories. The interventions were moderately successful at reducing epistemically unwarranted beliefs but did not reduce general conspiracy ideation or affect likelihood judgements of hypothetical conspiracy theories. This study highlights both the importance of teaching discernment in conspiracy interventions and measuring discernment as an outcome.

Email: Cian O’Mahony, cianomahony@ucc.ie

7:30-9:00 PM (1071)

Validation of the University of California Matrix Reasoning Test Standard (UCMRTs) for Children and Adolescents. ASHLEY MANLEY, *Northeastern University*, AARON R. SEITZ, *Northeastern University*, SUSANNE M. JAEGGI, *Northeastern University*, ANJA PAHOR, *University of Maribor* — Here we present data regarding a child-appropriate version of the University of California Matrix Reasoning Test (UCMRT), which is an abstract problem-solving test similar to the Ravens. This new child-friendly task UCMRT presents a 3x3 matrix with the lower right entry missing and provides 8 answer options, and includes one, two- and three-relation problems. Here we present data from 237 primarily Black, low SES sixth- to eighth -raders (11-15 yrs) that was collected in partnership with the Character Lab Research Network (CLRN). Participants completed two

test versions (A&B; A&C) and were randomly assigned to one of six conditions. We find that these tests showed good internal consistency, with Cronbach's alphas of .62-.78, depending on the test set and cohort. We discuss opportunities for the use of this measure to evaluate intervention programs and facilitate research.

Email: Ashley Manley, ashley.manley333@gmail.com

7:30-9:00 PM (1072)

Do Believers and Nonbelievers of Implausible Claims Differ in Logical Reasoning? SAMUEL ROBSON, *University of New South Wales*, KATE FAASSE, *University of New South Wales*, KRISTY MARTIRE, *University of New South Wales* — The pervasive endorsement of misinformed, implausible claims such as "climate change is a hoax" and "vaccines are harmful" is a pressing challenge for society. But why do people believe such claims? In two studies, we used a fictional evidence evaluation task to examine whether believers and nonbelievers of implausible claims differ in their logical reasoning. Half of the participants read a conventionally high-quality expert report from a doctor or forensic examiner. The other half read a low-quality report that either introduced logical inconsistencies through small changes to wording (Study 1) or was filled with logical fallacies (Study 2). Results revealed no significant difference in persuasiveness between high-quality and low-quality reports in either study, even though participants showed some recognition of low-quality indicators. Indeed, both groups were similarly persuaded by logically flawed arguments. These findings suggest that believing implausible claims does not necessarily result from general deficiencies in logical reasoning.

Email: Samuel Robson, sam.robson@unsw.edu.au

7:30-9:00 PM (1073)

Does Reasoning Hurt? CÉDRIC CORTIAL, *Université Paris 8, JÉRÔME PRADO, Université Lyon 1 & CNRS, SERGE CAPAROS, Laboratoire DysCo, Université Paris 8* — Human thinking involves two cognitive processes: effortless intuition and cognitively costly deliberation. A central issue for reasoning theories is to explain why humans make use of deliberation at all, and do not always simply rely on intuition. Specifically, current theories have difficulty addressing the issue of the motivation for "cognitive misers" to spend precious resources in costly deliberative processes. We test the hypothesis that discontinuous situations such as

cognitive conflicts elicit doubt, a negatively valenced emotion, which individuals strive to suppress using deliberative thinking. We used belief-bias deductive reasoning problems to generate conflicts between logical principles and believability. We found a robust relationship between the presence of conflict and the experience of doubt, as measured using self-reports. In addition, when given the opportunity to re-think their answer, higher doubt was related with longer re-thinking time, an increased probability of answer change and a higher rate of self-reports of deliberation. These results support the idea that a negative emotion, triggered by a poor intuition that did not emerge smoothly, causes individuals to engage in deliberation.

Email: Cédric Cortial, cedric.cortialpro@gmail.com

7:30-9:00 PM (1074)

Domain Effects on Interpretations of Conditionals: The Case of Math. DAVID W. BRAITHWAITE, *Florida State University* — Math is often thought to have a unique association with certainty. This study investigated a possible consequence of this association: that conditional statements are interpreted more deterministically in math than other domains. To test this hypothesis, in two experiments (Ns=146 and 117), adults were presented general conditionals involving fictional categories in math and science, and were asked to judge whether the conditionals were compatible with various frequencies of exceptions to them. Participants indicated that even rare exceptions (e.g., 1 exception per 99 confirming cases) would falsify a conditional (Experiments 1 and 2), that a conditional could not be true and rare exceptions to it at the same time exist (Experiment 1), and that the truth of a conditional precluded the existence of even rare exceptions (Experiment 2), more when the conditionals involved math than science. The findings suggest that as hypothesized, math is particularly likely to elicit deterministic interpretations of conditionals. I will discuss how the findings could be explained by various theories of conditional reasoning, including mental models theory, suppositionalism, inferentialism, and dual strategy theories.

Email: David Braithwaite, braithwaite@psy.fsu.edu

7:30-9:00 PM (1075)

Insight or Not? A Machine Learning Validation of Insight Self-Reports. HANS STUYCK, *KU*

Leuven, ALESSANDRO MAZZA, KU Leuven, AXEL CLEEREMANS, Université Libre de Bruxelles, EVA VAN DEN BUSSCHE, KU Leuven — In our lives, we mainly solve problems analytically (non-insight). However, sometimes, a solution suddenly pops into our minds, known as the Aha! experience. Such insights are linked to several beneficial outcomes, leading many to study the mechanisms behind insight. Yet, capturing insight in the lab is challenging. Typically, trial-by-trial, subjective insight/non-insight self-reports are used, but these are prone to biases, making it unclear what the self-reports measure. Sixty-five participants solved puzzles with insight or non-insight, as indicated by their self-reports. Various metacognitive (solution confidence, insight intensity, closeness-to-solution ratings) and behavioral measures were assessed. Instead of relying on self-reports, we used clustering algorithms to identify natural clusters in the data and their defining characteristics, which we compared to the self-reports. The data revealed two clusters closely matching the actual self-reports. Each cluster was defined by a combination of measures rather than one, aligning with the expected characteristics of insight (pleasurable, sudden, and confident solution finding). These findings support the validity of insight/non-insight self-reports in studying insight.

Email: Hans Stuyck, hans.stuyck@kuleuven.be

7:30-9:00 PM (1076)

Misinformation on Social Media: Examining Middle-Aged Individuals' Reasoning Skills and Engagement with Misinformation Online.

KALYPSO K. IORDANOU, University of Central Lancashire Cyprus, VASILIKI CHRISTODOULOU, University of Central Lancashire Cyprus — The present study examines the relation between reasoning skills and the ability to identify misinformation and conspiracy theories in social media. This study is part of the EU-funded project SMIDGE which examines the pressing concern of conspiracy theories, misinformation, and extremism proliferating online, particularly targeting middle-aged individuals (45-65), who are both susceptible to extremist narratives and influential as they often occupy decision-making roles. Middle-aged individuals are currently recruited through Prolific (n=500). Participants were asked to rate the accuracy of videos and online posts (Pennycook et al. 2020), some of which contain misinformation according to official fact checking sites on the topics of climate change,

vaccination, and immigration, to examine participants' ability to identify misinformation. Individuals' reasoning skills are examined through open-ended essay questions and scenario-based multiple-choice questions (Kuhn & Modrek, 2018). The survey was developed and pilot tested in four languages (English, Italian, Greek, German). At the conference we will present our findings and discuss their implication for fighting misinformation on social media.

Email: Kalypso Iordanou, Klordanou@uclan.ac.uk

7:30-9:00 PM (1077)

Positive Perceptions of Autism in Job Applications by Autistic and Allistic Raters.

ELISABETH BRADFORD, University of Dundee, KATHARINE CHADBOURN, University of Dundee, NINA FISHER, Edinburgh Napier University — Gaining meaningful employment is a significant challenge for many autistic people. Prior research has focused on perceptions of autistic individuals at interview stage, compared to neurotypical peers. However, it is unclear how autistic individuals may be perceived at the job application stage. We examined how job applications (cover letter and curriculum vitae) were perceived by 53 autistic and 47 allistic (non-autistic) individuals, when a diagnosis of autism was disclosed versus not. Autistic participants rated job applicants with an ASD disclosure as more likeable than allistic participants; there was no difference in likeability ratings for job applications without an ASD disclosure. Perceived competency of applicants did not differ between job applications. Exploratory analysis revealed that autistic disclosure job applications were perceived as possessing higher intelligence, motivation to excel in employment, and ability to work efficiently, alongside less social competence. Disclosing a diagnosis of autism may lead to improved perceptions and evaluations of job applications by both autistic and allistic individuals, suggesting a potentially positive impact—or at least not detrimental—of diagnostic disclosure.

Email: Elisabeth Bradford, ebradford001@dundee.ac.uk

7:30-9:00 PM (1078)

Who Are American Conspiracy Theorists?

SHAUNA M. BOWES, Vanderbilt University, LISA FAZIO, Vanderbilt University — Existing research focuses on factors that predict conspiracy belief among the general population. In contrast, we ask what is unique about strong believers in conspiracy theories. In a

nationally representative sample ($N=2,996$), we identified subsamples of people who did not endorse conspiracy theories ($n=1,518$) and those who strongly endorsed multiple conspiracy theories ($n=772$). We collected information on their demographic characteristics and cognitive styles (e.g., cognitive reflection). Conspiracy theorists were more conservative and religious, less politically polarized, less cognitively reflective, and more racially diverse than non-conspiracy theorists. Contrary to expectations, conspiracy theorists viewed themselves as more intellectually humble. Conspiracy theorists also tended to be younger and report lower socioeconomic statuses and less education than non-conspiracy theorists. Altogether, there are important differences between conspiracy theorists and non-conspiracy theorists, both in terms of who they are and their cognitive styles. Such findings provide a rich foundation for future work aiming to implement targeted interventions for conspiracy belief in those who are the most committed to their worldviews.

Email: Shauna Bowes, shauna.m.bowes@gmail.com

7:30-9:00 PM (1079)

GPS Recalibrated: Exploring Navigation Strategy Shifts under Real-Time fMRI

Neurofeedback. CHENGSI YI, *University of Florida*, TIAN LIN, *University of Florida*, MANISH ALLURI, *University of Florida*, JEFFREY KUNATH, *University of Illinois Chicago*, DAWN BOWERS, *University of Florida*, NATALIE C. EBNER, *University of Florida*, STEVEN M. WEISBERG, *University of Florida* — Spatial navigation can be accomplished using a range of strategies, which engage distinct networks of brain regions. Causal links between brain region activation and navigation strategy have been established in rodents, but have yet to be shown in humans. Here, we apply a real-time fMRI neurofeedback targeting hippocampus activation to initiate a strategy shift in a Y-maze task, predicting that individuals will shift from a response strategy (make the same turn) to a place strategy (encode the location). Preliminary results show that one younger and one older adult shift strategies over five sessions of neurofeedback. The other three participants all maintained place strategies throughout the experiment. We also report a behavioral control group, in which younger adults consistently use a place-based strategy ($N=??$) which helps establish the small likelihood of people switching without feedback during the Y-maze task. Comparing neurofeedback and control groups will

reveal the effectiveness of neurofeedback and the relationship between hippocampus activation and navigation strategy preferences, providing insights into cognitive navigation strategies and the potential for neurofeedback in cognitive training.

Email: Chengsi Yi, yic@ufl.edu

7:30-9:00 PM (1080)

Navigating Collective Dynamics: Leveraging GPS for Understanding Group Navigation Behavior in Expansive Environments. TAD T. BRUNYE, *Tufts University & US Army*, SETH ELKIN-FRANKSTON, *Tufts University & US Army*, AARON L. GARDONY, *U.S. Army Combat Capabilities Development Command (DEVCOM) Soldier Center & Tufts Center for Applied Brain and Cognitive Sciences*, JAMES MCINTYRE, *Tufts University*, ERIC MILLER, *Tufts University* — Location-based metrics are the cornerstone for understanding individual and collective dynamics across various domains, notably animal ecology and sports analytics. A critical gap persists in modeling human group dynamics within expansive environments where movement transcends local boundaries, such as seen with tourist groups, cycling teams, search and rescue teams, and military units. To characterize the movement of human collectives through large-scale space, we leveraged a GPS dataset detailing the movement of small (9-person) groups of people performing an extended navigation task across large-scale unbounded space. We developed a Python toolkit for pre-processing, normalizing, and deriving traditional (e.g., group dispersion) and relatively novel (e.g., individual movement entropy) features from GPS data. We present a case study demonstrating the toolkit's ability to derive features from collective navigation, and further demonstrate that those features can predict the group's subsequent performance on an applied task conducted in a new environment. Results are discussed in the context of both application (i.e., performance prediction) and theory (i.e., collective wayfinding and social dynamics).

Email: Tad Brunye, tbrunye01@tufts.edu

7:30-9:00 PM (1081)

The Influence of Prior Knowledge on Memory for Spatial Locations. JONATHAN W. KELLY, *Iowa State University*, TIMOTHY P. MCNAMARA, *Vanderbilt University*, TAYLOR DOTY, *Iowa State*

University, PHILLIP NEWMAN, *Vanderbilt University*, MOHAMMADAMIN SANAEI, *Iowa State University*

— Returning to a previously experienced location is typically guided by memory of the surrounding landmarks experienced during learning. When the task is repeated (e.g., repeatedly casting for fish in a lake), memory may also be influenced by the spatial prior, which is the distribution of previously experienced locations. To evaluate the influence of spatial priors, participants completed a location memory task within a virtual environment displayed on a desktop computer. On each trial, the participant encoded a visual target and attempted to return to the unmarked target location. Location varied across trials, and the distribution of locations differed across conditions. In the reliable condition, target locations were sampled from a normal distribution with a small standard deviation. In the unreliable condition, target locations were sampled from a uniform distribution with a wide radius. Response variability and bias toward the distribution mean indicated less sensitivity to the spatial prior manipulation than predicted by a Bayesian model.

Email: Jonathan Kelly, jonkelly@iastate.edu

7:30-9:00 PM (1082)

The Eyes Have It: Asymmetric Visual Capture of Sounds in Virtual Reality. MAGGIE K.

MCCRACKEN, *University of Utah*, MACY E. ROWLAND, *University of Utah*, HUNTER C. FINNEY, *University of Utah*, JEANINE K. STEFANUCCI, *University of Utah*, SARAH H. CREEM-REGEHR, *University of Utah* — Distance perception tends to rely on vision more than hearing. This dominance is typically demonstrated through visual capture where the location of a sound source is localized to a visual object, even if they are displaced spatially. However, sounds are captured asymmetrically because they can be displaced at a greater distance behind a visual object before being perceived as at a separate location. Using virtual reality (VR), participants completed a perceptual-matching task with a virtual visual object and a real-world speaker. The results of Experiment 1 showed asymmetrical capture of sound that was opposite of expected. In Experiment 2, we had participants complete a blind-walking task to determine if the visual distances were compressed. After controlling for a 34% compression, the asymmetrical capture was as expected. Our results suggest that VR is a powerful tool to generalize sensory integration research, but that VR-specific biases need to be considered.

Email: Maggie McCracken, maggiekmccracken@gmail.com

7:30-9:00 PM (1083)

Let's Get the Ball Rolling: Implementing the Use of Immersive Virtual Reality in Space and Time

Perceptual Estimates. ALEX DETRICH, *University of Utah*, MIRINDA WHITAKER, *University of Utah*, EMMA BUTNER, *University of Utah*, JEANINE K. STEFANUCCI, *University of Utah*, SARAH H. CREEM-REGEHR, *University of Utah* — Perceiving and representing space and time allows for the creation of more abstract representations of the environment. However, experiments examining estimates of space and time are often administered on desktop monitors that are 2D and not as complex as the experience of real spaces and time. The current study investigated whether the use of immersive virtual reality (which allows for testing space-time relationships in 3D) could aid in examining if space and time are represented symmetrically (a theory of magnitude, ATOM) or if time perception relies on space perception (metaphor theory, as in Casasanto & Boroditsky, 2008). Our findings, based on similar methods to Casasanto and Boroditsky (2008), supported the interpretation that space and time perception may be symmetrically encoded, although the effect was small. Broadly, these findings could provide some insight into the integration of temporal information into more complex spatial judgments, like the simultaneous encoding of time and distance estimates during navigation. It could also help in understanding prior findings in virtual reality that showed overestimation of time (Read et al., 2022), but underestimation of space (Buck et al., 2021) in other virtual environments.

Email: Alex Detrich, alex.detrich@psych.utah.edu

7:30-9:00 PM (1084)

Navigating The Metaverse: The Relation Between Scale and Expertise in Spatial Knowledge of Immersive and Desktop Virtual Reality.

ECE YÜKSEL, *University of Florida*, STEVEN M. WEISBERG, *University of Florida* — Playing video games is associated with cognitive advantages including improved spatial navigation skills, but the mechanism accounting for video game players' superior abilities is unclear. Here, we propose that larger mental representation scale (developed through practice playing video games) in virtual reality (VR) mediates the association between video game play and spatial navigation. Participants (n=62) learned two large-scale

virtual environments, one on a desktop and another with a head-mounted display. They were tested on how well they learned the environment and we measured their representation scale. Video game players outperformed non-players in spatial knowledge, but contrary to our hypothesis we found no conclusive evidence supporting the role of the mental representation scale. Video game players did not represent the VR environments as larger than non-players, and neither group performed better in an immersive VR compared to a desktop VR environment. This study represents a crucial step in understanding the cognitive benefits of video game play and their practical implications for fields like education and virtual environment design by exploring the mechanisms linking video game experience and spatial navigation.

Email: Ece Yüksel, eceyuksel@ufl.edu

7:30-9:00 PM (1085)

Beyond Boundaries: Investigating Boundary

Extension in Large and Small Scenes. LINDSAY HOUCK, *Rhode Island College*, DIONNE CHEN, *Bates College*, LAUREN WHITE, *Bates College*, ZZ LIANG, *Bates College* — Boundary extension (BE) occurs when an observer remembers more of an image than was shown, or “extended” boundaries. BE replicates in a variety of images, suggesting that BE is a robust perceptual phenomenon. However, recent work (e.g., Bainbridge & Baker, 2020, Hafri et al., 2021) found that larger, expansive scenes do not elicit BE, suggesting BE is dependent on object-oriented images. Scene-oriented images depict many sizes, however, and scene size has not been explicitly tested in BE. Here, we tested BE in large and small scenes. Participants saw 60 Unity images of large (fits>10 people) and small (fits<10 people) scenes for 10 s each. Participants then saw each image again and indicated if the image felt closer or farther than the original. Results showed a significant effect of scene size; smaller scenes elicited more “closer” responses than large scenes ($\chi^2(1)=32.58$, $p<0.001$) significantly more often than chance ($z\text{-ratio}=4.53$, $p<0.0001$), indicating BE. In contrast, large scenes showed no BE ($z\text{-ratio}=-1.126$, $p=0.78$). This suggests that BE may still occur in smaller scene-centered images. Future work will test BE in large and small scenes in immersive virtual reality to continue investigating the mechanisms underlying BE.

Email: Lindsay Houck, lhouck@ric.edu

7:30-9:00 PM (1086)

Disentangling Underlying Representations of

Non-Euclidean Space. ANDREW S. MCAVAN, *Vanderbilt University*, TIMOTHY P. MCNAMARA, *Vanderbilt University* — Human spatial navigation research is typically conducted within environments that try to mimic the real world as much as possible. However, to understand the nature of the processes that humans use to perceive and encode space, it is also important to present people with impossible spaces that could not exist in the real world. Here, we further analyze data that demonstrated a trend in which participants that experienced an impossible non-Euclidean space fell back on their Euclidean heuristic: when presented with two rooms containing an intermediary overlapping non-Euclidean space, every participant reconstructed a non-experienced Euclidean space through their immediate recall, JRD pointing, and map building responses. To further disentangle participants’ underlying spatial representations through behavioral data, we will be presenting correlates between self-reported spatial ability, technology familiarity and video game usage, and walked-path data to determine if a lack of non-Euclidean spatial perception is due to the impossible nature of the space, or something else entirely. We will also be reporting new data on the immediate recall of target objects in the absence of environmental boundaries.

Email: Andrew McAvan, andrew.mcavan@vanderbilt.edu

7:30-9:00 PM (1087)

Route Planning in Terrain with Varying

Metabolic Cost. YAFEI QI, *Vanderbilt University*, TIMOTHY P. MCNAMARA, *Vanderbilt University*, JONATHAN W. KELLY, *Iowa State University* — When planning routes, navigators balance various costs and benefits associated with different route features. The shortest path may require more energy than a longer but less strenuous path (e.g., the shortest path crossing a vast desert area vs. a detour around it). This study investigated human route planning in landscapes where traveling in different terrains (field and desert) incurs varying metabolic costs per unit distance. We manipulated the cost ratio of travel between desert and field and the geometric layout of these terrains. Participants were required to travel paths that minimized overall costs to a target location. All 34 participants failed to achieve optimality, with a mean efficiency—the minimum possible cost divided by the actual cost—of

about 92%. Participants failed to determine the optimal horizontal entry point into the desert, taking a longer detour before entering. Rather than maintaining a vertical route to minimize distance through the desert, their routes headed toward the target location before exiting the desert. Overall, male participants outperformed females. The optimal route should be a straight line within any single terrain, yet female participants generally failed to adhere to this strategy.

Email: Yafei Qi, Yafei.Qi@Vanderbilt.edu

7:30-9:00 PM (1088)

Melodies Spatialization: Making SPoARCs

Appear and Disappear. AXELLE PORRET,
Université Rennes 2, FABIEN MATHY, Université Côte d'Azur, ALESSANDRO GUIDA, Université Rennes 2, LP3C — The Spatial Positional Associated Response Codes (SPoARC) effect is the mental spatialization of sequences along a horizontal axis. Guida and Porret (2022) showed that when sequences are melodies, musicians can spatialize them whereas non-musicians cannot. In the present study, we wanted to test if non-musicians could spatialize melodies once they are more familiar by using two melodies against 42 in Guida and Porret (2022). In the first experiment, participants were asked to memorize sequences of four musical notes and to indicate if a subsequent probe was part of the sequence by pressing a “yes” key or a “no” key with the left or right index finger. Left-/right-hand key assignment was reversed when passing from the first block to the second at mid-experiment. The sequences were identical during each of the two blocks. The second experiment was identical to the first except that the two melodies were very familiar (an ascending or descending melodic tune). While the first experiment showed no SPoARC effect, the second triggered one, which highlights the importance of long-term knowledge for the SPoARC effect to emerge. Results showed for the first time that non-musicians can also spatialize melodies, if very simple and repeated.

Email: Axelle Porret, axelle.porret@etudiant.univ-rennes2.fr

7:30-9:00 PM (1089)

An Experimental Manipulation of Working

Memory Load During Spatial Navigation. ALEXA K. BUSHINSKI, *Purdue University*, THOMAS S. REDICK, *Purdue University* — Spatial navigation has been linked to visuospatial working memory (WM) in

previous research (e.g., Bushinski & Redick, 2023). In the current study, we evaluated the impact of a WM load during spatial navigation performance using a dual-task paradigm. In a pre-registered experiment, data were collected from N=300 healthy young adults. Subjects were randomly assigned into one of the three conditions (verbal dual-task, visuospatial dual-task, or control), which were completed throughout the learning phase of a spatial navigation task. Our results showed an increase in spatial navigation errors for both the verbal and visuospatial dual-task conditions compared to control. Critically, there was not a significant difference in error between the verbal and visuospatial dual-task conditions. We showed that both verbal and visuospatial WM are necessary for acquiring spatial knowledge in a novel environment. Results are discussed in relation to prior dual-task and individual differences research.

Email: Alexa Bushinski, abushins@purdue.edu

7:30-9:00 PM (1090)

Hippocampus Size Predicts Spatial Performance

in a Serious Game Designed to Detect Cognitive Impairment. GIORGIO COLOMBO, *Singapore-ETH Centre, ETH Zürich, MERVIN TEE, National University Health System, Singapore, SAIMA HILAL, National University of Singapore & National University Health System, Singapore, VICTOR SCHINAZI, Bond University, KAROLINA MINTA, Future Health Technologies, Singapore-ETH Centre & Campus for Research Excellence and Technological Enterprise (CREATE)* — The Spatial Performance Assessment for Cognitive Evaluation (SPACE) is a serious game designed to identify deficits in spatial ability indicative of cognitive impairment. We investigated the relationship between performance in SPACE and imaging markers of neurodegeneration and assessed its potential for cognitive training. Forty participants (MAge = 66.65; MMoCA = 26.6) underwent MRI, SPACE, and neuropsychological tests at baseline and after six months with the intervention group (N=20) playing SPACE twice weekly. At baseline, results from linear regressions revealed that the interaction between path integration (PI) error and mapping accuracy significantly predicted left ($R^2=0.402$, $p<0.001$) and right ($R^2=0.387$, $p=0.009$) hippocampal volume when accounting for age. Since PI is critical for mapping, the interaction suggests a compound effect in which high PI errors lead to low mapping accuracy, resulting in smaller hippocampi. Our results align with He & Brown (2019) who found that

spatial learning performance moderates the relationship between hippocampal volume and cognitive map accuracy. Behavioural data revealed greater tasks improvement in the intervention group underscoring the potential of SPACE for cognitive training.

Email: Giorgio Colombo, giorgio.colombo@sec.ethz.ch

7:30-9:00 PM (1091)

Confidence Mediates Sex Differences in Mental Rotation and Perspective-Taking/Spatial Orientation Ability. CARLOS J. DESME, *Florida International University*, SHANNON M. PRUDEN, *Florida International University* — Spatial ability is defined as a cognitive skill used to represent, transform, generate, and recall environmental information. Spatial ability is related with declaring entry into science, technology, engineering, and mathematics (STEM). Sex differences in small-scale or intrinsic (mental rotation test; MRT) and large-scale or extrinsic (perspective-taking/spatial orientation task; PTSOT) ability are detected. Research indicates experiential and affective factors are responsible for sex differences recorded. Although much literature is dedicated at examining experiential factors, affective factors remain unaddressed to a large extent. The current study investigated participant confidence as mediating the relation between participant sex and spatial ability performance. 100 participants enrolled in introductory STEM courses completed an online questionnaire that included a 24-item MRT, 12-item PTSOT, and self-reported confidence questions. Results demonstrate confidence mediating sex with MRT, PTSOT, and overall spatial performance. Findings highlight the importance of affective factors contributing to spatial development to benefit interventions designed at encouraging STEM interest amongst underrepresented or minority populations.

Email: Carlos Desme, cdesm002@fiu.edu

7:30-9:00 PM (1092)

Is There Efficiency in Redundancy? AMI EIDELS, *University of Newcastle*, QUENTIN GRONAU, *The University of Newcastle, Australia*, RANI MORAN, *Queen Mary University of London* — Numerous studies investigated the beneficial effects of redundant perceptual information. Examples span the processing of faces, whereby combining two halves of a face could lead to improved identification, or stimuli as simple as dots of light (or a light and an auditory tone) where

redundancy gain marks faster RTs to two signals over one. In many studies of redundant information the redundancy is in the signal, meaning that additional information may be revealed by the experimenter, or naturally observed in an environment that could be poor (no redundant information) or rich (redundant information present). But what if the signal is always poor? Can the cognitive system improve the efficiency of information processing by recruiting an additional, redundant processing system that is independent of the external environment and thus could possibly be controlled by the organism? We report simulation results showing that a seemingly inefficient redundant system (modelled as a double diffusion model, 2DDM) can, under reasonable assumptions, outperform the standard one-process system that is assumed by most evidence accumulation models (as measured by reward rate). We discuss those assumptions and other limitations.

Email: Ami Eidels, ami.eidels@newcastle.edu.au

7:30-9:00 PM (1093)

Social and Self-Related Memory Strategies Are Not Uniformly Effective Across Cultures. IVA DUJMIC, *Brandeis University*, ISU CHO, *Sungkyunkwan University*, MIN-YING WANG, *National Taiwan University*, YU-LING CHANG, *National Taiwan University*, ANGELA GUTCHESS, *Brandeis University* — Age-related declines in associative memory may be lessened for self and social information. Advantages from this type of information primarily have been studied in individualistic cultures; it is unclear whether benefits extend to collectivistic cultures. We examined this by comparing the memory of Taiwanese and American older adults (OA) and younger adults (YA) for object-scene pairs containing varying levels of social content and encoded in relation to the self (SR) or a distant-other (OR). We found that while American YA benefited more from SR than OR, American OA did not exhibit a significant difference between the two reference conditions. In addition, Americans' memory was not affected by the level of social content in the stimuli. However, Taiwanese OA benefitted the most from highly social information in OR, even compared to Taiwanese YA. Thus, when thinking about another person, individuals from a collectivistic culture are more sensitive to social information than those from an individualistic culture, a pattern that is magnified with age. These results suggest that memory strategies are not

uniformly effective across cultures and are impacted by differences in self-construal.

Email: Iva Dujmic, ivadujmic@brandeis.edu

7:30-9:00 PM (1095)

How Do Narratives Emerge? Sharing Knowledge Representations in Group Decision-Making.

RYOTA TAKANO, *Nagoya University*, TATSUYA KAMEDA, *Meji Gakuin University* — Narratives represent collective phenomena whereby individuals' comprehensions of social events converge as a shared story. We conducted a mock jury experiment to investigate how pair discussions engender narratives. Participants first read the trial record of a criminal case individually, organized either chronologically along the case's storyline (S) or by each witness's testimony (W). We then composed three types of pairs with different case organizations (S-S, S-W, or W-W). Pairs discussed the case to reach a verdict. Individual knowledge representations of the case were assessed through a free-recall test pre- and post-discussion. Pair-level similarity in knowledge representations became greater in the S-S and W-W pairs than in the S-W pairs. The S-S pairs reported the highest satisfaction with the discussion and the greatest sharedness-feelings with their partners, while their recall did not necessarily reflect the objective reality of the case. These findings illustrate the critical roles of narratives in consensus formation.

Email: Ryota Takano, takano@i.nagoya-u.ac.jp

7:30-9:00 PM (1096)

Implicit Assessment of Double Standards Using

Eye Tracking and the IAT. COLLIN SCARINCE, *Texas A&M University, Corpus Christi*, YULIANA ZAIKMAN, *Texas A&M University, Corpus Christi*, SHEALYN TOMLINSON, *University of Houston-Clear Lake* — The sexual double standard (SDS) is a phenomenon where people are held to differing standards of acceptable sexual behavior based on their gender. Previous research has mostly examined this phenomenon explicitly by utilizing questionnaires. Some researchers have advocated for implicit methods to investigate the judgment process behind the SDS, such as the Implicit Association Test (IAT). Given concerns about the validity of the IAT, an instrument for evaluating social perceptions, alternative implicit measures should be explored. The current study assessed and compared implicit and explicit methods to measure the SDS by

introducing a new procedure using eye tracking to monitor eye movements while participants performed a social evaluation. Participants (N=199) read a vignette of a fictional person (target), evaluated that person with a social-perceptions scale, and completed the IAT. We tracked participants' gazes while they read the vignette and provided evaluations of the target. We expected participants to spend more time reading and returning to information about the target's relationship history when the target was a promiscuous woman compared to a promiscuous man and compared these gaze patterns to the other explicit and implicit measures.

Email: Collin Scarince, collin.scarince@tamucc.edu

7:30-9:00 PM (1097)

Negativity Bias in Collective Mental Time Travel: Evidence from a Racially Diverse U.S. Sample.

TORI PEÑA, *Stony Brook University*, BONITA LONDON, *Stony Brook University*, SUPARNA RAJARAM, *Stony Brook University* — The ways in which we imagine the future and remember the past heavily shape how we guide our own behavior and engage in our daily lives. The ability to envision a future and reconstruct our past is known as mental time travel. While we often engage in mental time travel when thinking about our own timelines, we also might engage in mental time travel for our country's future. Recent work has found differences in the valence of collective mental time travel based on some social identities (e.g., nationality), but it is unknown if it differs based on race. In the current study, we aimed to examine the valence of collective mental time travel among undergraduate students as a function of racial ethnic identity in a racially diverse sample. We recruited undergraduate students who completed a fluency task to report as many positive and negative events for both the past and future of the United States. Consistent with previous research, participants reported more negative events than positive events for both the past and future with the future being less negative than the past. We will discuss these results along with patterns across racial-ethnic groups in our sample in the context of previous work with Western participants.

Email: Tori Peña, tori.pena@stonybrook.edu

7:30-9:00 PM (1098)

Sarcasm: A Cultural Double-Edged Sword.

ERICA EDWARDS, *The Pennsylvania State University Behrend*, DAWN G. BLASKO, *The Pennsylvania State*

University Behrend, VICTORIA A. KAZMERSKI, The Pennsylvania State University Behrend, SHARIFFAH DAWOOD, The Pennsylvania State University Behrend, KERRYN BROCHEY, The Pennsylvania State University Behrend, AMY LOVE, The Pennsylvania State University Behrend, HAOBO ZHI, The Pennsylvania State University Behrend — Sarcasm is a form of communication that can forge social bonds (Pfeifer et al., 2023) but it can also tear those bonds apart. The culture of the speaker and listener has been shown to impact interpretation (Blasko et al., 2021; Ning et al., 2023). We surveyed participants in three countries (Singapore, Sweden, and the United States) to investigate whether sarcasm use correlates with bullying in the workplace. Participants were more likely to use sarcasm for positive reasons (e.g., to be funny) than for negative reasons (e.g., to scold). Using sarcasm for negative reasons, but not positive ones, was positively correlated with bullying scores. These relationships varied by participant culture (country) and gender. Sarcasm can have both socially reparative and destructive uses, but the intent behind sarcasm depends on the speaker.

Email: Erica Edwards, ese5032@gmail.com

7:30-9:00 PM (1099)

The Role of Interviewer-Interviewee Dynamics in Detecting Usability Issues in Usability Testing

Interviews. LUCY CUI, *Rensselaer Polytechnic Institute*, MALEEEHA ZAMAN, *University of California, Los Angeles*, BRANDON DAY, *University of California, Los Angeles*, SHARON T. ZHAO, *University of California, Los Angeles*, KHOA LE, *University of California, Los Angeles*, CHELSEA WAN, *University of California, Los Angeles* — Companies may use convenience sampling (e.g., coworkers) for their usability test participants. This like-minded, motivated sample could downplay usability issues that could occur in the rest of the population. We developed a purposely frustrating (counterintuitive navigation pathways) high-fidelity chat app prototype to test whether the relationship between the interviewee and the interviewer (friends or stranger) influences the interviewee in sharing directly and indirectly their frustration. Six interviewers had 163 participants who were either their friends or strangers complete 6 tasks using the cognitive walkthrough procedure. Friends rated the prototype as more easy, less frustrating, and had significantly lower variation in ease ratings than strangers. Additionally, friends quit the task significantly less often than

strangers for the most difficult tasks. Non-verbal cues of frustration were not a reliable countermeasure ($\kappa=0.44$ across 9 independent coders). These results reveal concerns for the catching usability issues when choosing participants close to the interviewers.

Email: Lucy Cui, lucycui8@gmail.com

7:30-9:00 PM (1100)

Thinking about Social Groups: Abstract (vs. Concrete) Construals of Intergroup Relations Affect Stereotypes, Emotions, and Behavioral Intentions. ELENI LIPOURLI, *University of the Aegean*, ANTONIS GARDIKIOTIS, *Aristotle University of Thessaloniki* — An experimental study ($N=450$) examined whether the level of construing about majority's relations with a minority group (refugees), either within abstract terms (for example, participants read a text on why harmonious relations with refugees are important—abstract construal), or within concrete terms (for example, participants read a text on how can harmonious relations be achieved—concrete construal) differentially affects social thinking (attitudes toward cultural diversity, stereotypes), emotions and behavioral intentions toward the minority group. Analyses showed that abstract construal (vs. concrete and control conditions) led to more positive attitudes toward cultural diversity, and increased intention to help. Path analyses showed that abstract (vs. control) construal predicted attitudes towards cultural diversity which in turn predicted positive stereotypes and emotions, which in turn predicted help (all positive relationships). These findings highlight the importance of people's level of construal thinking about intergroup relations in predicting thinking and behavior towards social groups.

Email: Eleni Lipourli, lipourli@aegean.gr

7:30-9:00 PM (1101)

Bitchwaffle or Asspalace: Predicting the Plausibility of Novel Taboo Compound Words.

KATHERINE K. WHITE, *Rhodes College*, JULIAN MCMILLIAN, *Rhodes College*, LISE ABRAMS, *Pomona College* — A word's tabooeness is predicted by emotional properties such as its valence or arousal. However, semantic and phonological characteristics of a non-taboo word can influence judgments about what makes a good curse word, evidenced by research with novel taboo compounds (Reilly et al., 2020). The present study investigated whether semantic and phonological

characteristics of taboo and non-taboo words predict novel taboo compounds' frequency of use and plausibility. Frequency of use was assessed on Reddit, whereas plausibility ratings were obtained on Prolific using novel compound words of 50 taboo word prefixes paired with 50 non-taboo noun suffixes from five semantic categories. Analyses from Reddit revealed that the use of taboo compounds correlated with several linguistic characteristics of non-taboo suffixes. Analyses from Prolific explored a broader set of properties of the prefixes and suffixes, including word frequency and word length, as well as semantic (e.g., category), phonological (e.g., neighborhood), and phonetic (e.g., voicing) characteristics. The results have implications for which combinations of words are likely to become established words in the lexicon.

Email: Katherine White, whitek@rhodes.edu

7:30-9:00 PM (1102)

Cognitive Control Supports Recovery from Misanalysis: Evidence from Neural Oscillations.

MADELEINE WADE, *University of Colorado, Boulder*, VALERIE LANGLOIS, *University of Colorado, Boulder*, ANGELA MONTIEL, *University of Colorado, Boulder*, TAL NESS, *University of Maryland*, JARED M. NOVICK, *University of Maryland*, ALBERT E. KIM, *University of Colorado, Boulder* — We hypothesized that cognitive control is engaged during language comprehension when multiple interpretations are in conflict, for example in response to garden-path errors where comprehenders must select between an initially incorrect interpretation and an alternative, grammatically licensed one. Thirty participants read sentences like “While Anna dressed the baby spit up on the bed” (Ambiguous) or “While Anna dressed, the baby spit up...” (Unambiguous), while EEG was recorded. Ambiguous sentences elicited increased theta-band (3-8 Hz) power ~500 ms after the disambiguating word “baby.” By comparison, semantic and syntactic anomalies read by the same participants did not increase theta-band power but did elicit N400 and P600 ERP effects. Comprehension was measured by responses to questions like “Did Anna dress herself?” (“yes” indicates correct interpretation). We trained a machine learning classifier to distinguish correctly and incorrectly interpreted sentences based on theta-band activity. Decoding accuracy was above chance, peaking at ~65% 600ms after disambiguating word onset. Our findings suggest cognitive control aids recovery from misanalysis

during sentence processing and theta-band activity indexes this engagement.

Email: Madeleine Wade, madeleine.wade@colorado.edu

7:30-9:00 PM (1103)

Comprehension of Fluent and Disfluent Relative Clauses in Spoken Sentences. MATTHEW LOWDER, *University of Richmond*, CLAIRE O'SHAUGHNESSY, *University of Richmond* —

Although a large literature demonstrates that object RCs are harder to process than subject RCs, the majority of this research has been conducted using reading paradigms. One goal of the current study was to determine whether key findings on RC processing that have been demonstrated using written sentences replicate using spoken sentences. A second goal was to determine whether the presence of a misspoken word in the sentence could reduce the ORC-SRC difference, as previous research on repair disfluencies shows that misspoken words linger in memory and influence sentence interpretation. Participants listened to sentences that manipulated RC type, the type of embedded noun phrase, and fluency. Each sentence was followed by a written true-or-false comprehension question. Analysis of question accuracy and response time replicated key ORC-SRC effects that have been observed in reading paradigms and have traditionally been used to support similarity-based interference as one explanation for why ORCs are more difficult than SRCs. There was no evidence that the fluency of the sentence interacted with RC type, suggesting that the misspoken word in these sentences did not facilitate the comprehension of complex syntactic structures.

Email: Matthew Lowder, mlowder@richmond.edu

7:30-9:00 PM (1104)

Cross-Domain Structural Priming: Online Processing and Effects of Mathematical Training.

CHRISTOPHER R. SOENS, *Texas State University*, KRISTEN TOOLEY, *Texas State University, San Marcos*, PAUL CHRISTIAN DAWKINS, *Texas State University* — Structural priming research shows persistence of abstract structures in language use (Mahowald et al., 2016). Scheepers et al. (2011) expanded this to include math and language, proposing a common mental framework for abstract structures. We examined math-to-language priming among people with differing math training (math and non-math majors).

Seventy-six participants solved 24 prime math expressions in three conditions: Baseline ($7 + 24 = ?$), High Attachment ($7 + (28 - 4) \times 2 = ?$), and Low Attachment ($7 + 28 - (4 \times 2) = ?$). Ambiguous sentences (e.g., The reporter waited for the manager of the pop star who was always late) followed primes and a forced-choice question for evaluation. During testing, we tracked eye movements. A linear mixed-effects model bared no significant effect of condition on sentence interpretation or interaction between condition and major. More than math majors, non-math majors trended toward predicted priming patterns. Initial fixation patterns during math problems showed a first operation bias ($p < .001$), regardless of major. These results suggest cross-domain structural priming effects may not be as robust as formerly reported and challenge Scheepers et al.'s (2011) left-to-right extraction theory.

Email: Christopher Soens, crsoens@txstate.edu

7:30-9:00 PM (1105)

ERP Individual Differences in Adult Second Language Sentence Processing. SARAH GREY, *Fordham University* — ERP studies show that L2 learners systematically vary in whether they rely more on semantic or syntactic processes during language comprehension, demonstrated by variation in N400 and P600 ERPs (e.g., Grey, 2023). It is unclear whether this variability in neurocognitive language processes relates across different L2 structures or to behavioral measures of L2 ability. We examined individual differences (IDs) in N400/P600 responses for different L2 French structures in 17 English native speakers. During EEG/ERP acquisition, participants read correct sentences or sentences with errors in French verb aspect, verb tense, gender agreement, or semantics. Group-level ERP results indicated an N400 to semantics and no significant ERP effects for the three grammar structures. Inspection of IDs in ERPs revealed low variation for semantics: most learners showed N400s. For the three grammar structures, variation was higher, with some French learners showing P600s and others showing N400s. This demonstrates variable reliance within the group in using syntactic repair-P600 mechanisms or semantic-N400 mechanisms to process grammar. ERP IDs showed potential relationships with language learning aptitude and L2 proficiency.

Email: Sarah Grey, sgrey4@fordham.edu

7:30-9:00 PM (1106)

Iconicity Boosts Novel Sign Learning—Even for 'Non-Iconic' Signs. JENNIE PYERS, *Wellesley College*, NATALIA REYNOSO, *Wellesley College*, KRISTIANNY RUELAS-VARGAS, *Wellesley College*, KAREN EMMOREY, *San Diego State University* — Iconicity is a useful tool to generate symbols in a new language and is especially present across sign languages. We hypothesized that even signs rated as non-iconic have some residual form-meaning mapping that reflects their iconic origins. We tested whether novice learners would be sensitive to iconicity in both highly iconic and non-iconic ASL signs. Previous work with novice learners of sound symbolic words (ideophones) showed that ideophones were learned better than non-ideophones (non-iconic words). Further, ideophones were learned less well when paired with their antonym than with their true meaning, but crucially this effect was not observed for non-ideophones. Our parallel study with 75 novice sign learners revealed better learning for highly iconic signs, as expected (odds-ratio=.35, CI: .18-.68, $p=.002$). In contrast to the spoken language results, both iconic and non-iconic signs were learned less well when paired with their antonym than with their true meaning (odds-ratio=2.16, CI: 1.30-3.57, $p=.003$). Accuracy for learning both types of signs was higher than that reported for learning both types of spoken words. We conclude that novice learners can utilize even weak iconic form-meaning mappings to boost learning.

Email: Jennie Pyers, jpyers@wellesley.edu

7:30-9:00 PM (1107)

In for a Penny: How Much Money Will People Forgo to Avoid Unfamiliar Accents? GRACE TEUSCHER, *Washington University in St. Louis*, DREW MCLAUGHLIN, *Basque Center on Cognition, Brain & Language (BCBL)*, KRISTIN J. VAN ENGEN, *Washington University in St. Louis* — The subjective ease of understanding accents that differ from a listener's has typically been assessed through self-reports. This approach, however, relies on metacognitive judgments that are difficult to interpret and inconsistent across participants. To address this challenge, this study uses effort discounting, a paradigm borrowed from behavioral economics. In the experiment, participants may choose to listen to an L1-accented speaker for a smaller monetary reward or an L2-accented speaker for a larger reward. By varying the reward offered for the easier option based on previous choices, the subjective value of the effort

expended for each L2 speaker can be determined: the lowest monetary selection for a speaker represents the amount of money participants are willing to forego to avoid the effort required by that accent. Data collected to date show that listeners are willing to listen to highly intelligible L2-accented speakers. However, as speakers become less intelligible, they are less willing to expend the required effort. We also predict that participants who give lower ratings to L2 speakers on an affect and attitudes questionnaire are more likely to discount their reward to avoid the effort required by L2 speech.

Email: Grace Teuscher, g.teuscher@wustl.edu

7:30-9:00 PM (1108)

Replication: The Effect of Filled Pauses on Recall.

CAITLIN VOLANTE, *Vanderbilt University*, SARAH BROWN-SCHMIDT, *Vanderbilt University* — We present a close replication of Experiment 2 in Fraundorf and Watson (2011) which reported that plot points from passages containing disfluency were more likely to be recalled than plot points from fluent passages. This in progress, pre-registered, study is an attempt to (1) replicate the finding that passage fluency affects plot point recall; (2) conduct more detailed analyses of idea unit recall as a function of passage fluency; and (3) conduct novel exploratory measures of the effect of disfluency on beliefs about speaker accuracy and participant judgements of learning (JOLs). We predict that plot points from disfluent passages will be more likely to be recalled than those from fluent passages, replicating Fraundorf & Watson (2011). We predict that disfluent passages will be rated as less accurate summaries than fluent passages and that participant JOLs will be lower for disfluent passages, but will nonetheless predict recall.

Email: Caitlin Volante, caitlin.r.volante@Vanderbilt.edu

7:30-9:00 PM (1109)

Simultaneous Processing of Lexical Status and Syntactic Class Information in Spoken Words.

REET PATEL, *Villanova University*, MCCALL E. SARRETT, *Gonzaga University*, JOSEPH C. TOSCANO, *Villanova University* — Spoken language comprehension requires listeners to analyze information across multiple levels of linguistic organization, including both low-level information, such as phonological differences, and higher-level information, such as differences in syntactic and semantic properties

of words. There is debate about the extent to which information at different levels of linguistic organization is processed simultaneously. In the current study, we use the event-related potential (ERP) technique to investigate the timecourse of processing for spoken stimuli differing in lexical status (Experiment 1: words vs. nonwords) and a specific lexical property, namely, syntactic class (Experiment 2: nouns vs. adjectives). Stimuli were cross-spliced to control for effects of low-level acoustic differences between conditions, allowing us to isolate lexical-level effects. The results reveal overlap in the timecourse of processing for lexicality and syntactic class, with effects emerging 200-300 ms after the point of disambiguation in the stimuli. Overall, the results suggest that spoken word recognition is highly parallel, simultaneously processing information spanning different levels of linguistic organization.

Email: Reet Patel, rpatel09@villanova.edu

7:30-9:00 PM (1110)

Sound Symbolism in Language and the Mind: Hearing Meaning in 10 Unknown Languages.

SAYURI HAYAKAWA, *Oklahoma State University*, VIORICA MARIAN ♀, *Northwestern University* — An attribute of human language is the seemingly arbitrary association between a word's form and meaning, yet people often share intuitions about the meanings of novel words. We show that the meaning of foreign words can be partially deduced based on phonological form alone. Monolingual English speakers (N=134) and Spanish speakers (N=46) listened to 45 antonym word pairs (e.g., “chén...fú”, Mandarin for “sink...float”) in three of 10 possible foreign languages (Japanese, Mandarin, Thai, Polish, Russian, Ukrainian, French, Romanian, Spanish, English). For each pair, participants judged which native language word-pairs they corresponded to (sink : float or float : sink). Accuracy was higher than chance in each language. The ability to correctly infer meaning was additionally predicted by individual differences in verbal working memory, which may support cross-modal integration and the binding of form to meaning. Lastly, item analyses revealed that words that shared a meaning were also more likely to share phonology, thus providing a basis for listeners to infer meaning from form. We conclude that sound maps to meaning with some regularity, and sensitivity to form-meaning mappings indexes broader cognitive functions.

Email: Sayuri Hayakawa, sayuri.hayakawa@okstate.edu

7:30-9:00 PM (1111)

The Negation-Induced Forgetting Effect: Investigating its Boundary Conditions. BARBARA KAUP, *Eberhard Karls Universität Tübingen*, JULE NIBBENHAGEN, *Eberhard Karls Universität Tübingen*, CAROLIN DUDSCHIG, *Eberhard Karls Universität Tübingen* — In a study by Mayo et al. (2014), participants first watched a video tour of an apartment featuring various objects, such as a red sofa. Later, they were asked questions about these objects, requiring them to respond with either "yes" or "no." Finally, participants were asked to recognize the objects. After correctly negating an incorrect object feature (e.g., "Was the sofa black?" → "no"), object recognition was impaired relative to a condition in which a true feature of the object was correctly affirmed ("Was the sofa red?" → "yes"). In two experiments, we (a) replicated this negation-induced forgetting effect, (b) showed that it generalizes to a setting in which the negation is not in the response but in the sentence to be judged (e.g., "The sofa was red" → "yes" vs. "The sofa was not black" → "yes"), and (c) found the effect to be specific to conditions in which the negation actually concerns an attribute of the target object (in this case the sofa) instead of just appearing in the same sentence (e.g., "The sofa was not black" vs. "The cushion that was on the sofa was not black", respectively). In our presentation we discuss the implications of these results for the mechanisms underlying the negation-induced forgetting effect.

Email: Barbara Kaup, barbara.kaup@uni-tuebingen.de

7:30-9:00 PM (1112)

Variable Ergative Marking in Standard and Traditional Basque: Sociophonetic Variation and Processing. MATTHEW T. CARLSON, *The Pennsylvania State University*, ITXASO RODRÍGUEZ-ORDÓÑEZ, *California State University, Long Beach*, CLARA D. MARTIN, *Basque Center on Cognition, Brain & Language (BCBL)* — We studied sociophonetic variation and prediction in sentence processing in Basque, which marks transitive and some intransitive subjects with ergative case (-k suffix), and other intransitives with absolute (zero-marking). Ergativity, as other word-final obstruents, is subject to phonetic reduction but is ideologically linked to speaker authenticity: "new" speakers, who use Standard Basque, are associated with using it inconsistently, but traditional speakers, considered "native" of a local variety, are not.

96 new or traditional listeners performed self-paced listening on sentences produced by a standard or a local variety talker. Ergative suffix form (unreduced, reduced, absent) was crossed with the verb's argument structure. Both groups differentiated the talkers' authenticity based on a questionnaire. Traditional listeners listened longer when the subject's case was inconsistent with argument structure, regardless of talker variety, but treated reduced suffixes ambiguously suggesting that reduction adds uncertainty in sentence processing. New listeners showed little sensitivity to subject form. The results show differences in processing ergativity between listener groups but do not show differences based on talker variety.

Email: Matthew Carlson, mtc173@psu.edu

7:30-9:00 PM (1113)

A Language Acquisition Study: Learning New Spanish Words via the Survival Processing Paradigm. SARAH N. JONES, *University at Albany, SUNY*, JEANETTE ALTARRIBA, *University at Albany, SUNY* — Survival processing has been shown to enhance memory and retention. Words that are rated with regards to their survival relevance show enhanced memory, as compared to words rated as a function of other contexts (e.g., moving from one location to another). In particular, this paradigm has been shown to improve retention of words learned in a new language (Kazanas et al., 2020). The current study extends the prior work and examines the learning of emotion words (e.g., gun, puppy) and non-emotion words (e.g., cherry, skirt), in English and in Spanish, in the survival paradigm. Participants read either a survival or moving scenario and were then asked to learn a set of word translations in English and Spanish. Word translations were accompanied by pictures and auditory recordings. They then completed three tasks: word matching, picture-naming, and sentence completion. Results are discussed with regards to the generalizability of survival processing effects, the acquisition of different word types, and the overall learning of a foreign language.

Email: Sarah Jones, sjones23@albany.edu

7:30-9:00 PM (1114)

'Writing-to-Read': Exploring Potential Contributions of Writing to Word Reading in Mature English Readers. MENGYAN ZHU, *University of Bristol*, MARKUS DAMIAN, *University of*

Bristol — Reading and writing, traditionally studied as separate skills in cognitive psycholinguistics, may involve integrated neural and cognitive mechanisms. We investigate this relation by examining premotor activation during a visual word recognition task using progressive demasking. Using a dual-task paradigm with handwritten and printed words, we assess the potential impact of cognitive engagement in writing knowledge on word recognition: if writing plays a functional role in recognition, we expect greater interference under writing conditions. This study offers insights into the intertwined nature of reading and writing processes and their neural correlates. Understanding these processes enhances cognitive models of language processing and informs educational practices and interventions for language-related disorders. Our findings contribute to advancing the science of cognition by unravelling the complex interactions between reading and writing in proficient readers.

7:30-9:00 PM (1115)

Do Working Memory Abilities Influence Non-Native Speech Comprehension in Remote Learning? KATELYN L. MCCLURE, *Kent State University*, PHILLIP HAMRICK, *Kent State University*, CHRISTOPHER A. WAS, *Kent State University* — Recent work suggests that non-native accented speech (NNAS) seems to reduce recall and increase language anxiety in online educational settings, likely due to increases in cognitive load (McClure & Chen, forthcoming). This study examined whether working memory abilities moderate or offset these NNAS effects on cognitive load. Participants were exposed to either a native American English-speaking instructor or a Mandarin Chinese-accented English-speaking instructor while watching lecture videos. Participants were asked recall questions, completed a language anxiety scale (Kimura, 2008), and completed two working memory tasks. We predicted that individual differences in working memory would (a) moderate the relationship between NNAS and memory recall and (b) not affect the relationship between NNAS and language anxiety. Preliminary analyses of these data were largely consistent with these predictions. These findings suggest that NNAS increases cognitive processing demands, and individual differences in working memory may offset some of their effects in online learning environments.

Email: Katelyn McClure, kmcclu17@kent.edu

7:30-9:00 PM (1116)

Revisiting Peak Shift: How Does Discrimination Difficulty Affect Generalization Strategies?

JESSICA C. LEE, *The University of Sydney*, PETER LOVIBOND, *University of New South Wales*, TAMARA CAHYADI, *University of New South Wales*, RENÉ SCHLEGELMILCH, *University of Bremen* — After learning about one stimulus that leads to an outcome (S+) and another stimulus that leads to no outcome (S-), the resulting generalization gradient often peaks not at the S+, but at a novel stimulus that is shifted away from the S-. This canonical “peak shift” effect has been found to increase with more difficult discriminations (more similar S+ and S-), but the evidence is largely confined to non-human animal studies. Here, we show that in contrast to animals, humans display more peak shift with easier discriminations. Using a hierarchical mixture model, we characterize the effects of discrimination difficulty on relational- and similarity based responding, and for the first time, extend this idea to explain peak shift in stimulus identification. We conclude that peak shift in animals and humans is driven by different mechanisms.

Email: Jessica Lee, jessica.c.lee@sydney.edu.au

7:30-9:00 PM (1117)

That's Classified Information: Investigating the Influence of Spatial Proximity on MVPA Classification of Targets and Lures in an

Associative Memory Task. ALEXA BECKER, *The Pennsylvania State University*, NANCY A. DENNIS, *The Pennsylvania State University*, AMY OVERMAN, *Xavier University* — The current study examined the effect of configural placement on associative memory processing. Specifically, to-be-remembered (unrelated) object pairs were arranged in either a proximal or distal configuration at encoding with instructions to remember the object pair for a later memory test. Retrieval consisted of intact pairs (targets) and rearranged pairs (lures) within each condition. Past research has demonstrated a behavioral discriminability benefit for logically oriented or interacting stimuli relative to spatially distal or non-interacting stimuli. The current analysis focused on understanding the neural basis of that benefit, specifically the neural discriminability between targets and lures. Using MVPA, we found that a trained classifier could reliably distinguish between targets and lures in the proximal, but not distal, condition

within the intraparietal sulcus and lateral occipital cortex, yet not within any medial temporal lobe region. Results are discussed with respect to unitization and associative processing.

Email: Alexa Becker, agb5621@psu.edu

7:30-9:00 PM (1118)

Cued Recall Is Not More Than a Combination of Recognition and Recall Unless You Use Images.

HATICE DEDETAS SATIR , *University of Mannheim*, EZGI MELISA YUKSEL, *University of Wisconsin-Madison*, ASLI KILIC ÖZHAN, *Middle East Technical University* — Item properties affect word memorability differently in various tasks. In this study, we examined the effect of combined item properties: word imageability, word frequency, and image use on associative memory in a cued-recall paradigm. Participants learned lists of word (Study 1-3) and image pairs (Study 4) with different combinations of item properties, and they were subjected to a cued-recall test. The findings of the first three experiments demonstrated that performance is enhanced when words with high imageability and low frequency are used as cues and words with high imageability and high frequency are used as targets. However, no additional benefit was observed from the interaction between cue and target properties. Notably, the imageability and frequency of words only benefited cued recall to the extent that they were well recognized or recalled. In contrast, our fourth experiment illustrated that using images as cues negated the influence of target word properties on recall effectiveness. These results suggest that while word properties influence cue recognition and target recall tasks individually, images can uniformly enhance associative memory.

7:30-9:00 PM (1119)

Exploring Renewal of Choice Behavior Through Linear Mixed Models.

LIVIA SANCHEZ, *Universidad Nacional Autónoma de México* — Four experiments with rats assessed the effect of the acquisition's reinforcement rate on the renewal effect in a choice procedure. All experiments used a reinforcement schedule that distributed reinforcements probabilistically between two response options. During the acquisition phase, the percentage of reinforcers delivered to each response differed between groups. In the extinction phase, we extinguished one of the responses and reinforced the alternative response under a VI 240 s

schedule. Afterward, subjects were exposed to acquisition and extinction contexts in the test sessions while extinction conditions were maintained. The experiments showed higher renewal with higher acquisition reinforcement rates. However, this effect diminished when the reinforcement rate decreased during the last sessions of the acquisition phase. We used linear mixed models to analyze data and discussed their advantages. In addition, findings are discussed under the most recent relapse theories and their practical implications.

Email: Livia Sanchez, livia@unam.mx

7:30-9:00 PM (1120)

Exposure to Non-Caloric Sweet Taste—Exploring Possible Underlying Mechanisms.

MARTA GIL, *University of Granada*, GEOFFREY HALL, *University of York*, ISABEL DE BRUGADA, *University of Granada* — Studies conducted in our laboratory have demonstrated that exposure to a sweet taste, both with and without post-oral consequences, can alter subsequent learning when this substance serves as the unconditioned stimulus (US). The predominant (but not only) explanation for this US preexposure effect involves blocking mechanisms based on context-calories or taste-calories associations. However, experimental outcomes vary depending on the motivational state of the animals. We propose that (due to effects observed using non-caloric substances) different mechanisms might operate during preexposure to non-nutritive sweet tastes. This work explores two alternative explanations for the US preexposure effect under these circumstances. Specifically, we examine evidence suggesting that extensive exposure to a non-nutritive sweet taste results in habituation of its sensory (sweet taste) properties. Additionally, we discuss the potential implications of this research for understanding the detrimental effects of overconsuming artificial sweeteners in our current “obesogenic environment.” Research funded by PID2022-136219NB-I00 (MINECO/FEDER).

Email: Marta Gil, martagil@ugr.es

7:30-9:00 PM (1121)

The Effects of Drawing on Episodic Associative Recall.

JAMIE MURRAY, *University of Glasgow* — Learning new information requires us to form novel associations between previously unrelated concepts and this can be aided by adopting efficient mnemonic

strategies at encoding. Studies have demonstrated that drawing is a reliable encoding strategy for enhancing memory for individual items but the benefit of drawing for novel associations remains unclear. Here, we present two experiments that compare drawing to alternative encoding techniques such as writing (Experiment 1) and mental imagery (Experiment 2) for encoding novel word pairs. Our results suggest that although drawing enhances associative recall compared to writing, drawing does not result in any overall significant benefit compared to imagining. Critically, our data also suggests that the way in which unrelated word pairs are drawn can influence the overall benefit to memory recall. Our data extends the benefits of drawing to novel associative information and importantly, suggests that the way in which multi-component stimuli are encoded via drawing is crucial for learning.

Email: Jamie Murray, jamie.murray@glasgow.ac.uk

7:30-9:00 PM (1122)

Independent Effects of Valence and Memorability on Visual Statistical Learning.

MEITAL FRIEDMAN-OSKAR, *University of Haifa*,
TOMER SAHAR, *The Open University of Israel*,
HADAS OKON-SINGER, *University of Haifa*, TAL
MAKOVSKI, *The Open University of Israel* — Previous research showed that negative valence images benefit memory and visual statistical learning (VSL) tasks. Recent studies stressed another factor that strongly drives memory performance: image memorability, an inherent property regarding its likelihood to be remembered across observers. We examined the influence of image memorability and emotional valence on VSL and whether memorability explains the benefit of negative valence in VSL tasks. In three VSL experiments, participants viewed streams of repeating triplets of images with varying emotional valence and memorability scores. We found that memorability significantly influenced VSL performance, with high-memorability images enhancing VSL compared to low-memorability images. The results replicated the negative valence benefit, showing better VSL for negative valence images, but only under low-memorability conditions. This demonstrates that memorability plays an important role in VSL but cannot fully account for the benefit seen with negative emotion in VSL tasks. Our findings support the beneficial impact of negative valence on VSL and highlight the importance of considering

memorability when testing the effect of emotional valence on learning and memory.

Email: Meital Friedman-Oskar, meitalfrid45@gmail.com

7:30-9:00 PM (1123)

Exploring Interpersonal Dynamics Underpinning

Socially Induced Nocebo Effects. WINSTON TAN,

The University of Sydney, KIRSTEN BARNES,

University of New South Wales, BEN COLAGIURI, *The University of Sydney* — Socially induced nocebo effects

are a phenomenon in which seeing someone experience adverse outcomes (e.g., medication side effects) elicits similar outcomes for the observer. Though individual characteristics like model and observer gender appear to influence this transmission, it is unclear whether interpersonal dynamics between the model and observer have modulatory effects. The present study explored whether social exclusion influences the experience of socially induced nocebo effects. Participants were either included or excluded by two other participants (one of whom was a confederate) during a game called Cyberball. Half of the participants then observed the confederate report nausea-related symptoms from a virtual reality experience. Those who observed the confederate reported significantly greater nausea from their own virtual reality experience. Interestingly, social relationship (i.e., inclusion/exclusion) only had an effect in participants similar in age to the confederate. These outcomes demonstrate that, even with strained model-observer interpersonal dynamics, social learning can still elicit the nocebo effect, though this might be influenced by the characteristics of the model and observer.

Email: Winston Tan, winston.tan@sydney.edu.au

7:30-9:00 PM (1124)

Internal Representation Prioritizes Abstract Over Item-Specific Information During

Statistical Learning. MEI ZHOU, *The University of Hong Kong*, SHELLEY XIULI TONG, *The University of Hong Kong* — Statistical learning optimizes memory by abstracting relations among specific items. However, the precise mechanisms governing memory representations of abstract and item-specific information remain unclear. Thus, this study developed a novel association-representation paradigm to expose participants to picture-pseudocharacter pairs, with semantic categories associated with target radicals (i.e., abstract information) at high, moderate, and low probability levels, and specific meanings associated with control radicals (i.e., item-specific information). Generalized linear mixed model analysis revealed that working memory enhanced the representation of abstract over item-specific

information for high, but not moderate and low, probability associations when an item-specific encoding strategy was used. This effect decreased when participants used an abstract encoding strategy, indicating that all probability levels prioritized abstract information. In a subsequent recognition test, participants preferred distractors with abstract information, especially for low probability items. These findings suggest that a flexible memory prioritization system underpins statistical learning and operates differently across probabilistic contexts.

Email: Mei Zhou, zhoumei@connect.hku.hk

7:30-9:00 PM (1125)

Putting It into Context: Semantic Knowledge Influences Statistical Learning in Visual Search.

LAURA S. LI, *Queen's University*, HANNAH LUM SMITH, *Queen's University*, KAROLINA J. KRZYŚ,

Queen's University, CARRICK C. WILLIAMS,

California State University, San Marcos, MONICA S.

CASTELHANO, *Queen's University* — Statistical

learning can increase learning efficiency, but the influence of prior knowledge on this effect remains unclear. Across two experiments, we had participants search for 24 target object categories in visual arrays of four objects across 15 blocks. In Experiment 1, the same object image was used for each category, while in Experiment 2, a different image was shown in each block for each category. Targets appeared in either high or low probability locations (80% or 20% of trials, respectively). Of theoretical interest, targets were placed in either semantically consistent (e.g., boots in the lower quadrants) or inconsistent locations (e.g., boots in the upper quadrants). In both experiments, we found a significant interaction, where participants responded faster for objects in semantically consistent than inconsistent locations. This effect was greater for Experiment 1 but remained significant in Experiment 2. Further analysis showed that there was no difference in the learning rate, but the resultant learned associations were stronger for consistent than inconsistent locations. We conclude that semantic knowledge significantly influences performance, even without context.

Email: Laura Li, 20s1101@queensu.ca

7:30-9:00 PM (1126)

Investigating the Effects of Captioning on Time-Compressed Video Lecture Learning. ODIN

FISHER-SKAU, *University of Waterloo*, GUY LACROIX, *Carleton University*, MOHAMMED ASWAD, *Carleton University*, VERONICA BODEA, *Carleton University*, MADDY EMOND, *Carleton University*, EMILY R. SCHWARTZ, *Carleton University* — Video lectures are now a common way for universities to deliver course content (Pokhrel & Chhetri, 2021). Consequently, students have begun taking advantage of video acceleration (i.e., time compression) and captioning features included in most media players (Murphy et al., 2022). While faster playback speeds have been shown to eventually result in decreased learning (Cheng et al., 2020), the effects of captioning for video lectures, particularly when time-compressed, are unclear. Thus, two experiments (one online and one in-person) were conducted to examine the influences of captioning and playback speed on learning from video lectures. Participants were assigned to watch two video lectures at an assigned speed ranging from 1.0x to 2.5x, with one video including captioning. After each video, participants completed a quiz that tested their memory for its contents. Higher playback speeds resulted in worse quiz scores, while captioning resulted in similar or improved quiz scores. The results may have been specific to one video lecture, however. These findings may challenge the assumptions of the cognitive theory of multimedia learning's framework (Mayer, 2005) and serve to inform students' decision-making surrounding online learning.

Email: Odin Fisher-Skau, o3fisher@uwaterloo.ca

7:30-9:00 PM (1127)

Knowledge or Knowledge+? A Comparison of Predictive Models of Students' Knowledge Acquisition.

MICAH WATANABE, *Arizona State University*, KATERINA CHRISTHILF, *Arizona State University*, MEGAN IMUNDO, *Arizona State University*, TRACY ARNER, *Arizona State University*, DANIELLE McNAMARA, *Arizona State University* — Students' prior knowledge of a domain predicts their knowledge acquisition within that domain (McCarthy & McNamara, 2021). However, past research also suggests that students' ability to leverage prior knowledge, for example, by using comprehension strategies, affects their learning (Kaufman et al., 1985). In educational settings, grades are typically the summative evaluation of students' knowledge acquisition. Grades reflect their ability to both recall the acquired knowledge (e.g., quizzes) and use the knowledge in novel problems (e.g., essay writing). The current study tests two models of

knowledge acquisition in a college classroom setting. Undergraduates in Psychology 101 courses (N=491) took a battery of psychology knowledge and comprehension measures, and their final grades were collected after the semester. The first model predicted course grades from students' latent topic and general knowledge. The second model predicted course grades from students' latent topic and general knowledge, mediated by their comprehension skill. There was no difference in model performance, suggesting that students' prior knowledge is the primary predictor of students' ability to acquire and use new knowledge in applied settings.

Email: Micah Watanabe, mwatana5@asu.edu

7:30-9:00 PM (1128)

Relationship Between Lecture-Related and Unrelated Self-Generated Thoughts and Media Multitasking in University Lectures.

TAISUKE MORITA, *Tokyo University of Science* — This study explored the relationship between self-generated thoughts and media multitasking experienced by students during real-world university lectures. We asked 334 university students about their experiences with self-generated thoughts and media multitasking during the most recent lecture they attended at their university; specifically, we inquired about the extent to which they experienced lecture-unrelated thoughts, lecture-related elaborative thoughts, and lecture-related metacognitive monitoring. Correlational analysis revealed a significant positive correlation between the degree of media multitasking and the extent to which they experienced lecture-unrelated thoughts. Conversely, a significant negative correlation was found between the degree of media multitasking and the extent to which they experienced lecture-related metacognitive monitoring. Based on these results and findings from previous studies, the mechanisms underlying disengagement from the information currently being presented in university lectures, leading to self-generated thoughts, are discussed.

Email: Taisuke Morita, tmorita@rs.tus.ac.jp

7:30-9:00 PM (1129)

Retrieval Practice Improves Final Exam

Performance Among a Sample of Diverse College Students.

KENNETH BARIDEAUX, JR., *University of South Carolina Upstate* — Decades of research have indicated that retrieval practice, or the act of recalling



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previously studied information, enhances long-term retention. While meta-analyses of this research have demonstrated benefits of retrieval practice in the classroom, many have relied on re-reading as the comparison group, and these studies typically involve western/mostly white, educated, industrialized, rich, democratic (WEIRD) samples, both of which raise generalizability concerns. In this study, the aim was to address these issues by examining the impact of retrieval practice on a diverse sample of students enrolled in a Learning and Memory course, representing various racial and generational backgrounds. Participants engaged in either retrieval practice or a brief overview session before a non-cumulative final exam. The results indicated that students who participated in retrieval practice scored significantly higher on the final exam compared to those who received a brief overview. Moreover, the benefits of retrieval practice were found for both tested items as well as non-tested applied items. These results demonstrate that retrieval practice can have classroom benefits, especially among a non-WEIRD sample.

Email: Kenneth Barideaux, kbaridea@uscupstate.edu

7:30-9:00 PM (1130)

Same, Different, and Mixed Comparisons in

Inductive Learning. CASSANDRA OBERHAUSER, *New Mexico State University*, DOMINIC SIMON, *New Mexico State University* — Influenced by Kornell & Bjork (2008) and Kang & Pashler (2011, Experiment 2) on inductive learning of painting styles, we compared three conditions ($N=38$ each) in which triads of paintings were presented in three ways: Same (all three by one artist), Different (all three by different artists), and Mixed (two by one artist and one by another). Presentation of study round paintings was followed by a 30s distraction task. Then testing involved old/new artist judgments on each of 96 novel paintings, half old artists, half new, randomly presented one at a time. Overall learning performance varied substantially within groups, so performance was compared only for those who showed better than chance test performance. More participants showed learning in the Different than the Same and Mixed conditions, however this effect did not reach significance ($p=.051$, $B10 = .049$). Nor did number of correct trials differ between groups. Possible explanations are discussed.

Email: Cassandra Oberhauser, coberh@nmsu.edu

7:30-9:00 PM (1131)

Teachers' and Students' Perceptions, Utilization, and Advocacy of students' Learning Strategies.

NAYANTARA KURPAD, *St. Mary's College of Maryland*, NADIA LONNBERG, *St. Mary's College of Maryland*, KYREN LOPEZ, *St. Mary's College of Maryland*, SADIE GRZYMALSKI, *St. Mary's College of Maryland* — Recent research indicates that learning strategies positively impact student performance (Morehead et al., 2016). Studies have examined teachers' understanding and differentiation of these strategies (Surma et al., 2022; Morehead et al., 2016; Granström et al., 2023), emphasizing the need for educator education. Novice teachers especially benefit from understanding learning strategy misconceptions (Surma et al., 2022). This study aims to explore perceptions, utility, and advocacy of learning strategies. Teachers and students from Prolific Academic were surveyed regarding strategy use and advocacy. Additionally, the survey was shared with college students to understand their perceptions. The study focuses on whether students adopt advocated strategies, hypothesizing that they will if teachers promote them. Further, we can correlate the findings between students in a college setting and those on Prolific Academic. By examining strategy utilization and advocacy in the classroom and academic setting, this research extends previous findings.

Email: Nayantara Kurpad, nkurpad@smcm.edu

7:30-9:00 PM (1132)

The Promise and Peril of AI in Education: A Survey of College Students' Use and Attitudes.

OLIVIA WEBB, *Radford University*, OLIVE NICHOLS, *Radford University*, BENJAMIN BIERMEIER-HANSON, *Radford University*, KATHLEEN ARNOLD, *Radford University* — With the emergence of artificial intelligence (AI), educators are becoming increasingly concerned about inappropriate student use of AI. At the same time, there is a growing excitement about how AI may transform education for the better. Cognitive psychology is in a unique position to help determine how, if at all, AI can enhance or detract from student learning based on how the use of AI may impact cognitive processes. As a first step into this investigation, we explored how current undergraduate students are already using AI and their attitudes towards this technology in education. We created a survey and conducted an exploratory factor analysis to measure student AI use and attitudes, and found three distinct

factors: likelihood of using AI in education, belief that AI use enhances learning, and belief that AI use in education is ethical. We then collected a second sample for a confirmatory factor analysis to establish the reliability of these factors. This survey can provide insight into how students are naturally using AI, and whether this use is likely to enhance or hurt learning.

Email: Olivia Webb, otwebb@radford.edu

7:30-9:00 PM (1133)

The Role of Retrieval Practice in Peer

Instruction. ARIA STURMER, *Teachers College, Columbia University*, MICHELLE E. COVERDALE, *Purdue University*, JIAAN SHANG, *Purdue University*, JEFFREY D. KARPICKE, *Purdue University* — Peer instruction is a pedagogical method in which students individually answer a conceptual question, discuss their reasoning with a partner, then re-answer the question before receiving an explanation of the correct answer. Although peer instruction has been shown to enhance student learning relative to traditional lecture-only instruction, research has been limited to in-class studies and there has been no systematic investigation of the importance of the method's individual components. The present research replicated the peer-instruction effect in a controlled laboratory setting and investigated the relative contributions of the retrieval practice and peer discussion components. Subjects were assigned to one of three conditions in which they watched a lecture-style video then, either followed the peer instruction method to answer practice questions, answered questions with no peer discussion (retrieval practice), or engaged in no additional learning activity (video-only control). On a delayed multiple-choice test, both the peer instruction and retrieval practice groups outperformed the control; however, they did not differ from one another. These results emphasize the importance of retrieval practice in peer instruction.

Email: Aria Sturmer, as7377@tc.columbia.edu

7:30-9:00 PM (1134)

Understanding the Context of Cramming: Student Cost Perceptions, Study Strategies, and Exam Performance.

SIYU LUO, *Vanderbilt University*, CRISTINA ZEPEDA, *Vanderbilt University* — Although many laboratory studies have shown that cramming is less effective than spaced practice, relatively few studies answer the question: Why do

students cram and how is that related to their studying and performance? Building on the previous research, this study examined a set of contextual reasons: their perceived costs of studying, the busyness of their week, and the types of study strategies they employed. Across two studies, 50 and ~375 undergraduates enrolled in psychology courses responded to a survey in which they rated the extent they crammed for a specific exam, their perceived costs of studying, and how busy they were the week of their exam. They also described their study strategies, and exam scores were collected. In Study 1, students responded to this survey for three consecutive, non-cumulative exams, and in Study 2 students responded to the survey after their final exam. Study 1 revealed that the busyness of their week and their outside effort costs were positively related to cramming. Interestingly, there was no relationship between cramming and the types of study strategies they used or how well they performed on the exam. Results from Study 2 will be presented and implications will be discussed.

Email: Siyu Luo, siyu.luo@Vanderbilt.Edu

7:30-9:00 PM (1135)

Benefits of Supportive and Exuberant Feedback on Essay Writing.

YASMIN CHOWDHURY, *University of California, Santa Cruz*, JEAN E. FOX TREE, *University of California, Santa Cruz* — The type of feedback students receive on academic assignments can impact student performance and feelings. Through an experiment on Zoom, participants were given feedback on an essay. The video feedback was either supportive or critical and was given either with an exuberant or monotone voice. Participants then wrote a second essay. We assessed whether the type of feedback and the tone used to give the feedback affected writing performance. We also assessed feelings of social presence, feelings toward the feedback, and feelings of self-efficacy. In preliminary results, participants' writing improved the most when they were given exuberant feedback. In addition, supportive and exuberant feedback created higher feelings of social presence. Supportive feedback also raised feelings of self-efficacy. Finally, people felt positively about the feedback when they were given supportive feedback.

Email: Yasmin Chowdhury, ychowdhu@ucsc.edu

7:30-9:00 PM (1136)

Breaking the IOED: Effects of Generating Explanations on Metacognitive Monitoring and Control. INEZ ZUNG, *University of California, San Diego*, JACQUELYN Y. TSUI, *University of California, San Diego*, EMMA H. GELLER, *University of California, San Diego*, CAREN M. WALKER, *University of California, San Diego*, STEVEN C. PAN, *National University of Singapore* — Generating explanations has been shown to reduce overconfident judgments of understanding (e.g., illusion of explanatory depth; Rozenblit & Keil, 2002). The present study compared the effect of reading and generating explanations on ratings of understanding and on future study plans for complex materials. Participants rated their understanding of 10 common devices prior to the Read/Generate manipulation (T1), immediately after the manipulation (T2), and after making a study plan (indicating how they would allocate and sequence 20 minutes of total study time) and studying each expert explanation for 2 min (T3). Exp 1 used sliders while Exp 2 used numeric responses for the ratings of understanding, but results were largely consistent. Ratings did not differ at T1, but the Generate group's ratings dropped significantly at T2 while the Read group's ratings increased. All ratings increased from T2 to T3, but the Generate group's were still lower than the Read group's. Gamma correlations between the ratings and time allocation show that participants generally allocated more time to devices they understood less. Gammas between ratings and proposed study order show two broad strategies: studying highly rated devices early or late.

Email: Inez Zung, izung@ucsd.edu

7:30-9:00 PM (1137)

Categorizing Online Learners' Moment-to-Moment Attentional States and Assessing Their Effects on Learning. PRASANTH CHANDRAN, *Kansas State University*, BRIAN HOWATT, *Tarleton State University*, YIFENG HUANG, *Stony Brook University*, JEREMY MUNSELL, *Purdue University*, BRAYDEN WALLACE, *Kansas State University*, LINDSEY WILSON, *Kansas State University*, ALLY DINKEL, *Kansas State University*, SIDNEY D'MELLO, *University of Colorado, Boulder*, MINH HOAI, *Stony Brook University*, SANJAY REBELLO, *Purdue University*, LESTER LOSCHKY, *Kansas State*

University — Online learning is here to stay. However, its Achilles' heel is instructors' inability to estimate learners' attentiveness. Here, in a lab study, we categorized N=101 online physics learners' attentional/cognitive states into a 2x2 matrix of 1) looking at the materials versus away and 2) thinking about the materials versus not (i.e., on- vs. off-task)(D'Mello, 2016). We used eye-tracking, a webcam, an egocentric camera, mind-wandering probes, and cued retrospective recall to place learners in the 2x2 matrix of attentional/cognitive states, with 2 seconds precision. Pre- and post-tests measured learning. Learners primarily spent time looking at the materials and thinking about them. However, learners with greater prior knowledge spent more time looking away from the materials while off-task, which strongly negatively predicted their learning. In the first study of its kind, we could categorize each learner's behavior into the 2x2 matrix of attentional/cognitive states, with 2-second precision, for an entire 20-minute learning module. Furthermore, we correlated that with learning. We are using this rich ground truth to train machine-learning algorithms.

Email: Prasanth Chandran, prasanhp@ksu.edu

7:30-9:00 PM (1138)

Cognitive Exercise: A Way to Boost Exam Performance? MARIBETH TREGO, *University of California, Riverside*, ANNIE S. DITTA, *University of California, Riverside* — Research conducted in real-world classes suggests that learning from lectures can be improved through delivery of a pre-lecture cognitive exercise intervention that primes students' learning-related behaviors (e.g., listening to lecture, writing notes) and related cognitive skills (e.g., sustained attention, attention switching; White & Highfill, 2019, White et al., 2022). However, in-lab experiments with immediate tests have failed to replicate this result. Perhaps this effect only emerges on delayed tests, as in a real-world class. Thus, the present study sought to replicate these findings in a laboratory setting with both immediate and delayed tests. In a within-subjects design, participants were asked to: a) complete a visual task-switching cancellation task with auditory instructions (cognitive exercise intervention) before watching a history lecture or b) do nothing before watching a history lecture. It was hypothesized that the intervention would not yield a significant difference on the immediate test, but performance would be better on a delayed test when the cognitive exercise intervention was deployed.

Preliminary results reveal no significant difference on both the immediate and delayed tests between the cognitive exercise and control conditions.

Email: Maribeth Trego, mmcco035@ucr.edu

7:30-9:00 PM (1139)

Comparison of the Effects of Pedagogical Agents in Math and Art Lessons. REGANNE M. MILLER, *Georgia Institute of Technology*, RICHARD CATRAMBONE, *Georgia Institute of Technology* —

Pedagogical agents (PAs) are virtual, anthropomorphic characters integrated into digital educational environments to enhance learning outcomes. Although research shows that PAs generally improve learning, meta-analytical findings have suggested that the magnitude of this effect varies across learning domains. A prior study by our research group indirectly examined this discrepancy but lacked a no-PA condition. The present, ongoing study extends this previous work by employing a 2 (PA vs. no-PA) by 2 (math lesson vs. art lesson) experimental design. The dependent variables are participants' learning outcomes, reported motivation levels, and perceived workload. Our previous findings indicated that in PA-enhanced environments, participants achieve greater learning in math lessons compared to art lessons, despite also experiencing decreased motivation and increased workload. We hypothesize that the present study will reveal similar effects. By including a no-PA condition and measuring motivation and workload in addition to learning, this study aims to provide a more comprehensive view of student experiences with PAs.

Email: Reganne Miller, rmiller349@gatech.edu

7:30-9:00 PM (1140)

Impact of Filler Task Characteristics on Retrieval Performance. AIMEE N. SCOTT, *Western Kentucky University*, SARAH MYERS, *Western Kentucky University*, PATRICK WALLACE, *Western Kentucky University*, JENNI L. REDIFER, *Western Kentucky University* — Filler tasks such as math problems, videos, or working memory tasks are often used in memory research to prevent rehearsal. However, there has been little investigation into whether these filler tasks impact primary task performance. We investigated whether high math anxiety influenced retrieval performance following a math filler, compared to a Stroop filler. Participants ($n=69$) read brief science passages, completing a filler task and retrieval test after

each. Performance did not differ significantly as a function of filler task for individuals with high, $t(32)=0.93$, $p=.36$, 95% CI [-.185, .512], or low, $t(37)=0.54$, $p=.59$, 95% CI [-.234, .411] math anxiety. In fact, in some conditions, individuals performed worse following the Stroop filler task, suggesting that some commonly-used filler tasks may not equally prevent rehearsal. This suggests a need for further investigation into how filler tasks impact primary task performance.

Email: Aimee Scott, aimee.scott834@topper.wku.edu

7:30-9:00 PM (1141)

Comparing Forgetting Rates Between Item and Relational Memories. RHIANNON N. SORIANO SMITH, *University of Nevada, Las Vegas*, COLLEEN M. PARKS, *University of Nevada, Las Vegas* —

Recent theories of forgetting posit that relational memories are more prone to be forgotten due to decay, while item memories are more likely to be forgotten due to interference. Additionally, Wickelgren's (1974) model states that both interference and decay contribute to forgetting, independently of one another. The current study examined whether item and relational memories are forgotten due to different forgetting mechanisms and whether they are forgotten at different rates over time. Participants were tested using the Mnemonic Similarity Task (MST) over five days. Preliminary results found that item recognition shows more forgetting due to interference while mnemonic discrimination shows more forgetting due to decay. The findings can help advance and support theoretical notions surrounding forgetting.

Email: Rhiannon Soriano Smith, sorianos@unlv.nevada.edu

7:30-9:00 PM (1142)

Examining Individuals' Memory and Judgment of Learning after Group Testing, Individual Testing, and Restudying. YUNFENG WEI, *Montana State University*, MICHELLE MEADE, *Montana State University*, NICHOLAS SODERSTROM, *Montana State University* —

This study examined 1) if individuals can initiate testing sessions by generating quiz questions, 2) if group testing and individual testing are better than restudying after a long delay, and 3) how different studying strategies affect judgment of learning (JOL). Participants studied prose passages and were asked to generate questions and quiz themselves on the passages, work with a partner to generate questions and quiz each other, or restudy the

passages. Then, they completed an individual recall test after 2 days. We found that individuals could not initiate the testing session themselves because there was no significant difference in their memory performance. However, if we split data into higher and lower performers based on the number of questions they generated, group testing is better than restudying for higher performers, but restudying is better than individual testing for lower performers. Moreover, individuals can predict their performance after testing, and they can also predict their group partner's performance after group testing. Restudying, however, inflates their JOLs. This study suggests that students do not always self-initiate quizzing, but when they do, group testing may be a superior studying option for them.

Email: Yunfeng Wei, yunfeng.wei@montana.edu

7:30-9:00 PM (1143)

A Retrieved Context Model of Serial Recall and

Free Recall. LYNN LOHNAS, *Syracuse University* — It is important to characterize how participants use endogenous cues to guide memory retrieval. Across recall tests, different theories have emerged. When participants study a list of items then recall items in any order (free recall), retrieved context models have emerged as a leading explanation (Lohnas & Healey, 2021). However, when participants must recall the studied list of items in order (serial recall), theories favor positional representations (e.g., Henson, 1998; Hurlstone et al., 2014). Further, differences in assumptions of retrieved context models across recall tasks have posed challenges to this model class. Yet empirically free recall and serial recall share similarities (e.g., Bhatarah et al., 2008), and presumably recall tasks have shared mechanisms. I present a retrieved context model that can overcome some of these challenges, including effects of grouping in both recall tasks and first order errors in serial recall. The success of this model, with constrained differences across recall tasks, informs commonalities and differences between these two classic recall paradigms.

Email: Lynn Lohnas, ljlohnas@syr.edu

7:30-9:00 PM (1144)

Combining Clustering Recall with Self-Generated Cues: New Strategies to Enhance

Eyewitness Memory. RUI PAULO, *Birmingham City University*, BÁRBARA PINTO, *Universidade do Minho*,

DELFINA FERNANDES, *Universidade do Minho*, TELMA ALMEIDA, *ISPA-Instituto Universitário*, SAMUEL PINHEIRO, *ISPA-Instituto Universitário*, PEDRO B. ALBUQUERQUE, *Universidade do Minho* — Category clustering recall (CCR) and location clustering recall (LCR) enhance recall in comparison with other interviewing strategies used by the police. However, clustering recall requires the interviewer to propose cues (other-generated cues) that might not be compatible with the eyewitness or known to the police. We studied if CCR and LCR could instead use cues generated by the interviewee (self-generated cues) and still produce more information than a free recall. We applied a between-subjects design where 200 participants viewed a mock crime and 48 hours later provided an account using either a free recall, LCR (with self-generated or other-generated cues), or CCR (with self-generated or other-generated cues). We hypothesized that participants using clustering recall (CCR or LCR) will report more information with both cues (other-generated and self-generated) increasing correct recall in comparison with a free recall. A high (and similar) report accuracy is expected for all groups. This can support clustering recall as a valuable interviewing technique and provide new insight into whether self-generated cues can be used to broaden its applicability to a larger number of police investigations.

Email: Rui Paulo, ruimedpaulo@gmail.com

7:30-9:00 PM (1145)

fMRI Exploration of Mind Wandering and

Memory Consolidation. DEVAYANI JOSHI, *Drexel University*, AARON KUCYI, *Drexel University*, ALEXA TOMPARY, *Drexel University* — Mind-wandering—defined as self-generated, spontaneous thoughts that shift attention towards internal mental processes—is often associated with poor memory outcomes. However, its potential benefits after learning are less understood. Quiet rest following a learning task aids memory consolidation, which is the process of integrating new information into long-term memory. This environment is ideal for mind-wandering, which may involve spontaneous memory replay and contribute to memory consolidation. This study explores how mind-wandering during rest relates to neural signatures of systems-level consolidation and consequent memory outcomes. Sixteen participants (planned N=40) learned object-scene associations before undergoing 40 minutes of awake rest in an fMRI scanner. During rest, they reported if they



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were mind-wandering and described their spontaneous thoughts. Memory was tested immediately and after 24 hours. Preliminary analyses showed normal forgetting over 24 hours and a positive correlation between mind-wandering and memory performance. Further fMRI analysis aims to explore the neural dynamics involved in the interaction between mind-wandering and memory consolidation.

Email: Devayani Joshi, dj584@drexel.edu

7:30-9:00 PM (1146)

Hide your Phone When Studying! The Presence of a Cell Phone Hinders Memory, Though Differently than Traditional Divided Attention.

MORGAN EIBNER, *Towson University*, MARISSA SPEARS, *Towson University*, JARED J. MCGINLEY, *Towson University*, BLAIRE J. WEIDLER, *Towson University* — Research has shown that the presence of a cell phone can impair memory; however, it is unknown which memory mechanism(s) phones impair (encoding, retrieval, or both). Furthermore, researchers have claimed that cell phones are akin to divided attention. This study compared how traditional divided attention (DA) and the presence of a cell phone influence memory and whether this influence differs at encoding or retrieval. Participants completed two encoding-retrieval cycles, one under full attention (FA) and one with a distraction at either encoding or retrieval. Distractions involved either a present phone that received text messages or identifying features of auditorily presented words. Both the phone and traditional DA impaired memory (i.e., performance was better in the FA cycle); however, selectively traditional DA impaired memory more when present at encoding versus retrieval. Thus, both distractions influenced memory—but traditional DA produced more nuanced effects than a cell phone.

Email: Morgan Eibner, meibne1@students.towson.edu

7:30-9:00 PM (1147)

Interplay of Spatial and Temporal Bindings in Memory Search within Naturalistic Environments.

CHUANXIUYUE HE, *Rutgers University—New Brunswick*, ERIC ZENG, *Rutgers University—New Brunswick*, QIONG ZHANG, *Rutgers University* — Previous research has long recognized the important role of temporal attributes and spatial attributes in organizing memory, but less is known about the interplay between the two. This study examines how

individual differences in constructing spatial representations influence their reliance on temporal organization in an incidental free recall task. Fifty participants navigated a virtual marketplace to visit all 19 stores, therefore creating unique and idiosyncratic learning sequences. In a surprise free recall task, participants were asked to recall all the store names they could remember in any order. The recall order reveals reliance on both temporal and spatial information. Spatial representation was measured by the topological accuracy of maps constructed post-recall. Participants with a more accurate spatial representation showed stronger reliance on temporal organization. These findings highlight the critical role of spatial information and individual differences in memory search within naturalistic settings.

Email: Chuanxiuyue He, carol.he@rutgers.edu

7:30-9:00 PM (1148)

Process Interference Between Memory Encoding and Response Selection in a PRP-Like Dual-Task Paradigm.

SANDRA HENSEN, *RWTH Aachen University*, IRING KOCH, *RWTH Aachen University*, PATRICIA HIRSCH, *RWTH Aachen University* — Dual-tasks at the memory encoding stage have been shown to decrease memory accuracy for the studied information and impair concurrent task performance. Yet, which cognitive mechanisms are underlying this dual-task interference is still an unresolved question. In the present study we investigated the influence of a visual-manual concurrent task on the encoding process of auditory information in a PRP-like dual-task paradigm. Participants were asked to perform a free recall memory task and a spatial Stroop task in single or dual-task conditions at the encoding stage of the memory task. The stimulus-onset asynchrony (SOA) of both tasks was varied and a possible relationship between memory encoding processes and response selection processes in trials with a processing conflict (i.e., incongruent trials) in the concurrent task was analyzed on a trial-level. Results showed detrimental effects on recall performance and concurrent task performance in the dual-task condition compared to the single-task condition. Moreover, a short SOA as well as an increased processing conflict in the concurrent task lead to a decreased recall performance. Findings suggests that both tasks compete for simultaneous access to a shared limited capacity.

Email: Sandra Hensen, hensen@psych.rwth-aachen.de

7:30-9:00 PM (1149)

Relationships Between Young Adults' Self-Reported Encoding and Retrieval Strategies and CVLT Clustering Scores. BREND A KIRCHHOFF, *Saint Louis University*, SAMANTHA GOEWERT, *Saint Louis University*, MELISSA STONE, *Saint Louis University*, ALEXANDER WALTERS, *Saint Louis University*, BENJAMIN HERSTAM, *Saint Louis University* — Clustering scores from the California Verbal Learning Test (CVLT) are the most common assessment of self-initiated episodic memory strategies. However, the relationships between young adults' intentional use of encoding and retrieval strategies and their CVLT clustering scores have not been systematically explored. In this study, young adults completed Trials 1-5 of the CVLT-II and then gave retrospective encoding and retrieval strategy self-reports for Trials 1 and 5. Results demonstrated that use of a categorization strategy during encoding and letter imagery, concept imagery, and categorization strategies during retrieval was positively correlated with semantic clustering for Trial 1. Use of a categorization strategy during encoding and retrieval was positively correlated with semantic clustering for Trial 5. There were no significant positive correlations between self-reported encoding and retrieval strategy use and forward serial clustering for Trial 1. Use of a forward order strategy during encoding and forward order, rote repetition, and letter imagery strategies during retrieval was positively correlated with forward serial clustering for Trial 5.

Email: Brenda Kirchhoff, brenda.kirchhoff@health.slu.edu

7:30-9:00 PM (1150)

A Losing Battle: Novel Objects Do Not Always Compete Effectively for Attention. DEBORAH E. HANNULA, *University of Wisconsin-Milwaukee*, DANA SLABBEKOORN, *University of Wisconsin-Milwaukee*, JONATHON WHITLOCK, *University of Illinois Urbana-Champaign* — Novel objects can be powerful attractors of attention and are viewed preferentially when they are paired with familiar objects in the visual paired comparison task. However, studies also indicate that participants look disproportionately at studied associates of scene cues when the associates are presented with other familiar objects. The objective of the current investigation was to determine how novel objects and learned associates compete for attention. Participants studied scene-face pairs. During test trials,

studied scenes preceded the presentation of 3-face displays that included the associate, a novel face, and a face that had been studied with a different scene. Eye-tracking data was collected to investigate the competition between novel faces and associates in viewing patterns. Subsequently, participants attempted to identify both the associate and the novel face in each test display and rated their confidence. Time-course analyses indicated that viewing was directed disproportionately to associates, an effect that was evident shortly after display onset and particularly strong when data were back-sorted by accuracy and confidence. This result suggests that novel objects do not always compete effectively for attention.

Email: Deborah Hannula, hannula@uwm.edu

7:30-9:00 PM (1151)

Comparing Perceptual Interference with Pictures and Cue Depreciation with Words. MYA PARKER, *American University*, ZEHRA PEYNIRCIOGLU, *American University* — Perceptual interference (PI) refers to the later identification of initially more degraded than less degraded pictures (Bruner & Potter, 1964). Cue depreciation (CD) is a similar effect with words (Peynircioglu & Watkins, 1986), although, unlike PI, CD seems to be limited only to previously studied or special words. We explore this difference directly, using both between-participant and within-participant designs, while testing PI also in studied/special-picture conditions for the first time. With between-participant designs, CD and PI effects are largely replicated, although some interesting differences also occur. With within-participant designs, when both pictures and words are presented and tested together, these differences are diminished, with both effects tending to be influenced by each other with respect to the study/no study conditions. Results are discussed in terms of the possible effects of perceptual vs conceptual processing in PI and CD, respectively, and within the frameworks of the competition and mismatch hypotheses.

Email: Mya Parker, mp2893a@american.edu

7:30-9:00 PM (1152)

Larry Jacoby's (1944-2024) Greatest Hits. STEVE LINDSAY , *University of Victoria*, BARB CHALFONTE, *University of Massachusetts Amherst*, JANINE JENNINGS, *Wake Forest University*, MATTHEW G. RHODES, *Colorado State University*, CHAD ROGERS, *Union College*, JEFFREY P. TOTH,



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University of North Carolina Wilmington,
CHRISTOPHER N. WAHLHEIM, *University of North Carolina at Greensboro*, ANDREW YONELINAS, *University of California, at Davis* — This poster highlights and celebrates some of Larry Jacoby's many contributions to cognitive psychology. Larry advanced scientific understanding of the ways consciously controlled and automatic processes interact to give rise to subjective experiences such as recollecting, familiarity, and ease. He was influential both as a theoretician and as a methodologist. His process dissociation procedure, a method for obtaining separate estimates of concurrent influences of controlled and automatic processes, was a particularly ingenious and influential contribution. Larry was also a powerful mentor (as attested by his former students including the authors of this poster). Larry died in March of 2024 at 80 years of age, but his theoretical and methodological influences live on.

Email: Steve Lindsay, slindsay@uvic.ca

7:30-9:00 PM (1153)

Fino with Our Colleague, Mentor, and Friend: The Life and Legacy of Colleen M. Kelley (1953-2023). KERRI GOODWIN, *Towson University*, LILI SAHAKYAN, *University of Illinois Urbana-Champaign*, MATTHEW G. RHODES, *Colorado State University* — Celebrating the life and legacy of Colleen M. Kelley, we summarize her contributions to the field of memory and cognition, including her work on memory and the subjective experience of memory, including memory attributions, memory monitoring, and control over memory. We also provide an academic genealogy of Colleen's past and the legacy she created with her students, showcasing the ongoing and long-lasting impact she made in our professional and personal lives. We invite you to join us at this poster to celebrate her life with us.

Email: Kerri Goodwin, kgoodwin@towson.edu

7:30-9:00 PM (1154)

Oscillatory EEG Correlates of Orienting Episodic Retrieval Toward Memory Type and Specificity. ALLIYA PADIAK, *University of Missouri*, BRITTNEY BISHOP-CHRZANOWSKI, *University of Missouri*, ROMAN M. GUTIERREZ, *University of Missouri*, JEFFREY D. JOHNSON, *University of Missouri* — Successful episodic retrieval is thought to depend on cue-trace overlap, which can be due to the

quality of those components as well as how goal-directed states and cue processing are oriented. Here, we investigated the oscillatory EEG correlates of such retrieval orienting for both the type of memories sought and the specificity with which they had to be retrieved. Subjects (N=32) first encoded object pictures and names in the context of multiple tasks. A series of test blocks then differed according to the nature of the targeted memories: simple recognition, low-specificity orienting (pictures vs. words), and high-specificity orienting (type plus a specific task). Activity in the low gamma range differed with respect to orienting toward stimulus type, whereas decreases in alpha and beta were correlated with increased specificity. These findings provide novel oscillatory evidence of retrieval orienting and emphasize multiple, distinct ways in which cognitive control strategies can support episodic retrieval.

Email: Alliya Padiak, ahghp@missouri.edu

7:30-9:00 PM (1155)

Predicting the Accuracy of Spoken Recognition Memory Judgments: Prosody, Confidence, and Response Time. ARMIN BARSEGYAN, *California State University, Northridge*, JUSTIN KANTNER, *California State University, Northridge*, GIZEM FILIZ, *Washington University in St. Louis*, IAN G. DOBBINS, *Washington University in St. Louis* — Goupil and Aucouturier (2021) demonstrated that acoustic characteristics of spoken perceptual discrimination decisions predict their confidence and accuracy, suggesting that such prosodic signatures may serve the same role in the assessment of other cognitive judgments. Following this research, we collected spoken memory judgments in a 2AFC and 4AFC face recognition task. Despite a generic response format in which participants said only "Number One/Two/Three/Four" to indicate which face they had seen before, correct judgments were distinguished from incorrect judgments as higher-pitched, louder, and more rapidly spoken. Volume and speech rate were especially strong predictors, and each accounted for unique variance in accuracy. In a second experiment, we sought to replicate the above findings in a distinct sample. In addition, we examined two factors also likely to predict accuracy in this task: confidence (from explicit ratings) and reaction time (elapsed time before vocal response onset). The predictive power of acoustic speech signatures in tandem with metacognitive confidence and RT will be discussed, as will the application of these

findings to real-word scenarios such as everyday conversation and eyewitness memory.

Email: Armine Barsegyan, armine.barsegyan.643@my.csun.edu

7:30-9:00 PM (1156)

Recognition Memory: Does the Question Matter?

SOPHIA P. FABRIZIO, *Binghamton University, SUNY*, DAVID PEITA, *Binghamton University, SUNY*, ALEXUS S. LONGO, *Binghamton University, SUNY*, RACHEL NELSON, *Binghamton University, SUNY*, CRYSTAL COLLINS, *Binghamton University, SUNY*, DEANNE L. WESTERMAN, *Binghamton University, SUNY* — In recognition memory experiments, participants are typically asked, “Is this old?” and respond “yes” to classify a stimulus as previously experienced. A recent study found that if the question is instead framed as, “Is this new?” (with “yes” indicating novelty), recognition memory for words was substantially altered (Brainerd et al., 2022). Specifically, the “Is this new?” framing reduced accuracy, mainly by inflating false alarm rates. The present study tested the generality of this effect by including images and words printed in distinctive fonts, as these stimuli should produce lower false alarm rates (i.e., the distinctiveness heuristic) and may be less impacted by the framing of the question. The results showed a distinctiveness heuristic and an image superiority effect, as expected. In addition, sensitivity decreased across all stimulus types under the “Is this new?” framing, suggesting that the effect of question type on recognition performance is robust and generalizes across different types of stimuli.

Email: Sophia Fabrizio, sfabriz2@binghamton.edu

7:30-9:00 PM (1157)

The Attentional Boost Effect and Levels of Processing. WINSTON GOH, *National University of Singapore*, NUR NAZURAH MOHAMAD NASIR, *National University of Singapore* — The attentional boost effect (ABE) is the enhanced encoding for items that are paired with targets than with distractors. The present study examined whether the ABE will be affected by levels of processing (LOP), given that previous work focused on perceptual properties, such as colour detection, when discriminating between targets and distractors. If the ABE is based on the enhancement of early stage processes, using a conceptual processing level may attenuate it. Participants studied abstract/concrete words followed by old/new recognition. They were assigned to one of three encoding

conditions: full attention, divided attention with a colour detection task (low LOP), or divided attention with a concreteness detection task (high LOP). Results show that LOP does not influence the ABE; the boost to targets relative to distractors was found in both low and high LOP conditions. These findings suggest that the ABE is not limited to perceptual processing during encoding.

Email: Winston Goh, psygohw@nus.edu.sg

7:30-9:00 PM (1158)

The Benefits of Underlining are a Combination of Perceptual and Motor Advantages. PEDRO B. ALBUQUERQUE, *Universidade do Minho*, ANDREIA RIBEIRO, *Universidade do Minho*, PEDRO F. S. RODRIGUES, *Portucalense University* — Underlining is a widely used study technique, but research on its efficacy has been scarce and somewhat inconsistent. This work aimed to explore the role of underlining in word recognition. In Experiment 1, participants were instructed to (1) underline and (2) read words silently and perform a recognition test. Results showed higher recognition for underlined words than those only read in silence. To determine if the perceptual cues (colourful-underlining) alone, without motor involvement of underlining, are sufficient to enhance memory, Experiment 2 was conducted. Participants (1) read silently underlined words (passive-underlining) and (2) words without underlining. The results showed higher recognition for previously underlined words than non-underlined words. Finally, in Experiment 3, the impact of motor movement on recognition was examined. Results demonstrated a recognition advantage for words that were only motor-underlined. Together, these results indicate that the benefits of underlining memory depend on perceptual and motor cues.

Email: Pedro Albuquerque, pedro.b.albuquerque@psi.uminho.pt

7:30-9:00 PM (1159)

The Impact of Immersive Environments on Memory Performance. ANJALI THAPAR, *Bryn Mawr College*, MARIAN TAN, *Bryn Mawr College*, OLIVIA TAYLOR, *Bryn Mawr College*, ALINE NORMOYLE — The traditional lab setting used in memory research does not reflect the complexities of the real-world environment in which we encode and remember information. Researchers have begun to use more immersive environments for studying memory performance. Virtual reality (VR) is one such



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environment that offers potential, but research in this area is limited. While some studies suggest that immersive environments enhance memory accuracy (Ventura et al., 2019), others highlight the potential for increased distractions which are generally associated with decreased memory performance (Craik, 2014). The present study assessed the impact of immersive environments (such as 3D-VR and 2D-Desktop gaming environment) versus a traditional environment (such as 2D static images) on memory performance, reaction time, and confidence ratings in a subsequent item-recognition memory test. We found a reliable impact of encoding condition on performance: immersive environments resulted in slower response times and improved memory accuracy for previously seen items. The results support the idea that more immersive environments enhance memory accuracy, highlighting the importance of realistic encoding settings in understanding memory processes.

Email: Anjali Thapar, athapar@brynmawr.edu

7:30-9:00 PM (1160)

The Survival Processing Effect in a Second Language: Influence of Linguistic Competence and Emotional Resonance. ANGEL FERNANDEZ, *Universidad de Salamanca*, BEATRIZ BERMÚDEZ-MARGARETTO, *Universidad de Salamanca*, MARÍA J. SÁNCHEZ, *Universidad de Salamanca* — The survival processing effect (SPE) refers to enhanced memory performance for survival-relevant information, indicating the adaptiveness of human memory. Whereas the SPE has been systematically replicated in the first language (L1), a recent study revealed no SPE in a second language (L2), arguably a consequence of reduced emotional activation in L2 and suggestive of the role of emotions in encoding and retrieving information. In this study, native speakers of Spanish varying in language command and ability to express emotions in their L2 (English) rated the relevance of common English words in regard to a survival or a moving (control) scenario, and then completed an unexpected free recall test. The extent to which the SPE was modulated by participants' L2 level of linguistic and emotional competence, and the implications of these findings are discussed in light of current theoretical approaches to emotional processing in bilinguals.

Email: Angel Fernandez, angelfr@usal.es

7:30-9:00 PM (1161)

Hindsight Bias and Reversed Hindsight Bias in the Classroom. YUH-SHIOW LEE, *National Chung-Cheng University* — Hindsight bias can occur when people make a prediction and later are asked to recall their prediction. This study examined this memory bias in a real-world situation. In both experiments, college students were asked to predict their exam scores before the exam conducted two weeks later. One day after students had received their exam scores, they were asked to recall their predicted scores. Experiment 1 found that among a total of 142 students, 36 made errors in their recall of predicted scores. More importantly, 78% of students showed a memory error consistent with hindsight bias. Experiment 2 increased the memory difficulty by asking students to make predictions for all three exams, although they only had to recall the prediction of the first exam. Out of the 153 students, 104 made errors in their recall of predicted scores, and 74% of students showed hindsight bias. Overall, for the majority of students, the recall of predicted scores was

biased toward the real scores, regardless of the direction of mistakes in their recall. A reversed hindsight bias was most likely to occur for students who made a large prediction error, suggesting that during recall, students could overcompensate for their mistake in prediction.

Email: Yuh-Shiou Lee, psyysl@ccu.edu.tw

7:30-9:00 PM (1162)

Relief-Driven Drinking Motives Moderate the Relationship Between Stress and Cue-Induced Alcohol Craving. LARA PICCOLI, *Monash University*, LUCY ALBERTELLA, *Monash University*, CHAO SUO, *Monash University*, KARYN RICHARDSON, *Monash University*, RICO SZE CHUN LEE, *The University of Melbourne* — Alcohol craving under stress increases the risk of relapse in alcohol use disorder (AUD). This study investigated the moderating effect of relief-driven drinking motives on the relationship between stress and cue-induced alcohol craving and anxiety in AUD.

Forty-nine adults with AUD were randomised to a stress or no stress exposure group (24 participants; 25 participants). All participants then completed an alcohol cue exposure paradigm to measure alcohol craving and anxiety. Salivary cortisol samples, heart rate, and subjective stress ratings were collected. Analyses revealed that relief-driven drinking motives moderated the relationship between stress and cue-induced alcohol craving ($\beta=1.90$, $p=.015$); exposure to stress was associated with higher cue-induced alcohol craving, particularly for those with high relief-driven drinking motives. There was no significant interaction between stress group and relief-driven drinking motives in association with cue-induced anxiety ($\beta=1.55$, $p=.148$). Individuals who drink for relief endorse greater cue-induced alcohol craving when stressed. These findings further elucidate the motivational mechanisms of relief-driven drinking and inform more tailored interventions to treat AUD.

Email: Lara Piccoli, lara.piccoli@monash.edu

7:30-9:00 PM (1163)

The Relationship Between Subjective Vividness and Remembered Visual Characteristics of Emotional Stimuli Across the Lifespan.

LEONARD FAUL, *Boston College*, MAUREEN RITCHEY, *Boston College*, ELIZABETH A. KENSINGER, *Boston College* — Episodic memories are characterized by the vividness of their recollection.

Recent findings show that more vivid memories are associated with less fading of low-level visual information. However, more work is needed to clarify this effect over longer delays and how it may shift based on the emotional valence of a stimulus, as well as one's age. Here, participants ($n=307$, aged 19-78) incidentally encoded images varying in affective content and shown at different levels of color saturation, contrast, and hue. At a next-day recognition test, images identified as old were rated on subjective vividness and then reconstructed based on the remembered visual information from encoding. More arousing images were more vividly recollected, and vividness ratings were primarily associated with biases in reconstructed color saturation, but in both instances the coherence between these measures diminished with increasing age. Positive images were reconstructed with inflated color saturation and contrast compared to neutral or negative images. Our findings show that subjective vividness is not uniformly related to remembered visual salience, but differs depending on the emotionality of an experience and individual differences such as age.

Email: Leonard Faul, leonard.faul@bc.edu

7:30-9:00 PM (1164)

The Role of Adaptive Value: Exploring the Prioritization of Threat and Disgust in Episodic Memory. TIANYU (AMBER) HU, *Rutgers University—Newark*, KIMELE PERSAUD, *Rutgers University—Newark* — The representation of information in episodic memory is influenced by its emotional significance. Past research on emotion and memory has found that

individuals show better memory for negative compared to neutral information. Yet, these studies rarely differentiate memory for various kinds of negative information, leaving open questions about the specific mechanisms that drive privileged memory for emotionally salient information. Here, we assessed participants' ($N=41$) recognition memory for images identified as threatening, disgusting, annoying and neutral. By contrasting individuals' memory for threat- and disgust-relevant information with annoyance-relevant information, we explored the degree to which adaptive value underlies the enhancing effect of emotion on memory. Using signal detection theory, we found a robust memory advantage for disgust-relevant information compared to all other conditions. While individuals showed marginally higher hit rates for threatening compared to annoying information, they also



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showed the highest false alarm rate for threat. These findings provide initial evidence that the inherent adaptive value of emotional information contributes to the prioritization of such information in episodic memory.

Email: Tianyu (Amber) Hu, th686@scarletmail.rutgers.edu

7:30-9:00 PM (1165)

The Impact of Learning Activities Inside and Outside the Classroom on Behavioral and Emotional Engagement.

HARUNA INOUE, *Hosei University*, TETSUYA FUJITA, *Hosei University* — While engagement is a concept that reflects a commitment to a particular task, it is also sometimes treated as an indicator of adjustment to university life. Are engagement in specific classes and engagement in university classes in general, then, functionally different in relation to attitudes towards learning activities inside and outside the classroom? To find out, we compared the strength of the effect of engagement on attitudes to learning activities outside the classroom, namely active procrastination tendency, and on attitudes to learning activities inside the classroom, namely achievement goal orientation and leadership behavior, as explanatory variables. The results showed that engagement was more related to attitudes towards learning activities inside and outside the classroom when students were asked to respond to a specific class than when they were asked to respond to a university class in general. In other words, engagement is a specific indicator.

Email: Haruna Inoue, h.inoueee10@gmail.com

7:30-9:00 PM (1166)

The Memory-Experience Gap after a Nap. SHIRA DARCHI, *Ben-Gurion University of the Negev*, NIV REGGEV, *Ben-Gurion University of the Negev*, SHACHAR MAIDENBAUM, *Ben-Gurion University of the Negev*, TALYA SADEH, *Ben-Gurion University of the Negev* — The memory-experience gap (MEG) is the gap between the average of emotions experienced during a given event and the retroactive, overall evaluation of the experience, which is usually characterized by an overestimation. Much of the existing literature on the MEG focuses on the type of emotion, its intensity, and individual differences. Surprisingly, there is a lack of consideration of the effects of memory processes, such as sleep-dependent consolidation, on the MEG. The current study addressed this lacuna, by examining the effect of

sleep-dependent consolidation on the MEG. Participants were divided into a sleep group and a wake group. Initially, they played virtual reality games and rated their emotions. Afterward, the sleep group napped in the lab while the wake group listened to a podcast. Later, all participants reevaluated their emotions from the first stage. We found that the MEG is greater after sleep and that no MEG was formed without sleep. Interestingly, a MEG was found only for positive emotions. The results of the present work indicate that the existence of MEG and its intensity are influenced by sleep-dependent consolidation processes.

Email: Shira Darchi, shiradar@post.bgu.ac.il

7:30-9:00 PM (1167)

The Overjustification Effect Does Not Occur with Food as the Extrinsic Reward.

SARA R. BOND, *Texas Christian University*, JORDAN H. NERZ, *Texas Christian University*, KATIE CAGNEY, *Texas Christian University*, KENNETH LEISING, *Texas Christian University* — Behavior that is intrinsically motivated is said to be rewarding in itself, while extrinsically motivated behavior is followed by an observable reward. According to the overjustification hypothesis, intrinsically motivated behaviors can be reduced if they are followed by an observable reward. We evaluated whether the overjustification effect would occur in rats. All rats lever pressed for no reward (baseline), followed by a treatment phase and a second baseline. Group Extrinsic received an extrinsic reward (food) for each lever press during treatment, Group Intrinsic never received a reward, and Group Unexpected received an unpredictable reward. Contrary to our hypothesis that the extrinsic group would lever press less than the intrinsic group, results revealed an early increase in lever presses in the extrinsic group followed by similar lever press rates across 18 experiment days. The role of the initial level of interest and secondary reinforcement on the overjustification effect will be discussed.

Email: Sara Bond, s.bond9114@tcu.edu

7:30-9:00 PM (1168)

Assessing Model-Based and Model-Free

Pavlovian-Instrumental Transfer Using a Novel Two-Stage Paradigm. DANIEL J. SCHAD, *HMU Health and Medical University*, LAURA WIRTH, *HMU Health and Medical University*, NASSIM SADEDIN, *MSB Medical School Berlin* — Reinforcement learning

models suggest that learning involves both model-free (MF) and model-based (MB) systems, observed in instrumental and Pavlovian responding. In Pavlovian-instrumental transfer (PIT), Pavlovian values impact instrumental responses, with appetitive cues eliciting approach. The single-lever PIT paradigm, often considered as MF, has been associated with reduced MB (instrumental) control. To explore whether single-lever PIT effects are exclusively MF, or can also be MB, we created a novel two-stage paradigm assessing MF and MB control trial by trial, with very detailed instructions of the model. Based on a computational dual-control model, MF PIT predicted a two-way interaction and MB PIT a three-way interaction. Thus far, Bayesian sequential analysis using null hypothesis Bayes factors (BF; N=71) suggests MB (BF10=6.52, p=.014) influences on PIT (MF is unclear: BF10=1.52, p =.154). This establishes a novel paradigm to dissociate MF versus MB PIT effects, and suggests single-lever PIT may exhibit MB PIT at least when the MB system is highly certain.

Email: Daniel Schad, danieljschad@gmail.com

7:30-9:00 PM (1169)

Certain But Mistaken: Source Credibility Affects the Relation Between Error and Exploration. STANKA A. FITNEVA, *Queen's University* — The stronger people hold a belief, the likelier they are to explore and revise it when they encounter discrepant information. This “high certainty error” effect is largely explained by the epistemic emotions (e.g., curiosity) triggered by the error. In two studies, we examined the credibility of the source that challenges the existing belief as a potential moderator of this effect. After answering a trivia question and indicating their certainty, participants were shown an answer submitted by another participant, reported their surprise and curiosity, and were given the option of seeing up to three responses from different participants. The two studies differed by whether participants encountered high or low credibility sources. The results showed similar levels of surprise, curiosity, and exploration. Epistemic emotions also predicted exploration in both studies. However, high certainty in mistaken beliefs led to more exploration only when the belief was contradicted by a credible source.

Email: Stanka Fitneva, fitneva@queensu.ca

7:30-9:00 PM (1170)

Negative-Value Cues Reduce Proactive

Interference in Working Memory. SARA B. FESTINI, *University of Tampa*, RAQUEL AGUILAR, *University of Tampa*, KENDALL DESHLER, *University of Tampa* — Proactive interference (PI) occurs when prior learning disrupts current performance. Directed forgetting instructions have been shown to reduce PI within working memory (WM). Yet, value-directed remembering manipulations yield similar PI for high-value- and zero-value-cued WM items. Here, we evaluated the impact of negative-value cues on PI within WM. Participants performed an item-recognition WM task with a recent probes manipulation. Memoranda were assigned either negative (-5 or -10) or positive (5 or 10) point values after encoding. Occasionally, PI was induced by probing recent items from the prior WM trial. Across both experiments, PI was significantly reduced for negative- relative to positive-value memoranda. Response times were significantly faster for recent negative-value relative to recent positive-value probes. Surprise long-term memory recognition tests also revealed worse accuracy for negative- relative to positive-value items. These data inform theories of the voluntary removal of information from WM, indicating that if individuals know that certain information is harmful to maintain, they remove those detrimental representations from WM and experience less PI, akin to following directed forgetting instructions.

Email: Sara Festini, sfestini@ut.edu

7:30-9:00 PM (1171)

Testing Effects of Inoculation on Emotional Response to Political Accusations via Memory Modulation.

MICHAEL COHEN, *The University of Chicago*, JEAN DECETY, *The University of Chicago* — Accusations of unethical behavior negatively impact people’s views of targeted political candidates even if that information is later shown to be false, consistent with past literature on continued influence effects (CIEs). An inoculation intervention that encourages skepticism of emotionally stimulating content reduces the impact of such allegations and may have an additive effect beyond that of factual corrections. In prior experiments, accusation stimuli were remembered better than control stimuli while refutation stimuli were not, with this interaction notably apparent after a two-day delay but not after a 30-minute delay. The interaction with delay

suggests that the memory effect may be driven by enhanced amygdala-driven consolidation in response to accusations. The memory benefit for accusations was also associated with magnitude of CIEs on ratings given earlier, suggesting that the emotional impact of accusations plays a role in the persistence of false accusations. Inoculation interventions may reduce the emotional response to accusations; this would be apparent if an inoculation intervention reduces the memory benefit for accusations after a delay. Results from an experiment testing this hypothesis will be discussed.

Email: Michael Cohen, mscohen@uchicago.edu

7:30-9:00 PM (1172)

Metamemory Judgments and Design Effects: JOL Reactivity in Free Recall Is Affected by Study List Structure. SAMET KAYA, *University of North Carolina at Chapel Hill*, NEIL W. MULLIGAN, *University of North Carolina at Chapel Hill* — Judgments of learning (JOLs), which are used to study monitoring of memory, have been shown to be reactive: eliciting JOLs during study may alter memory performance as opposed to only studying information. A recent account of JOL reactivity focuses on the roles of item-specific and item-relational information, suggesting that making JOLs increases item-specific while disrupting item-relational processing. Drawing on the previous research on design effects, we tested this account by examining how list composition (i.e., mixed vs. pure) influences JOL reactivity in a free recall test. In a set of three experiments, we found consistent evidence that JOL reactivity demonstrates design effects by showing that it is more positive in mixed compared to pure lists. Our findings support the idea that JOL reactivity is a result of the tradeoff between item-specific and relational processing.

Email: Samet Kaya, samet@unc.edu

7:30-9:00 PM (1173)

Implicit Mnemicity Test: Are Our Own Memories Truer than Others' Memories? TALYA SADEH, *Ben-Gurion University of the Negev*, TAL GUTTMAN, *Ben-Gurion University of the Negev*, SHIRA DARCHI, *Ben-Gurion University of the Negev*, JOHANNES MAHR, *York University*, DANIEL L. SCHACTER, *Harvard University* — The current study focuses on the concept of mnemicity—a feature that

enables humans to interpret feelings of remembering as indicators of memory rather than imagination ("I experienced it myself"). We ask if and in what way memory representations of one own's experiences— involving mnemicity—differ from one's representations of others' memories—not involving mnemicity. We hypothesized that individuals implicitly perceive their own memories as truer than others' (veridical) memories. To test this hypothesis, we used a modified version of the Autobiographical Implicit Association Task (aIAT), with which we measured the Implicit Truth Value (ITV) individuals assign to: (1) details from their own autobiographical memories versus (2) details from autobiographical memories of close friends or family members that were shared with them. Details from both one's own and others' memories were extracted by leveraging GPT's NLP model to discriminate "pure" narrative content from pronouns and other linguistic information that differs between one's own memory and another's memory. In line with our hypothesis, we found that humans assign a higher ITV to their own memories than to others' memories, even though both memories are equally veridical.

Email: Talya Sadeh, tsadeh@bgu.ac.il

7:30-9:00 PM (1174)

The Art of (Un)Certainty: Confidence Ratings Produce Positive Reactivity on Cued-Recall. AMELIA G. MOREHEAD, *The University of Southern Mississippi*, NICHOLAS P. MAXWELL, *Midwestern State University Texas*, MARK J. HUFF, *The University of Southern Mississippi* — Providing metacognitive judgments at study is often reactive by affecting performance on subsequent tests relative to a control group that does not provide judgments. Reactivity patterns have been well-established using the judgment-of-learning (JOL) task in which participants forecast their likelihood of remembering a target word in the context of a cue word at test. JOLs typically improve performance when cue-target pairs are related (i.e., positive reactivity), but can increase, decrease, or produce no reactivity on unrelated pairs. In the present study, we evaluated whether retrospective confidence ratings (CRs) could also induce reactivity patterns. Participants studied mixed lists of related and unrelated cue-target pairs which were followed by a cued-recall test in which participants provided CRs for each target word recalled. Relative to a no-CR control group, CRs produced positive reactivity which was found for both

related and unrelated pairs. We suggest that CRs facilitate test-based monitoring which improves cued-recall.

Email: Amelia Morehead, Amelia.Morehead@usm.edu

7:30-9:00 PM (1175)

Becoming Fluent Overnight: Long-Lasting Effects of Perceptual Fluency on Metamemory Judgments.

SKYLAR J. LAURSEN, University of Guelph, CHRIS M. FIACCONI, University of Guelph — Judgments of learning (JOLs) are predictions of future memory performance made based on an individual's evaluation of previous learning. The cue utilization view of JOLs states that individuals use a variety of cues when predicting future memory performance. Critically however, the majority of research aimed at understanding how different types of cues influence individuals' JOLs has focused on immediate memory assessments examining individuals' in-the-moment experiences or has utilized very brief retention intervals and relied on the representation of previously studied material. Importantly, individuals' assessments of learning may be coloured by information learned in the past such that similar information learned previously may also influence their JOLs unknowingly. Using a letter set training procedure, we manipulated the fluency of to-be-learned material to examine whether previous learning would influence JOLs for new material over a 24-hour time period. As hypothesized, our results showed that previous learning did impact individuals' metamemory predictions, as JOLs for fluent stimuli (i.e., easier to process) were indeed higher than those given for disfluent stimuli both immediately following training and 24 hours later.

Email: Skylar Laursen, slaursen@uoguelph.ca

7:30-9:00 PM (1176)

Dynamic Cue Integration in Metacognitive Judgements.

LUISA SCHULZ, University of Mannheim, ARNDT BRÖDER, University of Mannheim, MONIKA UNDORF, Technische Universität Darmstadt — When individuals try to predict their future memory performance, they do not have direct access to it. Instead, they rely on probabilistic cues. Previous research suggests that when people form judgments of learning (JOLs) and multiple cues are available, they integrate them in a compensatory manner rather than focusing on a single cue. However, past experiments, which aggregate data from multiple trials, do not allow to address

potential dynamic changes in cue usage. Our study introduces a new experimental design where one cue (the context cue) remains constant across sequences of trials, while another cue (the target cue) changes randomly from trial to trial. We investigate whether the number of trials since the last context cue switch influences how both cues affect JOLs. Our findings reveal that the influence of the context cue decreases over successive trials when it remains constant. We found no interaction between the target cue and the number of trials since the last context cue switch. This study supports the idea that people use multiple cues when judging their future memory performance and shows that there are dynamic changes in cue influence over time.

Email: Luisa Schulz, luisa.schulz@uni-mannheim.de

7:30-9:00 PM (1177)

Linking Metamemory Judgments to Latent Memory Processes.

FRANZISKA M. LEIPOLD, University of Mannheim, ARNDT BRÖDER, University of Mannheim, MARTIN SCHNUERCH, University of Mannheim — Theories of metamemory monitoring often make explicit or implicit assumptions about how predictions of later memory performance (metamemory judgments) relate to latent memory processes. However, most research in this area is limited to relating metamemory measures to empirical manifestations of memory performance, rather than directly linking them to latent processes. Recent advances have been made by linking metamemory judgments to aggregate-level latent parameters of multinomial processing tree (MPT) models by Vincentizing the continuous judgments. A drawback of this approach is that binning the judgments and relating them to aggregate-level MPT parameters results in a substantial loss of information and does not allow the analysis of individual differences in the relationship between judgments and latent processes. Therefore, we propose the use of hierarchical latent-trait MPT models where continuous metamemory judgments are included as trial level predictors of person-specific model parameters. We illustrate the advantages of this approach in a reanalysis of published data and examine individual differences in associations of metamemory judgments to familiarity- and recollection-based memory processes.

Email: Franziska Leipold, franziska.leipold@uni-mannheim.de

7:30-9:00 PM (1178)

The Relative Accuracy of Source Memory

Predictions. DÉSIRÉE N. SCHÖNUNG, *University of Mannheim*, BEATRICE G. KUHLMANN, *University of Mannheim* — Judgments of learning (JOLs) are well-established predictors of individuals' memory for items. However, the ability to predict memory for sources, known as judgments of source (JOS), has not yet been sufficiently addressed, especially not with measures of source memory unconfounded by item memory and guessing. This experiment aimed to investigate the relative accuracy of JOS. We employed the approach by Undorf et al. (2016) of vincentizing items into bins based on JOS and analyzing memory performance within each bin using multinomial modeling to estimate source memory. In a standard source monitoring paradigm with a two-group between-subjects design (external vs. reality monitoring), N=66 participants provided predictions for both item memory (JOLs) and source memory (JOS). As hypothesized, the source memory parameters showed an increase across JOS bins, indicating relative accuracy of JOS. However, due to the correlation between JOLs and JOS, item memory parameters also increased with JOS bins. Nevertheless, we found some evidence that individuals can predict their source memory, which provides a basis for further research on the accuracy of and factors influencing JOS.

Email: Désirée Schönung, desiree.schoenung@uni-mannheim.de

7:30-9:00 PM (1179)

What Does It Feel Like to Forget Over Time? An Investigation of the Effects of Delay on Objective and Subjective Measures of Memory.

ZOHAR RAZ GROMAN, *Ben-Gurion University of the Negev*, TALYA SADEH, *Ben-Gurion University of the Negev* — Recent years have seen a revived interest in the study of delay-dependent forgetting, with compelling evidence that episodic, event-based memories are susceptible to delay-dependent forgetting (but are relatively immune to interference). The current study focuses on a fundamental question regarding event-based memories, which has received scant attention: What is the subjective experience accompanying forgetting of such memories? Namely, how does delay affect the alignment between objective and subjective measures of memory? With regard to objective measures, in two experiments, we found that while the accessibility of event-based memories declined over time, there was little or no

change in the nature of memory representations. In contrast, subjective measures of memory showed substantial decrement over time. Thus, our results reveal a discrepancy between objective and subjective memory measures. These results are interpreted in terms of the cues that drive subjective memory ratings following a delay. Such cues are likely based on the individuals' biased experiences of retrieval, specifically the ease and effort of retrieval, which increases over time, even when the retrieved representation does not change.

Email: Zohar Raz Groman, zohargro@post.bgu.ac.il

7:30-9:00 PM (1180)

Assuming Source Influences Sound Assessment and Identification: Use of Categorization Over Acoustics.

DINA ACKLIN, *US Naval Research Laboratory*, REBECCA R. GOLDSTEIN, *US Naval Research Laboratory* — Acoustic sorts with everyday sounds are found to be driven by sound category over acoustic features. However, category identification may be driven by underlying acoustic features. The present study focused on context-free continuous sounds across four categories: instrument (I), human (H), mechanical (M), and nature (N). Participants completed a sorting task followed by an identification task with HI sounds then again with MN sounds. Multidimensional Scaling for HI found two dimensions while MN found three dimensions. Visual inspection, participant labels, and correlations indicate dimension one represents the sound category for both HI (.827) and MN (.966). Dimension two for the HI correlated with pitch (-.611) and MN correlated with sharpness (.448). Accuracy was better for identifying the sound category than identifying the sound source. Preliminary analysis suggests acoustic features might not be informative enough to identify sound beyond overall category in a sort task.

Email: Dina Acklin, dina.m.acklin.civ@us.navy.mil

7:30-9:00 PM (1181)

Do iPhone Text Alerts Help Lexical Tone Perception?

FEIYIA SUO, *University of Oregon*, CHUNJIE WANG, *Shanghai International Studies University* — The perception of speech is a flexible process, influenced by multiple sources of information, and tuned over time to cumulative experience (Guediche, 2017). Studies have found that short-term perceptual training are effective in improving the comprehension of lexical tones by native speakers of non-tonal languages

(Kaan et al., 2007, 2008; Wayland and Guion, 2004; see Lu et al., 2015 for review). This study aims to investigate whether non-human sounds play a role in tone perception. In the first experiment, 21 non-tonal language native speakers' pitch perception performance on four non-human iPhone text alert sounds (Ding, Tweet, Glass, and Chord) and four recordings of disyllabic human sounds were compared. Results show that there is no difference between accuracy rates on text alert sounds and human sounds ($p=.4$), indicating that the cumulative experience, if not conscious, may not convert to learning. No difference between phone users were found either for text alert ($p=.6$), or human sounds ($p=.4$). The second experiment aims to bring in a short-term perceptual training based on the text alerts after the pitch perception task, and to investigate whether the training of non-human sound benefits the perception of tones.

Email: Feiya Suo, suo@uoregon.edu

7:30-9:00 PM (1182)

Misophonia Is Associated with Heightened Emotion Evocation by Music. STEPHEN C. VAN HEDGER, Huron University College, OMOLEWA BABALOLA, Huron University College, KATHRYNE VAN HEDGER, The University of Western Ontario — Misophonia is a disorder commonly characterized by negative emotional responses to “trigger” sounds, such as chewing or tapping. It has been linked to conditions like hyperacusis and PTSD; however, the relationship between misophonia and musical processing remains underexplored. Under the framework that misophonia stems from altered connectivity between auditory and limbic systems, we predicted that individuals with greater misophonia severity would show stronger emotional responses to music. From an initial screening study ($n=300$), a subset of participants (low misophonia: $n=58$, high misophonia: $n=40$) were asked about several musical and non-musical traits. High misophonia participants scored higher than low misophonia participants on several musical measures, including emotion evocation from music. Participants in the high misophonia group also scored higher than the low misophonia group on hyperacusis and PTSD tendencies, replicating prior work. The results support conceptualizing misophonia in terms of enhanced auditory-emotional responses, to both negative (“trigger”) and positive stimuli, such as music. These findings fit within a growing body of research

highlighting the positive emotional implications of misophonia.

Email: Stephen Van Hedger, svanhedg@uwo.ca

7:30-9:00 PM (1183)

Ruffled Music: Evidence for Ensemble Auditory Perception. JAMES T. MANTELL, *St. Mary's College of Maryland*, CARLA WILSON, *St. Mary's College of Maryland* — Listeners can rapidly identify complex sounds, even in noisy auditory environments. Fine-grained spectral-temporal information is essential for speech and music perception, but do listeners utilize long-term spectral-temporal information to extract auditory gist? We preregistered a series of studies to investigate the mechanisms of ensemble perception via music recognition. We created ruffled music by randomly shuffling the waveform contents of music excerpts. Ruffling is ideal because randomization systematically disrupts fine-grained temporal regularity while preserving long-term spectral-temporal information. According to the average spectrum hypothesis, the auditory system extracts auditory gist by comparing moving averages for a sound's spectrum to spectral content stored in long-term memory. In our first experiment, participants rated their recognition of popular song excerpts across six ruffle window durations ranging from not ruffled to highly ruffled. The results revealed a strong, statistically significant relationship between ruffle window duration and recognition rating, supporting the idea that audition, like vision, features multiple parallel processes that operate across various spectral/spatial-temporal modes.

Email: James Mantell, jtmantell@smcm.edu

7:30-9:00 PM (1184)

Listening Effort Judgments are Affected by a Memory Heuristic: the Peak-End Rule. RICARDO CASTAÑEDA OLAYO, *The University of Texas at San Antonio*, DESTINY SEARS, *The University of Texas at San Antonio*, JEFFREY MOCK, *The University of Texas at San Antonio*, EDWARD J. GOLOB, *The University of Texas at San Antonio* — Listening under challenging conditions is often effortful and aversive. Decision-making research shows that affect at the peak and end of an experience have a disproportionate influence on memory relative to the entire experience. We tested if retrospective listening effort reports are biased by the peak-end rule. Participants ($n=372$) reported fatigue and



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mood before and after listening for intermittent tone “signals” in continuous white noise, as well as their mental workload related to the task. Decreasing the signal/noise ratio increases task difficulty. Four groups were tested, each with the same total signal/noise ratio over ~12 min. In three groups the signal/noise ratio decreased for two minutes, either at the beginning, middle, or end of the task, and a fourth group had a constant signal/noise ratio (static). We hypothesized that retrospective workload judgments would be greater for the peak vs. static group, and when the signal/noise ratio decreased at the end vs. the middle and beginning. Results supported both hypotheses: (peak>static group, $p<.001$, $d=.81$; end>middle/beginning, $p<.001$, $d=.91$). Findings suggest that reported listening effort includes a decision-making stage that is susceptible to the peak-end rule.

Email: Ricardo Castañeda Olayo, ricardo.castaneda@utsa.edu

7:30-9:00 PM (1185)

Role of Temporal Regularity in Sound Category

Learning. DAVID PEITA, *Binghamton University, SUNY, ALEXANDRA MEDVEDEVA, Binghamton University, SUNY, SUNG-JOO LIM, Binghamton University, SUNY* — Auditory categorization is essential in speech perception, enabling the grouping of variable sounds into linguistic units. Research indicates that sound categories like speech are efficiently learned through the implicit, reward-based learning system. However, the optimal training contexts that hinge on this system remain unclear. Building on neurobiological evidence that temporal regularity enhances auditory processing via the overlapping reward-based system, we tested whether temporal regularity specifically facilitates implicit learning of sound categories that require integration of multiple dimensions (information integration; II) vs. explicit learning of categories defined by unidimensional rules (rule-based; RB). N=40 adults incidentally learned either II or RB categories while hearing periodic or aperiodic sound exemplars. We found that temporal regularity impacted learning of II but not RB categories at post-test. In addition, only for learning II categories, periodic sounds led to faster category responses during training. Our results suggest a potential interaction between temporal regularity processing and implicit sound category learning through a reward-based system.

Email: David Peita, dpeita1@binghamton.edu

7:30-9:00 PM (1186)

The Effect of Attention and Expectation on Spatial Localization of Moving Sounds.

MADELEINE I. R. TEMPLER, *The University of Texas at San Antonio*, LEMIRA V. ESPARZA, *The University of Texas at San Antonio*, EDWARD J. GOLOB, *The University of Texas at San Antonio* — Auditory motion generates illusions of forward and backward displacements from the location of sound offset, likely from extrapolation by perceptual systems. Displacements are also affected by endogenous attention and/or implicit expectation. The current study separately examined the impact of endogenous attention and expectation on perceptual displacements. Participants ($n=30$) heard virtual sounds (1 or 2 sec duration) moving from peripheral-to-central space, and judged offset location vs. midline (L/R). Displacement was calculated relative to motion direction (clockwise/counterclockwise). A cue at the beginning of each trial guided spatial attention to the left or right side (75/25% valid/invalid); expectation was manipulated by having most sounds start on one side (75 vs. 25%). There were larger forward displacements when sounds started on the more probable side ($p <.001$). Invalid trials produced more forward displacements than valid trials for 1 sec, but not 2 sec ($p=.012$). Results indicate that forward displacement increased with greater expectation (likely reflecting statistical learning), with little influence from attentional cueing. The findings help to demarcate non-perceptual factors on auditory motion perception.

Email: Madeleine Templer, Madeleine.templer@my.utsa.edu

7:30-9:00 PM (1187)

The Morgan Freeman Effect: Advantages and Disadvantages of Voice Familiarity When Listening to Speech Under Distraction.

MANDA FISCHER, *The University of Western Ontario*, INGRID JOHNSRUDE, *The University of Western Ontario* — We examined whether familiar voices are more efficiently processed (i.e., less resource intensive) than unfamiliar ones, by comparing their intelligibility when masked by a competing talker, while also manipulating concurrent cognitive load. Participants ($N=30$, 17F and 13M) heard two sentences spoken concurrently in different voices (familiar-unfamiliar or unfamiliar-unfamiliar) and reported the content of one (target) while ignoring the other (masker). While listening to the target-masker pair, participants either tracked the location of four moving

dots on a screen (dual task; DT) or ignored them (single task; ST). In both single- and dual-task conditions, target word-report accuracy was highest when the target voice was familiar. Accuracy was lowest when the masker voice was familiar; participants erroneously reported words from the familiar masker. The effect of DT on word-report depended on the familiarity of the target voice: word-report was higher in ST than DT for unfamiliar, but not familiar, targets. These results 1) indicate that familiar voices are more resource efficient than unfamiliar ones and 2) suggest that familiar voices enhance selective attention when task-relevant but distract when task-irrelevant.

Email: Manda Fischer, mfisch5@uwo.ca

7:30-9:00 PM (1188)

The Stimulus-to-Noise Tool (StNT): A New Tool for Comparing Diverse Auditory Stimuli. LEAH FOSTICK, *Ariel University*, MICALLE CARL-NEUHOF, *Ariel University* — The present study presents the stimulus-to-noise tool (StNT), which answers the challenge of comparing diverse auditory stimuli, such as when comparing speech (spoken by a single talker and therefore recognizable) with multi-talker speech, environmental sounds, or music. The StNT utilizes a progressive transformation of auditory stimuli (e.g., speech or music) into noise, across multiple steps. These manipulated stimuli are presented randomly to participants, who utilize a two-forced-choice paradigm to discern between "stimulus" and "noise." The presented study consists of three experiments, each shedding light on a distinct aspect of auditory perception: (1) perception of speech versus music; (2) detection of words with different meaning and length; and (3) recognition of speech presented by one, four, or eight talkers. The findings demonstrate the StNT's utility in facilitating comparisons across diverse auditory conditions, offering valuable insights into the perception of various auditory stimuli.

Email: Leah Fostick, leah.fostick@ariel.ac.il

7:30-9:00 PM (1189)

Do Social Desirability Cues Cause a 'Cheerleader Effect' in Naturalistic Images? DREW WALKER, *University of California, San Diego*, SAPNA RACHAPUDI, *University of California, San Diego* — The "cheerleader effect" is the finding that faces are more attractive in a group. One theory suggests this is

due to hierarchical encoding in the visual system, where objects are biased toward an ensemble average, making faces in a group appear closer to this attractive average (Walker and Vul, 2014). Although well-documented (e.g., Carragher et al., 2019), the exact mechanisms remain uncertain. Research shows judgments of facial competence can be influenced by contextual cues, such as clothing quality (Oh, Shafir, and Todorov, 2022). Shi, Vasanth, and Walker (2023) tested if the cheerleader effect may arise due to socially desirable cues. Observers rated faces alone and in a group with other faces obscured. While they found no confound between ensemble coding and the cheerleader effect, the strategy used to obscure faces may have impacted judgments. In the current study, we developed natural-looking images with faces replaced by blurred versions of the rated face to prevent ensemble averaging while maintaining the social desirability cue of being in a group. We replicated the previous finding with this more realistic stimuli, again finding no evidence that the cheerleader effect is caused by social desirability cues alone.

Email: Drew Walker, dehoffma@ucsd.edu

7:30-9:00 PM (1190)

Getting the Gist: Testing Limits of Visual System Ensemble Perception. SHAUL HOCHSTEIN, *Hebrew University*, DANIELLA KOYFMAN, *Hebrew University*, HAYA ABTAN, *Hebrew University* — Visual scenes are too complex to immediately perceive all their details. As suggested by Gestalt psychologists, grouping similar scene elements expedites evaluating scene gist, efficiently representing similar objects, overcoming processing, attention and memory limits. Observers perceive set means better than presence of members. Ensemble perception (EP) also occurs automatically, implicitly, on-the-fly, trial-by trial. We study EP temporal integration limits. We present 10 circle/line images in RSVP (rapid serial visual presentation) sequence with variable SOA (stimulus onset asynchrony), followed by 2-AFC (2-alternative forced choice) test (seen vs. new images) measuring memory of size/orientation, determining (brief SOA) speed and (long SOA) period of efficient integration. Using the classic Deese–Roediger–McDermott (DRM) paradigm, we present 8 RSVP images, with/out central prototype, followed by 8 images, seen or new, including prototype; participants mouse-clicked images judged seen. Participants always tended to choose test images closer to mean/prototype. This tendency was reduced for very long SOA and for

later clicks. We conclude that, while found for variety of stimuli/presentation modes, EP still has its limits.

Email: Shaul Hochstein, shaulhochstein@gmail.com

7:30-9:00 PM (1191)

How Much Can We Read into the Average Duration of the Dominance Phase for Multistable Stimuli? ALEXANDER PASTUKHOV, University of Bamberg, PAULA FINKENAUER, University of Bamberg, LEONIE LITTEK, University of Bamberg, LEA VOSS, University of Bamberg, CLAUS-CHRISTIAN CARBON, University of Bamberg —

When participants view stimuli compatible with multiple perceptual interpretations, their perception continuously switches. Multistable perception is characterized by an average dominance phase duration, particularly, when comparing between groups. We tested this measure's reliability by recruiting 31 participants over 3-5 days reporting on five bistable stimuli (two versions of kinetic-depth effect, Necker cube, moving plaid, and auditory streaming), three-minute blocks, twice per session in random order. We compared block pairs within and between sessions based on average phase duration and state-dominance index using correlation, average phase differences, variance, and consistency in participant and stimuli order measures. We found that for most statistics variance between sessions was comparable to variance within session, so that reliability is not compromised by measuring over multiple days. At the same time, variability of average dominance phase duration was so great even within session that it did not allow to reliably differentiate between participants or stimuli (within participant). In short, average dominance phase durations are too noisy and variable to serve as a reliable statistic to characterize individuals.

7:30-9:00 PM (1192)

The Phenomenon of Seeing One's Own Blind Spots as Afterimages and its Implication for the Cortical Origin of Afterimages. CHARLES Q. WU, Meta Reality Labs —

Each of our eyes is "endowed" with a blind spot (BS). Normally one does not see them, but under suitable conditions one can indeed see one or both of their BSes. More intriguingly, the BSes can manifest themselves as complementary afterimages (AIs). This phenomenon of seeing one's own BSes as AIs was first described by Charpentier (1898) and subsequently reported by many others [as reviewed by Helson (1934)]. In a dark room, with one eye open and other shadowed,

one adapts to a uniformly illuminated background (e.g., a LED red light at 5 lux; a screen with 50% reflectance) for 10 minutes; upon suddenly closing the eye, they will see a bluish-green (i.e., complementary color to red) spot corresponding to the BS of the viewing eye. Now I demonstrate an important implication of this phenomenon regarding the retinal versus cortical origin of AIs: Since there are neither photoreceptors for the BS in retina, nor cells representing BS within the LGN (lateral geniculate nucleus), this phenomenon implies that the origin of AIs is cortical; furthermore, relating this phenomenon to the neuroanatomical study of the human primary visual cortex (cortical area V1) by Adams and Horton (2002), we can infer that AIs originate in layer 4 of V1.

Email: Charles Wu, charlesqwu@percog.org

7:30-9:00 PM (1193)

Assessing Spatial Context in Memory Retrieval: Insights Using Event Narratives. REYYAN BILGE, Northeastern University, TUGBA UZER, TED

University — Recent research emphasizes the importance of spatial context in episodic and autobiographical memory. According to the "scene construction" theory, spatial context representations act as a "spatial scaffold" underlying and supporting episodic memories. We conducted two experiments to investigate the efficacy of location, object, and person cues in recalling ordinary (Experiment 1) and important (Experiment 2) events. In Experiment 1, 83 participants aged 18-22 recalled ordinary events prompted by cue words, rating the phenomenological aspects of their experiences. Then, they narrated events, focusing on location, activity, or people involved, and re-rated their experiences. Experiment 2 (N=41) replicated Experiment 1 but with important events. Contrary to our expectations, preliminary findings did not support the scaffolding effect of location, highlighting the need for considering methodological differences in assessing this hypothesis. These results contribute to the ongoing discussion on the role of spatial context in memory retrieval.

Email: Reyyan Bilge, r.bilge@northeastern.edu

7:30-9:00 PM (1194)

What Mind Matters: Deep Learning to Connect Neural Structure to Behavioral Function. ASHISH K. SAHOO, University of Florida, HAJYMYRAT GELDIMURADOV, University of Florida, AARON

ZYGALA, *University of Florida*, YIMING CUI, *University of Florida*, EMMANUEL GARIT, *University of Florida*, MAHSA LOTFOLLAHI, *Nvidia*, KUANG GONG, *University of Florida*, KALEB SMITH, *Nvidia*, ALINA ZARE, *University of Florida*, STEVEN M. WEISBERG, *University of Florida* — Understanding the association between structural properties of the human brain with individual differences in behavior is an ongoing endeavor, challenged by the brain's complexity. Past approaches, limited by simplistic neural structure measures like volume or cortical thickness have given way to more advanced modeling approaches, but are still limited by broad cognitive assessments. Empirical evidence shows that hippocampal structure may relate to individual variation in spatial navigation ability, yet pre-registered studies revealed no association between hippocampal volume and navigation ability. Here, we follow a data-driven approach developing and comparing deep learning methods (graph convolution neural networks, GCNN; 3DCNN) to analyze whether complex aspects of brain structure predict spatial navigation ability. We trained GCNNs and 3DCNNs on a T1 MRI dataset (N=90) containing objective measures of navigational ability. Across all approaches, we found weak predictive value in held-out test data, despite good fits to training data. These results could indicate the need for much larger datasets to improve predictability but may also support prior work indicating hippocampal volume may not be indicative of navigation ability.

Email: Ashish Sahoo, ashishkumarsahoo@ufl.edu

7:30-9:00 PM (1195)

Spatial Boundaries Disrupt Temporal Order and Elongate Subjective Time. ZIMING CHENG, *University of Toronto & Rotman Research Institute*, NICOLE BRZOZOWSKI, *University of Toronto*, MORRIS MOSCOVITCH, *University of Toronto & Rotman Research Institute* — People form structured memories from continuous experiences through event segmentations and boundaries, typically created by changes in context. It has been debated whether these boundaries arise from any contextual changes (contextual instability theory) or only unexpected ones (prediction error theory). Here, we explored event boundaries using spatial cues, where participants picked up objects in different rooms (boundaries due to prediction error), duplicated rooms (boundaries due to contextual instability), or in the same room (no boundaries). Participants showed worse associative

memory and elongated subjective time in different rooms compared to the same room. Participants also showed elongated subjective time in duplicated rooms compared to the same room, but only between adjacent objects. These findings indicate that prediction error mostly contributes to event boundary formation, but contextual instability alone could affect the time estimation specifically between adjacent objects. We also found event boundaries to elongate subjective time during episodic memory, explaining why time seems to pass quickly when someone is confined to the same location, such as during COVID-19 lockdowns.

Email: Ziming Cheng, ziming.cheng@mail.utoronto.ca

7:30-9:00 PM (1196)

Spatial Compression Does Not Occur During Digital Object Interactions. GRIFFIN NEWELL, *North Dakota State University*, LAURA E. THOMAS, *North Dakota State University* — After interacting with real-world objects, observers tend to recall the objects as closer together than if they did not interact with them, a phenomenon known as spatial compression. We investigated whether spatial compression also occurs during digital interactions. Online participants (n=194) passively viewed (condition 1) or actively dragged and dropped digital objects either to an adjacent location (condition 2) or a single fixed spot on the bottom of the screen (condition 3). After this brief study phase, participants performed a recall task, recreating the array by dragging each object back to its remembered position. The spatial layout of recalled arrays did not differ between the 3 conditions, suggesting that spatial compression does not occur during 2D online interaction.

Email: Griffin Newell, griffin.newell@ndus.edu

7:30-9:00 PM (1197)

The Influence of Spatial Language Knowledge on Reorientation Abilities in Young Children. VIANCA N. RODRIGUEZ, *Florida International University*, KATHERINE SALADRIGAS, *Florida International University*, NICK MATTOX, *Florida International University*, HANNAH BOWLEY, *Florida International University*, YINBO WU, *Florida International University*, TIMOTHY HAYES, *Florida International University*, ANTHONY DICK, *Florida International University*, AARON MATTFIELD, *Florida International University*, SHANNON M. PRUDEN, *Florida International University* — Children's spatial-

relational language knowledge has been shown to predict individual differences on large-scale spatial tasks. However, there is conflicting evidence regarding whether spatial-relational language comprehension predicts individual differences in spatial reorientation strategy. 75 typically developing children between 48 and 94 months old ($M=67.58$, $SD=10.77$; 37 girls) completed an age-appropriate spatial reorientation task and spatial-relational language comprehension test. Multiple regression models were used to evaluate the role of spatial-relational language in different reorienting strategies (geometric, landmark, or combined). After controlling for age, gender, and parent education, spatial-relational language comprehension was positively associated with children's geometric strategy usage ($b=0.17$, 90% CI [0.06, 0.28], $p=.002$). However, comprehension scores were not significantly associated with feature ($b=0.10$, 90% CI [-0.05, 0.25], $p=.200$) or combined ($b=0.03$, 90% CI [-0.09, 0.15], $p=.632$) strategies. These findings suggest that spatial-relational language may influence children's attentional to environmental cues during spatial tasks.

Email: Vianca Rodriguez, viarodri@fiu.edu

7:30-9:00 PM (1198)

Prior Spatial-Linguistic Regularities Affect the Generation of New Spatial Representations.

LUCA RINALDI, *University of Pavia*, DANIELE GATTI, *University of Pavia*, ANCERESI GIORGIA, *University of Pavia*, FRANCESCA RODIO, *University of Pavia*, TOMASO VECCHI, *University of Pavia* — Geographical knowledge requires a tight binding between spatial and linguistic information (i.e., memorizing a city's name and its absolute spatial position on a map). Here, we probed whether this binding holds back to systematic language-to-space statistical mapping. Results from 2 computational experiments based on more than 15.000 cities across 5 countries revealed systematic language-to-space regularities as indexed by both basic surface-level (i.e., letters and bigrams composing the city name) and deeper (i.e., as extracted from a distributional semantic model) linguistic information. Next, to test whether these statistical regularities influence geographical judgements, we asked human participants to judge the geographical location of never attested but linguistically plausible strings of letters. Results from 3 behavioral experiments indicate that participants' performance along with the prior language-to-space binding. These findings not only

attest the presence of systematic regularities between language and space but also indicate that humans rely on these prior regularities when creating new spaces.

Email: Luca Rinaldi, luca.rinaldi@unipv.it

Poster Session II

Friday, November 22, 2024, 12:00-1:30 PM US EST
12:00-1:30 PM (2001)

Adaptive Task Switching Predicts Switch Costs.

PETER DIXON, *University of Alberta*, SONALI BALA, *University of Alberta* — In the real world, people voluntarily decide to switch tasks when the benefits of switching to a new task outweighs the cost of switching. We developed a laboratory analogue of this decision in which participants performed either of two tasks at their discretion. However, the contrast of the stimuli for the two tasks varied: It tended to decrease each time a task was performed and increased each time a task was not performed. Thus, over trials, it would eventually become useful to switch to the other task because the stimulus for that task would be much easier to see. Under these conditions, switch cost varied with participant strategy: In particular, switch cost was substantially higher among those who tended to repeat tasks for many trials, while switch cost was minimal among those who switched often. Presumably, these strategies are adaptive, so that, for example, participants who have difficulty switching tasks only do so when absolutely necessary.

Email: Peter Dixon, peter.dixon@ualberta.ca

12:00-1:30 PM (2002)

Attention in Virtual Reality Real-World

Environments. BEATRIZ GIL-GÓMEZ DE LIAÑO, *Universidad Autónoma de Madrid*, DAVID PASCUAL-EZAMA, *Universidad Complutense de Madrid* — Virtual reality (VR) has changed science in the last decade, significantly transforming applied sciences, industrial settings, and society. In the present work, we adapted ANTI-V (Roca et al., 2011) and ANTI-VEA (Luna et al., 2018) experimental tasks based on Posner's theory to develop a behavioral assessment in the industry using VR. We created a VR real-world-like task for human resource selection and occupational risk prevention in which participants had to maintain a proper tank pressure by manipulating key-pressure tools shaped like arrows, in a similar way as in ANTI-VEA Posner tasks. We ran participants in different 2-D ($n=38$) and 3-D VR ($n=30$)

tasks, measuring visual selective attention, visual attentional capture, auditory attentional capture, and vigilance. The results validated classic Posner effects for measuring these variables within a VR industry selection task, showing the potential of VR in applied psychology using experimentally validated paradigms in cognitive attention science.

Email: Beatriz Gil-Gómez De Liaño, bgil.gomezdelianno@uam.es

12:00-1:30 PM (2003)

Contextual Modulation of Perceptual Fluency.

MYEONG-HO SOHN, *The George Washington University*, EMMA WIEDENMANN, *The George Washington University*, REBEKA ALMASI, *The George Washington University* — The conflict adaptation effect demonstrates flexible cognitive control, wherein the congruence effect is contextually reduced. This flexibility has been observed in perceptual fluency, through the clarity sequence effect (Dreisbach & Fischer, 2011), but has not yet been explored extensively with other cognitive control markers. The current study aimed to investigate whether perceptual fluency exhibits similar contextual modulation to cognitive control. Participants were tasked with a gender identification task using either clear or blurry stimuli. Experiment 1 aimed to demonstrate the clarity sequence effect, while Experiment 2 focused on illustrating the list wide proportion clarity effect. Experiment 3 aimed to establish the item specific proportion clarity effect. Our findings revealed that perceptual fluency was only contextually modulated during the item specific proportion clarity effect. The other effects were due to binding effects. Therefore, our results suggest that perceptual fluency and cognitive control behave similarly when stimuli are modulated on an item specific basis.

Email: Myeong-Ho Sohn, mhsohn@gwu.edu

12:00-1:30 PM (2004)

Distributional Analyses of the Stroop, Simon, and Flanker Tasks and Their Relationship with Working Memory Capacities.

PABLO CROIZET, CNRS, Université Clermont Auvergne, & LAPSCO, CLEMENT BELLETIER, Université Clermont Auvergne & LAPSCO UMR 6024 CNRS, CLOTILDE JOBERT, CNRS, Université Clermont Auvergne, & LAPSCO, LUDOVIC FERRAND, CNRS & LAPSCO — Cognitive control involves Inhibition and working memory capacities (WMC). It is crucial for adapting to new

situations. We aimed to study the link between these two components of cognitive control. Inhibition was assessed using the Stroop, Simon, and flanker tasks. These tasks have one relevant and another task-irrelevant dimension. In congruent trials, both dimensions activate the same response, while they activate opposing ones in incongruent trials. Interference, consisting in the reaction time (RT) difference between the two types of trials confounds both facilitation and interference of the irrelevant dimension. To better compare these tasks we added neutral trials, allowing for a distinction between pure interference and facilitation. Distributional analyses were used to visualize the impact of RT on interference. Additionally, we aimed to evaluate the relationship between pure interference and WMC. Our results challenge current theoretical frameworks and suggest that the three tasks involve different processes while they are classically considered as three similar measures of cognitive control. Additionally, WMC did not predict flanker performance, but higher capacities were associated with reduced Simon and Stroop interference.

Email: PABLO CROIZET, pablo.croizet@uca.fr

12:00-1:30 PM (2005)

Goal-Directed and Habitual Control In Sports Bettors.

TODD A. KAHAN, *Bates College*, SIMON L. MCCORMICK, *Bates College* — Sports betting became legal in the United States in May 2018 after the Supreme Court overturned the Amateur Sports Protection Act. Since then, there has been a dramatic increase in online betting, raising concerns among mental health experts (Granero et al., 2020). Emerging evidence indicates that gambling disorder and substance use disorder share similarities in their neurobiological underpinnings. The current study examined whether gambling severity, like other forms of addiction, is related to decreased levels of goal-directed relative to habitual behaviors. To evaluate this, we recruited 111 participants from Amazon Mechanical Turk to complete a slips-of-action task, which is associated with impaired cognitive control in alcohol-dependent patients (Sjoerds et al., 2013). The results indicate that individuals with more severe gambling problems exhibit an imbalance between goal-directed and habitual action control compared to non-gamblers, reflecting patterns seen in other types of addiction.

Email: Todd Kahan, tkahan@bates.edu

12:00-1:30 PM (2006)

Images of Nature Elicit Less Mind Wandering than Images of Urban Settings. JASON M.

WATSON, *University of Colorado, Denver*, BROOKE CHARBONNEAU, *Montana State University*, PIERCE JOHNSON, *University at Albany, SUNY*, KEITH A. HUTCHISON, *Montana State University* — Interacting with nature has been shown to produce cognitive and affective benefits. Watson et al. (2023) developed a novel database of 600 nature and 600 urban images with different perceptual characteristics (e.g., trees, water, buildings, cars) for use in lab experiments addressing the psychological effects of these settings. Watson et al. found that nature images were more fascinating, liked, and mysterious than urban images. Moreover, they found that nature images elicited more resilience, mindfulness, and awe but less anxiety than urban ones. The present study randomly selected a sub-set of images from the Watson et al. database, replicated their results, and further demonstrated that nature images elicit less mind wandering than urban ones. Implications of these findings will be discussed with regard to attention restoration theory, the notion that while directed attention can be fatigued by cognitively challenging tasks, it can also be replenished by nature, improving one's ability to maintain task goals and minimize distractions. Specifically, reduced mind wandering in response to nature images suggests directed attention may need to be optimally engaged, rather than rest, to be effectively restored.

Email: Jason Watson, jason.watson@ucdenver.edu

12:00-1:30 PM (2007)

Mechanism of Simon Conflict Resolution: Evidence from EEG Decoding. YOON SEO LEE, Korea University, YANG SEOK CHO, Korea University

— The congruency sequence effect (CSE) refers to a reduced congruency effect after incongruent trials compared to after congruent trials. This sequential modulation is thought to arise, at least in part, from the cognitive control managing conflict resolution. In the present study, we attempted to decode human scalp EEG recordings of task-relevant and task-irrelevant information to understand the nature of the conflict resolution process. Participants performed two color Simon tasks alternately on a trial-by-trial basis. For the decoding analysis, separate models were trained for color and location information for task-relevant and task-irrelevant information, respectively. The results indicated

a difference in decoding accuracy for task-irrelevant information following incongruent trials, whereas no such difference was observed for task-relevant information. These findings suggest that conflict resolution in Simon tasks is primarily associated with the modification of task-irrelevant information processing rather than task-relevant information processing.

Email: Yoon Seo Lee, yoonlee9557@gmail.com

12:00-1:30 PM (2008)

Negative Priming Induced by Short-Term and Long-Term Distractor Sets. HSUAN-FU CHAO,

National Tsing Hua University — According to the distractor set hypothesis, a stimulus matching the distractor set will produce negative priming. Previous studies have established a long-term distractor set (e.g., consistently ignoring yellow stimuli) at the start of an experiment. This study examines whether negative priming can be induced by both short-term and long-term distractor sets. The short-term distractor set was manipulated by providing the color of the distractor at the beginning of each trial. The results suggest that negative priming can be induced by both short-term and long-term distractor sets.

Email: Hsuan-Fu Chao, hfchao@mx.nthu.edu.tw

12:00-1:30 PM (2009)

Old Enough for the Cocktail Party? Children Notice their Own Name in the Irrelevant Channel. JAN PHILIPP RÖER, Witten/Herdecke

University, DOMINIC GUITARD, *Cardiff University*, BENEDIKT GREIL, *Heidelberg University*, NELSON COWAN, *University of Missouri* — We describe a preregistered replication of the classical cocktail party phenomenon in children, investigating attention scope and control during elementary school years. How often should children notice their own names in an ignored speech channel? Either direction of difference from younger adults could be expected, one effect based on the scope of attention (children should notice their names less often because of their lower capacity to apprehend multiple items simultaneously), and the opposite effect based on the control of attention (children should notice their names more often because of their poorer ability to suppress items in the irrelevant channel). A retrospective questionnaire indicated that 29% of the younger group ($M=6.4$ years), 43% of the middle group ($M=8.2$ years), and 25% of the older group ($M=11.7$ years) noticed their



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of the PSYCHONOMIC SOCIETY

own name and those who did made more shadowing errors shortly after the presentation of the name, with no simple developmental trend and no relation to individual differences in working memory capacity.

Email: Jan Philipp Röer, jan.roer@uni-wh.de

12:00-1:30 PM (2010)

The Strategic Control of Attention across Single- and Dual-Target Search.

MOLLY R. MCKINNEY, *Texas A&M University*, BRIAN A. ANDERSON, *Texas A&M University* — External factors (e.g., heterogeneity of items) can impose inefficiency in search performance, but an individual's strategy can also affect efficiency. In an ongoing study (N=22), we utilize the Adaptive Choice Visual Search (ACVS) task to impose an inefficient visual search environment on one group in which there is only one red or blue target to be found. Critically, for 50% of the trials, the target can be found in the smaller subset of red and blue items. Then, these participants complete a typical implementation of the ACVS task in which there are two targets on each trial, one of which is contained in the smaller subset of red and blue items (optimal target). Performance in this free-choice phase was compared to participants who did not experience the prior forced-choice phase. Preliminary results suggest that both groups show a robust and comparable tendency toward the optimal strategy, with a correlation between the tendency to search among the smaller subset of items across the two phases of the task. Thus, we did not find evidence for a hysteresis effect resulting from the inability to utilize the optimal strategy, but we did find evidence that how a person searches for a single target predicts later strategy use.

Email: Molly McKinney, mollyr.mckinney@exchange.tamu.edu

12:00-1:30 PM (2011)

P.A.R.T.: A Novel Online Platform for Advancing Research in Cognitive Control.

MARC YANGÜEZ, *Northeastern University*, JAAP MUNNEKE, VY NGO, AUDREY CARRILLO, *Northeastern University*, SUSANNE M. JAEGLI, *Northeastern University*, AARON R. SEITZ, *Northeastern University* — Measuring cognitive control presents significant challenges due to the high variability of tasks used across labs, leading to intense debates regarding whether cognitive control can be identified as a psychometric construct. Moreover, different sites often use different experimental platforms (e.g., online vs offline), and some

commonly used systems for measuring cognitive control lack (i) gamification features, (ii) flexible configurability, or (iii) compatibility with remote data collection (e.g., e-prime, Matlab, etc.). To address these challenges, we introduce P.A.R.T., an online platform designed to support open science and facilitate more accessible and inclusive research. P.A.R.T. enables harmonized data collection across sites, flexible configuration of cognitive tasks, gamified protocols, data collection in various settings (e.g., in-lab, in-home, schools, etc.) and is compatible with peripheral devices (EEG, fMRI, eye-tracking, etc.). Importantly, P.A.R.T. offers detailed data logging, promoting fine-structure modeling. This platform aims to standardize research practices, promote data collection across labs, and improve task quality to facilitate a deeper understanding of individual differences in cognitive control.

Email: Marc Yanguez, m.yanguez@northeastern.edu

12:00-1:30 PM (2012)

Criterion Shifts in a Sustained Attention Task Vary on Individual Differences in Inattention.

HENRI ETEL SKINNER, *University of California, Santa Barbara*, LAUREN LEE, *University of California, Santa Barbara*, BARRY GIESBRECHT, *University of California, Santa Barbara* — Sustained attention is necessary for many daily tasks, but performance often fails over time, a phenomenon known as the vigilance decrement. This phenomenon has largely been characterized using changes in hit rate alone. Here we apply signal detection theory to investigate the relative contributions of sensitivity (d') and criterion (bias) in the vigilance decrement. Subjects monitored a continuous stream of face and car images and reported when an image appeared for a longer duration. Subjects received detection rate feedback after each task block. A decrease in sensitivity across time was observed both within blocks and across blocks. Additionally, criterion decreased (i.e., became more liberal) across blocks. Importantly, higher self-report measures of inattention (Trait Mind-Wandering, Cognitive Failures Questionnaire, Adult ADHD Self-Report Scale) were related to steeper declines in criterion. This suggests feedback directed towards optimizing detection rate might especially prompt individuals with greater trait inattention to shift to a more liberal response bias. One potential explanation is individuals who are unable to maintain vigilance instead adjust their response strategy towards the same goal.



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Email: Henri Etel Skinner, henri@ucsb.edu

12:00-1:30 PM (2013)

Individual Differences in False Memories in the Deese–Roediger–McDermott Paradigm: An Attention Control Account. DANIEL P. BYRNES, *Kent State University*, CHRISTOPHER A. WAS, *Kent State University* — This study examined the underlying mechanisms of false memories observed in the Deese–Roediger–McDermott (DRM) paradigm. Previous work indicates that greater working memory capacity (WMC) and inhibition are associated with lower susceptibility to such false memories. We hypothesized that this may be, due to the closely related construct of attention control. We examined if individual differences in attention control accounted for variance in susceptibility to false memories, above and beyond inhibition and WMC alone. Using a standard DRM procedure in an individual differences approach to examine how WMC, inhibition, and attention control contribute to false word recall on the DRM task. Our results indicate that attention control accounts for unique variance in susceptibility to the false memories above and beyond that of WMC and inhibition, suggesting that attention control may be more directly related to the true underlying mechanisms behind false memories.

Email: Daniel Byrnes, dbyrnes1@kent.edu

12:00-1:30 PM (2014)

Individual Differences in Metacognitive Judgments of Learning and Perception of TUT Rate. MICHAEL MCHALE, *Kent State University*, CHRISTOPHER A. WAS, *Kent State University* — The present study investigated individual differences in performance judgment and retrospective evaluation of in-task task-unrelated thought (TUT) rate. Participants first completed an online flanker task (10 blocks and 350 total trials) with 10 interspersed categorical thought probes to measure in-task mind-wandering. After this, participants completed a metacognitive measure to report their predicted task score, following their prediction they were then provided with their actual task-performance score. Lastly, participants retrospectively reported their in-task mind-wandered via a 0 to 10 Likert scale. We used mediation analysis to test two questions. First, does task performance mediate the relationship between in-task and retrospective TUT rate. Second, does task performance judgment accuracy (predicted vs. actual task performance) mediate the relationship between in-

lecture TUT rate and retrospective reporting of TUT rate. Lastly, we tested if task-performance judgment accuracy predicts recall accuracy of in-task TUT rate (difference between in-task and retrospective TUT rate).

Email: Michael McHale, mmchale6@kent.edu

12:00-1:30 PM (2015)

On the Role of Task Position in Cognitive Testing. XAVIER CELAYA, *Arizona State University*, MATTHEW K. ROBISON, *University of Notre Dame*, HUNTER BALL, *The University of Texas at Arlington*, GENE BREWER, *University of California, Riverside* — Individual differences researchers traditionally use a fixed-order battery of tasks to measure hypothesized constructs. Fixed task order violates the principle of randomization, and fatigue may affect performance based on task position in the battery. In this study, 177 participants completed twelve tasks in randomized order measuring attention control (antisaccade, psychomotor vigilance, sustained attention to respond), working memory capacity (operation span, symmetry span, reading span), long-term memory (delayed free recall, picture-source memory, cued recall), and fluid intelligence (Raven's advanced matrices, number series, letter sets). This reanalysis investigates how the placement of each task during the battery (positions 1–12) impacts measurement. Results show that only attention control tasks consistently differed based on their battery position. In conclusion, task order generally does not affect most constructs, but attention control measures may be sensitive to task order due to diminished cognitive processes toward the end of the battery.

Email: Xavier Celaya, xcelaya@asu.edu

12:00-1:30 PM (2016)

Patterns of Low-Frequency Signals Across Brain Networks Reflect Trait-Level Differences in Attention Control. DOLLY T. SEEBURGER, *Georgia Institute of Technology*, JASON S. TSUKAHARA, *University of Miami*, NAN XU, *Georgia Institute of Technology*, SHELLA KEILHOLZ, *Georgia Institute of Technology*, ERIC SCHUMACHER, *Georgia Institute of Technology*, RANDALL W. ENGLE, *Georgia Institute of Technology* — Patterns of low-frequency signals across functional brain networks are relatively stable (Yousefi & Keilholz, 2021). This reflects a possible trait-level signal. In this individual differences study, participants

completed 2 days of a battery of cognitive tasks to assess attention control, working memory, and fluid intelligence as a latent factor. We then obtained fMRI scans during rest, 1-back and 3-back task. Attention control latent factor, and not working memory or fluid intelligence, significantly predicted differences in the connectivity between fronto-parietal and dorsal attention network as well as fronto-parietal and the default mode network. Moreover, the locus coeruleus, a region thought to be the nexus of attention control (Tsukahara & Engle 2021), was significantly correlated with the activity in the fronto-parietal control network. This suggests that high attention control individuals have better network switching of the fronto parietal to the dorsal attention from the default mode network, when cognitive load increase, while this is not as apparent in low attention control individuals. Furthermore, this relationship might be related to the connectivity of the locus coeruleus to the fronto-parietal control network.

Email: Dolly Seeburger, dseeburger3@gatech.edu

12:00-1:30 PM (2017)

Perceptual, Cognitive, and Socioemotional Dispositions Related to Art Knowledge, Interest, and Expertise.

CANDACE FARLING, *Occidental College*, ALEKSANDRA SHERMAN, *Occidental College*, REBECCA CHAMBERLAIN, *Goldsmiths, University of London*, CARMEL LEVITAN, *Occidental College* — How do skills trained in a specific domain transfer more generally? Here, we were interested in how art expertise (creation and appreciation) sharpens perceptual and cognitive skills. Previous research suggests that visual arts training may improve attention and observational skills, though more data is needed to make reliable claims. Moreover, little research has investigated whether visual arts and art appreciation could facilitate cognitive and perceptual skill development. We thus administered a study containing both an online and in-person sample assessing how art expertise and engagement relate to several cognitive and perceptual capacities. Our task battery includes measures of visual attention, working memory capacity, creativity, mental rotation, emotion recognition, empathy, and mental imagery. Art expertise is assessed in several ways: questionnaires assess art history knowledge, interest in the arts, self-reported experiences in art-making, and through two drawing tasks measuring both skill and creativity. There were significant correlations between drawing skills, art knowledge, and some (but

not all) perceptual and cognitive tasks. These results suggest that art appreciation may also improve perceptual and cognitive.

Email: Candace Farling, farling@oxy.edu

12:00-1:30 PM (2018)

Task-Evoked Pupillary Responses Reveal a Role for Attentional Intensity in Auditory

Discrimination. CODY A. MASHBURN, *Kennesaw State University*, MARK PILLAI, *Georgia Institute of Technology*, RANDALL W. ENGLE, *Georgia Institute of Technology*, JASON S. TSUKAHARA, *University of Miami* — Some of the strongest evidence that attention control processes are modality general comes from studies which leverage cross-modal prediction (Conway et al., 2001; Jastrzebski et al., 2020). While several researchers have noted a strong relationship between visual attention control and auditory feature discrimination, there has been little work to explain this correlation. We re-analyzed data from Tsukahara et al. (2020), including previously unreported oculometric data. We calculated trial-level task-evoked pupillary responses (TEPRs) and used task features (i.e., the difficulty of a discrimination) and participant responses (correct vs. incorrect) to predict trial-level TEPRs. We found that TEPRs tend to be larger on more difficult trials and for trials on which participants made errors. Both relationships varied with attention control ability, with better attention control leading to 1) larger TEPRs overall, 2) larger TEPRs on trials with more difficult discriminations, and 3) larger TEPRs on trials on which an error occurred. These results suggest that those with better attention control focus their attention more intensely than those with worse attention control, especially in response to changing task demands.

Email: Cody Mashburn, cmashburn3@gatech.edu

12:00-1:30 PM (2019)

Contextual Cueing in Virtual 3D Environments:

Learning and Updating Memories Outside the Field of View. ARTYOM ZINCHENKO, *Ludwig-Maximilians-Universität München*, ANANYA MANDAL, *Ludwig-Maximilians-Universität München*, HEINRICH RENE LIESEFELD , *University of Bremen*, THOMAS GEYER, *Ludwig-Maximilians-Universität München* — Our surrounding environment exhibits recurring patterns and regularities (contexts). Such repeated contexts improve the speed and accuracy

of visual search. While most previous studies on context-guided visual attention have employed 2D monitors, they fail to address whether attention can be directed toward areas outside the initial field of view. In a series of studies, we explored the influence of context on attentional selection in 3D virtual environments. Employing a contextual cueing task, we demonstrated that participants could locate a target object among distractors scattered across a 180-degree visual field, even when the targets shifted beyond their initial field of view. Conversely, after participants learned the target-context associations, we permanently relocated the target to a new location within the same context. Relearning to associate the already learned context with this new target location was impeded, irrespective of whether the target moved from outside to inside the field of view. Notably, context learning was also contingent on individual local-global attentional biases in 3D. These findings indicate that contextual cueing extends beyond 2D screens and manifests in more complex, 3D settings.

Email: Artyom Zinchenko, artyom.zinchenko@gmail.com

12:00-1:30 PM (2020)

Effects of Practice on the Reliability and Validity of 3-Minute 'Squared' Attention Control Tests.

ALEXANDER P. BURGOYNE, *Human Resources Research Organization (HumRRO)*, RICHARD PAK, *Clemson University*, RANDALL W. ENGLE, *Georgia Institute of Technology* — Two individuals take a cognitive test that will determine which one gets a job. One of them has practiced an online version of the test repeatedly and the other has not practiced the test at all. How does practice affect the reliability and validity of cognitive ability tests, and what are the practical consequences of subjects having different amounts of practice? We had a large sample practice the 3-minute “squared” attention control tests to investigate the effects of practice on the measures and their relations to fluid intelligence and working memory capacity. We simulated four distributions of practice (normal, uniform, skewed, and bimodal) by pseudo-randomly sampling scores from different practice attempts for each subject. Additionally, as a between-subjects manipulation, we provided on-screen “goal reminders” (i.e., task instructions) to half of subjects throughout the practice sessions. Subjects improved on the squared tasks with practice, but reliability and correlations with fluid intelligence and working memory capacity remained high even when different subjects had different amounts of practice. Goal

reminders had a negligible effect on the reliability and validity of the attention control measures.

Email: Alexander Burgoyne, burgoyn4@gmail.com

12:00-1:30 PM (2021)

It's Not Discrete: Valence Drives Age Differences in the Way Emotional Stimuli Are Attended.

BRIANA L. KENNEDY, *The University of Western Australia*, CHARLOTTE A. FOX, *The University of Western Australia & Telethon Kids Institute*, MARA MATHER, *University of Southern California* — In a pattern known as the positivity effect, older adults prioritize positive and deprioritize negative information compared to younger adults. The positivity effect is operationalized as a 2×2 interaction between age (younger versus older) and valence (negative versus positive). However, several discrete emotions fall within negative and positive categories, and these discrete emotions can systematically vary by other dimensions (e.g., arousal) and/or elicit different physiological responses that may change with age. In the current study, we examined age differences in the way different discrete emotions were attended. In two sessions that spanned across two days, younger adults and older adults completed an emotion-induced blindness task with distractor images that depicted fearful, disgusting, exciting, content, or emotionally neutral scenes. The positivity effect was evident across negative and positive distractor conditions, but there was little difference between discrete emotions within each negative and positive valence category. These results are further evidence that valence drives emotion-attention differences between younger and older adults.

Email: Briana Kennedy, briana.kennedy@uwa.edu.au

12:00-1:30 PM (2022)

Are Individual Differences in Boundary Extension Associated with Differences in Eye Movements During Encoding? MEGHAN CAULFIELD, *Seton Hall University*, AMANDA BURNS, *Seton Hall University*, RACHEL GERRIE, *Seton Hall University*, HELENE INTRAUB, *University of Delaware*, IRENE P. KAN, *Villanova University* —

Boundary extension (BE) occurs when people incorrectly recall perceiving beyond the edges of a studied scene. Recent research found that individuals with high behavioral inhibition (BI), a temperament related to risk for anxiety, are less prone to making the BE error. Here,



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we wished to determine if reduced BE reflects a different scanning strategy (e.g., greater scrutiny of the boundary region or pictured object). Participants studied 20 scenes for 15s each while having their eye movements recorded, then provided boundary ratings for 20 test pictures, some of which were the same as the studied scene and some of which were of a closer or wider-angle than studied. A significant correlation between BI and boundary ratings indicated that those with higher scores on the Adult Measure of Behavioural Inhibition (AMBI) were less susceptible to the BE error for wide-angle scenes. Eye tracking measures revealed no difference in the number of fixations or the total time spent fixating the boundary region or the main object of the scene. Overall, results suggest that while BI can account for some individual differences in BE, it may not be due to scanning strategy during encoding.

Email: Meghan Caulfield, meghan.caufield@shu.edu

12:00-1:30 PM (2023)

Creative Climates: The Impact of Environmental Context on Group and Individual Creativity.

MICHAEL HOPKINS, *University of South Florida*, RUTH ANN ATCHLEY, *University of South Florida*, PAUL ATCHLEY, *University of South Florida*, DELNAZ TAHERKALATEH, *University of South Florida*, TAMIRA GODFREY-ANDRADE, *University of South Florida*, MATTHEW C. SIMPSON, *University of South Florida*, EARNEST CHERRY, *University of South Florida*, ALINA PETERSON, *The Pennsylvania State University* — As urbanization accelerates, the cognitive effects of increasing exposure to manmade environments and decreased time spent in nature becomes even more important to understand. The current research examines individual and collaborative creativity in built and natural settings. Prior findings that groups outperform individuals on verbal creativity tasks (Hopkins et al., 2023) are replicated and extended through the addition of group-based collective intelligence as a predictor. Attention Restoration Theory (ART) suggests nature exposure facilitates enhanced creativity (Atchley, Strayer, & Atchley, 2012). Higher creativity is predicted in participants exposed to outdoor/natural environments compared to indoors/built environments. An interaction effect between environment and participation type (group vs. individual) is also predicted, such that outdoor-exposed groups are expected to perform better than suggested by the sum of the independent effects. This study aims to contribute to the

literatures examining creativity, natural environments, and group dynamics, providing insights into the optimal conditions for fostering innovation.

Email: Michael Hopkins, hpm4@usf.edu

12:00-1:30 PM (2024)

The Impact of Spatial Prediction on Allocation of Attention.

KAROLINA KRZYS, *Queen's University*, MUBEENA MISTRY, *Queen's University*, TYLER YAN, *Queen's University*, MONICA S. CASTELHANO, *Queen's University* — Past research shows that object's spatial associations with scene context guide attention. However, there is a considerable variability in how consistently objects are spatially constrained, affecting the reliability of their associations. Here, we examined attentional allocation when based on the variable predictability of a target's likely location. We first quantified 150 objects' associations and then examined how attention was allocated during search for high or low predictability targets. Attention was probed with a sudden onset of a distractor object in 50% of trials. The distractor appeared in a relevant or irrelevant scene region relative to the target location. We found a significant interaction between the target's predictability and the distractor's placement. The distractor was more likely to capture attention in relevant regions for high than low predictability and less likely in irrelevant regions. This suggests attention was spatially constrained to the attended region when predictability was high but spread out across the scene when predictability was low. Our findings highlight the impact of spatial predictability on attention, demonstrating the immediate influence of higher order information on processing.

Email: Karolina Krzys, karolina.j.krzys@gmail.com

12:00-1:30 PM (2025)

L2 Development in Advanced Learners: Working Memory and Aptitude Effects.

KIRSTEN M. HUMMEL, *Laval University* — This study examines advanced francophone learners of English in order to assess effects of working memory (WM) and language aptitude on the development of second language (L2) skills over a 5-month period. Some studies have reported WM (central executive) links with L2 learning (e.g., Biedron, 2022), while others (e.g., Grey et al., 2015) have not. Phonological short-term memory (PSTM) has been associated with L2 acquisition (e.g., Verhagen & Leseman, 2016), primarily at lower proficiency levels

(Serafini & Sanz, 2016). Traditional aptitude measures are generally strong predictors of language learning at early stages (e.g., Li, 2016). Our study took L2 proficiency measures before and after a 5-month period among students enrolled in a TESL degree program. WM measures included a composite span task (executive function) and nonword repetition and recognition tasks (PSTM). Aptitude measures consisted of the French version of the MLAT (short form). Variables were highly correlated between Time 1 and Time 2. However, results revealed the only predictor of L2 improvement (reading comprehension) was one component of the WM span task (symmetry task). Results will be discussed, including possible factors to explain results.

Email: Kirsten Hummel, kirsten.hummel@lli.ulaval.ca

12:00-1:30 PM (2026)

Language Representation in Cognitive Research on Bilingualism: Trends Across Three Decades.

EMILY L. MALLIN, *Texas A&M University*, JYOTSNA VAID, *Texas A&M University*, DUN-YA HU, *Texas A&M University* — Psycholinguistic research has long been marked by a Eurocentric bias, with much of the field's literature centering around English and other western European languages. This homogeneity in language representation has been noted in cognitive science overall (Blasi et al., 2022); however, little attention has been directed at studies of bilingualism (but see Vaid, 2022). We screened two leading journals in the field of cognitive bilingualism research, *International Journal of Bilingualism* and *Bilingualism: Language and Cognition*, for empirical studies published between 1993 to 2024, inclusive. For each study, we coded 1) the language or languages that were the focus of the study, and 2) all (other) languages of the participants, classifying them by language family. Similarly to cognitive science overall, we found that bilingualism research has exhibited a Eurocentric bias for the last three decades. We consider the causes of this bias and its theoretical and applied implications.

Email: Emily Mallin, emily.mallin@tamu.edu

12:00-1:30 PM (2027)

The Neural Bases of Theory of Mind: The Role of Bilingual Typology.

HANNAH G. TREADWAY, *University of Florida*, ZOE KA PUI CHEUNG, *University of Florida*, ESTER NAVARRO, *St. John's University*, ELEONORA ROSSI, *University of Florida*

— Theory of mind (ToM), or the ability to felicitously assign mental states to others, has previously exhibited sensitivity to individual differences in verbal memory, working memory, executive control, and bilingual status. Recent studies reveal that bilinguals reliably outperform monolinguals on false-belief (FB) tasks (Rubio-Fernández & Glucksberg, 2012; Navarro & Conway, 2021), a signature of ToM proficiency. It remains unknown (1) which neural processes underlie the performance of bilingual adults on ToM tasks and (2) whether distinct bilingual profiles differentially modulate said processes. In the present study, Spanish-English heritage bilinguals (expected n=30) complete a belief reasoning task (Guan et al., 2018) with concurrent EEG recording. Event-related potentials and oscillations elicited during FB and true-belief (TB) trials will be comparatively analyzed. Results will be discussed considering individual differences of inhibitory control, resting-state EEG, metalinguistic awareness, language profiles, and personal social network. This study will shed light on how experiential and cognitive dimensions of bilingualism interact in the neural underpinnings of social competence and communication.

Email: Hannah Treadway, treadwayhannah@ufl.edu

12:00-1:30 PM (2028)

How Bilingual Language Experience Shapes Learning of American Sign Language.

REMIE LOU H. GEHA, *University of California, Irvine*, SHANNON SYRACUSE, *University of California, Irvine Bilingualism, Mind, and Brain Lab*, KAILEY SUDA, *University of California, Irvine Bilingualism, Mind, and Brain Lab*, JUDITH F. KROLL, *University of California, Irvine* — Previous studies suggest bilinguals are superior language learners, but the impact of different types of language experience is unclear. This study examined the acquisition of American Sign Language (ASL) by two groups of unimodal English-speaking bilinguals, one of which speaks Spanish as a home language and the other which speaks Mandarin as the native language. Participants engaged in Zoom sessions to learn ASL using a mobile app, ASL Bloom. They completed tasks that measured language history and dominance (a questionnaire, verbal fluency, MINT Sprint) and cognitive abilities (memory span, AX-CPT). ASL learning was assessed using a translation recognition task (TRT). Preliminary findings revealed that Spanish speakers were more dominant in English than Spanish but that Mandarin-English bilinguals



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maintained dominance in Mandarin. Although they were similar in the speed of performing the TRT task, and similar in the profile of their cognitive performance, initial results suggested that Spanish speakers were more accurate in recognizing ASL signs. These data suggest that language dominance rather than language distance may be critical to new language learning.

Email: Remie Lou Geha, rlegeha@gmail.com

12:00-1:30 PM (2029)

Factors Affecting Phonological Processing of Japanese Kanji Word by L1-Chinese Learners: Reading Consistency, Lexical Frequency, and L2 Proficiency. NAN KANG, *Kyoto University*, SATORU SAITO, *Kyoto University* — Previous studies suggested that Japanese kanji words with high frequency and consistent/typical pronunciation have advantages in the oral reading task. The current study aimed to replicate this phenomenon with learners of Japanese as a second language (L2). Experiments 1 and 2 were conducted among university students with advanced and intermediate L2 proficiency. Lexical frequency (high/low) and reading consistency (consistent/atypical/atypical) of the materials in Fushimi et al. (1999) were re-evaluated through corpus analysis and manipulated accordingly. The results of mixed-effects regression models showed faster responses and higher reading accuracy for high-frequency words than low-frequency words, and the effect of reading consistency was produced in a graded pattern (i.e., reaction time/reading error rate: consistent

Email: Nan Kang, kang.nan.66r@st.kyoto-u.ac.jp

12:00-1:30 PM (2030)

Language Brokering: Capturing Early Life Translation Experience. GUADALUPE A. A. MENDOZA, *University of California, Irvine*, JUDITH F. KROLL, *University of California, Irvine* — The dynamic interaction between two language systems is a key element of bilingualism, yet certain experiences may alter the degree of interaction. One such experience is language brokering, the informal practice wherein many heritage bilinguals translate and interpret for their families and communities, which requires a distinctly integrated use of the two languages. While past studies revealed more integrated conceptual representations (López & Vaid, 2018), the present study seeks to investigate the long-term cognitive consequences of the

translation process itself, focusing on the connectedness between items in the bilingual lexicon. Spanish-English heritage bilinguals with varying levels of language brokering experiences completed a translation-recognition task where they decided whether or not two words presented are a translation of each other. Data collection is currently underway, focusing on capturing the affordances of serving as a language broker and how this experience may foster cognitive flexibility and increased connectedness between a bilingual's two languages.

Email: Guadalupe A. Mendoza, guadalalam@uci.edu

12:00-1:30 PM (2031)

The Impact of Language Experiences on Subcortical Brain Volumes. SOMAYYA SALEEMI, *University of Ottawa*, SHANNA KOUSAIE, *University of Ottawa* — This study examines the relationship between subcortical brain volumes and language experience, including age-of-acquisition, language proficiency and usage, and code-switching frequency, measured along a continuum. Structural neuroimaging is used to quantify the volume of the hippocampus, amygdala, and putamen. By incorporating comprehensive measures of language experience and proficiency, the study aims to elucidate how different dimensions of bilingual language experience influence subcortical brain morphology in a sample of young adult bilinguals ($n=20$; 15 females; mean age=20.8 years). Analysis is currently underway. Automated segmentation algorithms using FSL-FIRST are used for subcortical structure segmentation. Following segmentation, volume is extracted and related to continuous measures of language experience in regression-based analyses. A positive association between language experience and volume in the hippocampus, amygdala, and putamen is expected. The potential for nonlinear relationships will be explored.

Email: Somayya Saleemi, somayyas6@gmail.com

12:00-1:30 PM (2032)

Human Assessments of Machine Learning Models: Social Media Topics at the Debut of the Pandemic. AADYA SINGH, *Cornell University*, VALÉRIE F. REYNA, *Cornell University*, DAVID BRONIATOWSKI, *The George Washington University*, SARAH EDELSON, *Cornell University*, MEGAN BIRMINGHAM, *Cornell University*, SOPHIA

WATKINS, *Cornell University*, RACHEL ZUN, *Cornell University*, EMMA LAMOUNTAIN, *Cornell University*, CHLOE ASACK, *Cornell University*, JORDAN ROUE, *Cornell University* — Understanding the public's concerns is crucial for risk communication during public-health crises but rapid summarization is challenging. We used topic models to summarize social media messages about COVID-19 and assessed validity of model outputs with novel systematic techniques. We obtained all posts in public Facebook pages and groups containing such keywords as "coronavirus" for 60 days at the debut of the pandemic. The model extracted 50 sets (topics) of 10 words and 10 examples representative of the corpuses of posts. Human judges (N=118 students and 100 MTurkers) rated the meaningful coherence of each topic's words, examples, and fit of examples to words, as well as summarizing the gist of the topics and examples. Human ratings were correlated within ($r=.92-.96$) and across groups, and related to qualitative summaries of gist. Correlations were lower between human ratings and overall machine coherence ($r=.27-.37$ for students; .28-.35 for MTurkers) but were stronger for such machine metrics as distance from a uniform distribution ($r=.59, .64$, and .56 for students; .54, .61, and .55 for MTurkers). Results suggest that machine-generated topics imperfectly reflect meaningful (nonrandom) categories interpretable by human users.

Email: Aadya Singh, as3295@cornell.edu

12:00-1:30 PM (2033)

Attributions of Negativity Toward the Past, Present, and Future in Minority Groups Is Predicted by Systematic Inequalities. JAYLENE I. VÁZQUEZ, *Case Western Reserve University*, DOROTEJA RUBEZ, *Case Western Reserve University*, KYLE LAFOLLETTE, *Case Western Reserve University* — The influence of socioeconomic status (SES) and racial discrimination on cognitive biases is well-documented. However, there is a gap in understanding how systematic inequalities impact attributions of negativity toward the past, present, and future. Negativity biases can be particularly harmful in minority groups by limiting opportunities for social mobility. To investigate mechanisms for negativity, we analyzed data from 388 participants, including Black, White, Hispanic, and Non-Hispanic individuals, each completing an Implicit Association Test (IAT) measuring implicit attitudes toward different temporal dimensions. Participants' incomes were estimated using Standard

Occupation Classifications, and neighborhood socioeconomic disadvantage was determined from zip codes. Neighborhood ethnic and racial concentrations were used as proximal measures of potential experienced discrimination. Diffusion models were applied to IAT data to distinguish negativity biases related to the past, present, and future from other decision-making processes. Results provide insights into how systemic inequalities influence cognitive attributions, suggesting strategies for addressing disparities.

Email: Jaylene Vázquez, jiv5@case.edu

12:00-1:30 PM (2034)

Enhancing Biodiversity Learning Through Analogical Reasoning and Augmented Reality: An Ecological and Experimental Study. LAURA LEON PEREZ, *University of Geneva*, JULIEN MERCIER, *Haute École d'Ingénierie et de Gestion du Canton de Vaud (HEIG-VD)*, CATHERINE AUDRIN, *University of Teacher Education Vaud*, EMMANUEL SANDER, *University of Geneva IDEA Lab*, OLIVIER ERTZ, *Haute École d'Ingénierie et de Gestion du Canton de Vaud (HEIG-VD)* — The complexity of biodiversity conceptions, encompassing both scientific and political dimensions, holds significant challenges. Effective cognitive approaches for enhancing biodiversity conceptual development are essential. This study explores the effect of an intervention using analogical reasoning combined with augmented reality (AR) technology to foster biodiversity learning among school pupils. Analogies were used for their help in grasping complex ideas by mobilizing familiar concepts and AR technology was employed because it facilitates nature exploration through its mobility and clarified abstract concepts through visualization. In a study involving 170 students aged 12 to 17, significant increase in knowledge acquisition and spatial exploration were observed in the AR condition compared to those using non-digital methods, emphasizing the potential of AR to improve learning. However, further research is needed to assess whether AR might cause distractions, potentially leading to disconnection from the natural environment. Continuing to improve this teaching approach shows great potential for enhancing students' understanding of biodiversity concepts and increasing their environmental awareness.

Email: Laura Leon Perez, laura.leonperez@unige.ch Julien Mercier, julien.mercier@heig-vd.ch

12:00-1:30 PM (2035)

Improving Category Learning through Graded Classification.

MERCURY MASON, *Binghamton University, SUNY*, KENNETH J. KURTZ, *Binghamton University, SUNY* — Real-world categories are thought to exhibit graded structure, however, in laboratory studies learning and sorting by family resemblance are rarely observed relative to unidimensional solutions. We hypothesize that the artificial discreteness of laboratory classification tasks may undermine psychological sensitivity and use of gradedness. To address this, we introduce a graded classification task where participants provide responses involving both class and quality assessments ("good A," "very good B") and receive feedback on both components. Results suggest improved learning, better acquisition of graded structure, and greater resistance to unidimensional solutions compared to traditional artificial classification tasks. Further, a better grasp of the graded structure enhances performance on subsequent test tasks that require a graded category representation. These findings suggest that incorporating graded assessments in classification tasks can facilitate more effective category learning and better align laboratory studies with the graded nature of real-world categories and feedback.

Email: Mercury Mason, mmason2@binghamton.edu

12:00-1:30 PM (2036)

Take Me Down to the Prototype City, But Which One? Differences in Semantic Representations of Settlement Between Canada and the United States.

CHELSEA MCKENZIE, *The University of Western Ontario*, LIZA KHOLWADWALA, *The University of Western Ontario*, LYDIA HELEN TZIANAS, *The University of Western Ontario*, NICOLE CARRIER, *The University of Western Ontario*, UROOJ ANEES, *The University of Western Ontario*, ALEXIA B. ROMITA, *The University of Western Ontario*, JOHN PAUL MINDA, *The University of Western Ontario* — The present study explored whether people share a common understanding of different settlement concepts despite individual variation. Participants completed a property listing task where they were asked to generate features for 57 settlement concepts. Hierarchical cluster analysis identified distinct clusters based on shared features. Central tendencies extracted from clusters at different levels of abstraction revealed featural prototypes and an overall family resemblance structure.

To probe the effects of regional context on conceptual structure, subsequent cluster analyses used a subset of participants who were long-term residents of Canada or the United States. Prototypical features varied regionally, suggesting an effect of geographical region on conceptual structure. However, the results should be interpreted cautiously, as more data is needed to understand such differences in representation. Findings centralize the utility of semantic feature norms in understanding how people collectively think about where they live, and the importance of context effects on representations of settlements.

Email: Chelsea McKenzie, cmcken7@uwo.ca

12:00-1:30 PM (2037)

The Role of Semantic Memory Structure on Verbal Fluency and Creativity.

PAUL V. DISTEFANO, *The Pennsylvania State University*, ROGER E. BEATY, *The Pennsylvania State University*, YOED N. KENETT, *Technion-Israel Institute of Technology*, MICHELE T. DIAZ, *The Pennsylvania State University* — Semantic memory structure influences language production, word retrieval, and higher-order cognition, including creativity. Previous research has found that creative individuals have less modular and more interconnected semantic networks allowing them to flexibly connect concepts. However, this work has exclusively been conducted on taxonomic semantic categories such as animals. This study investigates how verbal fluency generation varies across taxonomic, thematic, relational, and goal-based semantic categories to better understand how semantic memory structure influences creativity. Taxonomic categories are concrete and hierarchically organized, while thematic, relational, and goal-based categories are abstract, relying on schemas or contextual information. In a sample of 325 college-aged participants, we use network science methods to examine how category abstractness relates to divergent thinking. We hypothesize that less modular semantic structures facilitate higher verbal fluency production, particularly in more abstract categories, as well as higher creative performance. This research has implications for understanding memory organization, categorization, and creativity generally.

Email: Paul DiStefano, pvd5334@psu.edu

12:00-1:30 PM (2038)

Being Alive: English Speakers Understand 'Aliveness' in Terms of Gradient Capacity for

Agency as Well as Folk-Biological Categories.

LILIA RISSMAN, *Rochester Institute of Technology* — English speakers learn that the category "alive" is binary. Nonetheless, when making speeded decisions, adults are more likely to report that animals are alive than plants and that abiotic natural kinds (like a comet) are alive than artifacts (Goldberg & Thompson-Schill, 2009). I tested the role of categorical vs. gradient knowledge in predicting English speakers' aliveness judgments (104 adults viewed a word or image and had one second to decide whether the entity was alive or not; 118 entities tested). I hypothesized that an entity's gradient capacity for agency (how much it can move, perceive, interact, and cause events, as rated by an additional 180 adults) would predict aliveness judgments and RTs. Using classification and regression trees to partition the entities, I pitted these agency properties against an entity's category (animal, plant, abiotic natural kind, artifact). Both types of knowledge were predictive, suggesting that the binary, biological understanding of "alive" is constructed from a more foundational understanding of an entity's gradient capacity for agency. Responses were similar when people viewed words vs. images, showing that non-binary interpretations of "alive" are not stimulus-specific.

Email: Lilia Rissman, lrrgsh@rit.edu

12:00-1:30 PM (2039)

Constructing a Psychological Feature Space Without Collecting Any Human Data Using ChatGPT.

CRAIG SANDERS, *Meta Platforms, Inc.* — Recent work has shown that feature vectors of naturalistic stimuli extracted from deep networks can be utilized with cognitive models to explain human behavior on tasks such as categorization. However, the networks' feature spaces generally require retraining or re-weighting using human data to make accurate predictions. I demonstrate that ChatGPT can be used to generate a psychological feature space without any retraining or re-weighting. I showed ChatGPT images of rocks and asked it to rate each rock on several psychologically meaningful dimensions, and I asked it to rate the similarity of each pair of rocks. ChatGPT's responses correlated highly with independent human responses, and its feature space derived using multi-dimensional scaling was remarkably similar to the feature space derived from human data. These findings indicate that generative AI could be used to simulate realistic human data or automate certain types of data

collection, enabling more large-scale studies with naturalistic stimuli.

Email: Craig Sanders, crasanders@gmail.com

12:00-1:30 PM (2040)

Observation and Testing in Category Learning.

MIKE KALISH, *Syracuse University*, YU-WEI CHANG, *Syracuse University*, SINEM AYTAC, *Syracuse University*, DANIEL CORRAL, *Syracuse University* — The way in which people learn novel categorical discriminations remains an elusive target for cognitive theory. One aspect of learning is that it can proceed in the absence of error. Most cognitive theories of category learning are error-driven, although fully Bayesian learners are not. The issue is complicated by the nature of the learning required, namely, when people learn new categorical distinctions, they learn both new associations of items with labels and new ways to attend to the task-relevant stimulus properties. Results comparing learning with and without correction, but with feedback, have been mixed. Learning with corrective feedback is supervised learning in which a guess is required before the correct category label is provided, while feedback without correction provides the label at the same time as the stimulus item ("observational" learning). We ran a version of the classic Medin, Alton, Edelson & Frako (1982) design in both a corrective feedback and observational condition. This task pits a perfect relational (XOR) against an imperfect single predictor in a discrete feature space. We find differences in the nature and stability of people's response patterns which pose challenges to contemporary theorizing.

Email: Mike Kalish, mlk8300@gmail.com

12:00-1:30 PM (2041)

Action or Reaction: Prediction and Task

Strategy.

MICHAEL S. GILBERT, *University of California, Riverside*, DAVID A. ROSENBAUM, *University of California, Riverside* — Many cognitive processes rely on prediction. However, the cognitive load of prediction can be costly, even though low-level predictive processes seem to work effortlessly. If prediction is so central to cognition, why is it so often costly? In a series of experiments that used a novel task called the Anywhere Click method, participants were asked to click anywhere on a screen to cause a target to appear and then to click on that target. These targets appeared in a repeating pattern. However, even when informed that the pattern existed, most participants used



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a simple reactive strategy instead of a predictive one. Further variations of the experiment have been performed to evaluate the basis for these findings. These experiments will form the core of future work aimed at disentangling the link between low-level prediction and costly behavioral predictive strategies.

Email: Michael Gilbert, mgilb004@ucr.edu

12:00-1:30 PM (2042)

Attitudes, Not Nudges, Drive Vaccination. JAVIER CORREDOR, *Universidad Nacional de Colombia*, JOHANNA SÁNCHEZ-MORA, *Universidad Nacional de Colombia*, SERGIO BARBOSA, *Universidad del Rosario* — Despite the fact that vaccination is known to be highly effective in preventing disease, there is increasing public debate about its use. In our study, we evaluate a series of nudges designed to promote vaccination against COVID-19. To this end, the article sequentially tests five different nudges. In each experiment, participants are randomly assigned to a condition in which they encounter a nudge with a particular feature (e.g., positive framing, automatic processing, audio, video). Their willingness to vaccinate and related variables are compared with those of participants exposed to the contrasting feature within the same dimension. Furthermore, participants complete three scales assessing their attitudes toward vaccination, social solidarity, and authoritarianism. Our analysis of the five pre-registered experiments revealed that the nudges had inconsistent effects on different measures of vaccination willingness. Interestingly, and consistent with public discourse, we found that attitudes toward vaccines were consistently related to all measures of willingness to vaccinate. This underscores the importance of integrating both incentive-based and attitude-based strategies in public health interventions.

Email: Javier Corredor, jacorredora@unal.edu.co

12:00-1:30 PM (2043)

Decision Making in Dual Tasks: Distinguishing Serial and Parallel Processing with Drift-Diffusion Modeling. SHUANGKE JIANG, *University of Zurich*, ALICE REINHARTZ, *Medical School Hamburg*, ELEANOR R. A HYDE, *University of Sheffield*, JEFF FERRERI, *Institut Universitaire de Gériatrie de Montréal*, SYLVIE BELLEVILLE, *University of Montreal*, CLAUDIA C. VON BASTIAN, *University of Sheffield*, TILO STROBACH, *Medical*

School Hamburg — While it is well-documented that performing concurrent tasks leads to declined performance, especially among older adults, the origin of these dual-task costs remains under debate. The bottleneck theory posits that dual tasks can only be processed serially during the central decision-making process. In contrast, the capacity-sharing theory suggests that a limited capacity is divided between the two tasks, resulting in parallel decision-making processes. In this study, we recruited 388 adults (18-85 years old, $M=48.61$, $SD=18.28$) who performed dual tasks. Participants were instructed to respond to two concurrent task rules (decisions on both shape and color, parity and comparison, animacy and size) with the same stimulus (simple shapes, numbers, and line drawings). By employing drift-diffusion modeling, we investigated whether decision (drift rate) processes of dual-task sets operate in a serial or parallel manner. Additionally, we explored whether these operations vary with age. This will provide insight into theorizing about dual-task processing across different age groups.

Email: Shuangke Jiang, jiangshuangke@gmail.com

12:00-1:30 PM (2044)

Disentangling the Contribution of Decision and Motor Variables to Confidence Estimate. AXEL GARNIER-ALLAIN, *Laboratoire de Recherches Intégratives en Neurosciences et Psychologie Cognitive (Inserm & Université de Franche-Comté)*, VINCENT DE GARDELLE, *Centre National de la Recherche Scientifique (CNRS) & Paris School of Economics*, THIBAULT GAJDOS, *Centre National de la Recherche Scientifique (CNRS) & Aix-Marseille University*, MATHIEU SERVANT, *Laboratoire de Recherches Intégratives en Neurosciences et Psychologie Cognitive (Inserm & Université de Franche-Comté)* — Decision-making has been theorized as an accumulation-to-bound mechanism, but the relationship between evidence accumulation, the formation of a motor plan, and the metacognitive evaluation of the response has yet to be elucidated. Recent computational accounts of decision and motor processes suggest that the decision variable is continuously transmitted to motor areas of the brain that prepare the response, but can be corrupted by noise during the transmission process. Motor preparation is accomplished through a Kalman-Bucy filter to recover the decision variable from noise. This raises a new question: Is confidence based on the decision or the motor preparation variable? To shed light on this

problem, we manipulated the amount of noise in the decision variable and the gain of the filter at the motor preparation level to examine the impact of each manipulation on confidence reports. The results suggest that confidence is based on the decision variable only.

Email: Axel Garnier-Allain, aixel.garnier-allain@univ-fcomte.fr

12:00-1:30 PM (2045)

Does Probabilistic Hazard Information Embedded into Wireless Emergency Alerts Improve Protective Action Decisions to Severe Weather Warnings? MARK A. CASTEEL, *The Pennsylvania State University York* — Crisis warning

researchers are currently investigating whether better protective action decisions are made if individuals are provided probabilistic information concerning the likelihood of an emergency severe weather event. Most research addressing this question has used a Probabilistic Hazard Information (PHI) radar graphic which consists of a “plume” with colored bands extending outward from the edge of the storm. The research, however, is mixed on whether PHI improves decision making. The research presented here examines protective action decisions to Wireless Emergency Alerts (WEAs) that either do or do not include a PHI graphic. WEAs are text messages distributed by the National Weather Service via smartphone, to warn the public about severe weather. In the current study, participants saw a series of WEAs and made a protective action decision after each one. A second WEA then appeared, and it included a radar graphic and location marker, and protective decisions were made. Finally, a third WEA appeared including a PHI plume, and protective action decisions were made. Decisions to the three warning versions were compared. Results will be discussed and implications and suggested next steps will be offered.

Email: Mark Casteel, mac13@psu.edu

12:00-1:30 PM (2046)

Exploring the Associations of Cognitive Process Model Parameters with Socioeconomic Success. MISCHA VON KRAUSE, *Heidelberg University*, STEFAN T. RADEV, *Rensselaer Polytechnic Institute* —

Cognitive process models, such as the diffusion decision model, allow researchers to estimate a set of parameters from empirical response times and accuracy data obtained in binary decision tasks. These parameters can then be used to quantify individual differences. For the

drift rate parameter (reflecting evidence accumulation speed), higher parameter estimates seem to be linked to higher intelligence scores. However, cognitive abilities such as general intelligence are known to predict socioeconomic success (e.g., educational attainment, job prestige, income). If drift rates reflect a type of cognitive ability, they should also exhibit similar patterns. We thus studied the associations of cognitive process model parameters with several indicators of socioeconomic success in a very large sample of online implicit association test data (Project Implicit; N>5,000,000). We found associations between cognitive process model parameters and indicators of socioeconomic success marked by small effect sizes. Our results highlight the utility of big data approaches in the field of cognitive modeling that have only recently become practically feasible through novel simulation-based inference methods.

Email: Mischa von Krause, mischa.vonkrause@psychologie.uni-heidelberg.de

12:00-1:30 PM (2047)

FPST-VR: A Software for Conducting First-Person Shooter Task Studies in a Virtual Reality Headset. DAVID S. MARCH, *Florida State University* —

In a typical first-person shooter task (Correll et al., 2002), participants are presented with images of people either holding a gun or something innocuous and quickly “shoot” armed and quickly “don’t shoot” unarmed targets by pressing corresponding keyboard keys. Bias is evidenced as people more quickly “shooting” and more slowly “not shooting” individuals of certain races and ethnicities relative to others. Although this computerized task has proven useful, its ecological validity is low. Toward improving the ecologically validity of methodology to measure shooter bias, I have developed a virtual reality version of the first-person shooter task (FPST-VR). The software offers researchers easily implemented and completely customizable study parameters (e.g., number of trials, number of weapons, gender and race of target, etc.) all delivered within a simple GUI and VR headset. And in addition to measuring the binary shoot/don’t-shoot choice and latency, FPST-VR records millimeter-precise head and hand movement during shooting/nonshooting actions resulting in a more fine-grained account of response behavior. The immersive experience of CFS-VR increases the psychological and physical realism of each encounter and response action.

Email: David March, march@psy.fsu.edu

12:00-1:30 PM (2048)

From Power to Financial Risk: The Mediating Role of Cognitive Flexibility and Risk Perception.

KATARZYNA SEKŚCIŃSKA, *University of Warsaw*, DIANA JAWORSKA, *University of Warsaw*, JOANNA RUDZIŃSKA-WOJCIECHOWSKA, *Akademia Leona Koźmińskiego* — Risky decisions made by powerful individuals have significant financial implications for businesses and society. Understanding the factors influencing these decisions is crucial. Research indicates that people with a high sense of power are more prone to take investment and gambling risks, yet the role of individual differences remains underexplored. This study (N=245) investigates cognitive flexibility as a potential mediator between power and financial risk-taking. Results reveal that a sense of power enhances cognitive flexibility and reduces risk perception in both investment and gambling contexts. Consequently, powerful individuals exhibit an increased propensity for risky financial behaviors. Furthermore, a serial mediation effect was identified, showing that cognitive flexibility and risk perception together mediate the relationship between power and risky financial choices. These findings offer novel insights into how cognitive flexibility can explain the link between power and financial risk-taking, highlighting its role in shaping risk perception and decision-making processes.

Email: Katarzyna Sekścińska, sekscinska@psych.uw.edu.pl

12:00-1:30 PM (2049)

Individual Differences in Subtractive Thinking and Creative Problem-Solving: Evidence for an Association with Convergent But Not Divergent Thinking.

DAVID MARTINEZ, *University of Maryland*, TIM GEORGE, *University of Maryland*, MITCHELL KOFF, *University of Maryland* — Recent research suggests that people are biased toward additive changes when making improvements or solving problems, and that they overlook the option to remove elements from a situation (Adams et al., 2021). However, little research has explored individual differences in the tendency to make subtractive changes. This study investigated the relationship between individual differences in measures related to creative thinking, and the frequency of subtractive changes. A large sample of participants completed a subset of the subtractive thinking tasks from Adams et al., along with several

tasks intended to measure both convergent and divergent thinking. While convergent and divergent thinking scores were correlated with the tendency to use subtractive changes, only the convergent thinking scores emerged as a significant predictor in a regression model. These results may indicate that the ability to re-represent a problem could underlie both successful convergent thinking performance and the noticing of subtractive solutions.

Email: David Martinez, davidmtzphd@gmail.com

12:00-1:30 PM (2050)

Investigating the Role of Theory of Mind in Human-AI coordination.

RODERICK YANG TERNG SEOW, *Carnegie Mellon University*, HODA HEIDARI, *Carnegie Mellon University*, CLEOTILDE GONZALEZ, *Carnegie Mellon University* — Successful teamwork requires implicit coordination among team members. With advancements in AI, human-AI teams are becoming a reality, making it crucial to design AI agents capable of such coordination. A key aspect is theory of mind (ToM), which involves understanding others' beliefs, desires, and intentions. We explore this using the level-k ToM framework, where k denotes the recursion level in predicting a partner's actions. We hypothesize that effective human-AI coordination occurs when agents accurately predict teammates' actions by adopting complementary k-levels. To test this, we introduce a simultaneous-choice, multi-attribute task, where outcomes depend on the interplay between choice features and agent decisions. Simulations with cognitive models (IBL; Gonzalez et al., 2003) support our hypothesis. However, empirical results show no advantage for human-IBL-L1 over human-IBL-L0 pairs, even when participants are assumed to behave as L0 agents without information about the AI. Analyses reveal that participants' choices are poorly predicted by an IBL-L0 model, limiting the potential benefit of an IBL-L1 partner for coordinating with human agents.

Email: Roderick Yang Terng Seow, yseow@andrew.cmu.edu

12:00-1:30 PM (2051)

Forget Slap, Remember Slime: Investigating Incidental Memory for Discrete Emotion Words.

MARY C. AVERY, *University at Albany, SUNY*, MICHAEL T. SPENCER, *Baruch College, CUNY*, MARY B. PACHECO, *Russell Sage College*, JEANETTE ALTARRIBA, *University at Albany, SUNY*

— Research indicates that negatively valenced emotion words capture attention (e.g., in a modified dot probe task; Sutton & Altarriba, 2011) as compared to neutral and positive words. Valenced stimuli are also better recalled in intentional tests (Hamann, 2001). These findings align with evolutionary theory maintaining automatic vigilance for possibly threatening stimuli (Pratto & John, 1991) and enhanced memory for emotional stimuli, for survival (LeDoux, 1996). However, further findings suggest the importance of discrete emotional information. That is, emotion words equated on valence and arousal (e.g., anger- and disgust-related words) are processed differently in word recognition tasks (Briesemeister et al., 2011) and a modified dot probe task (Avery et al., 2023). Specifically, disgust-related words tend to elicit faster and more accurate responses. The current study investigated if the bias extends to incidental memory. Participants responded to happy-, anger-, fear-, or disgust-related word stimuli in a modified dot probe task. Then, a surprise recall test assessed word memory. Results suggest that disgust words were better remembered. Also, intrusions will be analyzed to assess their discrete emotion category.

Email: Mary Avery, mavery@albany.edu

12:00-1:30 PM (2052)

The Influence of PTSD Symptom Severity on Emotional Word Use and Cognitive Processing Styles.

MATTHEW ALTOBELLi, *Rochester Institute of Technology*, TINA M. SUTTON, *Rochester Institute of Technology* — Emotional language plays a critical role in how individuals process and communicate their experiences. This study explored how emotional words were used in written narratives depending on PTSD symptom severity and how their use related to cognitive processing styles. Significant differences in processing styles and emotional word use emerged between participants with low and high PTSD symptom severity. There were significantly more overaccommodated and assimilated statements in the high PTSD symptom severity group and symptom severity was positively correlated with overaccommodation and assimilation. Interestingly, the average valence value and positive word count of the narratives were higher for individuals with greater PTSD symptom severity and emotion-laden word arousal was positively associated with average valence for the high symptom severity group. This suggests that individuals with higher PTSD symptom

severity often negate positive words, whereas those with lower symptom severity do not.

Email: Matthew Altobelli, mgagsh@rit.edu

12:00-1:30 PM (2053)

Culture Influences Perception of Emotional Faces.

MY V. H. NGUYEN, *University of Houston*, YINAN XU, *University of Houston*, EVELYN D. RODARTE, *University of Houston*, ARTURO HERNANDEZ, *University of Houston* — Emotional stimuli such as faces may influence cognitive response, and this is dependent on the affective rating of the stimuli. Research revealed cultural differences in both expression and perception of emotions. Hence, it is important to explore the affective rating of facial stimuli using a diverse population of raters. The current research explores two sets of stimuli: (1) diverse adult faces drawn from the NimStim Set of Facial Expressions and the RADIATE, and (2) mostly white adolescent faces drawn from the NIMH Child Emotional Faces Picture Set. Findings revealed cultural effects of emotion face perception, such that participants who identify as Hispanic/Latino gave lower arousal ratings to emotional faces than participants who do not. Moreover, individuals of different racial backgrounds perceive emotion faces to have different intensities depending on the perceived race of the stimuli. Finally, participants of different racial backgrounds may have different expectations for emotional facial expressions, leading to differences in label matching. These findings further support prior research showing variation in emotion face perception across cultures and suggest better validation of stimuli for cross-cultural research.

Email: My Nguyen, mvhnguyenn@gmail.com

12:00-1:30 PM (2054)

Affective Evaluation of Self-Produced Action-Effect Episodes.

ROBERT WIRTH, *Julius-Maximilians-Universität Würzburg* — Humans and other biological agents seem to be inclined to generate motor activities that result in foreseeable and immediate perceptual effects, although neither the motor activities nor the ensuing perceptual effects themselves appear particularly attractive. While the reasons for this preference are yet unclear, the current research suggests that episodes in which motor activities produce predicted perceptual events come with positive affect. Using affective priming, participants first carried out actions

that produced expected or unexpected effects. Shortly after, participants categorized probe words as positive or negative. Results suggest that expected effects come with positive affect and unexpected events come with negative affect, which in turn modulates the performance in the affective probe task. These results scrutinize the role of affective evaluation in the generation of, and possible preference for, specific action-effect relationships, and thus lead to a deeper understanding of how affective and cognitive processes jointly govern action control.

Email: Robert Wirth, Robert.Wirth@uni-wuerzburg.de

12:00-1:30 PM (2055)

Aphantasia and Spontaneous Use of Emotion

Regulation. JASON S. CHAN, *University College Cork*, ISOBEL KELLEHER, *University College Cork*, AOIFE O'FLYNN, *University College Cork*, FRANZISKA FRIEMEL, *Friedrich-Alexander University & University College Cork*, ANNALISA SETTI, *University College Cork* — Aphantasia is an individual difference characterised by reduced mental imagery, affecting nearly 4% of the population. Mental imagery contributes to a number of cognitive processes such as memory, future planning, decision making and emotional regulation. The aim of this research is to explore the relationship between aphantasia and emotional regulation. Approximately 150 completed the Visual Vividness Imagery Questionnaire (VVIQ) and Spontaneous Use of Imagery Scale (SUIS) to measure visual imagery; the Depression Anxiety Stress Survey (DASS) and Emotional Regulation Questionnaire (ERQ) to measure emotional regulation; and the Perth Alexithymia Questionnaire-Short (PAQ-S) to measure alexithymia. We found a significant relationship between people with lower visual imagery (more aphantasia) using less cognitive appraisal, and participants' visual imagery accounted for approximately 34% of the systematic variance. Findings emphasize the importance of identifying strengths and weaknesses of aphantasics in their ability to emotionally regulate.

Email: Jason Chan, jason.chan@ucc.ie

12:00-1:30 PM (2056)

Articulatory Interference of Vocal Emotion

Recognition. EMMA GREENSPON, *St. John Fisher University*, ADRIANA ZEFUTIE — Participants recognized spoken pseudosentences portraying anger,

happiness, fear, sadness, disgust, and neutral emotion. Interference conditions were included: no interference, silent articulation (articulatory interference), quiet humming (phonatory interference), and finger tapping (non-vocal motor interference). A 4 (interference condition) x 6 (emotion type) repeated measures ANOVA on unbiased accuracy rates was run for a sample of 65 participants. A significant effect of emotion type ($p<.001$) revealed that sentences were recognized with varying degrees of accuracy in line with prior research. There was a significant interaction between emotion type and interference condition ($p<.01$), but no main effect of interference condition ($p=.75$). The interaction was driven by a single contrast: articulatory interference ($M=.49$) during rehearsals disrupted emotion recognition relative to finger tapping ($M=.61$) for pseudosentences portraying sadness. Pitch discrimination was the only predictor of overall performance while controlling for singing accuracy and music experience.

Email: Emma Greenspon, egreensp@monmouth.edu

12:00-1:30 PM (2057)

Emotion Congruity Suggests Automatic

Activation of Emotional Experience. AVISHAI HENIK, *Ben-Gurion University of the Negev*, TEHILA NADAV, *Ben-Gurion University of the Negev* — We employed emotional words (e.g., fear) and scene pictures that trigger emotions, in a picture-word Stroop-like experiment. Participants were asked to pay attention either to the word or to the picture and decide whether the target (i.e., word or picture) was positive or negative. The words and the pictures, when irrelevant to the task, modulated performance. Importantly, unlike the Stroop color-word task, the pictures interfered with responding to words. Namely, the pictures created a reverse Stroop effect. Moreover, positive and negative pictures had comparable effects, that is, there seemed to be no negative bias. The symmetry in the effects of positive and negative pictures constrains the generality of the negative bias assumption.

Email: Avishai Henik, henik@bgu.ac.il

12:00-1:30 PM (2058)

Examining the Effects of Emotional Facial

Expression on Recognition Memory. AMANDA R. STEVENS, *Tarleton State University*, CURT CARLSON, *Texas A&M University, Commerce*, BENTON H. PIERCE, *Texas A&M University*,

Commerce — According to Bruce and Young (1986), facial expression should not influence recognition memory for faces, implying that, in an old/new recognition task, expression should have no effect on discriminability, whether manipulated at encoding or retrieval. To our knowledge, these kinds of questions have barely been addressed in the literature. We conducted three old/new recognition experiments in which we manipulated facial expression (neutral, angry, sad, happy) at both encoding and test. In Experiment 1, we included all expressions at both study and test. In Experiment 2, we isolated the effects of expression on encoding versus retrieval by manipulating expression at only study or only test. In our final experiment participants were presented with only one expression at study or test, one of which was always neutral so we could better isolate the effect of expression at the list rather than item level (e.g., study neutral faces then tested with happy faces). Overall, our experiments revealed minimal and inconsistent effects of expression on facial recognition, therefore much more research is needed to understand how (or whether) facial expression impacts recognition.

Email: Amanda Stevens, astevens@tarleton.edu

12:00-1:30 PM (2059)

Heartbeats and Head Games: What Heart Rate Can Tell Us about Meditation and Anxiety. IVAN ALATORRE, *California State University, Northridge*, ANN HILLARY BUENAFE, *California State University, Northridge*, JOSELUZ SOSA, *California State University, Northridge*, ELENI R. BENCHEK, *California State University, Northridge*, STEFANIE A. DREW, *California State University, Northridge* — The COVID-19 pandemic increased academic stress, resulting in unexpected and enduring impacts on students. Our study investigates predictors of three constructs of anxiety experienced during academic assessment in a comparison of virtual reality (3D) and video-based (2D) meditations. It remains unclear which measure (general anxiety, testing anxiety, or math anxiety) best captures students' mental states. By looking at immersivity, mindfulness, and heart rate change (HRC) we hypothesized that there would be a linear relationship between these variables on math anxiety, with HRC being the most significant predictor. Our results indicate that the interventions (3D and 2D) lowered HRC ($M=12.32$, $SD=11.74$), while regression analyses revealed the strongest prediction for general

anxiety as measured by Beck's Anxiety Index, $F(3,119)=9.127$, $p<.001$. Within this model, the mindfulness measure best predicted general anxiety ($\beta=-.93$, $p<.001$). This suggests the importance of mindfulness in targeted anxiety interventions.

Email: Ivan Alatorre, ivan.alatorre.303@my.csun.edu

12:00-1:30 PM (2060)

How Emotion, Motivation, and Attention Impact Learning in Online and In-Person Teaching Modalities. JOSÉ HINOJOSA, *Universidad Complutense de Madrid*, NURIA CAMUÑAS, *Universidad Nebrija*, FRANCISCO BUADES, *Universidad Nebrija*, JORGE GONZÁLEZ ALONSO, *Universidad Nebrija & UiT The Arctic University of Norway*, CLAUDIA POCH, *Universidad Nebrija* — We designed an ecological experiment to assess how attention, motivation, and emotion, which are particularly relevant for academic success, impact learning in two different teaching modalities (online and in-person) in university students. When comparing the effect of teaching modality, we found that retention of lecture material, attentiveness, and motivation were all worse in the online modality. We further studied, by multiple regression, how retention was influenced by attention, motivation and emotion, along with the teaching modality. Only attentiveness predicted material retention. In a subsequent analysis, we found that attentiveness, measured across eight different time points, was predicted by motivation and class format. Post-hoc analyses of distractions showed more ambient and multimedia distractions in the online condition, but the same rates of mind wandering in both modalities. In conclusion, discrepancies in learning outcomes between online and in-person classes are driven by differences in the attentional and motivational characteristics inherent to the contexts of each modality.

Email: José Hinojosa, hinojosa@ucm.es

12:00-1:30 PM (2061)

White Matter Properties and Neural Responses to Faces in Infants. STEFANIA CONTE, *Binghamton University, SUNY*, DEVON UMEOZOR, *Binghamton University, SUNY* — We investigated the relationship between structural brain development and neural responses to faces in typically developing 12-month-old infants. Functional responses were recorded through event-related potentials (ERPs) from 20 infants, while

presented with intact and scrambled faces and objects. N290 ERP amplitude values were analyzed. Anatomical and diffusion-weighted volumes were obtained from 10 infants during natural sleep. Sixteen fiber bundles were reconstructed using probabilistic tractography and investigated for their fractional anisotropy (FA) properties. Linear mixed models were performed on the N290 amplitude values. Results showed larger amplitudes to intact faces than all remaining conditions ($t(7)>-7.67$, $p<.001$), as well as right lateralized N290 responses for face stimuli only ($p<.006$). FA values in the right dorsal cingulate (rCBD) showed negative correlations with the N290 amplitude activity, specifically in response to intact faces ($r=-.35$, $p=.003$). These preliminary results show that the rCBD white matter bundle is linked to the N290 ERP activity. This structural-functional relationship may be interpreted in light of the role of the cingulum bundle in the early development of socioemotional skills.

Email: Stefania Conte, sconte@binghamton.edu

12:00-1:30 PM (2062)

The Causal Role of Sensory Strength in Dissociating Imagination from Reality: Evidence from Boosting Signal Strength via TMS. LUNA T. HUESTEGGE, *University College London*, CRISTINA URIBE, *University College London*, STEPHEN FLEMING, *University College London*, PETER KOK, *University College London*, SVEN BESTMANN, *University College London*, NADINE DIJKSTRA, *University College London* — How do we distinguish imagination from reality, given that visual imagery and perception share neural mechanisms in the visual cortex? As neural firing strength in the visual cortex is lower during imagery (vs. perception), one prominent account assumes that this signal strength difference may be crucial, as imagery may fail to meet a "reality threshold" for perception. We investigated the proposed causal role of signal strength in dissociating imagination from reality by using subthreshold transcranial magnetic stimulation (TMS), which can be used to increase signal detection sensitivity. Specifically, we amplified signals in early visual cortex while participants detected tilted gratings embedded in noise (present in 50% of trials). In half of those trials, participants were additionally asked to imagine the to-be-detected grating. We predict more false positive grating detections in the imagery condition with subthreshold (vs. sham) TMS. The data will speak to the issue of whether the amplification of "imagined" neural

signals causes them to cross the reality threshold and thus be mistaken for perceived "real" signals. This would suggest that signal strength indeed plays a causal role in distinguishing imagination from reality.

Email: Luna Huestegge, luna.huestegge.20@ucl.ac.uk

12:00-1:30 PM (2063)

BOLD (fMRI) Activation on Multiple Demand (MD) Regions and Default Mode Network (DMN) at the Beginning and During Various Extended Tasks. BERHAN FARUK AKGÜR, *Bilkent University*, HASAN DUYMUŞ, *Ankara Yıldırım Beyazıt University*, AUSAFA. FAROOQUI, *Bilkent University* — Extended tasks include minor tasks executed as a unitary construct. We investigated the BOLD activation in different task conditions. Our study showed that MD regions and some DMN regions on difficult tasks showed deactivation on start of tasks and increased their activation during tasks. However, the same regions on easy tasks showed an increased activation at the start of the tasks and a deactivation during the tasks. We conducted two distinct experiments employing extended tasks. The first was a tactile determination task in which participants identified the larger shape on plexiglass tablets. The second experiment utilized an auditory 3 versus 1 n-back working memory task with letters. Both experiments had an easy condition and a difficult condition. Results showed that extended tasks are not unitary constructs; they encompass varying levels of complexity and engage distinct psychological and neural processes. Notably, MD regions exhibited a specific activation pattern delineated by task difficulty, with certain DMN regions demonstrating similar activation pattern. These findings shed light on the dynamic interplay between brain networks during extended task performance and task demands.

Email: Berhan Faruk Akgür, berhanakgur@hotmail.com

12:00-1:30 PM (2064)

Using Transcranial Alternating Current Stimulation with Concurrent EEG to Examine the Role of Alpha- and Gamma-Band Oscillations in Creative Thinking. NECLA ECE YILMAZ, *Drexel University*, JOHN KOUNIOS, *Drexel University*, AARON KUCYI, *Drexel University*, EVANGELIA G. CHRYSIKOU, *Drexel University* — Creative problem-solving is characterized by alternating creative ideation and idea evaluation processes,

representing different states of executive control. Alpha-band synchronization has been observed during tasks requiring creative ideation, whereas gamma-band synchronization has been reported during tasks requiring idea evaluation. Research has shown that non-invasive brain stimulation offers a way to modulate the neural dynamics presumed to underpin creative cognition. Despite this, few studies have manipulated neural synchronization through non-invasive brain stimulation to enhance creativity. In a within-subjects design, we used transcranial alternating current stimulation (tACS) with concurrent electroencephalography (EEG) over executive control regions to induce targeted oscillations during creative thinking. Participants performed a creative ideation task under (a) alpha-band (10Hz), (b) gamma-band (40 Hz), or (c) sham tACS. EEG measures were used to confirm the impact of tACS on task-based oscillatory activity. Results offer evidence for a facilitatory role of alpha oscillations in creative ideation, supporting a potentially direct link between synchronized brain activity and creativity.

Email: Necla Ece Yilmaz, neclaece@gmail.com

12:00-1:30 PM (2065)

Adopting a Precision Neuroscience Approach to Cognitive Control Via Repeated Within-Subject EEG Sessions. MAYA QUALE, *Washington University in St. Louis*, JOSET A. ETZEL, *Washington University in St. Louis*, TODD BRAVER, *Washington University in St. Louis* — A wide range of experimental paradigms have been used to examine mechanisms of cognitive control, but recently concerns have been raised regarding whether these provide sufficient measurement reliability to be utilized for investigation of individual differences. To examine this issue, we utilized a “precision neuroscience” approach, assessing the same participants across multiple repeated sessions (3-6) in which the same task was performed while EEG data were collected. We provide initial results from participants performing the AX-CPT, Eriksen flanker, and Cued Task-Switching paradigms to demonstrate the power of this approach. For example, in the AX-CPT task, session-to-session performance was quite consistent, with evidence of maintained proactive control in AY trial RTs, though with some evidence of practice-related effects impacting AX trials. A key prediction to be tested is that with sufficient data, reliable single-subject brain-behavioral associations can be established between EEG/ERP signatures and key behavioral indices of cognitive control (e.g., A-cue bias

and BX RT interference in the AX-CPT task), and furthermore, that these indices will exhibit reliable within-individual cross-task correlations.

Email: Maya Quale, mayaq@wustl.edu

12:00-1:30 PM (2066)

Processing Key Features in Affective Faces.

CRYSTAL COLLINS, *Binghamton University, SUNY*, STEFANIA CONTE, *Binghamton University, SUNY* — Featural processing mechanisms are involved in identifying emotional faces. The location of a feature may be important as seen in processing inverted faces. This study seeks to link the behavioral and neural (i.e., N170) responses to understand the contribution of feature type and location in processing facial expressions. A total of 20 participants viewed happy and angry unmasked and masked faces (i.e., either the eyes or mouth removed), presented in upright or inverted orientations. Neural responses were recorded while they performed an emotion identification task. Repeated measures ANOVAs were performed on accuracy, RTs, and N170 ERP latency values. Results indicate higher accuracy for happy than angry faces ($F(1,19)=38.2$, $p<.001$). Participants were less accurate when viewing angry faces with eyes removed ($p < .023$). RTs were faster for upright than inverted stimuli ($F(1,19)=14.4$, $p<.001$) regardless of emotion. N170 latencies were shorter for happy than angry faces ($F(1,27)=6.2$, $p<.020$). Shorter N170 latencies were also linked to higher accuracy ($r=-0.21$, $p=.02$) and longer RTs ($r=-0.22$, $p=.018$) for happy faces. These short latencies may indicate an objective marker of neural expertise in discriminating facial expressions.

Email: Crystal Collins, ccollins1@binghamton.edu

12:00-1:30 PM (2067)

The Power of Pain: How Pain Representations Impact Neural Responses of Empathy. XIN WANG, *The University of Hong Kong*, SHELLEY XIULI TONG, *The University of Hong Kong* — Showing empathy to others in pain helps forge stronger social connections. Pain could be expressed through various ways, which may activate distinctive empathic responses. However, few studies have investigated the influence of pain representations on neural responses of empathy. This study examined this question by recording EEG signals of 28 neurotypical adults during a pain empathy task. Sixty-two video clips depicting the natural unfolding pain process including three phases were used



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as stimuli. During the antecedent cause phase, the visual perception-related ERPs (e.g., N100 and P100) were elicited with no significant differences (pain vs. no-pain). Later, the pain event phase activated a frontal P300 without condition differences and another posterior-occipital N200 with less negativity during the pain event condition compared to the no-pain condition. Finally, the affective consequence phase, which depicted either pained or neutral faces of the main character, activated a more positive frontal-central-posterior P200 and a more negative posterior-occipital N170 during the pained face condition. In conclusion, our study has identified the modulation effect of pain representations on the neural mechanisms of empathy.

Email: Xin Wang, u3008562@connect.hku.hk

12:00-1:30 PM (2068)

A Low-Activity Cortical Network Selectively Encodes Syntax. ADAM M. MORGAN, NYU Grossman School of Medicine, ORRIN DEVINSKY, NYU Langone, WERNER DOYLE, NYU Langone, PATRICIA DUGAN, NYU Langone, DANIEL FRIEDMAN, NYU Langone, ADEEN FLINKER, NYU Langone — Syntax, the abstract structure of language, is a hallmark of human cognition. However, its neural underpinnings remain obscured by inherent limitations of non-invasive brain measures and a near total focus on comprehension paradigms. Here, we address these limitations with high-resolution neurosurgical recordings (electrocorticography) and a controlled sentence production experiment. We uncover three syntactic networks that are broadly distributed across traditional language regions, but with focal concentrations in middle and inferior frontal gyri. These networks process syntax mostly to the exclusion of words and meaning, in contrast to recent claims and supporting a cognitive architecture with a distinct syntactic system. Finally, our data reveal a striking property of syntax: it is encoded independent of neural activity levels. We propose that this "low-activity coding" scheme represents a novel mechanism for encoding information, reserved for higher-order cognition more broadly.

Email: Adam Morgan, adam.milton.morgan@gmail.com

12:00-1:30 PM (2069)

How Early Is Error Evidence Available? Decoding Errors from Whole-Brain Activity in a Large-Scale EEG Study. ELISA PORTH, University

of Cologne, ANDRÉ BEAUDUCEL, Rheinische Friedrich-Wilhelms-Universität Bonn, JÜRGEN HENNIG, Justus-Liebig-Universität Gießen, JOHANNES HEWIG, Julius-Maximilians-Universität Würzburg, ANDREA HILDEBRANDT, Carl von Ossietzky Universität Oldenburg, CORINNA KÜHRT, Technische Universität Dresden, ANDRÉ MATTES, University of Cologne, ERIK M. MUELLER, Philipps-Universität Marburg, EVA NIESSEN, University of Cologne, ROMAN OSINSKY, University Osnabrück, KATHARINA PAUL, University Hamburg, ANJA RIESEL, University Hamburg, LENA ROMMERSKIRCHEN, University Osnabrück, CASSIE SHORT, Carl von Ossietzky Universität Oldenburg, JUTTA STAHL, University of Cologne, ALEXANDER STROBEL, Technische Universität Dresden, JOHANNES RODRIGUES, Julius-Maximilians-Universität Würzburg, JAN WACKER, University Hamburg — Errors are prominent features of daily tasks, and they often become apparent after their execution. Interestingly, evidence from cognitive neuroscience suggests that error-related information may be available prior to motor execution. We present data from a large-scale multi-laboratory EEG study in which we decoded errors and correct responses from whole-brain activity using multivariate pattern analysis. Participants (n=766) performed a two-choice flanker task while their electroencephalogram was recorded. We hypothesized that a support-vector based classifier successfully decodes errors and correct responses from whole-brain activity after the initiation of a motor response on a central processing level (indicated by the onset of the lateralized readiness potential [LRP]) but before motor execution. Results show that the classification onset of the multivariate pattern analysis (i.e., the earliest time point at which decoding accuracies are significantly above chance level) falls within the expected period between the LRP onset and motor execution. This suggests that error-related information is indeed available before a response is executed, and that response-guiding evidence accumulation proceeds after response initiation.

Email: Elisa Porth, elisa.porth@uni-koeln.de

12:00-1:30 PM (2070)

The Role of Motor Cortex GABA in Proactive and Reactive Stopping. DOMINIC M. D. TRAN, The University of Sydney, ILLEANA PRIETO, Macquarie University, MINJU LEE, The University of Sydney, EVAN J. LIVESEY, The University of Sydney — Our

ability to inhibit actions is achieved through coordinated proactive and reactive processes that recruit different cognitive and neurophysiological mechanisms. Here we adapted a two-step continuous performance task in which the decision to respond or not depended on a combination of an initial context cue and a subsequent target probe. Using transcranial magnetic stimulation (TMS), we mapped changes in motor excitability and GABA-mediated inhibition in the lead-up to initiating or during the inhibition of a response. We found distinct changes in motor activity at critical timepoints when participants were preparing in advance to (proactively) inhibit a response during the cue, and while (reactively) inhibiting a response during the probe. Different GABA subtypes were recruited for proactive versus reactive inhibition. Further, motor system activity during early timepoints correlated with behavioural indices of proactive capacity and predicted whether participants would later successfully inhibit their response.

Email: Dominic Tran, dom.minh.nic.tran@gmail.com

12:00-1:30 PM (2071)

Sweet as Sugar: The Effects of Candy Reward on Cognitive Flexibility.

BEATRICE E. LOMEZO, *Texas A&M University*, JOSEPH M. ORR, *Texas A&M University* — While changing monetary rewards are known to influence cognitive flexibility, it is unclear whether these findings extend to primary reward. In a sample of 113 college students, we examined whether a small number of candies would replicate previous findings of monetary reward of cognitive flexibility. Cues informed participants if they could earn a low or high number of points for quickly and accurately performing either a number or letter judgement task. For every 50 points earned, a single M&M candy was dispensed to a bowl next to the participant. Response times decreased as participants got closer to getting the next candy, and this effect was stronger on high vs. low reward trials. In terms of switch probabilities, we replicated the well-known effect of reward transition with participants switching more when the number of points changed from trial to trial than when they remained the same. Critically, split half reliabilities for critical effects were 2-5 times larger with candy reward than with monetary reward. These results suggest that primary reward is more robust than monetary reward and primary reward may be more motivating than money.

Email: Beatrice Lomeo, beatricelomeo@tamu.edu

12:00-1:30 PM (2072)

The Alternating Mind: A Bayesian Dual Process Model for Human Decision-Making.

MIANZHI HU , *Texas A&M University*, DARRELL A. WORTHY, *Texas A&M University* — In reinforcement learning (RL), the multifaceted nature of human decision-making complicates computational modeling, as most models assume a single strategy being used and are therefore contextually limited. We observed that individuals prefer less rewarding but more frequently exposed options only under conditions of high reward variance. This shift of focus from reward value to frequency, driven by uncertainty, can hardly be captured by traditional RL models. Thus, we propose a Bayesian dual process model employing recency-weighted Dirichlet and multivariate Gaussian distributions to represent frequency-based and value-based strategies, respectively. This model updates both distributions and alternates by entropy to select the most confident distribution guiding the next decision. Our model significantly outperforms conventional RL models and highlights the strategic shift by showing that individuals rely more on the value-based Gaussian process when the underlying expected values are easier to estimate, but more on the frequency-based Dirichlet process as environmental uncertainty escalates. Importantly, this indicates that people adaptively prioritize the most salient reward information for decision-making.

Email: Mianzhi Hu, rudolfhu@tamu.edu

12:00-1:30 PM (2073)

Understanding the Behavioral Mechanisms of Pavlovian Biases: Intriguing Insights from Replication and Reversal Paradigms.

SANJITI SHARMA, *Colorado State University*, JOSEPH A. MARTIS, *Colorado State University*, CAROL SEGER, *Colorado State University* — Pavlovian biases are crucial to our decision-making processes, however, if left unchecked can extend to maladaptive behavior such as substance use disorders (SUDs), anxiety, and much more. This study explores the interaction between Pavlovian biases and goal-directed instrumental learning by examining how each adapts to task reversal. We hypothesized that Pavlovian biases would be slow to adjust after reversal due to their reliance on inflexible learning, whereas the more flexible goal-directed instrumental learning system would adapt more quickly. The experiment utilized a modified go/no-go task with

two phases: replication of existing findings (Raab & Hartley, 2020) and a task reversal paradigm. Results showed instrumental learning's flexibility, with participants adapting after reversal. However, Pavlovian biases led to decreased accuracy post-reversal, with slow adaptation, especially when conflicting with instrumental objectives. These findings emphasize the inflexible nature of Pavlovian biases and their role in decision-making and cognitive rigidity.

Email: Sanjiti Sharma, sanjiti.sharma@colostate.edu

12:00-1:30 PM (2074)

The Role of Anxiety and Depression in Cognitive Flexibility: Evidence from Mixed Effects Models.

JUAN BALCAZAR, *Texas A&M University*, JOSEPH M. ORR, *Texas A&M University* — Cognitive flexibility describes the brain's ability to adapt to a changing environment. Mood disorders, overall, are characterized by attention and working memory deficits, resulting in poor flexibility. Notably, anxiety disorders are associated with abnormal processing of outcomes, including heightened sensitivity to loss and risk aversion. The purpose of the present study was to examine the contributions of anxiety and depression on an individual's flexibility following a negative outcome. In the present study, participants with anxious and depressive traits ($n=96$) completed a reward-based voluntary task-switching paradigm that utilized probabilistic reward (70% high reward, 30% low reward). Participants received feedback following their response. Because mood traits predict how an individual responds to negative outcomes, we used mixed-effect modeling which can capture individual differences than traditional methods can. We computed 'switch' likelihood predicted by reward and feedback outcomes. Our findings show important insights to work examining flexibility deficits in mood and psychiatric disorders.

Email: Juan Balcazar, balc557@tamu.edu

12:00-1:30 PM (2075)

Cognition-Personality Interactions: Investigating the Neural Correlates of Extraversion in Decision-Making in Younger and Older Adults.

ALEXANDRA HERING, *Tilburg University*, VRINDA DIMRI, *The University of British Columbia*, GABRIEL OLARU, *Tilburg University*, GEERT VAN BOXTEL, *Tilburg University*, YVONNE BREHMER, *Tilburg University* — Research on cognitive aging and

personality has been conducted largely separately. The few studies investigating links between cognition and personality remain mainly correlative in nature. Our research aims to uncover the neural correlates of personality-cognition relations by using electroencephalography (EEG) in younger and older adults. 55 younger and 53 older adults filled in an extensive survey on different personality traits among others on extraversion. Additionally, they participated in a lab session where they performed a reward-based decision-making task while EEG was recorded. For the decision-making, participants had to decide between two pictures, that were associated with different amounts of points to win or to lose. Analyses focused on behavioral performance as well as event-related potentials such as the feedback-related negativity (FRN). Assertiveness, a subfacet of extraversion was associated with higher decision-making performance and lower preference for risky options. Activity of the FRN was not related to extraversion. However, younger adults showed a lower preference for risky choices and greater FRN amplitudes for unpredicted gains than older adults indicating greater risk sensitivity.

Email: Alexandra Hering, a.hering@tilburguniversity.edu

12:00-1:30 PM (2076)

The Impact of a Working Memory Load on Strategy Adjustments during a Probabilistic Reversal Learning Task.

ANTHONY R. STENSON, *Eastern Oregon University* — Flexibility research using a probabilistic reversal learning (PRL) tasks typically assume individuals anticipate outcomes by updating and maintaining expectations generated from feedback to identify unexpected changes. However, PRL tasks allow for many cognitive strategies that allow for the ability to behave in a flexible manner while also minimizing the amount of information held within working memory (WM) to guide choice. This study sought to address this limitation of past work to determine whether individuals flexibly adapt cognitive strategies to meet changing WM demands. To explore the role of WM in the ability to flexibly adapt behavior and strategies, participants completed a modified PRL task in one of two WM-load conditions. There were no significant differences in behavioral performance between groups. However, modelling results revealed that although individuals do flexibly adapt strategies as demands change, they may have a propensity to do so in a disadvantageous manner.

Email: Anthony Stenson, astenson@eou.edu

12:00-1:30 PM (2077)

The Influence of Time Orientation on Internet Addiction and Online Gambling: A Cross-Sectional Study. AMANDEEP DHALIWAL, *The University of Texas at Arlington*, HOA N. HUYNH, *The University of Texas at Dallas* — Internet addiction, especially online gambling, is a growing concern in the digital age. This study examines the relationship between internet addiction and online gambling, focusing on time orientation. A cross-sectional survey with 300 participants was conducted through MTurk. Scales used included ZTPI (Zimbardo & Boyd, 1999), IAT (Young, 1998), and OGD-Q (Gonzalez-Cabrera et al., 2020). Multiple regression analyses showed that present-hedonistic time orientation significantly predicted internet addiction ($\beta=0.29$, $p<0.001$) and online gambling ($\beta=0.35$, $p<0.001$), controlling for age and gender. Future orientation predicted lower internet addiction levels ($\beta=-0.28$, $p<0.001$) and reduced online gambling behaviors ($\beta=-0.22$, $p<0.001$). Encouraging a future-oriented mindset may help mitigate these behaviors. Interventions should include strategies to balance time perspectives, such as mindfulness meditation, cognitive-behavioral therapy, and goal-setting exercises.

Email: Amandeep Dhaliwal, amandeep.dhaliwal@uta.edu

12:00-1:30 PM (2078)

A Model-Based Investigation into the Strategic Regulation of Variable Behavior. JANNE REYNDERS, *University of Ghent*, TOM VERGUTS, *Ghent University*, SENNE BRAEM, *Ghent University* — Everyday life requires variability. For example, it is important to be variable or unpredictable in many games (e.g., rock paper scissors). Behavioral experiments in which variable responding is rewarded show that humans and nonhuman animals can increase response variability strategically. However, it remains unclear what cognitive mechanisms underlie such variable behavior. One hypothesis, often assumed in computational decision-making models, states that biological agents have access to a random generator. Alternatively, variable behavior may result from a dynamic reinforcement-extinction learning process. Yet another explanation assumes we can learn to be biased against recently chosen options. We tested human participants in three different contexts, each requiring a different level of variability, and studied differences in behavior using a computational model that

linked different parameters to each of these hypotheses. Our results suggest that human participants upregulate variability mostly by relying on a random generator and a choice-bias that values recently unchosen options.

Email: Janne Reynders, janne.reynders@ugent.be

12:00-1:30 PM (2079)

Age, Sex, and Symptom-Related Differences in Motivated Cognitive Control in Children Varying in ADHD Symptomology. AUDREY NG, *University of Denver*, MEGAN LUCYSHYN, *University of Denver*, RACHEL E. BROUGH, *University of Denver*, LAUREN MCGRATH, *University of Denver*, KIMBERLY S.

CHIEW , *University of Denver* — ADHD is a common neurodevelopmental disorder, characterized by inattention, hyperactivity, and impulsivity, and historically has been diagnosed at a higher rate in males than females. ADHD is associated with changes in cognitive control and reward processing, but little research has examined motivation-cognitive control interactions or their variation by age, sex, or symptomatology in this disorder. This study examines motivated cognitive control in children ages 8-16 varying in ADHD symptomatology using a reward-incentivized AX Continuous Performance Task. Preliminary results (N=48, 27 males, 21 females) suggest that as expected, children are faster and more accurate with increasing age, but surprisingly, proactive control decreased with increasing age. Males had higher average ADHD symptomatology and faster global reaction times versus females. Males also used more proactive control in response to rewards, though all participants increased proactive control with reward. Higher ADHD symptomatology was associated with higher error rates on baseline trials and faster reaction times on incentivized trials. These preliminary data point to potential differences in motivational and cognitive processes with age, sex, and ADHD symptoms.

Email: Audrey Ng, audrey.d.ng@du.edu

12:00-1:30 PM (2080)

Agency in Reward Devaluation: Fear of Happiness and Feedback Selection. MYA URENA, *University of Minnesota*, SAMUEL WINER, *The New School*, CAITLIN MILLS, *University of Minnesota* — Reward devaluation theory (RDT) posits that many individuals with depression demonstrate a bias toward negative material while actively avoiding positive

material. Previous research, employing a novel valence selection task, demonstrated that individuals with a fear of happiness (FOH) tend to favor negative or neutral options over positive ones. Substantial negative correlations emerged between positive choices and FOH (Study 1: rho = -0.31, p<.01; Study 2: rho = -0.36, p<.01), even when positive choices were objectively correct (Study 3: rho = -0.23, p<.01). Despite these findings, implications of reward devaluation in everyday decision-making remain unclear. We will investigate this by instructing participants to solve math problems after being given agency to choose from two types of feedback (positive or neutral). We hypothesize that individuals with greater FOH will avoid selecting positive feedback, aligning with RDT. Emphasizing participants' autonomy in selecting feedback may provide deeper insights into depression-associated biases.

Email: Mya Urena, urena014@umn.edu

12:00-1:30 PM (2081)

Digital Amnesia: The Aftermath of a Screenshot.

SOPHIA P. FABRIZIO, *Binghamton University, SUNY*, DEANNE L. WESTERMAN, *Binghamton University, SUNY*, REBECCA LURIE, *Binghamton University, SUNY* — The photo impairment effect is the finding that memory for photographed information is worse than for information that is just viewed. This finding has recently been extended to stimuli that are screenshotted on a phone or computer. One proposed mechanism for the impairment is cognitive offloading, a reliance on an external memory store for information. Past research on cognitive offloading has shown a compensatory boost in performance on other cognitive tasks. Four experiments examined the predictions of this account by investigating potential benefits of screenshotting over viewing pieces of art, as might be anticipated from previous offloading research. The results demonstrate pronounced memory costs of screenshotting (average d=1.35). Contrary to a cognitive offloading account, participants did not display improved source memory, improved memory for subsequently learned information, nor was performance enhanced on a subsequent cognitive task compared with viewing.

Email: Sophia Fabrizio, sfabriz2@binghamton.edu

12:00-1:30 PM (2082)

Enhancing Cognitive Estimation with Nonlinear Distributional Latent Variable Modeling.

ROBERT KASUMBA, *Washington University in St. Louis*, DOM CP MARTICORENA, *Washington University*, ANJA PAHOR, *University of Maribor*, SUSANNE M. JAEGGI, *Northeastern University*, AARON R. SEITZ, *Northeastern University*, JACOB R. GARDNER, *University of Pennsylvania*, DENNIS L. BARBOUR, *Washington University* — Understanding executive functions (EF) through conventional cognitive testing procedures often involves standardized assessments targeting specific EF constructs, which assume direct correspondence between task and construct. Violations of this assumption give rise to extra unmodeled variance and concomitant modeling error. Moreover, these methods typically evaluate summarized metrics as mixed effects, neglecting underlying individual variation at the item level. We propose nonlinear distributional latent variable modeling (DLVM) to address these limitations. DLVM learns all cross-information between items, tests, and individuals, offering a more nuanced representation of EF. Being fully Bayesian, DLVM not only models the summarized metrics but also the underlying process and modeling uncertainties. DLVM, assessed on an EF test battery in young adults, demonstrates a strong capability in learning latent variable representations that reflect individual task performance. Utilizing low-order models, DLVM achieves high performance with lower data requirements than traditional methods.

Email: Robert Kasumba, rkasumba@wustl.edu

12:00-1:30 PM (2083)

From Screens to Scenes: A Comparative Study of Zoom and Virtual Reality in Digital Lecture

EDDIE O. RAMIREZ, *California State University, Northridge*, ONYX HARRISON, *California State University, Northridge*, ARI ROBY, *California State University, Northridge*, ELENI R. BENCHEK, *California State University, Northridge*, STEFANIE A. DREW, *California State University, Northridge* — During the COVID-19 pandemic many institutions transitioned to remote learning solutions and continue to use them. The current study sought to investigate the viability of virtual reality as an alternative to Zoom for lecture delivery. We hypothesized that participants in the VR condition would demonstrate higher test scores compared to those in the Zoom condition. Data were collected from undergraduate students (N=55). A two-way 2 (media: VR or Zoom) x 2 (time: before and after lesson) mixed-factorial ANOVA was conducted. There

was a significant main effect of time, $F(1,44)=44.221$, $p<.001$, $\eta^2=.484$, indicating a significant improvement of test scores after the lectures. There was no significant difference in test scores between the VR and Zoom conditions. Though our hypothesis was not supported, our results indicate VR and Zoom presentations of lecture content did not significantly differ in test scores after lecture presentation, suggesting that VR may be a viable alternative to Zoom for delivering lecture content.

Email: Eddie Ramirez, cor@ucsb.edu

12:00-1:30 PM (2084)

How Modality Switching Affects the Liking Gap in Conversation. VANESSA Y. OVIEDO, *University of California, Santa Cruz*, ANDREW J. GUYDISH, *Elon University*, JEAN E. FOX TREE, *University of California, Santa Cruz* — Generating perceptions of others is usually effortless, but determining how others perceive us is more demanding. People often underestimate how much others like them, a cognitive bias known as the liking gap. We examined how the communicative setting affected the liking gap in conversation. We conducted two experiments where participants interacted via text, audio, or video-chat, then switched to video-chat. In Experiment 1, participants worked on tangram tasks. After this, they completed a memory test of the tangrams seen. The liking gap was present across all settings with no significant differences between them. Recall of tangrams was best when switching from text-chat to video-chat. In Experiment 2, participants engaged in conversations about favorite movies and TV shows. After this, they recalled topics they discussed. Again, the liking gap persisted across settings with no significant differences. Memory analysis results for Experiment 2 are pending.

Email: Vanessa Oviedo, oviedo@ucsc.edu

12:00-1:30 PM (2085)

Just Try a Little Harder: Examining Whether Retrieval Effort Influences the Cost of External Memory Store Availability. MEGAN O. KELLY, *University of Waterloo*, AISLING SAMPSON, *University of Toronto*, EVAN F. RISKO, *University of Waterloo* — Individuals expecting external memory support demonstrate lower memory performance when unexpectedly without that support compared to individuals with no such expectation of memory support. One explanation for this finding is that individuals

expecting external memory support at test invest less study effort to internally store the to-be-remembered information (study-effort hypothesis; Kelly & Risko, 2022). While a study effort hypothesis can explain some of this poorer memory performance, we consider a retrieval effort hypothesis as an additional, nonmutually exclusive explanation. In the current work, we examined whether the unexpected loss of external memory support leads to lower retrieval effort, and whether reduced retrieval effort mediates the relation between expecting external memory support and memory performance. We also tested the potential influence of expected memory performance on retrieval efforts and subsequent memory performance.

Email: Megan Kelly, mo2kelly@uwaterloo.ca

12:00-1:30 PM (2086)

Semantic Structures in Humans and Machines: Large Language Models. AURORA SLOMAN-MOLL, *Texas A&M University*, NEEKA MOTAMEDRASA, *Texas A&M University*, TAKASHI YAMAUCHI, *Texas A&M University* — Large language models (LLMs) excel in generating human-like language but struggle with creativity and experiential understanding. This study examines the differences between human and LLM language processing. Human participants rated 60 stimuli sentences across various categories—basic, idiomatic, emotional, humorous, sarcastic, slang, and syntactically peculiar sentences—on 40 categories; for machines, embeddings (low-dimensional vector representations of sentences) were generated using the OpenAI-GPT4 model. Pairwise dissimilarity matrices for the sentences were constructed from both human responses and LLM embeddings. Principal component analysis (PCA) visualized the semantic relationships, and representational similarity analysis assessed the extent to which human and LLM judgments diverge. The study found high agreement for basic and emotional sentences but significant divergence for sarcastic and humorous ones, highlighting LLMs' limitations in creative interpretation and nuanced understanding of sarcasm, common sense, and sentiments.

Email: Aurora Sloman-Moll, auroraslomanmoll@tamu.edu

12:00-1:30 PM (2087)

Spotting the E-Scooter: The Influence of Salience and Visual Clutter on Micromobility Safety.

NANA-SERWAAH NYANNOR, *Old Dominion University*, YUSUKE YAMANI, *Old Dominion University*, JEFFREY GLASSMAN, *Old Dominion University*, MARY STILL, *Old Dominion University*, JEREMIAH D. STILL, *Old Dominion University* — Our study explores the effects of visual saliency, environmental clutter on e-scooter detection performance. This is particularly timely research as e-scooters are a rapidly growing group of vulnerable road users. In a high-fidelity driving simulator, participants navigated risky scenarios where a virtual e-scooter approached vehicles in pre-crash scenarios. The study examines visual conspicuity's impact on a naturalistic e-scooter detection task. The surrounding clutter serve as naturalistic environmental factors, while salience reflects future design elements we can inform. The manipulation of visual clutter and salience was verified by computational models (i.e., Salience: Itti, Koch, & Niebur, 1998; Clutter: Rosenholtz, Li, & Nakano, 2007). Our findings are situated in the contemporary attentional capture theory.

Email: Nana-Serwaah Nyannor, nnyan001@odu.edu

12:00-1:30 PM (2088)

The Role of Race and Gender of Pedagogical Agents in Instructional Videos. FANGZHENG ZHAO, *University of California, Santa Barbara*, RICHARD E. MAYER, *University of California, Santa Barbara* — This study investigated the impact of various 3D pedagogical agents differing in race (white, black, Asian) and gender (male, female) versus a real human instructor in a video lesson on chemical bonds. Participants were randomly assigned to one of the seven video lesson conditions and then completed questionnaires and posttests. The results showed no significant differences in learning outcomes or felt emotions between the agents and the human instructor, supporting the Media Equation hypothesis. However, the human instructor scored higher in perceived social connections. Female agents led to higher ratings of positive emotions and perceived social connection than male agents. Evidence of a race-matching effect was observed, where students showed a preference for agents of their own race, though no gender-matching effect was found. These findings highlighted the potential of incorporating diverse pedagogical agents to enhance digital learning environments by making them more inclusive and representative of different student backgrounds.

Email: Fangzheng Zhao, f_zhao@ucsb.edu

12:00-1:30 PM (2089)

The Vibration Mode Is Disruptive: The Effect of Other-Owned Smartphone Vibrations on Memory. LUISA FERNANDA HENAO, *Universidad Nacional de Colombia*, KARLOS LUNA, *Universidad Nacional de Colombia*, SARA CADAVÍD, *Universidad Nacional de Colombia* — Cognitive effects of smartphones have become a relevant research area. In two experiments, we investigated the effect of vibrating notifications from other people's phones on long-term memory. Participants watched an educational video while a nearby experimenter-owned smartphone emitted vibrations for new notifications at specific moments. After a few minutes, their memory for video content with and without vibrations was assessed. In Experiment 1, memory showed no significant effect of vibrations, but there was an interesting numerical trend. In Experiment 2, we adjusted some parameters and added a metamemory measure. We found a significantly worse memory performance on questions with vibrations and lower confidence on questions with vibrations. Experiment 2 also included a media-multitasking measure that showed no relation to memory or metamemory results. Our findings provide new data on the effects of silent notifications on memory and metamemory, highlighting the potential disruption of nearby phones.

Email: Luisa Henao, lfhenaomo@unal.edu.co

12:00-1:30 PM (2090)

Digital Fixation and Cognitive Style: Googling Information May Induce Less Analytical Thinking. JULIA S. SOARES, *Mississippi State University*, TORI PEÑA, *Stony Brook University* — People who use internet search (e.g., Google) to answer questions are more likely to use it again later than people who answer from memory (known as digital fixation; Storm et al., 2016). People experiencing digital fixation also report lower need for cognition, a measure of self-reported cognitive style, compared to those who rely on their memory. In the current study, we used the Cognitive Reflection Test (CRT) to examine whether digital fixation affects objective cognitive style. In Experiment 1, participants answered hard trivia questions either by Googling the answers (Google Condition) or attempting to answer from memory (Memory Condition). Participants then switched to answering easy trivia

questions and could choose to answer from memory or using Google. They then completed the CRT. The Google Condition participants chose to answer these easy questions from memory less often compared to the Memory Condition, showing digital fixation. Novel to this study, participants in the Google Condition also had lower scores on the CRT compared to participants in the Memory Condition. Experiment 2 replicated these patterns, suggesting that using the internet over memory could induce a less analytical cognitive style.

Email: Julia Soares, jss396@msstate.edu

12:00-1:30 PM (2091)

Do You See What I See? Children's Understanding of Others' Visual Perspectives Over Video Chat.

CHAOLAN LIN, *University of California, San Diego*, ADENA SCHACHNER, *University of California, San Diego* — Visual

perspective-taking, understanding what others can see, is crucial for social interaction. We tested how 4- and 5-year-old children ($N=138$) understand others' visual perspectives over video chat, asking: (1) Do children mistakenly believe that their partners see through their eyes on-screen? (2) Do they understand that the self-view shows their partner's perspective, and use it to learn what their partner can see? We found that when the self-view was turned off, nearly all children mistakenly showed toys to their partner by holding them up to the partner's face on-screen, out of view of the camera ($M=96\%$ of trials). When the self-view was turned on, children used it to learn what their partner could see: They more often correctly held toys up to the camera ($M=52\%$ of trials, vs. 4% with self-view off; $p<.01$). With age, children used the self-view more often ($p <.01$), showing emerging understanding that it represents their partner's visual perspective.

Email: Chaolan Lin, cclin@ucsd.edu

12:00-1:30 PM (2092)

Experimental Evidence for Acceptance and Beauty Assessment of Civil Drone Usages in Comparison with a Baseline.

THOMAS JACOBSEN, *Helmut Schmidt University/University of the Federal Armed Forces Hamburg*, SVANTJE T. KÄHLER, *Helmut Schmidt University/University of the Federal Armed Forces Hamburg*, MIRIAM TOMAT, *Helmut Schmidt University/University of the Federal Armed Forces Hamburg*, AQUILES LUNA-

RODRIGUEZ, *Helmut Schmidt University/University of the Federal Armed Forces Hamburg* — Public recognition and acceptance of civil drones depend on their features and the context. An experiment with 24 undergraduates examined the factors Area of operation (industrial, rural, urban), Usage (medical, commercial), and Salience (orange, white) by comparing pictures of drones, helicopters, and a goose (baseline) in different scenes. Both acceptance and aesthetic ratings of 81 stimuli were collected, along with nine factors influencing acceptance. Usage had the largest impact on acceptance, followed by Area of operation and Salience. Technical objects were more accepted in industrial areas, contrary to the baseline. Commercial helicopters were less accepted than commercial drones, and medical objects' acceptance was not influenced by other factors. Beauty ratings revealed different effects, aligning with findings in empirical aesthetics. Factors such as usefulness, reduction of privacy, and societal acceptance were rated as most important for acceptance. The experiment's design enabled result comparability for nuanced discussion. The findings highlight the complexity of drone acceptance and underscore important contextual factors.

Email: Thomas Jacobsen, jacobsen@hsu-hh.de

12:00-1:30 PM (2093)

Advice Taking from Interactive, Self-

Explanatory Generative AI. TOBIAS R. REBOLZ, *University of Tübingen*, ALENA KOOP, *University of Tübingen*, MANDY HÜTTER, *University of Tübingen* — Generative artificial intelligence (GenAI) has surged in popularity with the implementation of conversational user interfaces. The possibility to engage in natural conversations thus constitutes a promising

countermeasure to algorithm aversion. To test this, 472 participants in a judge-advisor system solved ten estimation tasks with access to pre-generated output from ChatGPT. In the control condition, only the numerical output was provided as advice. Participants in the treatment conditions were additionally provided with, or could request, a detailed explanation of the rationale underlying ChatGPT's judgments. Whereas actively requesting an explanation significantly enhanced the positive effect of interactivity on the weight of advice, there was no evidence for a differential weighting of advice provided with optional versus mandatory explanations. The inherent self-explanatory capabilities of GenAI and the opportunity to interactively engage



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with it independently increase users' advice taking. This finding underscores the potential of conversational user interfaces to improve individuals' augmented judgment and decision-making, but also poses a threat to human autonomy in interactions with conversational GenAI systems.

Email: Tobias R. Rebholz, tobias.rebholz@uni-tuebingen.de

12:00-1:30 PM (2094)

Understanding Changes in Human Trust of AI Assistance using a Kalman-Filter-Like Theory.

SCOTT D. BROWN, *University of Newcastle*,
QUENTIN GRONAU, *University of Newcastle*,
JONATHON LOVE, *University of Newcastle*, GEMMA PALMER, *University of Newcastle*, GEORGIA MASON, *University of Newcastle*, AMI EIDELS, *University of Newcastle* — With the growing role of artificial intelligence (AI) in our lives, attention is increasingly turning to the way that humans and AI work together. A key aspect of this, is how people integrate judgements or recommendations from machine-agents, when they differ from their own judgements. We investigated trust in human-machine teaming using two experiments based on the judge-advisor system. In one experiment, participants made perceptual decisions and in the other they discriminated between legitimate and phishing emails. In each case, participants made an initial judgment and then received a recommendation from a machine agent. The participants then made a second response which combined their first estimate and the machine's recommendation. During some periods, the agent's recommendations were of lower quality (either biased, variable, or both). We measured how people respond to changes in the bias and reliability of the recommendations. We developed an extended version of the Kalman filter as a cognitive model capturing the dynamics of trust and information integration. The theory gives natural explanations of well-known phenomena, such as the adage that trust is slow to build and quick to lose.

Email: Scott Brown, scott.brown@newcastle.edu.au

12:00-1:30 PM (2095)

Empathy and Zoom Fatigue. LAUREN E. KNOX, *University of California, Santa Cruz*, JEAN E. FOX TREE, *University of California, Santa Cruz* — Daily use of video chat platforms (i.e., Zoom) for work, school, and social communication has declined with the end of COVID-19 social distancing restrictions. This is a

welcome change to the many who preferred in-person communication. However, there are benefits to the use of such platforms, especially for particular groups of people. These considerations are often left out, as previous research on video chat experiences typically center the negative experiences and highlight the voices of the majority. The current study used an online survey to fill this gap by examining how highlighting the benefits of video chat, considering those who benefit from video chat, and identifying as someone who benefits from video chat platform use may change perceptions and experiences with these platforms. We hypothesized that empathizing with groups that benefit from video chat platforms and identifying with those groups would relate to less Zoom fatigue and greater conversation enjoyment in recalled video chat experiences. Findings will be discussed.

Email: Lauren Knox, laknox@ucsc.edu

12:00-1:30 PM (2096)

Measuring Readers' Standards for Coherence for Comprehension.

HYEJIN HWANG, *University of Minnesota*, PANAYIOTA KENDEOU, *University of Minnesota*, NANA KIM, *University of Minnesota*, JASMINE KIM, *University of Minnesota*, PAUL VAN DEN BROEK, *Leiden University*, BYEONG-YOUNG CHO, *Hanyang University* — Standards of coherence (SOC) are criteria of comprehension that readers implicitly or explicitly adopt. Despite its importance for reading comprehension, almost no measure for SOC has been available. Thus, we developed and tested a measure for reader-based dimensions of SOC in a series of three studies. We first selected 107 items from 10 reading-related surveys. In Study 1, we conducted explanatory (EFA) and confirmatory factor analysis (CFA; n=500), resulting in two possibilities, 5- and 8-factor structures. In Study 2 (n=298), only the 5-factor model demonstrated good fit to the data. The five factors include: (1) reading attitudes and habits, (2) goal setting and monitoring, (3) use of coherence building strategies, (4) strategy metacognition, and (5) reading self-efficacy. Internal reliability for the 5-factor model was acceptable. In Study 3 (n=452), we validated the 5-factor model and also established convergent, discriminant, and predictive validity.

Email: HyeJin Hwang, hwang305@umn.edu

12:00-1:30 PM (2097)

Bilingual Metaphor and Simile Comprehension

Is (Like) a Multidetermined Puzzle: Evidence

from L1 and L2 Ratings.

MARCO S. G. SENALDI, *McGill University*, IOLA PATALAS, *Concordia University*, DEBRA TITONE, *McGill University* — Comprehending figurative elements, such as idioms, arises from the multidetermined interplay of direct memory access and compositional parsing, whereby first language (L1) readers may prioritize direct access and L2 readers prioritize compositional parsing (Senaldi & Titone, 2024). Here, we extended this approach to two other figurative elements, metaphor ("life is a journey") and simile ("life is like a journey"), the latter of which arguably supports a more compositional processing strategy. Accordingly, 36 English L1 and 24 English L2 readers rated 84 English matched metaphors or similes (counterbalanced) for comprehensibility, familiarity, and aptness (i.e., semantic constituency). Linear mixed-effects models revealed that L1 readers' comprehensibility ratings were higher for both metaphors and similes as familiarity and aptness increased. In contrast, L2 readers' comprehensibility ratings were higher for similes vs. metaphors, particularly similes that were highly familiar and low-apt, and for readers who acquired English later in life. Collectively, these findings suggest that L2 readers prioritize compositional processing more than L1 readers when interpreting figurative elements, consistent with the literature on idioms.

Email: Marco Senaldi, marco.senaldi@mcgill.ca

12:00-1:30 PM (2098)

Internet Discourse Markers, LOL.

ALLISON NGUYEN, *Illinois State University* — New discourse markers have emerged on the Internet that are used in everyday spontaneous communication, both written and spoken. We looked at lol in isolation and lol combined with no (no lol, lol no). Participants were asked to provide judgments on sentences with the target items at the beginning, middle, or end. For sentences with lol no and no lol, participants were also asked to provide a meaning interpretation. We found that there is a preference for using lol at the ends of text messages. When looking at lol no and no lol, participants preferred lol no to indicate something close to laughter or humor and no lol to act as a hedge. Like lol, there was a preference for lol no and no lol to appear in the middle or end of an utterance. This work sheds light on how lol is

pragmatically used and understood by speakers, and how lol fits into the established class of discourse markers.

Email: Allison Nguyen, anguye9@ilstu.edu

12:00-1:30 PM (2099)

Seeing Double: Investigating Idioms in Discourse

Using a Repetition Paradigm.

KRISTA A. MILLER, *Lake Forest College*, GARY RANEY, *University of Illinois Chicago* — How are idioms processed and represented in an extended discourse? We used a repetition paradigm similar to Binder & Morris (1995, 2011) to investigate idiom processing within a text. Participants read passages containing figurative or literal uses of idioms that were presented either once (control condition) or twice (repeated condition) within the passage. In the repeated conditions, the meaning of the idiom either stayed the same (consistent) or changed (switched) across encounters. Reading time on the second encounter with the idiom (or first encounter in the control condition) was recorded. Idioms in the switched meaning condition took longer to read than idioms in the consistent meaning condition. This may support the conclusion that the contextually inappropriate meaning of an idiom is less activated, or even inhibited, after meaning selection occurs. Alternatively, the results may reflect difficulty integrating the conflicting interpretation of the second idiom in the switched meaning condition within the larger context. Models of idiom comprehension need to further address how idiom meaning is represented in the discourse as well as the role inhibition may play.

Email: Krista Miller, kmiller@lakeforest.edu

12:00-1:30 PM (2100)

Verbatim Memory for Metaphoric vs. Literal

Phrases.

WILLIAM H. LEVINE, *University of Arkansas* — Arguably one of the hallmarks of literary language is that it deviates from typical wording. Theorists (e.g., Miall & Kuiken, 1994) have argued that this non-standard language use leads to foregrounding, which overrides the usual automatic processing that is typical in skilled readers. This deautomatization disrupts the usual processing done to recover meaning and shifts it to the wording, focusing attention on surface features of the text. If this is the case, then memory for precise wording should be improved for literary text compared to comparable non-literary text. To test this, participants read short narrative passages that ended in a sentence

(e.g., "the flower flourished") that could be interpreted as a metaphor or literally, depending on prior context. Reading time was longer for these sentences when they appeared as metaphors, and more importantly, verbatim recognition memory for them was better when they had appeared as metaphors. These findings are discussed with respect to shifting attention to different types of information during reading.

Email: William Levine, whlevine@uark.edu

12:00-1:30 PM (2101)

Observed Iconic Gesture Improves

Comprehension of Accented Spoken Narratives.

LAURA M. MORETT, *University of Missouri*, SYLVIA E. YOUNG, *University of Missouri*, SARAH GREY, *Fordham University* — Previous research shows that gesture and speech interact, affecting language processing. For instance, observing iconic gestures improves first language (L1) and second language (L2) listeners' comprehension of spoken narratives. However, observing such gestures may benefit comprehension more for L1 listeners than L2 listeners. At present, it is unclear whether observing iconic gestures benefits L1 listeners' comprehension of L2 accented narratives and whether it does so to a different degree than for L1 accented narratives. This work seeks to examine the effect of iconic gesture observation and its potential interaction with L2 accenting on L1 listeners' narrative comprehension. L1 English speakers ($n=105$) watched two videos of talkers producing narratives about Pluto the Dog or Donald Duck. Videos showed iconic gestures relaying narrative content or no gestures, and L1- or L2-accented speech. Comprehension was measured via note taking, free recall, and specific question responses. We observed an interaction between gesture and accent for note taking, as well as significant interactions between gesture, accent, narrative (Pluto or Donald Duck), and order of narrative presentation for free recall and specific question responses.

Email: Laura Morett, lmorett@health.missouri.edu

12:00-1:30 PM (2102)

'Frog, Don't Do That!': The Coordination of Comprehension, Participation, and Evaluation in Narrative Experiences. SHU HU, *Georgia State University*, VIRGINIA TROEMEL, *Georgia State University*, RICHARD J. GERRIG, *Stony Brook University*, JOESPH P. MAGLIANO, *Georgia State University*

University — Narrative experiences involve a range of ways in which people engage with a narrative. We comprehend, have a sense of participation in narrative experiences, and evaluate them. Theories have been proposed and tested for these different aspects of narrative experience, but more research is needed to understand how these aspects are coordinated. There is some research suggesting that the aspects of narrative experience require attentional focus. We hypothesized that participation and evaluation are less likely when there is more attentional demand in-moment-to-moment processing needed to support comprehension.

Specifically, visual media such as pictures and movies have attentional scaffolds that help viewers know where to look as they process the narrative; texts do not have these affordances for attention. As such, we explored the extent to which media affected the propensity to engage in comprehension, participatory, and evaluative activities when participants thought aloud about picture- and text-based versions of stories.

Email: Shu Hu, shu13@gsu.edu

12:00-1:30 PM (2103)

Knowing Versus Believing: The Effects

Evidentials and Authority Have on Certainty.

WILL ERVIN, *Illinois State University*, ALLISON NGUYEN, *Illinois State University* — Words like "know" and "believe" are called evidentials, demonstrating the speaker's degree of certainty in the concept they are expressing—also known as personal epistemology (Ku et al., 2014; Nuyts, 2001). Authority figures are also thought to modify credibility, due to their social influence (Ku et al., 2014; Schommer, 2012; Wei, 2024). Preliminary data shows that evidentials influenced certainty, $F(1, 12)=57.259$, $p<.001$. Evidentials with similar strength to "know" produced higher levels of certainty, while evidentials related to belief ("feels," "assumes," "thinks") produced less certainty. In addition, who was making the assertion had an effect, $F(3.025, 12)=2.982$, $p=.044$. There was an interaction between person and epistemic such that names had the lowest ratings of certainty, regardless of epistemic, $F(3.144, 12)=4.203$, $p=.011$. This suggests that names are treated differently than pronouns and job titles when we are evaluating beliefs.

Email: Will Ervin, wtervin@ilstu.edu

12:00-1:30 PM (2104)

El Tiny or El Escritorio Tiny? Exploring L2's Influence on Adjective Placement in Spanish.

BEVERLY COTTER, *University of California, Davis*, FERNANDA FERREIRA, *University of California, Davis* — In our study, we explored how second language (L2) knowledge influences processing in one's first language (L1), focusing on syntactic differences between Spanish and English. Spanish places adjectives after nouns, while English places them before. Additionally, Spanish allows single adjectives to function as nouns, unlike English (e.g., "el inteligente" in Spanish and "the intelligent person" in English). Heritage Spanish-English bilinguals in California and late Spanish-English bilinguals in Mexico completed a picture-naming task specifically designed to elicit noun-adjective and adjective-noun word strings. Surprisingly, we found no significant difference in accuracy between groups, contradicting our prior study that collected acceptability judgment ratings on these constructions. We plan to use eye-tracking and a visual world paradigm to further investigate how adjective placement influences prediction during language processing.

Email: Beverly Cotter, btcotter@ucdavis.edu

12:00-1:30 PM (2105)

Referential Overspecification in Production and Comprehension: Effects of Communicative Goal, Visual Perspective, and Referential Form.

CASEY M. RIEDMANN, *Northwestern University*, WILLIAM S. HORTON, *Northwestern University* — Speakers frequently overspecify by providing more description than a context warrants (e.g., saying "red car" in single-car contexts wherein "car" is sufficient). Though ostensibly inefficient, the reasons underlying overspecification are complex. Across multiple experiments, we investigate how the production of overspecifications is determined in part by speakers' communicative goals (requesting vs. informing), visual perspectives (the presence of competitors in privileged vs. common ground), and the properties being described (color vs. pattern vs. semantic type). Results demonstrate that speakers produce different referential forms ("red car" vs. "convertible") at different rates as a function of perspective, and, to a lesser extent, goal. A subsequent comprehension experiment measured listeners' reaction times for locating referents when provided with overspecified descriptions. Results suggest an advantage

for color, but not pattern or type overspecifications. Taken together, these experiments support a production account in which speakers overspecify to reduce their own cognitive effort while maintaining successful communication.

Email: Casey Riedmann, caseyriedmann2023@u.northwestern.edu

12:00-1:30 PM (2106)

Analyzing Child Language Corpora with BERTopic: Uncovering Developmental Themes in Early Language Acquisition.

XIAOWEI ZHAO, *Emmanuel College*, CAROLINE SONG, *Boston Latin School* — Topic modeling is a statistical technique used in machine learning and natural language processing to uncover hidden topical patterns within large bodies of unstructured text. In this study, we employed BERTopic (<https://maartengr.github.io/BERTopic/>), a state-of-the-art topic modeling approach that leverages word embeddings pre-generated from large language models (LLMs), to investigate common topics in conversations between children and their caregivers. Specifically, we analyzed longitudinal data from the Child Language Data Exchange System (CHILDES, <https://childe.talkbank.org/>) and grouped semantically similar sentences from these conversations into clusters labeled with keywords indicative of their main topics. The aim was to examine how themes in children's language develop over time during the early stages of language acquisition and how these themes are influenced by their caregivers' speech.

Email: Xiaowei Zhao, zhaox@emmanuel.edu

12:00-1:30 PM (2107)

Global and Focal Adjustments in Clear Speech: The Effect of Instruction.

ANNE OLMSTEAD, *The Pennsylvania State University*, EMMA HOORFAR, *The Pennsylvania State University* — Clear speech is a style of speaking characterized by increased intelligibility relative to conversational speech. The intelligibility benefits of clear speech are conferred by a combination of adjustments that occur across multiple speech segments, such as decreased speaking rate, as well as those that increase contrast between phonemes. Elicitation of clear speech can occur in several ways including through strategies that encourage one kind of adjustment over another. In the current study, typical American English-speaking adults were instructed to produce words in three different conditions:

conversationally, speaking the whole word clearly, and distinguishing the word from a phonological neighbor differing in the medial vowel. Duration and spectral characteristics of the resulting speech were measured, and intelligibility of the words was assessed through listener judgments. Clear speech adjustments occurred in both clear speech conditions, but the adjustments and resulting intelligibility gains did not always differ between the two conditions. Implications of these findings for understanding clear speech adjustments and for clinical populations will be discussed.

12:00-1:30 PM (2108)

Handshape Convergence Over Time and Transmission in an Emergent Sign Language in Nicaragua.

ANN SENGHAS, *Barnard College, Columbia University, MICHELE MIOZZO, Barnard College, Columbia University, SAMANTHA SELTZER, Barnard College, CATHERINE O'BRIEN, Barnard College* — The forms of handshapes in sign languages are influenced by physiological, conceptual (e.g., iconic affordances), and motor factors shared by all natural sign languages. Miozzo and Peressotti (2022) studied handshape adaptiveness in 33 sign languages, finding high similarity in ranked handshape frequencies across languages. This raises questions about when such factors influence handshape: whether languages start similarly constrained and diverge, or whether they become more alike over time under such pressures. To explore this, we examined handshape longitudinally in Lengua de Señas Nicaragüense (LSN), a nascent sign language. We divided the community into age cohorts by decade: first (1974-1983) and second (1984-1993). We compared signs collected in 2007 vs. 2017 from two signers from each cohort to capture within-cohort changes over a decade and compare them to changes across cohorts during transmission. Within cohorts, handshape rankings in LSN did not significantly change over 10 years, suggesting stability in use. However, across cohorts, LSN handshapes became significantly more like those in the 33 other sign languages, indicating that pressures influencing handshapes are exerted during language acquisition by new learners.

Email: Ann Senghas, asenghas@barnard.edu

12:00-1:30 PM (2109)

Incidental and Intentional Vocabulary Learning in a Foreign Language: A Comparison Between High- and Low-Proficiency English Language

Learners. AYELET SASSON, *Bar-Ilan University, RACHEL SCHIFF, Bar-Ilan University, DANIEL MOR, Bar-Ilan University* — This study examines differences in incidental and intentional vocabulary learning in an unfamiliar language between high-proficiency (HP) and low-proficiency (LP) English language learners (ELLs). It also evaluates how incidental learning impacts intentional learning. Seventy-two university ELLs participated: 37 HP and 35 LP in English. Participants completed a translation recognition task following a letter search task to measure vocabulary learning. Performance on words included in the letter search task was compared with new words. Results show that both groups exceeded chance levels in incidental learning, but the HP group outperformed the LP group in both incidental and intentional learning. LP ELLs improved only from the first to the fourth block, while HP ELLs improved across all blocks. Both groups exhibited an incidental learning effect, which diminished in the HP group. These findings suggest that the incidental learning effect varies with proficiency level.

Email: Ayelet Sasson, ayelet.sasson@biu.ac.il

12:00-1:30 PM (2110)

Reactive Cognitive Control, Perceptual

Flexibility, and Phonetic Drift. GRANT M. BERRY, *Villanova University, JAKE CASELLI, Villanova University, CLAIRE DONNELLY, Villanova University, JOSEPH C. TOSCANO, Villanova University* — We report on research investigating how phonetic drift is influenced by cognitive control in a simulated sound change paradigm. Participants (n=48) read a list of 100 words aloud as a baseline. Next, they completed five pairs of blocks where they listened to a model talker read those words or read them aloud. In listening blocks, the vowel /i/ was lowered to /ɛ/ in a predetermined phonetic context by 25% per block. Finally, participants completed tasks to measure reactive cognitive control (AX-CPT; n-back with lures). A dual mechanisms of control framework would posit that lower performance on reactive control tasks will correlate to greater integration of the novel vowel into the traditional category, leading to blurring of the category boundary and increased phonetic drift. Results of generalized additive modeling provide some support for this account: individuals with weaker reactive control showed less distinction in vowel height between the novel and traditional variants, while those with higher reactive control tended to hypercorrect, raising the vowel higher

than unmodified targets ($F(2,3)=2.75$, $p< 0.05$). We interpret findings as evidence that reactive control marshals acoustic ambiguity and regulates phonetic drift.

Email: Grant Berry, grant.berry@villanova.edu

12:00-1:30 PM (2111)

Role of Animacy in Processing Transitive Constructions in Mandarin Chinese. DONG-BO HSU, *National Taiwan Normal University* — Animacy

has been considered to play a deterministic role in role identification when the transitive constructions SVO and ba- and bei-constructions in Mandarin Chinese are being comprehended. Mandarin speakers seemed to select animate a noun phrase (NP) as doer. The current study employed finding-agent task to identify who is the doer of the heard transitive constructions which were contrasted with their animacy while keeping all the sentences equally plausible. The results indicated that animacy does not play a deterministic role in role identification but the structural information does. Bei-constructions were comprehended worse than their two counterparts. When the first NP was animate, SVO was comprehended better than the ba-construction; when the first NP was inanimate, the comprehended pattern was reversed. Since animacy plays a role when both constructions have their first NP as agent and second NP as patient, such patterns challenge the predictions made by good-enough representations and eADM models.

Email: Dong-Bo Hsu, dhsu2@ntnu.edu.tw

12:00-1:30 PM (2112)

Smart Starts: Cognitive Differences Predict Prior Knowledge Involvement in Language Learning.

GABRIELLA SILVA, *Universidad Nebrija*, PABLO BERNABEU, *UiT The Arctic University of Norway*, MY NGOC GIANG HOANG, *UiT The Arctic University of Norway*, VINCENT DELUCA, *UiT The Arctic University of Norway*, CLAUDIA POCH, *Universidad Nebrija*, JASON ROTHMAN, *UiT The Arctic University of Norway & Universidad Nebrija*, JORGE GONZÁLEZ ALONSO, *Universidad Nebrija & UiT The Arctic University of Norway* — Unlike children acquiring their first language (L1), L2/Ln learners can draw on existing grammatical knowledge to ease the task, at least for those properties where the grammars align. This means that, in addition to statistical learning, there might be a substantial role for individual differences in cognitive processes necessary to identify, recruit and deploy this

prior knowledge—e.g., procedural memory, working memory (WM), inhibitory control. In this study, we measured these individual differences through an SRT task, a digit-span, and a Stroop task, at the onset of a longitudinal artificial language (AL) learning paradigm. Grammatical and lexical similarity between the ALs and previous languages (Norwegian-English or Spanish-English) were systematically manipulated. Behavioral measures of sensitivity to grammatical violations in the AL were collected after each training session (three total). Results suggest that the ability to capitalize on prior knowledge is significantly modulated by individual differences in procedural memory, WM and inhibitory control.

Email: Gabriella Silva, gsilva@nebrija.es

12:00-1:30 PM (2113)

Syntactic Complexity Outweighs Prosodic Effects in Language Comprehension: An Eye-Tracking Study. ILEANA RATIU, *Arizona State University*, ARIANNA N. LACROIX, *Purdue University* — Non-canonical sentence structures are more difficult to comprehend than canonical sentence structures. Prosody can reduce the increased processing costs associated with non-canonical sentences, as it provides information regarding emotion, grammatical structure, and emphasis.

This study investigated whether eye movements such as blinks, saccades, and fixations were associated with cognitive effort during non-canonical sentence comprehension and whether these eye movement indices also reflect changes in cognitive effort associated with prosody. Thirty cognitively normal participants listened to auditorily presented sentences and selected the corresponding image. Behavioral (reaction times, accuracy) and physiological (eye movements) responses were recorded. Eye movement measures differentiated non-canonical sentences from canonical sentences. Saccades further distinguished the non-canonical structures from one another. These findings provide insights into the real-time cognitive processes involved in identifying the correct target and the cognitive load associated with parsing sentences of increasing complexity.

Email: Ileana Ratiu, ileana.ratiu@asu.edu

12:00-1:30 PM (2114)

The Effect of Modifiers on Younger and Older Adults' Memory. SI ON YOON, *New York University*,

RAHELEH SARYAZDI, *Trent University* — In everyday communication, people often use modifiers to describe objects in the here-and-now. Research has shown that modification enhances younger adults' memory for past referents and that older adults produce more modifiers than younger adults. Less explored is whether the production of different types of modifiers affects memory in younger and older adults. Thus, we explored whether the use of color versus state modifiers affects recognition memory in younger ($N=67$) and older ($N=60$) adults. Participants were first asked to describe a target image presented with another same-category object of a different color or state, or presented with an unrelated object. Next, participants completed a recognition memory task. Older adults produced more modifiers and better memory performance for past referents than younger adults. Analysis of linking production and memory revealed that the production of modifiers helped later recognition memory across both age groups, irrespective of the type of modifier used.

Email: Si On Yoon, sy4195@nyu.edu

12:00-1:30 PM (2115)

The Role of Phonological and Visual Processing Skills for Spelling During the Early Years of Elementary Education. TAMIRES ZAR, *University of São Paulo*, SYLVIA BARRERA, *University of São Paulo* — In learning to spell, children rely on various general cognitive capacities including attention, memory, visual and phonological information processing, and linguistic abilities. Our aim was to analyze the contribution of visual and phonological processing skills to spelling performance. The sample consisted of 100 Portuguese-speaking children, from first to fifth grade from Brazilian schools. Participants underwent tasks assessing spelling, phonological awareness (PA), phonological and visuospatial short-term memory, rapid automatized naming, visual attention span, and visual perception. Our data was analyzed considering the overall sample and also the participants' grades. Results showed that for the first two grades, variables related to phonological processing emerged as better predictors for spelling. Whereas for third to fifth grade, visual processing variables emerged as good predictors for spelling, alongside PA, which remained an important predictive variable. These findings support the notion that while phonological processing seems more closely tied to the early stages of learning to spell, visual

processing skills become important predictors for phases of increased automatization and accuracy in spelling.

Email: Tamires Zar, tamireszar@alumni.usp.br

12:00-1:30 PM (2116)

L1 and L2 Offline and Online Processing of Pragmatically Licensed Negative Polarity Items. GRACE N. DEMEURISSE, *University of Florida*, EDITH KAAN, *University of Florida* — The interface hypothesis (IH), an L2 sentence processing theory, predicts L2 speakers will have difficulty processing on linguistic interfaces. Past studies investigating the IH have manipulated null and overt-subject pronouns. Negative polarity items (NPIs), sitting on syntax-semantics and syntax-pragmatics interfaces, also offer a means to investigate the IH. NPIs are only grammatical in negative contexts, though degree of negation varies (e.g., in "no/onlyLIC young athletes have everNPI won the award", 'no' is canonically negative but 'only' gives rise to negative pragmatic implicature (young athletes and nobody else...)). Thus, the IH would predict that L2 speakers will have difficulty processing NPIs. We report the results of 82 L1 English speakers' grammaticality judgments to NPIs licensed by "no/only." We asked whether NPI licenser and Autism Spectrum Quotient Communication Subscale (CS) scores differentially modulate NPI judgments. Z-scored judgments were higher on licensed NPIs ($M=0.5$) than unlicensed (ungrammatical) NPIs ($M=-1$). Low-CS score participants judged unlicensed NPIs higher ($M=-0.97$) than high-score participants ($M=-1.05$), suggesting CS scores may affect NPI licensing. Data collection for L2 speakers is ongoing.

Email: Grace deMeurisse, gdemeurisse@ufl.edu

12:00-1:30 PM (2117)

Reading with Hands: the Neural Relationship Between Fingerspelling and Print. SOFIA E. ORTEGA, *San Diego State University*, KATHERINE J. MIDGLEY, *San Diego State University*, PHILLIP J. HOLCOMB, *San Diego State University*, KAREN EMMOREY, *San Diego State University*, BRITTANY LEE, *University of Connecticut* — Fingerspelling skill is a leading predictor of reading ability in deaf children and adults who use American Sign Language (ASL). Fingerspelling provides an additional orthographic code for processing print. We used ERPs to investigate how English words, fingerspelled words, and ASL signs



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modulate priming effects for printed English words. We also investigated whether fingerspelled word primes elicit an N170. Twenty-four skilled deaf adult readers completed a semantic categorization go/no-go task while viewing word targets preceded by different prime types: printed English words, ASL signs, or fingerspelled words. ERPs to target words revealed strong N400 priming effects in all three conditions; however, effects were graded: printed words > fingerspelled words > signs. We replicated the bilateral (rather than left-lateralized) N170 to words for deaf readers, but the N170 to fingerspelled primes was larger in the right hemisphere. We speculate that early acquisition of fingerspelling might support right hemisphere processing of print. Overall, these findings indicate a unique neural link between fingerspelling and print, and we suggest that fingerspelling could alter the neural tuning for print in deaf ASL-English bilinguals.

Email: Sofia Ortega, sortega@sdsu.edu

12:00-1:30 PM (2118)

Adolescent Processing of Relative Clauses and Verb Bias Sentences: Evidence from Self-Paced Reading. MICHELLE PERDOMO, *Vanderbilt University*, VAN RYNALD LICERALDE, *Vanderbilt University*, EMILY PHILLIPS GALLOWAY, *Vanderbilt University*, DUANE WATSON, *Vanderbilt University* — Adolescents are at a critical developmental life stage, yet little is known regarding their language processing skills. Surprisal accounts would posit that teens will have an easier time processing sentences that use high frequency constructions and will use verb bias information based on real-world distributions of these features in language input. We administered a self-paced reading task using relative clauses and temporarily ambiguous sentences. Preliminary analysis of a subset of data from a larger study ($n=78$) reveals longer reading times at the second noun phrase—whether subject or object of the relative clause. Participants also reflected longer reading times after the missing complementizer in ambiguous sentences. Comprehension accuracy was lower in the object-extracted relative clauses and ambiguous sentences. Through continued data collection, we provide some groundwork for further understanding adolescent language processing.

Email: Michelle Perdomo, michelle.perdomo@vanderbilt.edu

12:00-1:30 PM (2119)

Individual Differences in Self-Construal and Autobiographical Memories Across Latine and European Americans. DAISY ALEJANDRA ESTRADA, *Stony Brook University*, KIMBERLY SANDOVAL, *Stony Brook University*, MOHAMMAD MUSTAFIZ, *Stony Brook University*, BRIANNA RODRIGUEZ, *Stony Brook University*, CINDY GARCIA-RIVAS, *Stony Brook University*, RICHARD J. GERRIG, *Stony Brook University* — Extensive research has examined cultural differences in autobiographical memory (AM), yet little research has focused on Latine cultures. To address this gap, our project examined cultural differences between AM features for Latine and European Americans. To examine how individual differences relate to AM features, we asked participants to characterize themselves in relation to others on dimensions of self-construal. The study recruited 95 Latine and 97 European American undergraduates who were prompted to report five self-defining autobiographical memories (Singelis, 1994) and then complete a seven-dimension self-construal scale (Vignoles et al., 2016). We coded the AM for several characteristics (e.g., emotion, functions, specificity). At the group level, we found that Latine participants' memories served a more social function than those of European American participants. At the individual level, we observed broadly that some self-construal dimensions were associated with various AM features. We also observed an interaction between culture and self-interest (versus commitment to others) such that self-interest was negatively associated with social function in European Americans' AM but not for Latine participants.

Email: Daisy Alejandra Estrada, daisy.estrada@stonybrook.edu

12:00-1:30 PM (2120)

The Interaction of Item and Context in Spontaneous Autobiographical Memories. DANI PARRA, *University of Notre Dame*, SEAN DAGEFORDE, *University of Notre Dame*, GABRIEL A. RADVANSKY, *University of Notre Dame*, JAMES R. BROCKMOLE, *University of Notre Dame* — Prior research on autobiographical memory has shown that people often spontaneously retrieve such memories multiple times during the day. It has been suggested that these spontaneous autobiographical memories may be triggered by objects that are seen in the environment or the context one finds oneself in (e.g., the location).

Our study sought to assess whether the combined influence of the nature of the items seen, and the context in which they were encountered, would influence the experience of spontaneous autobiographical memories. Specifically, we had people view sacred and secular paintings in different contexts. In some cases, this was a physical context of either a chapel or an office. In other cases, this was a virtual environment context of a church, museum, or factory. We found that spontaneous autobiographical memories were more likely in non-art settings (i.e., office and factory), than in art-typical settings (i.e., chapel, church, and museum). Interestingly, people spent less time viewing paintings in a museum than in other locations, although their viewing distance was closer. This suggests that spatial context interacts with items to influence the occurrence of spontaneous autobiographical memories.

Email: Dani Parra, dparra2@nd.edu

12:00-1:30 PM (2121)

Collective Memory in the Making: The Effects of the COVID-19 Pandemic on Autobiographical Memory Organization and Content.

ÖYKÜ EKİNÇİ, *University of Alberta*, NORMAN R. BROWN, *University of Alberta* — In this study, we aimed to test whether the COVID-19 pandemic spawned memorable autobiographical memories around its onset. Participants recalled and dated memorable events from their lives and indicated the event's relation to the pandemic. Findings revealed an increased recall of COVID-related events in 2020, gradually decreasing in the following years. Individuals more affected by the pandemic in material terms reported more COVID-related memories. Despite the pandemic's historical significance, transitional impact ratings were moderate, contrasting with other public transitions with similar effects. These results suggest that the COVID-19 pandemic constitutes an important collective transition and a distinct autobiographical period, even in the absence of a severe transitional impact.

Email: Öykü Ekinci, ekinci@ualberta.ca

12:00-1:30 PM (2122)

What's Next? Turkish General Elections as a Historic Moment for Remembering the Past and Projecting the Future.

ELIF SOZER, *The New School*, MEYMUNE N. TOPCU, *MEF University*, AYSECAN BODUROGLU, *Koç University* — In 2023,

Turkish society voted in a general election to choose its president amid a crippling economic crisis. The incumbent president, Erdogan, won against the leader of the main opposition party in the second round. After the finalized election results, we collected nationally representative data through in person interviews to assess how the flashbulb memory of the election impacts accessible collective memories, and different pathways of remembering the future. Although there has been extensive research on flashbulb memory, remembering public events as a part of collective memory, and collective future thinking, the relationship between the three of them has not been dissected yet. Our research paves the way to understand how the present political climate shapes what is remembered of the collective past, and how the past and the present interact in shaping collective future projections via psychological predictors like agency, need for cognitive closure, system justification, and collective nostalgia.

Email: Elif Sozer, sozee287@newschool.edu

12:00-1:30 PM (2123)

Applying a Dimensional Memory Model to the Experience Component of Belief Formation.

WILLIAM LANGSTON, *Middle Tennessee State University*, GRESHAM GROVES, *Middle Tennessee State University* — Previous research in our lab has shown that experience mediates the relationship between personality and belief. However, the measures of experience that we previously used are somewhat crude and tailored for specific beliefs. Rubin (2022) presented a memory model that identified scene vs. not, self-reference vs. not, and explicit vs. implicit as three dimensions along which memories can be classified. The goal of this research was to evaluate whether experiences could be classified along these same dimensions (along with positive and negative affect) to provide a generic framework for classifying experience. We identified experience measures to assess the dimensions proposed by Rubin that could (ideally) have universal applicability. To test this approach to classifying experience, we used existing measures demonstrating the relationships between personality variables and Christian belief and evaluated the role of the experience components in mediating these relationships. The data allowed us to assess this potentially useful application of memory research to the psychology of belief.

Email: William Langston, william.langston@mtsu.edu

12:00-1:30 PM (2124)

Characterizing Emotional Memory for Religious and Non-Religious Doubt.

RYAN T. DALEY, *Gordon College*, ABIGAIL DUNDORE, *Gordon College*

— Religious and spiritual (R/S) doubts are pervasive experiences in emerging adulthood. These experiences are associated with poor mental health outcomes. Yet, a relatively small amount of literature seeks to understand the lived experiences of R/S doubt. By understanding the lived experiences of R/S doubt, future iterations of these experiences might be able to be modified. This study aims to characterize the emotional valence of young adult autobiographical memories of R/S doubts and doubts about important life decisions (control). Results indicate that the number of positive, negative, and neutral details do not differ between the R/S and control groups, but emotional polarity scores indicated a greater magnitude of negativity in the R/S group. That is, R/S doubts have stronger negative emotional magnitude than non-religious doubts. These findings introduce a potential avenue to reduce the negative emotionality of R/S doubts and associated negative mental health outcomes via autobiographical memory in future research.

Email: Ryan Daley, ryan.daley@gordon.edu

12:00-1:30 PM (2125)

Does Encoding Course Material Using Self-Referential Cues Influence Memory Performance Among University Students?

LINA DEKER, *McMaster University*, JOSEPH KIM, *McMaster University*, FARIA SANA, *McMaster University & Athabasca University*

— One robust strategy that increases memory retention is the self-reference effect (SRE). The SRE suggests individuals show enhanced memory for information when linking it with the self. Educational psychologists examined the SRE by using self-referential cues (SRC) in course material. However, few studies in the adult literature have investigated SRC using course content. The present study examines whether encoding course material using SRC influences memory performance among university students. Participants will complete a learning and testing session. During the learning session, participants will complete tasks in three conditions (baseline, SRC and other-referential cues). Participants will read passages about various topics and listen to recordings of an educator explaining the passages. After 48 hours, participants will complete a testing session and answer a few memory

questions. We predict that memory performance will be higher for SRC condition. This research can inform educators about the impact modifying course material has on students' performance.

Email: Lina Deker, dekerl@mcmaster.ca

12:00-1:30 PM (2126)

Effects of Intersectional Social Identity on

Flashbulb Memory Accessibility Among International Undergraduate Students. JENNIFER M. TALARICO, *Lafayette College* — Flashbulb memories are vivid, long-lasting, confidently-held memories of where you were and what you were doing when you learned the news of an important public event. One model explaining flashbulb memory formation (Berntsen, 2009) argues that an event must have relevance to one's social group in order to facilitate rehearsal and support the phenomenology of these memories. Recent cross-cultural work (Talarico, Bohn, & Wessel, 2019) has shown that nationality influences which newsworthy events are most likely to lead to individual flashbulb memories. This project examines how intersectional identities can influence the accessibility of flashbulb memories. International undergraduate students attending college in the United States were primed with either their homeland identity or their American identity and then asked to spontaneously generate flashbulb memories. We expect that US-centric events (e.g., the September 11th attacks) will be more likely to be recalled by those primed with their American identity and events more central to their home country to be recalled more readily when primed with that identity (e.g., the Wenchuan earthquake among students originally from China).

Email: Jennifer Talarico, talaricj@lafayette.edu

12:00-1:30 PM (2127)

Memories of Internal Experiences in

Autobiographical Recall. CORALIE KNIGHT, *Purdue University*, HAOWEN SU, *Purdue University*, YOOLIM HONG, *Purdue University*, ALYSSA MCMAHON, *Purdue University*, TAYLOR KORN, *Purdue University*, HONGMI LEE, *Purdue University* — Real-world memories often include our internal thoughts and feelings. However, human memory studies have primarily focused on the external features of events, such as sensory stimuli and actions, overlooking the memories of internal states. To bridge this gap, we analyzed data

from 210 participants in the publicly available Hippocorpus dataset. Participants recounted a specific memorable life event twice, with a 2- to 3-month interval. Each recall was manually divided into segments, each representing a single idea, and categorized as details of external features or internal states. We found that memories of internal states were more prone to distortion or forgetting over time compared to external features. Internal details with lower emotional intensity and weaker semantic connections to external details were particularly vulnerable. However, across individuals, the overall proportion of internal details positively correlated with perceived importance of the recalled event, and precise retelling of internal details across recalls predicted increased importance over time. These findings suggest that despite their fragile nature, memories of internal states significantly influence the subjective experience of autobiographical recall.

Email: Coralie Knight, knight87@purdue.edu

12:00-1:30 PM (2128)

Can Generating Drawings Support Metacomprehension Accuracy After a Delay?

ALLISON J. JAEGER, *Mississippi State University*, TANNER M. GRUBBS, *Mississippi State University*, PHUC XUAN NHI NGUYEN, *Mississippi State University*, LOGAN FIORELLA, *University of Georgia* — This study examined the effect of generating one's own drawings versus viewing provided drawings on the accuracy of students' judgments of learning (JOL) and judgments of drawing (JOD) immediately (T1) and after a delay (T2). Overall, there was no effect of generating drawings versus viewing provided drawings on test or drawing performance, contrary to previous research demonstrating benefits for learner-generated drawing tasks. However, there was an effect of timepoint; drawing performance was better at T1 than T2, though this difference was not observed in test performance. In terms of relative comprehension monitoring accuracy for the JOLs, accuracy was higher at T1 than at T2 in the generate conditions, but there was no difference in JOL accuracy at T1 and T2 in the no-generate conditions. JOD relative accuracy did not significantly differ between the generate and no-generate conditions, but there was a marginal effect of timepoint, with participants having more accurate judgments at T2 than T1. Overall, these results suggest that generating diagrams while reading can support better JOL accuracy

immediately after reading, but this benefit may fade after a delay.

Email: Allison Jaeger, ajb1193@msstate.edu

12:00-1:30 PM (2129)

Dancing in the Doldrums: Investigating the Effects of Boredom on Achievement and Learning Strategies.

MARY CHAPMAN, *University of Northern Colorado*, JAMES A. KOLE, *University of Northern Colorado* — The goal of the present study was to experimentally establish relationships between boredom, learning strategies, and achievement, as well as to investigate whether learning strategies mediate the boredom-achievement relationship. Two versions of a lecture were recorded; in one version the narrator spoke with a monotone voice and slides were mostly text, whereas in the other version the narrator spoke with varied intonation and slides included more images. After the lecture, subjects completed measures of boredom and learning strategies, followed by a multiple-choice final test. The results indicated that those who saw the boring lecture were significantly more bored than those who saw the less boring lecture. Furthermore, boredom impacted final test performance, with higher accuracy for the less boring lecture. However, lecture type did not impact the use of learning strategies, and learning strategies did not account for any significant variation in test scores. Thus, the present study is consistent with prior correlational studies that show boredom impacts achievement, although not through the use of more shallow learning strategies.

Email: Mary Chapman, Mary.Chapman@unco.edu

12:00-1:30 PM (2130)

Fostering Generative Learning by Translating Across Verbal and Visual Representations.

LOGAN FIORELLA, *University of Georgia*, ALEXIS CAPOBIANCO, *University of Georgia*, ALLISON J. JAEGER, *Mississippi State University*, ANNA BURNETT, *University of Georgia* — This study explored the effects of generative learning activities that require learners to translate across verbal and visual representations while learning in science. In a 2 x 2 (plus control) design, undergraduates (n=197) learned about the human circulatory system from either provided text or provided diagrams, and they were prompted to either generate explanations or create drawings from the provided material. Students who were required to

translate across representations (explain from provided diagrams or draw from provided text) significantly outperformed students not required to translate (explain from provided text or draw from provided diagrams) on a subsequent comprehension test. The translation groups also significantly outperformed a control group who studied provided text and diagrams. Overall, the findings suggest the generative activities are most effective when they require learners to use their existing knowledge to translate the provided material into a new representation.

Email: Logan Fiorella, lfiorella@uga.edu

12:00-1:30 PM (2131)

Notetaking Reexamined: Are There Student Learning Differences When Comparing Typing Versus Handwritten Approaches? DAVID J. THERRIAULT, *University of Florida*, LISE ABRAMS, *Pomona College* — The idea that handwritten notes improve learning relative to typing is often promoted as an effective learning strategy (Muller & Oppenheimer, 2014). However, more recent research has produced mixed results or failed to replicate that finding (Morehead et al., 2019; Urry et al., 2021). The discrepant findings challenge the idea that longhand notetaking facilitates encoding of novel information in all contexts. The current study explored the differences in learning performance when participants were instructed to type or handwrite their notes in a class setting (i.e., after viewing an entire lecture) and their memory was tested a week later. Notetaking performance was compared to a control condition (sit and listen without taking notes), and participants' handwriting and typing speed/accuracy were measured as possible covariates. Findings are interpreted with respect to possible boundary conditions surrounding how notetaking and typing are experimentally implemented.

Email: David Therriault, therriault@coe.ufl.edu

12:00-1:30 PM (2132)

More Steps, Same Effect: Spacing Increases Retention of Mathematics Procedures of Varying Complexity. EWAN MURRAY, *University of York*, AIDAN HORNER, *University of York*, SILKE M. GÖBEL, *University of York* — The spacing effect, where practice is distributed over time rather than in a single session, often benefits long-term memory. However, it is less clear that spacing is effective for more complex material. As more educators harness the spacing effect, it

is important to discern under what conditions it is most effective. We investigated the impact of procedural complexity on the efficacy of spacing, by varying the number of steps in arithmetic procedures. Participants were taught two procedures, either in a single session (massed) or over three sessions spanning three consecutive days (spaced). Experiment one compared learning a two-step with a three-step procedure. We found a significant overall effect of spacing, but no difference between the two procedures. Experiment two compared learning a two-step with a five-step procedure. Performance in the five-step procedure was significantly worse when compared to the two-step, yet both procedures benefited equally from spaced relative to massed learning. We found no evidence of an interaction between procedural complexity and the spacing effect. This suggests that increasing the number of steps in an arithmetic procedure does not negatively impact the efficacy of the spacing effect.

Email: Ewan Murray, ewan.murray@york.ac.uk

12:00-1:30 PM (2133)

Good for Learning But Not in a Rush: Evaluations of Study Strategies Across Contexts. MELANIE PRIETO, *University of California, Santa Cruz*, DAVID MENENDEZ, *University of California, Santa Cruz*, HANNAH HAUSMAN, *University of California, Santa Cruz* — Students' intended and actual study habits often diverge. For example, at the beginning of the term, most students plan to space their studying, but many cram the night before the test. Affect when planning or executing study can inform whether learners employ that strategy. That is, a student who feels self-testing is difficult may instead reread notes, which feels easier and more rewarding in the moment. The present research tested the hypothesis that students base intended study on effectiveness and actual study on effort avoidance. To better understand the gap between intention and practice, we asked 200 participants to rate 14 study strategies (interleaving, blocking, etc.) on a 7-point scale in realistic learning scenarios (e.g., preparing for a multiple-choice test on ANOVAs in a statistics class). Key questions addressed perceived difficulty and effort associated with strategy preparation and use. Finally, we assessed the role of contextual factors, such as time constraints or performance goals, in strategy choice. We are collecting data and expect students to be aware of optimal learning strategies in contexts free of

time constraints but, under time constraints, prefer strategies perceived as easiest and least effortful.

Email: Melanie Prieto, merpriet@ucsc.edu

12:00-1:30 PM (2134)

The Power of Correction: Unraveling Misconceptions in Learning. JEXY AN

NEPANGUE, *University of California, Santa Cruz*, HANNAH HAUSMAN, *University of California, Santa Cruz* — Our understanding of the world is often colored by misconceptions deeply embedded in our memory. Recent research has shed light on how confidently held misconceptions are more likely to be corrected with feedback, a phenomenon known as the hypercorrection effect. This study seeks to deepen our understanding of this effect by exploring its persistence over a 3-day delay and the cognitive mechanisms involved. Participants in the study answered a series of general knowledge questions, rated their confidence in their answers, and received corrective feedback—either immediately or after a delay. They also rated their familiarity with the correct answers. Half of the participants took a final test immediately and after a delay, while the other half took the final test only after a delay. By examining whether the hypercorrection effect persists regardless of the timing of corrective feedback or if it is more pronounced with immediate feedback due to the accessibility of confidence levels, this experiment aims to uncover insights into how our prior knowledge and confidence levels influence the process of error correction.

Email: Jexy An Nepangue, jnepangu@ucsc.edu

12:00-1:30 PM (2135)

Curiosity & Comprehension: An Investigation of the Seductive Details Effect Across Different

Testing Formats. ZOË F. WARREN, *University of California, Riverside*, ANNIE S. DITTA, *University of California, Riverside* — Prior research has investigated the harmful effect of seductive details on free recall; however, such tests do not accurately reflect assessment in an educational context. We sought to examine whether seductive details are harmful regardless of testing format. Participants read passages with or without seductive details (between-subjects), and then recalled the information using a cued or free recall task (within-subjects). We hypothesized an interaction such that participants would experience the seductive details effect in the free recall condition, but not in the cued recall

condition. Preliminary analyses unsurprisingly indicate that test performance is significantly better on cued vs. free recall tests. The seductive details and interaction effects, while nonsignificant, are in the expected direction. Together, these results can contribute to an understanding of the seductive details effect.

Email: Zoë Warren, zwarr001@ucr.edu

12:00-1:30 PM (2136)

Designing Effective Automated Feedback for Digital Learning Environments. LAUREN E.

BATES, *Chatham University*, MONICA A. RIORDAN, *Chatham University* — Addressing student experiences within digital learning environments and finding ways to maximize positive outcomes is of increasing importance. Central to the student learning experience is feedback offered by instructors. Effective feedback is crucial to student learning, motivation, goal setting, and persistence within a course. Students report that feedback is most useful when it is specific, personalized to them, and integrates positive affect, but learning management system (LMS) tools are ill-equipped to deliver this kind of feedback. Our project investigated the role of socio-emotional communication tools (e.g., statements of encouragement, emojis) in online quiz feedback. We sought to understand if these factors influenced variables such as social presence, learning, and students' perceptions of feedback utility. Using a within-subjects design, students in an undergraduate course took weekly online quizzes delivered by the course LMS and were randomly assigned to receive correct answer feedback with or without a supportive comment. Results are discussed in terms of how socio-emotional communication tools can impact students' learning, motivation, and perceptions of the instructor in an online learning environment.

Email: Lauren Bates, l.bates@chatham.edu

12:00-1:30 PM (2137)

Does Knowledge of Autism Spectrum Disorder

Impact Perceived Stigma? SUSAN E. RUPPEL, *University of South Carolina Upstate*, MOLLIE GOFORTH, *University of South Carolina Upstate* — Research has shown that individuals with autism spectrum disorder (ASD) experience vast amounts of stigma, so much so that the lack of societal understanding of the disorder causes some parents of these individuals to shelter their children from society.

Since individuals with ASD can be stigmatized, it is important for researchers to develop a deeper understanding of the disorder with the hope of decreasing the stigma that surrounds it. By understanding how education impacts the stigma around ASD, researchers will have a better understanding of how individuals with ASD can be more readily accepted in and understood by society. The current study assessed if education about ASD would increase participants' willingness to interact with individuals who have ASD or exhibit ASD behaviors. Results showed that watching an educational video on ASD did increase participants' willingness to interact with individuals with an ASD label and individuals who exhibited ASD behaviors.

Email: Susan Ruppel, ruppel@uscupstate.edu

12:00-1:30 PM (2138)

Engagement with Effective Learning Strategies in Students with Test Anxiety. CAROLINA E. KUEPPER-TETZEL, *University of Glasgow*, GRACE CALLAGHAN, *University of Glasgow*, VENDULA OPLUŠTILOVÁ, *University of Glasgow* — Test anxiety is common among students with an estimated prevalence of 20-40% and is associated with impaired learning and academic achievement. While test anxiety is a multi-faceted construct, theoretical explanations (e.g., the skills deficit model) have emphasized the contributing role of poor study skills to the development and maintenance of test anxiety. Using a mixed-methods approach, we investigated the relationship between students' engagement with effective learning strategies (specifically spaced and retrieval practice) and test anxiety. In Study 1, we surveyed N=166 students and revealed that neither engagement with spaced practice nor retrieval practice significantly predicted levels of test anxiety in students. In Study 2, we asked N=136 participants in open-ended questions about their views on implementing spaced and retrieval practice in relation to test anxiety. Through thematic analysis, we identified implementation success, time management, and previous experiences as main themes for the uptake of effective learning strategies. Our findings have implications for developing ways to promote effective study strategies among students with test anxiety.

Email: Carolina Kuepper-Tetzel, carolina.kuepper-tetzel@glasgow.ac.uk

12:00-1:30 PM (2139)

Evaluating the Effects of Stress on Learning and Memory Processes. KATHERINE ARCHER, *Rutgers University–Newark*, AMBER ANGEL, *Rutgers University–Newark*, KAREN E. SMITH, *Rutgers University–Newark*, KIMELE PERSAUD, *Rutgers University–Newark* — Stress is pervasive in educational contexts, but how stress modulates learning and memory in these contexts is less clear. Prior research suggests the effects of stress on memory are shaped by both the timing and intensity of the stressor. Here, we examine how stress prior to encoding influences recall of educationally relevant material, and whether this effect is moderated by the intensity of the stress response. Participants studied the answers to trivia questions immediately after undergoing a laboratory stressor (cold pressor task) or control condition. Twenty-four hours later, participants returned to the lab and were tested on their memory for answers to the trivia questions. To assess the intensity of participants' stress responses, we collected indices of autonomic cardiac activity. Analyses of autonomic reactivity revealed how intensity of stress responses shape memory effects. Initial results suggest a trend towards poorer memory in the stress group as compared to the control group. We discuss how these findings can inform strategies for learning under stress in educational contexts.

Email: Katherine Archer, ka651@psychology.rutgers.edu

12:00-1:30 PM (2140)

From Passive to Metacognitive: The Effect of Mode of Engagement on Chemistry Learning Outcomes. BRENDAN SCHUETZE, *University of Utah*, YOANA OMARCHEVSKA, *University of Potsdam*, JULIANE RICHTER, *Hochschule der Medien*, KATHARINA SCHEITER, *University of Potsdam* — The present study investigated the relationship between different modes of cognitive engagement and metacognitive judgments during learning with a digital interactive textbook to secondary students' (N=248) immediate and delayed knowledge in chemistry. Log data was analyzed and learning activities were classified according to the ICAP framework, which hypothesizes that the effectiveness of different learning activities should follow the pattern: Interactive>Constructive>Active>Passive engagement. Structural equation modeling was used to analyze prior knowledge, modes of cognitive engagement (passive,

active, constructive), and metacognitive judgments as predictors of immediate and delayed knowledge. Constructive engagement ($\beta=0.21$, $p<.001$) and metacognitive judgments ($\beta=0.37$, $p<.001$) significantly predicted immediate knowledge, while metacognitive judgments ($\beta=0.37$, $p<.001$) were the only significant predictor of delayed knowledge. Passive and active engagement contributed little predictive value. Our findings are broadly in line with the ICAP model but also point to the benefit of incorporating metacognitive judgments in the evaluation of student learning.

Email: Brendan Schuetze, brendan.schuetze@gmail.com

12:00-1:30 PM (2141)

How Can We Convey Important Details During the Assembly Process? Is It Possible? ETSUKO T. HARADA, *University of Tsukuba & IdeaLab Inc.*, ERIKO ANKYU, *University of Tsukuba*, HIROKO AKATSU, *Oki Electric Industry Co., Ltd.* — In today's assembly plants, detailed manual information is provided to assemblers along with individual product parts for small-quantity, high-mix manufacturing. Assembly errors are frequent and sometimes bring serious problems. Why is the detailed information necessary for individual assembly not internalized by each assembling worker? Two experiments were executed in which participants performed three assembly tasks with different difficulties three times each while looking at a manual. Results showed that people stopped looking at the manual early on, showing a much shorter assembling time; however, the test phase with no manual revealed that they did not learn the important details (Experiment 1). Introducing a new-type manual, which highlighted important information with written descriptions at the points for preventing errors and with a face graphic with moving eyes to guide the assembler's gaze to the target part of the objects (Experiment 2), had little effect. We discussed about the reasons why people tend to avoid consulting manuals while assembling objects and what is needed for conveying task-related information from the external into the human-object interaction.

Email: Etsuko Harada, etharada@human.tsukuba.ac.jp

12:00-1:30 PM (2142)

Inner Speech Facilitates LEGO® Construction. FELICE VAN 'T WOUT, *University of Exeter* — Research has shown that language (and specifically inner speech) facilitates instruction following (e.g., van 't Wout & Jarrold, 2022; 2023). To date, these studies have

mostly used lab-based computer paradigms, in which participants learn sets of arbitrary stimulus-response mappings. Arguably, such paradigms do not adequately capture the complexities of instruction following in everyday life. Therefore, the current study aimed to investigate the role of inner speech in instruction following in a more naturalistic setting, adopting LEGO construction as an experimental task. Sixty adult participants were required to complete 10 simple LEGO DUPLO® builds (consisting of 7 to 12 bricks each). Prior to each LEGO build, participants viewed the instructions (a visual depiction of the completed build) for 15 seconds. During this instruction phase (but not during the build phase), participants performed either a verbal or a nonverbal distractor task. Results showed that performance was significantly worse (indexed by increased completion times and error rates) when a verbal distractor task had been performed during the instruction phase. These findings demonstrate that inner speech facilitates LEGO construction.

Email: Felice van 't Wout, F.M.Van-t-Wout@exeter.ac.uk

12:00-1:30 PM (2143)

Be on the Lookout: Racial Biases in Prospective Person Memory. MEGAN H. PAPESH, *University of Massachusetts Lowell*, ALAN C. QUINN, *University of Massachusetts Lowell*, DANIELLA CASH, *Sam Houston State University* — Every year, approximately 100,000 missing persons are reported to authorities who often call upon the public for assistance, using methods such as lost person posters, social media posts, AMBER alerts, and billboards. The efficacy of these methods relies on multiple memory-related processes: People must learn the features of the missing person, remember to be on the lookout, and then successfully recognize the missing person, if spotted. These processes place heavy demands on prospective memory (PM). Unlike laboratory PM tasks, search for missing persons has a social element: Often, the missing person will be from a different social or racial group than the people called upon to search for them. In the present study, we examined the costs to attention and memory when participants searched for own- and other-race faces, using a laboratory prospective person memory (PPM) paradigm. We found the predicted deficits in both attention and memory during other-race PPM, and that these deficits were robust to manipulations designed to improve performance.

Email: Megan Papesh, megan_papesh@uml.edu

12:00-1:30 PM (2144)

Does the End-of-History Illusion Apply to Collective Memory in Younger and Older Adults? ELEANOR FARRY, *Claremont McKenna College*, DANIEL WU, *Claremont McKenna College*, MAGDALENA ABEL, *University of Regensburg*, AMY CORNING, *University of Michigan*, SHARDA UMANATH, *Claremont McKenna College* —

Individuals tend to notice that they have changed from past to present but do not anticipate that they will personally change in the future—the End-of-History Illusion (EOHI). Does this apply to collective memories? Prior work showed that younger adults (YAs) tend not to anticipate change in their perceptions of nationally important historical events whereas older adults (OAs) perceive many differences from their youth to now. To more systematically examine EOHI in collective memory, representative American samples of over 300 YAs and 300 OAs rated their emotional valence of 12 national historic events in the present and 50 or 100 years in the future. When projecting 50 years into the future, YAs anticipate no change, whereas OAs do anticipate some changes. For 100 years, YAs begin to anticipate some changes, though still fewer than OAs. These findings provide some evidence and boundaries of extending EOHI to collective memory.

Email: Eleanor Farry, eefa2020@mymail.pomona.edu

12:00-1:30 PM (2145)

The Effect of Task Type and Delay on Naturalistic Prospective Memory. DAWN M. MCBRIDE, *Illinois State University*, DANTE CARUSO, *Illinois State University* — Prospective memory (PM) describes our ability to remember to complete a future task. PM tasks are generally divided into two types: time-based PM tasks and event-based PM tasks. In the current experiments, we examined the effects of task type and delay on a naturalistic PM task (send a text message to the researcher 1, 3, or 6 days in the future). Texts were to be sent at a set time, in response to a text received from the researcher, or after eating an evening meal. Results showed that participants in the event-based conditions completed their PM task at higher rates than participants in the time-based conditions. Furthermore, the decline in completion rates across delays was similar for event- and time-based tasks. Whereas, research has shown that people tend to plan future tasks primarily as time-based tasks, these results suggest that people may

be more likely to complete their prospective memory tasks if planned instead as event-based tasks.

Email: Dawn McBride, dmcbride@ilstu.edu

12:00-1:30 PM (2146)

Learning-Based Strategic Monitoring in Prospective Memory. MADELINE R. VALDEZ , *Washington University in St. Louis*, JULIE M. BUGG, *Washington University in St. Louis* — Prospective memory (PM), the act of remembering to perform an intention in the future (e.g., remembering to give a colleague a message), often requires one to monitor for PM cues. Monitoring is attentionally demanding and incurs a cost to the ongoing task. Prior research shows that individuals use explicit contextual information to adjust monitoring based on the likelihood of encountering a PM cue. The current study tested whether individuals learn, through experience, to strategically monitor for PM cues. In both experiments, the color of the stimuli represented context and was predictive of PM demands (i.e., the likelihood of encountering a PM cue), but participants were not explicitly told this. Results from Experiment 1 (N=86) and Experiment 2 (N=88) showed that participants did not use probabilistic or deterministic contextual cues to adjust monitoring to meet PM demands. Thus, when explicit information is not available, individuals do not flexibly adjust monitoring through learned characteristics of the environment. Critically, this study provides novel insight into the mechanisms of strategic monitoring in PM, suggesting that strategic monitoring processes are not supported by a learning-based system.

Email: Madeline Valdez, m.r.valdez@wustl.edu

12:00-1:30 PM (2147)

Reducing Future-Oriented Thoughts through Intention Offloading. CONNOR DUPRE, *The University of Texas at Arlington*, HUNTER BALL, *The University of Texas at Arlington* — Although offloading improves fulfillment of future-oriented intentions (i.e., prospective memory), little research has examined the nature of offloaded memory representations during the retention interval between encoding and retrieval. We previously found that offloading does not reduce thinking of relatively simple intentions during the retention interval. The current study examined whether these effects extend to more complex intentions in which different prospective targets (e.g., dog, table, etc.) were

associated with separate actions (e.g., press 7, press 2, etc.). Participants engaged in a lexical decision task across two blocks, forming an intention to respond to PM targets in block 2. Thought probes during block 1 indicated that participants thought about their future intentions less frequently when offloaded. Moreover, offloading improved intention fulfillment in block 2. Additionally, we examined whether expectations regarding reminders (i.e., knowing if a reminder would be available before or after intention encoding) influenced performance, but found no impact on performance or future-oriented thinking. Thus, offloading reduces future-oriented thinking of complex intentions while also improving intention fulfillment.

Email: Connor Dupre, connor.dupre@mavs.uta.edu

12:00-1:30 PM (2148)

Imagining the Future: Simulating Future Goals Improves Vividness and Reduces Anxiety But Does Not Enhance Enjoyment. SOPHIE SCHANZER, Yeshiva University, RAFAELA DREYFUSS, Yeshiva University, MAIA PUROW, Yeshiva University, ELIZABETH PARKS-STAMM, University of Southern Maine, ANNA-LISA COHEN, Yeshiva University — Episodic future thinking (EFT) refers to the capacity to imagine or simulate experiences that might occur in one's future (Atance & O'Neill, 2001; Schacter et al., 2008). A sample of 41 university-aged participants (21 females, 20 males) were guided through simulations of events that varied in their distance from the present: academic goals (near), career goals (further), and relationship goals (furthest). Ratings of vividness, perceptions of control, and pleasure associated with future goals were measured pre- and post-simulations. Results revealed that pleasure associated with all three future goals decreased after simulations. Perhaps, because simulations highlighted the obstacles associated with successfully obtaining those goals. However, vividness of future goals increased after simulations especially for academic goals. An effect of gender emerged for perceived control, with females rating perceived control as lower than males. All participants rated perceived control highest for academic goals, lower for career goals, and lowest for relationship goals. Ratings of goal-related anxiety were reduced post-simulations for all three goals. These results highlight the potential of EFT in promoting near- and long-term goals.

Email: Sophie Schanzer, sschanze@mail.yu.edu

12:00-1:30 PM (2149)

Predicting Climate Change: Remembering Past Temperatures and Estimating Future Temperatures. SCOTT COLE, York St John

University, KRYSHTIAN BARZYKOWSKI, Jagiellonian University, THEOFILOS GKITNOPOULOS, Jagiellonian University, SEN CHENG, Ruhr-Universität Bochum — Climate change will have a profound impact on the world's population. At the psychological level, research has focused on people's beliefs, attitudes and behaviours, but research has yet to examine how humans estimate past and future temperatures. Here, we report an online study in which people estimated previous temperatures and predicted future ones, in addition to information on the psychological processes involved (e.g., personal memories, cognitive biases). Participants were asked to provide temperatures based on time direction (past, future) and distance (a day, week, month, year, 5 years). We report pre-registered analyses on temperature estimations compared to actual climate data and forecasts, the link between past and future estimations and the psychological processes underlying these estimations. Knowledge gained from this investigation will be used in understanding the basic psychology of climate change which can be applied to improving behaviour change, policy making and government messaging.

Email: Scott Cole, cole.s.n80@gmail.com

12:00-1:30 PM (2150)

Memory for Political Statements: Assessing Motivated Forgetting and Congeniality Effects. JOSEPH ROMAGANO, Lehigh University, ALMUT HUPBACH, Lehigh University — The current study

aimed to replicate and extend work by Waldum and Sahakyan (2012) on motivated forgetting of political statements that are either congruent or incongruent with the participants' political orientations. Consistent with their findings, we observed a politically motivated directed forgetting effect for incongruent statements. However, in our study, this effect was restricted to participants with a conservative political orientation. Specifically, liberal participants did not exhibit motivated forgetting of statements that aligned with Republican values. In a second study, we assessed congruency based on individual endorsement of conservative and liberal statements rather than overall statement-orientation alignment. In this study, neither political orientation nor

the forget instruction influenced memory for congruent or incongruent statements. These discrepant findings underscore the importance of assessing belief-congruency on an individualized basis when studying congeniality effects in memory. Findings will be discussed in relation to motivated forgetting mechanisms and congeniality effects.

Email: Joseph Romagano, jsr1151@gmail.com

12:00-1:30 PM (2151)

Memory Vividness Is Associated with Regulation of Emotional Reactivity During Retrieval.

AMBER L. MARTIN, *Gordon College*, RYAN T. DALEY, *Gordon College* — The overlap between memory encoding and retrieval contexts is important for memory accuracy, but it is unclear how emotional reactivity during these phases of memory is associated with memory vividness. Theories of memory recapitulation suggest that similar emotional reactivity at encoding and retrieval could be associated with higher memory vividness. Alternatively, emotion regulation accounts suggest that differences in emotional reactivity at encoding and retrieval are associated with higher memory vividness. Approximately 5 months following the breaching of the U.S. Capitol Building on January 6, 2021, we tested participant memory vividness for the event as well as their emotional reactivity during the time of the event (encoding) and during the time of the study (retrieval). Individuals with lower emotional reactivity during memory recall compared to encoding had stronger memory vividness. These findings suggest that emotional regulatory processes, rather than memory recapitulation, may support memory vividness in the context of emotional reactivity associated with a negative public event.

Email: Amber Martin, ambermartinnh@gmail.com

12:00-1:30 PM (2152)

Reminders of Fake News Headlines Enhance Belief Updating and Memory for Corrections: The Role of Attention Revealed by Eye Tracking.

BAYLEY M. WELLONS, *University of North Carolina at Greensboro*, CHRISTOPHER N. WAHLHEIM, *University of North Carolina at Greensboro* — Fake news exposure can cause inaccurate memories and beliefs. These effects can be mitigated by presenting reminders of fake news before corrections. The present experiment used eye tracking to investigate the role of

attention to changed details in these effects. In Phase 1, subjects rated the familiarity and accuracy of real and fake news of unclear veracity. In Phase 2, subjects read real news that corrected false information or affirmed true information from Phase 1. In Phase 3, subjects re-rated the accuracy of Phase 1 headlines and their memory for headline correction in Phase 2. Corrections with fake news reminders led to the greatest reduction in accuracy ratings for fake news, highest memory for corrections, and earliest fixations to true details in Phase 2. Corrections recollected in Phase 3 were associated with more and earlier fixations to true details in Phase 2. This occurred most for corrections with fake news reminders. These results suggest that reminders guided attention to changed details that improved memory for corrections. Fake news mitigation methods should direct attention to differences between true and false details to promote memory for corrections and associated reductions in false beliefs.

Email: Bayley Wellons, bmwellons@uncg.edu

12:00-1:30 PM (2153)

Second Thoughts Are Not Better than Second Looks—Revisiting the Benefit of Refreshing on Long-Term Memory.

NOAH RISCHERT, *University of Zurich*, LEA M. BARTSCH, *University of Zurich* — Attentional refreshing, a domain-general mechanism proposed to sustain the activation of mental representations, has been suggested as a central component of working memory processing. However, its exact role in the formation of long-term memory representations and its operationalization in experimental setups remain the subjects of much debate and inconsistency. Across two experiments, we addressed these disparities by systematically manipulating the impact of key differences that characterized earlier studies, such as the type of stimuli to be refreshed, vocalization, working memory load, and the inclusion of distractor tasks. Our results indicate no significant advantage in a delayed memory test for refreshing over repeating a word or an image. We argue that the ambiguous results of previous studies might reflect the loose theoretical foundation underpinning the refreshing process, allowing for flexible operationalizations and predictions difficult to falsify. We suggest that future research should first concentrate on redefining, improving, and clarifying the concept of refreshing.

Email: Noah Rischert, richert@psychologie.uzh.ch

12:00-1:30 PM (2154)

Sleep-Dependent Memory Consolidation

Supports Negative Memory Bias in Depression. REGAN CHRISTIAN, *Texas State University*, DIEGO VILA PEÑA, *Texas State University*, LYDIA GARZA, *Texas State University*, CARMEN WESTERBERG, *Texas State University* — Individuals with depression commonly exhibit superior memory for negative information in comparison to neutral and positive information. The present experiment investigated how sleep-dependent memory consolidation processes may contribute to this negative memory bias in depressed individuals. Participants completed a depression inventory and were divided into high and low depressive symptom groups. Both groups of participants listened to a story containing happy, sad, and neutral details. Next, half of each group stayed awake during a 90-minute break and the remaining participants took a nap monitored with electroencephalography (EEG). Finally, participants were asked to recall as many details from the story as possible. For participants who napped, those in the high depression group recalled a smaller proportion of happy details than those in the low depression group. For participants who remained awake, there was no difference in the proportion of happy details recalled between groups. During sleep, happy details may be less likely to be prioritized for consolidation in individuals with depression. These findings suggest that sleep-dependent memory consolidation contributes to the negative memory bias in depressed individuals.

Email: Regan Christian, kob26@txstate.edu

12:00-1:30 PM (2155)

The Influence of Mating-Related Encoding and of Carotenoid Coloration in Memory.

JÊNNYFER C. A. FREITAS, *William James Center for Research & University of Aveiro*, JOSEFA N. S. PANDEIRADA, *William James Center for Research & University of Aveiro*, GÜN R. SEMIN, *William James Center for Research & Ispa-Instituto Universitário*, JÊNNYFER C. A. FREITAS, *William James Center for Research & University of Aveiro* — The role of reproduction in memory remains unclear due to diverse procedures and conflicting results. From an evolutionary perspective, there is room for its involvement, given memory's ultimate function: to enhance our chances of survival and reproduction. This study compares memory performance for information processed in the context of a potential mating vs. working partner (between-subjects

manipulation). We also explored the influence of carotenoid coloration which relates to mate value. We predicted better memory for information associated with high-coloration faces, especially in the mating context. Following Fitzgerald et al.'s (2016) procedure, females viewed opposite-sex faces with high or low carotenoid coloration, alongside personal descriptions. Memory for the descriptors was tested via free recall; at the end, they rated the attractiveness of the faces. Results showed higher attractiveness ratings for high-coloration faces, particularly in the mating condition. No memory differences were obtained. These findings are discussed considering sex-based differences in prioritizing physical characteristics in potential mates.

Email: Jênnifer Freitas, jennyferfreitas@ua.pt

12:00-1:30 PM (2156)

Why We Remember Now and Later: Examining Memory Justifications Over Time.

AVI GAMORAN, *Ben-Gurion University of the Negev*, TALYA SADEH, *Ben-Gurion University of the Negev* — Humans share in others' experiences and learn from them, but epistemic vigilance is necessary to avoid being misled by false information. Human memories which are error-prone must therefore be evaluated to establish their veracity. Memory justifications help maintain epistemic vigilance regarding our own memories as well as others'. Understanding how justifications are affected by the passage of time is crucial since they serve to ensure memory validity in everyday life and in legal settings. In this registered report study, we examine changes in justifications' content and detail over time using behavioral measures and linguistic analyses of participants' self-reported memory justifications. Memory justifications are validated as credible sources of information by demonstrating their connection with free-recall performance. Results show that items with justifications are accurately recalled regardless of time-delays, while accuracy for items without justifications decreases over time. Strikingly, justifications' content and level of detail remain preserved over time.

Email: Avi Gamoran, avigam@post.bgu.ac.il

12:00-1:30 PM (2157)

Integration of Information Across Separate Events.

GREGORY E. COX, *University at Albany, SUNY*, SUPRIYA SAMAROO, *University at Albany, SUNY*, NATHAN GILLESPIE, *University at Albany*,

SUNY — Repetition is critical for turning individual episodes into semantic knowledge. According to some theories, these episodes are stored as separate traces, each of which grants an extra chance for correct retrieval. Other theories assume that repetitions add information to a single integrated trace. We used an object color recall task to distinguish between these two theories. In two experiments, recall was faster, more confident, and more precise for repeated objects, enough so that the majority of participants were best fit by models with integrated traces. Integration could occur during retrieval if color information were aggregated across traces, predicting a benefit for repetition if just colors were repeated instead of whole objects; this prediction was not borne out in a third experiment. A fourth experiment found that, when repeated objects changed color, participants often recalled an intermediate color instead of separate colors. Results across experiments were best explained by integrated trace models, supporting the idea that repetitions, even on short timescales, contribute to an integrated memory trace which eventually serves as the basis for generalized semantic knowledge.

Email: Gregory Cox, gregcox7@gmail.com

12:00-1:30 PM (2158)

Task and Resource Constraints Modulate Memory Search: Evidence from Gamified Experiments with Individuals, Groups, and Dyads. ABHILASHA A. KUMAR, *Bowdoin College*, CHANNING E. HAMBRIC, *Bowdoin College* — Humans regularly search and retrieve concepts from their mental lexicon while adapting to resource constraints and task demands. How do individuals balance these constraints across various tasks? This work investigates memory search processes using two gamified paradigms: Semantigories and Connector. Semantigories, a large-scale gamified verbal fluency task, requires participants to retrieve items from different domains (e.g., animals, celebrities, book titles) and provide self and peer ratings for pairwise transitions. Data from over 1000 participants reveal that individuals use multiple lexical sources (semantics, phonology, frequency) during memory search, and the use of these sources varies across domains and demographic groups (age and language). In Connector, participants give one-word clues to convey two target words from a board to a listener. Across a series of experiments, we show that speakers balance internal search and concept accessibility with informativity by reasoning about the listener's search

processes. Taken together, these paradigms illuminate how individuals prioritize information sources and contextual demands to perform successful searches across different tasks in individual as well as social scenarios.

12:00-1:30 PM (2159)

What Is a Suitable Answer to an Unanswerable Question and How to Get It? Brief Retrieval Training and Other Manipulations Improving Responding. EWA SMOŁKA, *Jagiellonian University*, MONIKA DERDA, *Jagiellonian University*, AGNIESZKA NIEDŹWIEŃSKA, *Jagiellonian University* — When faced with unanswerable questions, individuals often struggle to provide accurate responses. In eyewitness investigations, interviewers may inadvertently ask about details not present in the event. Various ideas exist on what is an adequate answer to an unanswerable question. Our argument centres on the importance of explicit information that a detail was either absent or not visible. Yet, people only rarely spontaneously reject unanswerable questions (e.g., "It was not there"). Instead, they tend to respond with "don't know" or even provide erroneous substantive answers. In two experiments, we explored techniques to improve responses to unanswerable questions. We replicated the efficacy of a brief retrieval training both in a face-to-face interview and in an online procedure. Additionally, we introduced a novel response-format manipulation focused on building awareness of unanswerable questions which proved equally effective. Beyond improving memory reports, our results provide unique insights into how people draw upon their event memory and other knowledge to respond to questions. More broadly, the results offer interesting perspectives on how people form beliefs about the past and what shapes what they ultimately report.

Email: Ewa Smołka, ewa.smolka@uj.edu.pl

12:00-1:30 PM (2160)

ChatGPT Demonstrates Profound Overconfidence and Modest Discrimination when Judging Its Performance on Medical Licensing Exam Questions. MICHAEL J. SERRA, *Texas Tech University Health Sciences Center* — To what extent can a generative artificial intelligence like ChatGPT judge its own performance on a difficult test of knowledge? We tested ChatGPT 3.5 with multiple-choice and free-response versions of questions from Step 1 of

the United States Medical Licensing Examination (USMLE; 10 independent iterations of 60 different questions in both formats). It answered about 61% of questions correctly in both formats, just barely “passing.” The presence of the multiple-choice options biased its responding both positively and negatively, leading it to answer some questions better in one format or the other. In both formats, ChatGPT showed moderate discrimination (relative accuracy) when judging the correctness of its responses, but it was also extremely overconfident (absolute accuracy) at all levels of performance, demonstrating the “unskilled and unaware” or Dunning-Kruger pattern. Follow-up studies indicated that the overconfidence did not stem from prompt-related effects like anchoring or framing. Despite performing at the cutoff for passing, ChatGPT is nevertheless a poor study aid for USMLE type exams, as it is likely to provide incorrect answers and faulty justifications with high confidence while offering few hints at its unreliability.

Email: Michael Serra, michael.serra@ttuhsc.edu

12:00-1:30 PM (2161)

Does Temporal Binding Reflect Sense of Agency (SoA) or Memory Processes? Insights from Implicit and Explicit Measures in a Goal-Directed Action Paradigm.

FATEMEH MAHDINIA, *Rutgers University*, AMIR LINDOR, *Rutgers University*, PERNILLE HEMMER, *Rutgers University*, ROBRECHT VAN DER WEL, *Rutgers University–Camden* — Sense of Agency (SoA) is a core concept related to our experience as intentional agents in our environment. Explicit and implicit measures have been used to study SoA. Recent findings suggest that the most common implicit measure, namely Temporal Binding (TB), may reflect memory processes rather than SoA. Here, we implemented two TB measures and an explicit measure in a novel goal-directed extended action task to better understand SoA measures. Participants either observed or produced dot movements to a target of choice. They then estimated one of two possible durations; for Temporal Binding version 1 (TB1), they estimated the duration between the end of the dot movement and a tone that played either 300, 500, or 700 ms later (akin to traditional TB studies). For TB2, they estimated the duration between the start and end of the dot movements. After every 10 trials, they also provided explicit SoA ratings. The results indicated that participants reported stronger explicit SoA during active

than passive movements. Results from neither TB version aligned with prediction based on TB-accounts as a reflection of SoA. We discuss memory-based and scaling accounts as alternative interpretations for our data.

Email: Fatemeh Mahdinia, fm470@rutgers.edu

12:00-1:30 PM (2162)

Prospective Metacognition in Children.

BONNIE PERDUE, *Agnes Scott College*, LEILA REED, *Agnes Scott College*, ANDREW KELLY, *Georgia State University* — Metacognition research has typically focused on judgments made about one’s present or past cognitive state. Research on future-oriented, or prospective metacognition, is more limited despite the potential importance of evaluating one’s cognitive abilities at a future time. The current study explores how well 3- to 5-year-old participants assess their future cognitive abilities. Participants were trained to solve numberlink-like mazes which required linking two identical stimuli within a maze. For testing, participants were instructed to choose which of two mazes to solve. Mazes varied in terms of the number of stimulus pairs (2 or 3) and in the solvability of each maze (solvable or impossible). Participants selected the correct maze significantly more often than chance and eye-tracking data demonstrated that participants looked significantly longer at the solvable maze in each pairing. Results support that children were able to assess their ability to solve a maze in the future before making a choice.

Email: Bonnie Perdue, bperdue@agnesscott.edu

12:00-1:30 PM (2163)

Cognitive Offloading by Children During a Manual Memory Task.

ELIZABETH HASELTINE, *Georgia State University*, JOEY MCKEON, *Georgia State University*, BROOKE N. JACKSON, *Georgia State University*, STELLA MAYERHOFF, *Georgia State University*, MICHAEL J. BERAN, *Georgia State University* — Cognitive offloading occurs when you use external aids to store or organize information, freeing up mental resources and reducing demands on memory or attention. Common examples include shopping lists and daily to-do lists. Offloading often results in a decrease in uncertainty and improves task performance and efficiency. We assessed whether 4- and 5-year-old children could use an external aid to spontaneously offload information about the location of a favorite toy. Children hid toys in cups that were all the same color

except for one. They then engaged in a separate test to delay prize retrieval. All 43 children showed evidence of cognitive offloading by putting their favorite toy in the unique cup to easily find later. Overall, 81.2% of trials were correctly offloaded and one-third of children reached criteria for proficient offloading with no errors. This indicates that children of this age are capable of cognitive offloading and can often do so immediately and consistently over multiple sessions. Further research on this topic will forward our understanding of metacognitive development, providing insight into when children start to recognize their cognitive limitations and develop helpful strategies to compensate.

Email: Elizabeth Haseltine, ehaseltine1@student.gsu.edu

12:00-1:30 PM (2164)

Confidence Trumps Calibration in Making Decisions with Multiple Advisors. JONATHAN

YUQUIMPO , *University of Illinois at Urbana-Champaign*, AARON S. BENJAMIN, *University of Illinois Urbana-Champaign* — People seek advice to make informed decisions, often with the help of an advisor or team of advisors. It is known that decision-makers heavily rely on advisor confidence when weighing advice. However, the weighting of confidence should vary with advisor calibration—the advisors' ability to report when they are more or less likely to be correct. The current study explores the utilization of advice between pairs of advisors that differ in confidence and calibration. Participants predicted the outcome of a horse race with the help of assessments provided by two advisors. Both advisors had the same overall accuracy (70%), but one calibrated advisor had 60% accuracy for low-confidence assessments and 80% accuracy for high-confidence assessments. Three competing theories were expressed in order-constrained contrasts. The theory most supported by the data was one in which participants attended to advisor confidence but did not attend to calibration.

Email: Jonathan Yuquimpo, jy57@illinois.edu

12:00-1:30 PM (2165)

Prefrontal GABA and Meta-Attention Individual Differences. KALI CHIDLEY, *The University of Queensland*, SHANE E. EHRHARDT, *The University of Queensland*, REUBEN RIDEAUX, *The University of Sydney & Queensland Brain Institute, The University of Queensland*, YOHAN WARDS, *The University of*

Queensland, MAŁGORZATA MARJAŃSKA, *Centre for Magnetic Resonance Research, University of Minnesota*, JASON B. MATTINGLEY, *The University of Queensland & Canadian Institute for Advanced Research (CIFAR)*, AISLING MULVIHILL, *The University of Queensland*, HANNAH L. FILMER, *The University of Queensland*, NATASHA MATTHEWS, *The University of Queensland*, PAUL E. DUX, *The University of Queensland* — Self-regulation of cognition is critical for performance, yet individuals often struggle to accurately assess their own abilities. This lack of metacognitive insight is particularly problematic for attention regulation, as poor monitoring and control of attentional states and poor strategy selection impedes goal-directed behaviour. Here we examined the neurochemical correlates of metacognition. Specifically, we employed ultra-high field magnetic resonance spectroscopy (7 T) in a large sample (N=166) and administered a questionnaire measuring self-perceived and objectively rated meta-attention knowledge (Adult Meta-Attention Knowledge Questionnaire). Cluster analysis revealed three distinct profiles of meta-attention: low functioning (low self-rated attention control and monitoring, low strategy knowledge), overconfident (high self-rated attention control and monitoring, low strategy knowledge), and underconfident (low self-rated attention control and monitoring, high strategy knowledge). Prefrontal cortex GABA+ (but not glutamate) levels differ between these groups, with lower GABA+ observed in the low functioning group, suggesting that prefrontal inhibitory signalling may predict individual differences in meta-attention.

Email: Kali Chidley, k.chidley@uqconnect.edu.au

12:00-1:30 PM (2166)

The Relation Between Perceived Mental Effort, Monitoring Judgments, and Learning Outcomes: A Meta-Analysis. LOUISE DAVID, *Maastricht University*, FELICITAS BIWER, *Maastricht University*, MARTINE BAARS, *Radboud University*, LISETTE WIJNIA, *Open University of the Netherlands*, FRED PAAS, *Erasmus University Rotterdam & University of Wollongong*, ANIQUE DE BRUIN, *Maastricht University* — Accurately monitoring learning processes depends on using the right cues, one of which could be perceived mental effort. Baars et al. (2020) found a negative association between mental effort and monitoring judgments ($r=-.35$), suggesting that the amount of effort experienced during learning is usually

negatively correlated with perceptions of learning. However, the relationship between mental effort, monitoring judgments, and learning outcomes remains unclear. Using a meta-analytic structural equation model, we explored this relationship. Results showed a negative association between perceived effort and monitoring judgments ($\beta=-.19$), a positive association between monitoring judgments and learning outcomes ($\beta=.29$), and a negative indirect association between perceived effort and learning outcomes ($\beta=-.05$), which was mediated by monitoring judgments. Findings suggest that when learners perceive higher levels of effort, they exhibit lower learning judgments, which relates to lower actual learning outcomes. Thus, learners seem to use perceived effort as a cue to judge their learning while perceived effort only indirectly relates to actual learning outcomes.

Email: Louise David, l.david@maastrichtuniversity.nl

12:00-1:30 PM (2167)

Curiosity, Feeling of Closeness, and Agency in the Remote Associates Task. JOSE M.

FRANCISCO-ANDRES, *Colorado State University*, JILL GIBSON, *Colorado State University*, ANNE M. CLEARY, *Colorado State University* — Curiosity serves as a driver for information-seeking and is thought to emerge from a gap in knowledge, as well as a feeling-of-closeness to a piece of information. Various explanations for information-seeking behaviors that stem from curiosity have been proposed in the extant literature, such as the Reinforcement Learning view of curiosity, which posits that information-seeking is driven by the value placed upon a piece of information due to curiosity. However, recent work has brought forward a contrasting perspective that places an emphasis on the inherent need for agency with such behaviors. This current study sought to expand upon previous work through the use of a creative problem solving task, the Remote Associates Task. Findings from the study are supportive of 1) higher curiosity ratings emerging from feelings-of-closeness, 2) feelings-of-closeness being accompanied by greater use of limited resources during problem solving, and 3) a greater tendency to spend more time generating a solution when a feeling-of-closeness is present. In a novel way, our findings provide support for the theory of agency in information-seeking.

Email: Jose Francisco-Andres, jose.francisco-andres@colostate.edu

12:00-1:30 PM (2168)

Learning Cues for Metacognitive Judgments via Statistical Learning. SOFIA NAVARRO BÁEZ

Technische Universität Darmstadt & University of Mannheim, ARNDT BRÖDER, University of Mannheim, MONIKA UNDORF, Technische Universität Darmstadt

— Although much is known about the specific cues that underlie people's cognitions about their cognitions (i.e., metacognition), very little is known about mechanisms for learning these cues. We examined statistical learning as a mechanism to extract regularities from the environment and use this knowledge to inform judgments of learning (JOLs). Across two experiments, participants were exposed to a continuous auditory stream of artificial words with fixed transitional probabilities between adjacent syllables. Afterwards, they studied and made JOLs for (1) "words" that were presented in the stream, (2) "phantoms" that were not presented in the stream but followed transitional probabilities, and (3) "non-words" that did not follow transitional probabilities. Results showed that JOLs were based on the wordlikeness cue arising from transitional probabilities: JOLs were higher for word and phantom than not for non-word items. However, items following transitional probabilities from the stream were not better recognized than items not following the transitional probabilities. This study demonstrates that people acquire cues for metacognitive judgments through statistical learning even when the cues are not valid.

Email: Sofia Navarro Baez, sofia.navarro@tu-darmstadt.de

12:00-1:30 PM (2169)

Déjà Vu Experiences Throughout the Lifespan: On the Relationship between Age, Spontaneous and Experimentally-Induced Déjà Vu, and Other Metacognitive Quirks. KATHERINE L. MCNEELY-WHITE, *University of California, Davis*, JOSE M.

FRANCISCO-ANDRES, *Colorado State University*, BROOKE N. CARLAW, *Colorado State University*, JILL GIBSON, *Colorado State University*, ANNE M. CLEARY, *Colorado State University*, NIGEL PEDERSEN, *University of California, Davis* — Age-related differences in memory performance have typically shown that younger adults tend to have superior performance compared to older adults. However, little is known about age-related differences in metacognitive quirks frequency, such as déjà vu. Survey research suggests that spontaneous déjà vu frequency decreases

with age, and that approximately a third of surveyed participants have never experienced déjà vu; however, no experimental research has yet examined these findings. In the present study, we investigated whether age would impact experimentally-induced and spontaneous déjà vu using a dynamic spatial memory task and the Inventory for Déjà Vu Experiences Assessment, while also examining familiarity-based and recollection-based recognition memory performance. Findings suggest that the majority of participants report having déjà vu in real-life, that déjà vu frequency does not decrease with age, and that familiarity-based and recollection-based recognition performance on a spatial memory task do not decrease with age. These findings inform research on the nature of déjà vu experiences while also highlighting the need for a reconsideration of age-related memory differences.

Email: Katherine McNeely-White, katherinelmwhite@gmail.com

12:00-1:30 PM (2170)

Metacognitive Strategies, Motivation, and Academic Achievement in Nontraditional Students. STEPHANIE BABB, *University of Houston-Downtown*, TRAVIS CRONE, *University of Houston-Downtown*, RUTH JOHNSON, *University of Houston-Downtown* — Nontraditional learners face more barriers to educational success than do traditional students, often due to increased responsibilities, such as family and work, and lower levels of academic preparation. However, nontraditional learners may be better prepared for the classroom than traditional students; due to their diverse backgrounds, and life and workforce experiences, older students typically display more maturity in understanding course content, especially when it involves the perspectives or experiences of others. Overall, very little research in adult education is devoted to nontraditional learners. The current study categorized nontraditional students ($n=368$) based upon their number of nontraditional characteristics, and participants completed surveys that investigated their metacognitive strategies, time management skills, motivation, and academic achievement. It is predicted that better metacognitive and time management strategies will correlate with higher levels of academic motivation and achievement, and that, contrary to previous findings, moderately and highly nontraditional students will have better time management strategies than traditional and minimally nontraditional students.

Email: Stephanie Babb, babbs@uhd.edu

12:00-1:30 PM (2171)

Students' Perceptions of Effective Math Learning Strategies.

MARISSA HARTWIG, *University of Maryland*, DOUG ROHRER, *University of South Florida* — Two highly effective math learning strategies are spaced practice (in which problems of the same kind are distributed across many sessions) and interleaved practice (in which problems of different kinds are mixed rather than blocked). Though supported by data, these strategies may be underutilized if students perceive them to be ineffective or unpleasant. In two studies, we examined students' perceptions of spaced and interleaved math practice. In Study 1, we surveyed 174 grade 7 math students about the efficacy and likability of spaced and interleaved practice. Spaced practice was often judged likable, but many students failed to recognize its efficacy. Interleaved practice was judged both unlikable and inefficacious by most students. In Study 2, we further explored perceptions of interleaving in a survey of 233 grade 7 math students. Again, students erroneously judged Interleaved practice to have low efficacy. Compared to blocked practice, interleaved practice was judged less effective, less preferable, more time-consuming, and more difficult. Helping students appreciate effective math learning strategies is an important future direction.

Email: Marissa Hartwig, mkhartwig@gmail.com

12:00-1:30 PM (2172)

Subjective Fluency Ratings of Website Searches Depend on Expectations and Experience.

MARY STILL, *Old Dominion University* — When evaluating the intuitiveness of a design, participants often rate ease of use, effortfulness, familiarity, and goal achievement. Recently, processing fluency has been identified as a necessary component underlying intuitive design (Reinhardt & Hurtienne, 2023). With a variety of methods to manipulate fluency, application to design is promising. In reality, expectations and comparison processes impact subjective fluency. In this experiment, participants searched websites for specific information then rated how easy the process was to find the information. Expectations of fluency were manipulated between-subjects. Half of the participants expected to interact with websites in Dutch, half in English. Processing fluency was manipulated within-subjects using font style and repetition (two homepages were repeated). These manipulations allow examination of fluency based on internal references (language

experience, homepage familiarity) and external references (font). Fluency effects tended to be stronger when internal references were used. Further examination of internal references for fluency are needed for effective application.

Email: Mary Still, marystill@gmail.com

12:00-1:30 PM (2173)

The Cognitive Mechanisms Underlying the Positive Reactivity Effect to Recognition

Memory. BAIKE LI, *Beijing Normal University*, CHUNLIANG YANG, *Beijing Normal University* — A recent body of studies has found that requiring participants to make concurrent judgments of learning (JOLs) during learning can reactively alter their memory performance, known as the reactivity effect. In the pure list word learning task, making JOLs can enhance word recognition memory, demonstrating a positive reactivity effect. The current study proposes four experiments to test the potential mechanisms (the enhanced-engagement hypothesis vs. strategy-changed hypothesis) of the positive reactivity effect for word recognition memory. Experiment 1 employs the interleaved JOL paradigm to investigate whether the positive reactivity effect is transferable. Experiments 2-4 use paradigms (production effect, spacing effect, and time-saving paradigm) to modulate the different dimensions of learning engagement. Four experiments showed that the positive reactivity effect induced by JOL is not transferable and can be modulated by learning engagement. The results provide experimental evidence supporting the enhanced-engagement hypothesis as the cognitive mechanism behind the positive reactivity effect on word recognition memory.

Email: Baike Li, baike.li94@gmail.com

12:00-1:30 PM (2174)

Students' Self-Regulated Use of Worked Examples and Problem Solving

XINRAN WANG, *Vanderbilt University*, REBECCA ADLER, *Vanderbilt University*, CRISTINA ZEPEDA, *Vanderbilt University*, BETHANY RITTLE-JOHNSON, *Vanderbilt University* — Do students study math in effective ways? Prior work (Foster et al., 2018) found that although studying worked examples can benefit novices, they generally used it less than problem-solving. Here, we dig deeper into their self-regulated strategy use via the agenda-based regulation model (ABR) (Ariel et al., 2009) by

manipulating the assigned posttest values. Participants ($n=36$) learned to solve four types of probability problems that were either assigned high- or low-point values. For each problem, they chose between studying the problem with worked examples or problem-solving. Students then completed a posttest and answered questions about their preference, perceived difficulty and effort, and purpose of using each learning strategy. Despite using the strategies with a similar rate (~45%), students switched more between the strategies for higher-value problem types. For these higher-value problem types, they also allocated more study time and achieved higher categorization accuracy at posttest. Thus, students made strategic adjustments in their use of worked examples and problem-solving based on point values, but the cost benefits were minimal.

Email: Xinran Wang, xinran.wang.1@vanderbilt.edu

12:00-1:30 PM (2175)

Confidence in Memory Decisions: A Multidimensional Detection Theory Analysis. ALI POURNAGHDALI, *University of Southern California*, TEAL EICH, *University of Southern California* — The aim of this study is to determine whether confidence judgments are good predictors of sensitivity in memory recognition (i.e., metacognitive sensitivity of confidence). To this end, we used general recognition theory (GRT), which according to empirical evidence, estimates metacognitive sensitivity of different metacognitive judgments without being influenced by other confounding factors such as the level of metacognitive bias. To employ GRT, we asked participants to study a series of words printed in either a blue or red ink-color. After the study phase, we presented each word again in a black ink and asked participants to indicate the ink color during the study phase and to rate their confidence on the accuracy of each recognition decision. Next, we fit a GRT model to the data and constructed a sensitivity vs. metacognition curve, which represents changes in memory recognition sensitivity as a function of strength of internal evidence for high confidence. Using the fitted model, we also estimated participants' metacognitive biases. According to the results, confidence judgments indeed predict memory recognition sensitivity. Participants, however, were conservative at reporting high level of confidence.

Email: Ali Pournaghdali, Pournagh@usc.edu

12:00-1:30 PM (2176)

Do Human-Automation Teamings Help or Hinder Metacognition and Performance While Fatigued? TIMOTHY DUNN, *Naval Health Research Center*, MAX SMITH, *Leidos/Navy (contractor)* — The world has become increasingly automated, leading to human–automation teamings (HATs) being common to day-to-day tasks. HATs are most often aimed at benefitting the human, however little awareness of capabilities and the offloading of critical cognitive processes can be detrimental. Furthermore, human factors (e.g., fatigue) may exacerbate negative affects brought on by the automation. The current study assessed how metacognition (Type 2 AUROC and trust) and performance (A') within a HAT evolved over 24 hours of sleep restriction. Thirty-six trained Navy sailors were tasked with identifying targets in a simulated task over four 1-hour sessions and provided confidence judgments on their performance with and without imperfect automated cuing to targets. Results showed that performance with automation remained stable across the 24 hours despite metacognitive sensitivity and trust in the automation decreasing as a function of fatigue. This work highlights the need to understand potential negative consequences of increased automation.

Email: Timothy Dunn, timothy.l.dunn1@gmail.com

12:00-1:30 PM (2177)

Judgments of Learning Impair Rule-Based Discovery. KIT S. DOUBLE, *The University of Sydney*, DOMINIC M. D. TRAN, *The University of Sydney*, MICAH GOLDWATER, *The University of Sydney* — Eliciting judgments of learning (JOLs) from participants has been shown to enhance memory recall on paired-associates tasks in some contexts, a reactivity effect. However, little is known about the effect of JOLs on forms of learning where the task requires generalizing beyond the training set, such as in category learning. Here, we explore the effect of JOLs on relational rule discovery using a categorization paradigm. In Experiment 1 and 2, where both a relational rule and visual stimulus features can be effectively used for categorization, we show that JOLs impair rule discovery but do not affect memorization of visual features. In Experiment 3, we modified the task such that only a relational rule could be used to categorize stimuli and observed no evidence of reactivity. We explain these findings using the changed-goal hypothesis of reactivity, which proposes that eliciting JOLs causes participants to

shift strategies to focus on short-term performance at the expense of mastery. Specifically, when participants have multiple viable strategies, JOLs shift participants' categorization strategy away from rule discovery and instead encourage a more expedient strategy based on memorization of visual features.

Email: Kit Double, kit.double@sydney.edu.au

12:00-1:30 PM (2178)

Opting Out from Responding During Problem-Solving: How Do We Give Up and Why Does It Matter? SABINA KLEITMAN, *Sydney University*, MARVIN LAW, *Sydney University*, LAZAR STANKOV, *Sydney University*, VALERIE THOMPSON, *University of Saskatchewan* — Under the meta-reasoning framework, the decision to opt out of responding reflects a proposed metacognitive strategy to save time, mitigate errors and regulate effort costs when solving problems. These assumptions, however, are yet to be investigated. We examined this behaviour from individual differences and cognitive perspectives in four studies ($N_1=176$, $N_2=370$, $N_3=221$ & $N_4=250$). Participants varied systematically in their giving-up behaviour: frequencies converged onto a Giving-Up factor using CFA in Studies 1 and 2. In Study 2 we also conducted LPA, and participants clustered into three profiles: fast-and-frequent, fast-and-rare, and slow-and-rare. The two “fast” profiles were maladaptive, having lower points than the adaptive “slow” profile. In Studies 3 and 4, opting out metrics also shared relationships with reported effort and time management, cognitive and metacognitive metrics like judgments of solvability and confidence. Thus, our results validate the processes proposed by the meta-reasoning framework and provide a foundation for further investigation into the role of giving up in problem-solving and decision-making.

Email: Sabina Kleitman, sabina.kleitman@sydney.edu.au

12:00-1:30 PM (2179)

Unskilled and Unaware: As Miscalibration Increases, So Does Second-Order Judgments. MARIANA V. C. COUTINHO, *United Arab Emirates University*, JUSTIN J. COUCHMAN, *Albright College*, JUSTIN THOMAS, *The King Abdulaziz Centre for World Culture*, IMANI FREDRICKS-LOWMAN, *Florida Memorial University* — Overestimation and miscalibration increase with a decrease in performance. Researchers have attributed this finding to participants’



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lack of knowledge and skills about the task performed. However, whether overestimation indicates lack of awareness is debatable, and additional studies are needed. The present study examined the extent to which students at different levels of performance know that their self-estimates are biased. We asked 653 college students to estimate their performance in an exam and subsequently rate how confident they were that their self-estimates were accurate. The latter judgment is known as second-order judgments (SOJs). The findings showed that the relationship between miscalibration and SOJs was negative for high performers and positive for low performers. Specifically, for low performers, the less calibrated their self-estimates were, the more confident they were in their accuracy. This finding supports the claim that awareness of what one knows and does not know depends in part on how much one knows.

Email: Mariana Coutinho, mariana.coutinho@uaeu.ac.ae

12:00-1:30 PM (2180)

Differentiating the Influence of Local and Global Priors on Temporal Estimation Performance.

EVE A. ISHAM, *University of Arizona* — In interval timing, contextual factors such as prior trials can influence the performance of the current trial. Research on priors often compares the influence of immediately preceding trials (local prior) to the accumulated average of all trials (global prior), but the results have been mixed regarding which prior is a stronger predictor. As an extension to the literature, we examined if an intermediate prior (the accumulated average of a few trials leading up to the current trial) could also serve as a predictor. Additionally, we explored if predicting priors change as the experiment progresses and/or with variability in performance across trials. Preliminary data suggest that participants with lower variability tended to rely more on the intermediate prior earlier in the experiment, but the global prior became a stronger predictor in later trials. Conversely, participants with greater variability in their time production performance relied more on the local prior in the earlier and last trial, but on the global average for middle trials. Understanding the differentiation of predicting priors as a function of performance variability may help model how individuals use prior experience to monitor and correct temporal errors.

Email: Eve Isham, eaisham@arizona.edu

12:00-1:30 PM (2181)

'Your Eyes are Bigger than your Mouth': Over-Estimations of Oral Cavity Volume are Improved by Experience. TIMOTHY N. WELSH, *University of Toronto*, CASSIE CHAN, *University of Toronto*, APRIL KARLINSKY, *California State University, San Bernardino*, MERRYN CONSTABLE, *Northumbria University*, CATHERINE SABISTON, *University of Toronto*, LUC TREMBLAY, *University of Toronto* — Affordances emerge from relations between the environment and the capabilities of an actor. It is unclear if affordances can emerge for body parts which cannot be seen. The present study was designed to determine: 1) how well people can estimate the size of their oral cavity/mouth by predicting how much water they can fit into their mouth and 2) if physical experience shapes such estimates. Participants (n=20) completed 2 Estimation tasks (Point and Pour) before and after an Execution task in which they physically experienced how much water their mouth could hold. In the Point task, participants were presented with 9 clear glasses of water, ranging from 50-230 ml and then pointed to the 1 glass that they thought held the maximum amount of water their mouth could hold. In the Pour task, participants poured the amount of water into an opaque cup that they thought their mouth could maximally hold. Although estimates in the Point task were more accurate than those in the Pour task prior to the Execution task ($p < 0.05$), estimates in both tasks converged on the actual volume after the Execution task. These data reveal that physical experience can shape affordances that emerge for body parts that cannot be seen.

Email: Timothy Welsh, t.welsh@utoronto.ca

12:00-1:30 PM (2182)

Complex Figures: a New Mobile Measure of Visuospatial Construction and Memory. MARIYA VODYANYK, *Northeastern University*, ANJA PAHOR, *University of Maribor*, SUSANNE M. JAEGGI, *Northeastern University*, AARON R. SEITZ, *Northeastern University* — Assessing visuospatial construction and memory can provide insight into an individual's ability to make mental representations, inform neuropsychological assessment, and track training-related gains. Given the lack of freely available and psychometrically validated tools that can flexibly measure performance both in-person and remotely, we addressed this gap by developing a self-administrable



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mobile-based assessment called Complex Figures, designed to assess visuospatial construction abilities and visuospatial memory recall. The task is administered interwoven with a word-learning task, has multiple forms for repeated testing, and is compatible with a variety of devices. The task is available as an application for iOS and Android devices and contains many other validated cognitive measures like cancellation and matrix reasoning. Here, we report on internal consistency and inter-rater reliability with a pool of 249 participants over a collection of three studies (mean age=70, range=50–86). We look at effects of demographic factors, fluid reasoning, and education on task performance, and impact of the copy score on the recall score.

Email: Mariya Vodyanyk, vodyanyk.m@northeastern.edu

12:00-1:30 PM (2183)

Modality Switching in Children: Is There an Influence of Modality Compatibility? SIMONE SCHAEFFNER, *Julius-Maximilians-Universität Würzburg*, VERA WOLFRUM, *Julius-Maximilians-Universität Würzburg*, CARINA LÜKE, *Julius-Maximilians-Universität Würzburg* — Modality switching leads to switch costs, which are typically higher for switching between relatively incompatible (i.e., auditory-manual and visual-vocal) compared to relatively compatible modality combinations (i.e., auditory-vocal and visual-manual). Although a number of studies have reported compatibility effects, data are limited to adults and the underlying cognitive mechanisms are still under debate. The present study contributes to a better understanding by providing the first data from children (first to fourth grade). In two experiments, children switched between compatible and incompatible modality combinations while deciding whether the presented pictures and tones (Experiment 1; N=32) or gestures and spoken words (Experiment 2; N=32) represent an animal or not by pressing a yes- or no- button or saying “yes” or “no”. Both experiments revealed significantly longer reaction times and higher error rates in incompatible than in compatible combinations. Interestingly, in contrast to previous data of adults, switch costs did not differ significantly depending on modality compatibility. This supports the assumption that the effects of modality compatibility develop over time through lifelong ideomotor learning mechanisms.

Email: Simone Schaeffner, simone.schaeffner@uni-wuerzburg.de

12:00-1:30 PM (2184)

The Influence of Stimulus Size on Produced Handgrip Force. MASAYOSHI NAGAI, *Ritsumeikan University*, SAYAKI HIRATA, *Ritsumeikan University*, HINA TAWADA, *Ritsumeikan University*, KYOSUKE YOSHINAGA, *Ritsumeikan University* — This study investigated whether participants' handgrip force is influenced by the size of a stimulus. In Experiment 1, a white filled-circle stimulus was presented ten times (five small and five large circles in random order) in each trial, and participants were required to squeeze a hand dynamometer when each circle appeared. Results showed that participants exerted a stronger handgrip force in response to the large stimulus compared to the small one. However, it was possible that the brightness of a stimulus, rather than its size, affected the produced handgrip force. In Experiment 2, therefore, we attempted to replicate this result with isoluminant stimuli and observed the same trend. These findings suggest that information regarding stimulus size modulates the strength of the produced motor force in participants.

Email: Masayoshi Nagai, mnagai@fc.ritsumei.ac.jp

12:00-1:30 PM (2185)

Binding Features and Responses Across Time: The Role of Preceding and Subsequent Visual Stimuli. SIHAN HE, *University of Toronto*, JAY PRATT, *University of Toronto* — Efficient and flexible responses are essential for successfully interacting with the environment. These responses require an instantaneous integration of visual stimuli and responses, known as stimulus-response binding (SR binding), resulting in a holistic temporary representation. This binding process is commonly assumed to end with the execution of the response or its action effect, but its actual starting or ending points have never been empirically tested yet. In two experiments, we aimed to address the temporal dynamics of this binding process by implementing a sequence of two stimuli where participants needed to respond only to the first (Experiment 1) or second (Experiment 2) stimulus. Our results indicate that the response was bound with both stimuli when the participants responded to the first one. However, no binding occurred with the first stimulus when participants responded to the second one. This finding suggests that the SR binding process operates a temporal binding window that allows it to integrate a response with multiple temporally close stimuli.



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Email: Sihan He, mikehe0605@hotmail.com

12:00-1:30 PM (2186)

Contact Surface Curvature Length Specifies Graspability.

MCKENZIE GUNTER, *University of Southern Mississippi*, MYAH G. KELLY, *University of Southern Mississippi*, ALEN HAJNAL, *University of Southern Mississippi* — Although prehensile activity is part of everyday life, it is still not clear what is the information that specifies graspability. In a lab experiment we manipulated size and shape and asked observers to perceive if objects are graspable. Twenty-five 3D-printed objects varying in size and shape (from cube to sphere) were shown to 20 participants. The ratio of object diameter and handspan was proposed as the invariant, however, the results showed that it did not map onto perception in a 1:1 fashion. We recomputed the ratio using surface curvature length of the object instead of the diameter as the relevant object property. The results revealed that the ratio of contact surface curvature length and hand span map onto perceived graspability in a 1:1 fashion irrespective of shape. This result demonstrated that the new ratio is the invariant that specifies perceived graspability.

Email: McKenzie Gunter, mckenzie.gunter@usm.edu

12:00-1:30 PM (2187)

Do Exploratory Probing Movements Predict Perceived Geometric or Affordance Properties of a Surface?

ARGHYA KASHYAP, *Illinois State University*, KWESI BLANKSON, *Illinois State University*, JEFFREY WAGMAN, *Illinois State University*, ALEN HAJNAL, *University of Southern Mississippi* — People use different exploratory movements to perceive different properties of a hand-held object and different exploratory wielding movements to perceive different properties of a wielded object. We investigated whether people use different exploratory probing movements to perceive different properties of a surface. Participants probed a surface and attempted to perceive either an affordance (whether they could stand on that surface) or a geometric property (angle of inclination) of that surface. Perceived angle was nearly perfectly correlated with (but imperfectly scaled to) surface angle. The perceived boundary between surfaces that could be stood on and those that could not closely matched the actual boundary on this behavior. With respect to the exploratory probing movements, mixed effects modeling showed that neither

mean accelerations of probing movements nor variability of accelerations of probing movements predicted perceived angle. However, both quantities predicted perceived affordances for standing on the surface.

Email: Arghya Kashyap, arghyakas@gmail.com

12:00-1:30 PM (2188)

Functional Specificity of Grasping by Hand and Tool.

MYAH G. KELLY, *University of Southern Mississippi*, MCKENZIE GUNTER, *University of Southern Mississippi*, ALEN HAJNAL, *University of Southern Mississippi*, JEFFREY WAGMAN, *Illinois State University* — According to the ecological approach, perception of affordances exhibits functional specificity. This means that the information for grasping objects by hand and by tool should be based on the same invariant. Participants perceived whether they could pick up spherical and cubic objects of various sizes with their hand and with a grabber tool. Only minimal experience with the grabber tool was provided before the experiment. No other feedback or training was offered. The ratio between the diameter (or edge length) of the objects and handspan (or tool span) served as a candidate invariant for grasping. The invariant predicted perception across shapes, but not across hand and tool use. Substituting actual grabber span with perceived grabber span showed closer correspondence between perception by hand and tool, but differences in calibration were still present. Future studies will investigate the effect of training on perception of the affordance of grasping.

Email: Myah Kelly, myah.kelly@usm.edu

12:00-1:30 PM (2189)

Prospective Control of Steering Through Multiple Waypoints.

AJ JANSEN, *Rensselaer Polytechnic Institute*, BRETT R. FAJEN, *Rensselaer Polytechnic Institute* — Many locomotor tasks require navigating a complex environment at speed, moving smoothly through multiple waypoints. Actors who consider only one waypoint at a time may be forced to make jerky steering adjustments or even miss waypoints. The present study systematically explored the relationship between steering behavior toward one waypoint and the relative position of the next. Subjects were presented with a simulated drone-flying task in which they navigated through a series of three gates along a tree-lined lane. Two gates were at a fixed distance on the centerline and the third at a variable

distance, angle, and orientation. Steering behavior between Gates 1 and 2 was systematically affected by the relative position of Gate 3. In a follow-up experiment, we found that reducing inertia of the drone in the same task resulted in dramatic reduction of this effect. The findings suggest that humans adapt their trajectory based on information from multiple waypoints at a time, dependent on action capabilities. The study provides a clearer understanding of how and under what conditions humans adapt their movements in anticipation of future goals and informs the development of control strategies for steering through multiple waypoints.

Email: AJ Jansen, jansea@rpi.edu

12:00-1:30 PM (2190)

The Role of Spatial Knowledge in the Online Control of High-Speed Steering. GRACE ROESSLING, *Rensselaer Polytechnic Institute*, BRETT R. FAJEN, *Rensselaer Polytechnic Institute*

Drivers rely on currently available visual information to guide steering along a winding road but less is known about the role of spatial knowledge acquired with repeated exposure to the same route. The present study was designed to better understand how steering behavior differs when drivers follow familiar versus unfamiliar roads. Two groups of subjects used a steering wheel and foot pedals to guide a car along a set of ten winding roads (~3 km long) in a simulated environment. Each road included 8 curves, U-turns, and S-turns. The geometry of the road was identical across trials for the Familiar Group. For the Unfamiliar Group, road geometry varied across trials but was the same as that in the Familiar Group on trial 10, allowing us to compare behavior across groups on the same road. Patches of fog were also added to some segments to determine whether the role of spatial knowledge depends on visibility. We found an effect of visibility on speed, speed variance, and steering variance but no significant effects or interactions involving familiarity. The findings suggest that either ten trials were not sufficient for the Familiar Group to learn the road geometry or that spatial knowledge plays a negligible role in steering.

Email: Grace Roessling, pro.graceroessling@gmail.com

12:00-1:30 PM (2191)

Extending the Study of Peripheral Vision to Naturalistic, Virtual Reality Environments. DOYEON LEE, *University of Florida*, BRIAN

ODEGAARD, *University of Florida* — How effectively can we detect targets (and rate confidence) for judgments made outside the center of our visual field? Previously, our laboratory has shown that both perceptual and metacognitive sensitivity declines with eccentricity for Gabor-like targets in a simple visual task (Pruitt, Knotts, & Odegaard, 2024). In this investigation, we created a new detection task using virtual reality: on each “trial,” observers were a passenger in a moving car in a suburban environment, and were instructed to fixate on specific traffic signs, while noting when soldier-like targets emerged in the periphery. Surprisingly, in our first experiment, observers displayed near-ceiling level performance across a range of eccentricities. In our second experiment, by manipulating target duration, occlusion, and environment complexity, performance decreased as eccentricity increased. We discuss how characterizing complex factors in naturalistic tasks is critical for better understanding how peripheral vision works in real-world settings.

Email: Doyeon Lee, doyeon.lee@ufl.edu

12:00-1:30 PM (2192)

Motor Imagery in Congenitally Blind and Sighted Individuals: Differences in Alpha Oscillation Patterns. DARIUSZ ZAPAŁA, *The John Paul II Catholic University of Lublin*, MAGDALENA SZUBIELSKA, *The John Paul II Catholic University of Lublin*, ROBERT KWAŚNIAK, *The John Paul II Catholic University of Lublin*, PAULINA DROŹDZIEL, *The John Paul II Catholic University of Lublin*, PAWEŁ AUGUSTYNOWICZ, *The John Paul II Catholic University of Lublin* — The absence of visual experience in congenital blindness (CB) can impact the development of the brain, leading to a range of cognitive and behavioral differences relative to the sighted population. One of the mental processes that CB can influence is motor imagery (MI), which is the mental simulation of actions without actually physically performing them. Our experiment involved 12 CB ($4\text{ F}, \text{Mage}=33.9 \pm \text{SD} = 8.1$) and 12 sighted ($4\text{ F}, \text{Mage}=34.2 \pm \text{SD} = 8.2$) subjects. Participants were tasked with mentally replaying the kinesthetic stimuli generated by the haptic interface. The electroencephalographic (EEG) activity and congruence of the mental representations with the somesthetic sensations were analyzed. Although the groups did not differ in MI task performance, variations were observed in brain oscillation patterns. We have identified alpha rhythms (8-12 Hz) desynchronization in the frontal area

and over the right sensorimotor cortex in the CB group, in contrast to the synchronization in the same areas in the sighted. This previously unreported pattern of brain oscillations during MI may indicate an alternative imagery strategy in the CB group.

Email: Dariusz Zapala, dzapala@kul.pl

12:00-1:30 PM (2193)

Object, and Not Illusory Size, Attention Scale Determines Saccadic Reaction Time. MARK R. HARWOOD, *University of East London*, JACK HAMMOND, *University of East London* — Spatial attention scale strongly modulates saccadic reaction times (SRT) in a “paradoxical” way: larger, more salient targets elicit slower SRT. Conversely, pointing movements match salience expectations with faster RT to larger target sizes (physical or illusion-induced). Given the surprising SRT effect and its contrast to manual RT, understanding this process is an important outstanding topic. Here, we ask if size illusions accentuate attention’s paradoxical SRT changes? We tested SRT to 3 Ebbinghaus illusion conditions (enlarged, reduced, isolated control) at 3 different scales, measuring illusion size and self-reported impulsivity in 12 participants (Ps). Stimuli induced the expected size illusions. We found a strong main effect of attentional scale on SRT, but no effect of illusion or interaction, implying that SRT is strongly modulated by the real, and not illusory object size. Interestingly, more impulsive Ps seemed to treat Ebbinghaus stimuli as larger single (compound) targets as they experienced weaker illusions, but stronger SRT effects commensurate with the larger overall physical sizes (compared to isolated control). These findings are consistent with a vision-for-action versus vision-for-perception dissociation.

Email: Mark Harwood, m.harwood@uel.ac.uk

Poster Session III

Friday, November 22, 2024, 6:00-7:30 PM US EST

6:00-7:30 PM (3139)

The Detail Paradox: Age-Related Changes in Subjective and Objective Measures of Detail for Imagined Life Events. ALEEA L. DEVITT, *The University of Waikato* — We use memory to imagine detailed possible past and future events, which allows us to learn from the past and prepare for the future. The episodic detail with which we remember and imagine life events decreases as we get older. Paradoxically, the

reported subjective experience of event detail increases with age. We examine whether the cause of this detail paradox is due to younger and older adults using different types of event content to make subjective judgements of detail. We examined the relationship between the amount of sensory, emotional, and semantic information comprising past and future event descriptions, and subjective detail ratings on a trial-by-trial basis. Both younger and older adults considered events that contain more episodic information to be more vivid. However, differences emerged for remembered past and imagined future events. Future events that contain more factual knowledge were considered to be more vivid, whereas the same was not true for memories. These results suggest alternative mechanisms underpin judgements of subjective detail according to event type.

Email: Aleea Devitt, aldevitt@gmail.com

6:00-7:30 PM

Submission retracted. — retracted

6:00-7:30 PM (3001)

A Systematic Assessment of Context Independence Violations in the Stop-Signal Literature. MICHELLE DONZALLAZ, *University of Amsterdam*, HENRIK GODMANN, *University of Amsterdam*, ANDREW HEATHCOTE, *University of Newcastle*, DORA MATZKE, *University of Amsterdam* — Response inhibition, the ability to stop ongoing responses when they are no longer appropriate, is commonly assessed using the stop-signal paradigm. The paradigm owes its popularity to the underlying horse-race model that enables estimation of the unobservable latency of stopping. The race model conceptualizes performance as a race between a go and a stop process. A key assumption of the race model is that the go process is unaffected by the presence or absence of a stop signal. Bissett et al. (2021) found that this “context independence” assumption is commonly violated, especially when the stop signal is presented shortly after the primary task. As context independence violations invalidate traditional estimates of stopping latencies derived from the race model, they should not be taken lightly. Here we present a systematic assessment of context independence relying on an extensive review of the literature. We screened 3,100 papers published between 2000 and 2021, resulting in 45 papers with openly available stop-signal datasets included in our analysis. We evaluate the prevalence and severity of

context independence violations and explore an alternative explanation for apparent violations in the form of “trigger failures.”

Email: Michelle Donzallaz, m.c.donzallaz@uva.nl

6:00-7:30 PM (3002)

Does Being Slow Make Us Distracted? Testing a Value-Based Decision Model of Attentional Control.

DOMINIK GRAETZ, University of Oregon, ULRICH MAYR, University of Oregon — Typically, attentional capture is studied using completely meaningless distractors. Yet, in the real world, competing stimuli are often associated with conflicting goals. We develop here a paradigm to study attentional control as value-based decision-making. Participants received fixed payments for each correct trial of a centrally presented task within 2-minute blocks. To mimic real-world distractors, task-irrelevant images or videos were presented with sudden onsets in the screen’s periphery—distractor fixations therefore cost money. In a “top-down” control condition, subjects could “conjure up” the distracting stimuli in a gaze-contingent manner. Results showed a pattern of bottom-up driven rational decision-making: Distractor fixations in the top-down condition were rare, but substantially increased for bottom-up stimuli, particularly when primary-task incentives were low and distracting images meaningful. Most importantly, we tested and confirmed a non-intuitive prediction of the value-based decision model, namely that distractor fixations increase when the primary task rate is reduced. Thus, distraction does not only make us slower, being slower can also make us more distracted.

Email: Dominik Graetz, dgrtz@uoregon.edu

6:00-7:30 PM (3003)

Episodic Retrieval in Task Switching: Repeating the Response Induces Retrieval of the Task.

ELENA BENINI, RWTH Aachen University, LUCA MORETTI, RWTH Aachen University, MALTE MÖLLER, Passau University, IRING KOCH, RWTH Aachen University, ANDREA M. M. PHILIPP, RWTH Aachen University, RUYI QIU, Hunan University of Chinese Medicine, JAMES A. GRANGE, Keele University, SUSANNE MAYR, Passau University — In task switching, task selection is assumed to precede response selection. The present study weakens this assumption, investigating whether selecting a response can still influence task selection via retrieval

mechanisms. Indeed, binding and retrieval accounts propose that tasks and the responses are bound in each trial, so that when the response repeats from the previous trial (n-1), it retrieves the n-1 task. In this study (Experiment 1: data reanalysis, N=255; Experiment 2: N=96, Experiment 3: N=96), participants switched between three tasks affording four possible responses each. Using multinomial processing tree models, the probability of erroneously selecting the previously relevant task was used as a measure for unintentional n-1 task retrieval. The probability of retrieving the n-1 task was larger when the correct response should be repeated than when it should be switched. This suggests that, after the correct task is selected, the process of response selection can feed back into task selection, occasionally retrieving and activating the n-1 task to a higher degree than the previously selected one. This study provides novel evidence for episodic retrieval in task switching while elucidating the interplay of task and response selection.

Email: Elena Benini, elena.benini@psych.rwth-aachen.de

6:00-7:30 PM (3004)

Setting Specific Goals Improves Cognitive Effort, Self-Efficacy, and Sustained Attention.

LAUREN D. GARNER, University of Notre Dame, MATTHEW K. ROBISON, University of Notre Dame — Investigating the efficacy of goal setting strategies is critical in understanding how individuals regulate performance in cognitive tasks. This research examines the impact of self-set versus experimenter-set goals and point incentives on performance across three experiments using two sustained attention tasks. In Experiment 1, we compared self-set and experimenter-set goals in the psychomotor vigilance task (PVT), hypothesizing that self-set goals would lead to better performance due to increased agency. No significant differences emerged in task performance between the two conditions. Participants who self-set their goals also set increasingly easier goal standards over time. Experiment 2 introduced a novel task paradigm “Green Means Go,” modeled after the PVT, and revealed faster reaction times in goal setting conditions compared to a no-goal condition. Having specific goals, either self-set or experimenter-set, was better for performance than having no goals. Experiment 3 allowed all participants to set their own goals and explored the influence of a points-based incentivization system on task performance. Those who

received points displayed enhanced performance compared to a no-point condition.

Email: Lauren Garner, lgarner@nd.edu

6:00-7:30 PM (3005)

Switching Between Cognitive Control States? No,

Thank You. MERVE ILERI-TAYAR , *Washington University in St. Louis*, JULIE M. BUGG, *Washington University in St. Louis*, WOUTER KOOL, *Washington University in St. Louis* — While cognitive control is crucial in goal-directed behavior, it is inherently costly. We hypothesized that internally switching between cognitive control states (relaxed and focused) contributes to the costs and people should accordingly avoid such demands. Additionally, we examined the tradeoff between these costs and another source of demand—encountering environments with higher conflict. To test our hypotheses, we conducted a series of experiments combining the Stroop task with a Demand Selection Task in which participants selected between options varying in control demands. In Experiments 1a and 1b, we manipulated the switch rate (SR) between congruent and incongruent trials (low vs. high) to induce shifts between relaxed and focused states. Participants avoided high switch decks. In Experiment 2, we manipulated proportion congruence (PC, mostly congruent vs. mostly incongruent). Participants avoided mostly incongruent decks. Finally, in Experiment 3, by manipulating SR and PC simultaneously, we explored the tradeoff between two sources of demand. Our results demonstrated a robust avoidance of high switch environments independent of PC, highlighting a strong aversion to switching between cognitive control states.

Email: Merve Ileri-Tayar, mileritayar@gmail.com

6:00-7:30 PM (3006)

What's That Sound? The Impact of Misophonic Trigger Sounds on Working Memory and Attentional Control.

MONIKA A. MAZELA, *The University of Southern Mississippi*, JACOB M. NAMIAS, *The University of Southern Mississippi*, MARK J. HUFF, *The University of Southern Mississippi*, DONALD SACCO, *The University of Southern Mississippi*, KIMBERLY WARD, *The University of Southern Mississippi*, JAMI MCLEMORE, *The University of Southern Mississippi*, MALINA MANGRUM, *The University of Southern Mississippi* — Misophonia is an auditory condition in which exposure

to trigger sounds can induce powerful negative emotions including anger and distress. Trigger sources can vary, but most involve everyday sounds originating from the mouth including lip-smacking, chewing, and teeth grinding. Misophonia is common, with 40%-45% of individuals reporting mild-or-greater sensitivities to triggers. Given the reported sensitivities, we evaluated performance on attentional control and working memory tasks in a group of normal-hearing participants who were exposed to trigger sounds relative to a volume-matched white-noise control. Misophonia triggers had no impact on working memory performance (OSPAN and n-back tasks), but decreased antisaccade accuracy and slowed response latencies on incongruent Stroop trials relative to control sounds. These patterns indicate that the presence (vs. absence) of triggers impairs inhibitory processes that are characteristic of antisaccade and Stroop tasks, but do not appear to affect the quantity of items maintained within working memory.

Email: Monika Mazela, Monika.Mazela@usm.edu

6:00-7:30 PM (3007)

Action Video Games' Features Promoting

Attentional Control.

SYLVIE DENKINGER, *University of Geneva*, DAPHNE BAVELIER, *University of Geneva*, FREYA JOESSEL, *University of Wisconsin-Madison*, C. SHAWN GREEN, *University of Wisconsin-Madison* — Research has shown that playing action video games promotes enhanced attentional control. Understanding the mechanisms underlying such improvements will provide crucial pointers to purposefully develop effective cognitive training paradigms. In this vein, it has been proposed that no single game feature is responsible for the beneficial effects, but instead the positive outcomes derive from a combination of three components: fast-paced decision-making, load on divided attention, and timely shifts to focused attention. As an initial test of this idea, we designed a game with four different versions, three loading on each of the above components in isolation and one combining them. Through a web deployed study, we observed greater attentional control after training (small effect size) with all game versions as compared to business as usual, with divided attention training showing the largest positive effects. Unfortunately, our combined version was too difficult for participants, which in turn led to lack of progression during training. The impact of follow-up adjustments made to the game will be presented as a continuing path to understanding

the relation between game mechanics and enhancement of attentional control.

Email: Sylvie Denkinger, sylvie.denkinger@unige.ch

6:00-7:30 PM (3008)

Crossmodal Response Precuing. DENISE N. STEPHAN, *RWTH Aachen University*, IRING KOCH, *RWTH Aachen University* — In response precueing, a cue indicates the subset of possible stimuli and the corresponding required responses, allowing to prepare these responses. Traditional response precueing studies focused on visuo-spatial cues and targets combined with manual responses, often neglecting possible crossmodal influences. To address this, we developed a novel crossmodal response precueing paradigm combining visual and auditory bimodal precues with visual or auditory unimodal targets. We tested the paradigm in two successive experiments. In the second experiment, we varied the cue target interval, confirming that the cues were used for preparation. Our data suggest a general advantage for auditory cues, regardless of target modality, and indicate a preference for visual over auditory targets. This might be caused by the higher alerting quality of auditory cues, requiring active attention to process visual targets as effectively. Interestingly, the established advantage of hand cues over finger cues diminishes with our non-spatial cues, likely because the spatial features responsible for cue-pattern advantages did not overlap. This hypothesis will be explored in future research.

Email: Denise Stephan, stephan@psych.rwth-aachen.de

6:00-7:30 PM (3009)

Exploring Domain-Specific Load Effects on Memory Updating: The Role of Representation Interaction in Updating Task Performance. SZU-HUNG LIN, *Soochow University* — This study investigated the domain-specific effects of memory load on memory updating performance, emphasizing the interplay between memorized and perceptual representations. We hypothesized that the domain-specific effect would emerge predominantly when the updating task involves the interaction of these representations. Using a digit ordering task where digits were displayed either sequentially (to engage both memory and perceptual representations) or simultaneously (involving only memory representations), we manipulated memory load (high/low) and load type

(same/different domain) to examine these effects. The results demonstrated that the domain-specific effect on updating performance occurred only in conditions where perceptual and memorized representations interacted. In contrast, updating that involved only memorized representations showed no significant load effects, confirming our hypothesis that the load effect is contingent on the type of task engagement. This underscores the importance of representation domain in cognitive tasks and provides insights for future studies.

Email: Szu-Hung Lin, labforsh@gmail.com

6:00-7:30 PM (3010)

Is Four the Same as 4? Exploring Whether Stimulus Repetitions or Identity Repetitions Drive Voluntary Task Choices. JACKSON S. COLVETT, *Berry College*, ELIZABETH K. BOOR, *Berry College*, ANGELINA F. PENNINO, *Berry College* — The initial conception of voluntary task switching as being entirely volitionally driven was challenged by evidence that bottom-up stimulus information affects task choice, such that people are more likely to switch tasks on stimulus switches than stimulus repetitions. In previous research, both the perceptual elements and the identity of the stimulus changed on a stimulus switch, producing ambiguity as to which change drove the effect. By intermixing two stimulus types (words and Arabic numerals in Experiment 1; words and dot arrays in Experiment 2), we aimed to disentangle whether stimulus or identity repetitions drive stimulus-based switching. We produced lists with equal numbers of full stimulus repetitions ($4 \rightarrow 4$) full switches ($4 \rightarrow \text{one}$) and trials where the identity repeated but the stimulus changed (identity repetitions; $4 \rightarrow \text{four}$). We replicated the previous finding that participants were more likely to repeat the previous task on a full stimulus repetition than they were with a full switch. However, identity repetitions were not statistically different from full switches. These findings indicate that bottom-up perceptual information, rather than stimulus identity, may be what drives stimulus-based switching.

Email: Jackson Colgett, jcolgett@berry.edu

6:00-7:30 PM (3011)

Asymmetric Transfer of Contextual Cueing Effect Between Active Search and Visual Search. JUN SAIKI, *Kyoto University*, JUNPEI MIZUNO, *National Institute of Information and Communications*

Technology (NICT), NOBUHIRO HAGURA, National Institute of Information and Communications Technology (NICT), MATTHEW DEBRECHT, Kyoto University, YOSHIYUKI UEDA, Kyoto University — Vast majority of visual search studies use displays with all search items visible. However, search behaviors in real life such as rescue operations often require active removal of obstacles to discover a target. To investigate search behavior in such situations, we devised an experimental paradigm called active search task in which participants actively clear noise to search for a target. We investigated the contextual cueing effect in the active search, and its relation to the contextual cueing in the standard visual search. Participants initially saw a white noise display, and mouse click opened a small circular window to show the search display. They continued clicks until target is found. Half of the search displays are repeated and the others had random configurations as in the typical contextual cueing paradigm. Response time and the number of clicks revealed a contextual cueing effect in the active search task, and this effect transferred to a subsequent standard visual search task. However, when the task order was reversed, the standard visual search followed by the active search, the contextual cueing effect obtained during the visual search phase did not transfer to the subsequent active search phase.

Email: Jun Saiki, saiki.jun.8e@kyoto-u.ac.jp

6:00-7:30 PM (3012)

Unseen Influences: Ensemble Representations Guide Attention in a Visual Search Task. JAY PRATT, *University of Toronto*, KRISTINA KNOX, *University of Toronto*, JONATHAN S. CANT, *University of Toronto Scarborough* — Ensemble encoding is the process whereby abundant visual information in our environment is condensed into statistical representations. We investigated how these statistical representations are utilized by visual cognition processes by asking whether ensemble representations, such as the average orientation of a set of items, can guide attention in a subsequent task. To test this, we combined an orientation-based ensemble-processing task with a visual search task. On each trial, participants were shown an initial display of eight bars of varying orientations. They then engaged in either a search task, locating the shortest bar among six others, or an ensemble task, reporting the average orientation of the previous set in a two-alternative forced-choice task. Importantly, in half of these search displays, the target or a single distractor matched the average orientation of the

initial display. The results revealed a significant difference in response times when the target (faster responses) or distractor (slower responses) matched the average orientation of the initial ensemble display. Overall, the results reveal that an internally generated and unseen ensemble representation can guide attention in subsequent cognitive tasks.

Email: Jay Pratt, jay.pratt@utoronto.ca

6:00-7:30 PM (3013)

Inhibition of Return in Working Memory: Lack of Evidence. JAROSŁAW ORZECHOWSKI, *SWPS University*, PAWEŁ JEMIOŁO, *AGH University of Science and Technology*, TOMASZ MARUSZEWSKI, *SWPS University* — The purpose of this research is the analysis of the relationship between visual attention and visual working memory. It has long been established that these two mechanisms operate as a single attentional system in which there is continuous competition to seize control of attention. However, the results of empirical research show not a single universal mechanism but dissociations between attentional mechanisms operating on the levels of perceptual and memory representations. Six experiments were conducted using isomorphic inhibition-of-return tasks for visual attention and working memory. Although the inhibition-of-return effect appeared in tasks involving visual attention, it did not occur in working memory, regardless of its cognitive load. When examining tasks involving working memory, a facilitation effect for the cue condition was found with shorter cue-target onset asynchrony. For longer cue-target onset asynchrony, neither facilitation nor inhibition was observed. Our research shows no evidence for the inhibition of return effect in working memory. The case of the inhibition-of-return effect indicates a dissociation between attentional mechanisms operating at the levels of perceptual and memory representations.

Email: Jarosław Orzechowski, jorzechowski@swps.edu.pl

6:00-7:30 PM (3014)

Is There an Autism Benefit or ADHD Cost in Dynamic Visual Search Tasks? LYNDSEY K. LANAGAN-LEITZEL, *Eastern Connecticut State University* — Many prior studies have demonstrated enhanced visual search performance for autistic individuals, purportedly due to enhanced pattern recognition, and worse performance for individuals with ADHD, purportedly due to premature responses. Given

the prevalence of autism and ADHD in the general population, it is important to consider the potential impact of these conditions on applied visual search performance. A sample of 40 undergraduate students completed three dynamic visual search tasks—identifying luminance changes, motion changes, and drowning incidents—and completed surveys of autism and ADHD symptomology. There were no reliable group differences in d prime, criterion, or target-present response time, although a moderate negative correlation was found for ADHD symptomology and target-present response time, suggesting faster response times for individuals with higher symptomology. Follow-up studies are planned for surveillance tasks and the implications of these results for occupational search and surveillance tasks will be discussed.

Email: Lyndsey Lanagan-Leitzel, lanaganleitzell@easternct.edu

6:00-7:30 PM (3015)

Proactive Guidance Is Applied During Acquisition of Categorical Statistical Regularities.

ARIEL M. KERSHNER, *Neumann University*, JENNA R. WURTZBACHER, *Neumann University*, VICTORIA A. MILLWARD, *Neumann University*, AMEERA ALADE, *Neumann University* — Many of our daily visual searches are for categories, such as searching for any member of the "pen" category. The template that supports this categorical search is compiled from our lifetime of history with these categories, and further biased by our recent experience with the category statistics. For instance, "blue" and "black" may be included in your template for 'pen', but the template may be biased more towards "blue" if you have recently used blue pens. Is there a difference between the "acquisition" portion of building this bias towards blue pens, and the "application" portion of using the bias to guide attention during search? Each of 18 real-world categories were assigned a consistent color and a test color. Participants searched for each category six times in the consistent color, responding faster for each subsequent category search. They then searched for each of the categories twice more: once in the consistent color and once in the test color. Responses to the consistent category color were faster than the inconsistent category color. Overall, the results suggest that proactive guidance is applied early in the process of acquiring the categorical statistical regularities, and grows stronger with each trial.

Email: Ariel Kershner, arielmkershner@gmail.com

6:00-7:30 PM (3016)

Selective Attention Encodes Target Information into Visual Working Memory.

ZACHARY HAMBLIN-FROHMAN, *University of Toronto*, JAY PRATT, *University of Toronto* — Selectively attending a target, out of non-target items, causes interference with maintained VWM information. This finding may reflect that selectively attended items are automatically encoded into VWM. If an item is represented in VWM, then attention is captured by feature-matching items in subsequent tasks. On Trial 1, participants searched for a diamond shape with a varying irrelevant colour. The target diamond was presented either alone (non-selectively attended condition) or among differently coloured non-targets (selectively attended). On Trial 2 the task was the same but a singleton distractor was present. This distractor colour either matched the Trial 1 target colour or was a novel colour. Results revealed that the matching distractors captured attention on Trial 2 and importantly, this effect was stronger when the target was selectively attended on Trial 1 compared to the attend-alone condition. Adding VWM load attenuates this effect, suggesting the selectively attended item was encoded. These results suggest that interacting with external stimuli leads to automatic encoding into VWM at variable rates of fidelity, where competitive attentional selection leads to a stronger implicit memory representation.

Email: Zachary Hamblin-Frohman, zachhamfro@gmail.com

6:00-7:30 PM (3017)

Visual Detection and Decision-Making in a Security Surveillance Microworld.

HELEN M. HODGETTS, *Cardiff Metropolitan University*, CINDY CHAMBERLAND, *Université Laval*, SERGE PELLETIER, *Université Laval*, SÉBASTIEN TREMBLAY, *Université Laval* — Response time for visual search comprises both search and decision-making time. For search paradigms that use basic stimuli (shapes, colors), decision time can be trivial due to the close match with participants' template criteria. In a dynamic, applied setting however (e.g., security surveillance), target incidents are not always clearly defined, and the decision-making component becomes as important as the noticing component in determining incident reporting. Using a complex, dynamic, multi-screen, city center simulated CCTV surveillance microworld (n=128), we refer to the NSEEV model (Noticing Salience Expectancy Effort Value) that predicts

the distribution of attention. In accordance with the salience principle, incidents that were larger on the screen (e.g., street gang) were more often noticed than smaller targets, yet despite this, decision time was longer. Regarding value, despite high severity incidents tending to be being smaller on screen (e.g., missing child)—and therefore not always noticed—for those high value incidents that were detected, decision time was faster. Results suggest a difference between top-down and bottom-up factors for noticing and decision-making within an applied experimental visual search task.

Email: Helen Hodgetts, hhodgetts@cardiffmet.ac.uk

6:00-7:30 PM (3018)

Where to Next? Applying a Bayesian Model of Target-by-Target Selection to a Foraging Task in Virtual Reality. THOMAS ROHALY, DCS

Corporation, CHLOE CALLAHAN-FLINTOFT, U.S. Army Combat Capabilities Development Command (DEVCOM) Soldier Center — Whether it is looking for a list of groceries in the store or finding shells on the beach, visual search tasks in the real world often involve multiple targets. Foraging, as it is popularly referred to, is a well-studied task in the literature (Bella-Fernández et al., 2022). However, most of the experimental work has used 2D desktop paradigms, while foraging in the real world is often done in a 3D environment. To bridge this gap, the current work had participants forage for conjunction targets in virtual reality. A Bayesian model (Clarke et al., 2022), built to simulate target selection order in desktop paradigms, was modified and fitted to the current work's data to quantify contributing factors to target selection (e.g., spatial proximity) and individual differences in behavior. More broadly, this work demonstrates how models, built in the lab, can inform our understanding how foraging is conducted in the natural environment.

Email: Thomas Rohaly, trohaly@dcscorp.com

6:00-7:30 PM (3019)

Accurate Saccade Guidance without the N2pc Component: A Computational Explanation with RAGNAROC-PLUS (RAG+). JOYCE TAM, The Pennsylvania State University, CHLOE CALLAHAN-FLINTOFT, U.S. Army Combat Capabilities Development Command (DEVCOM) Soldier Center, BRAD WYBLE, The Pennsylvania State University — The N2pc is a neural correlate of covert attention often

equated with pre-saccadic guidance. However, observations of accurate saccades without a preceding N2pc challenge this idea. Here, we present a computational model based on structural and functional aspects of the ventral visual stream and the ventral-medial pulvinar—RAG+. The model differentiates between feedforward (posterior to anterior) attention, which is rapid but spatially coarse-grained, and the optionally invoked feedback attention, which improves the spatial resolution of attention and converges attended locations across feature-selective maps. In RAG+, the N2pc results from feedback, such that its occurrence is not mandatory, but instead associated with the task-dependent need to pinpoint specific locations. Within the same set of mechanisms, RAG+ successfully simulates accurate saccades without pre-saccadic N2pc and other standard benchmarks regarding the N2pc and search behaviors. We present RAG+ as a formal theory of visual attention encompassing the intricate interactions between covert and overt attention.

Email: Joyce Tam, joyce.m.y.tam@gmail.com

6:00-7:30 PM (3020)

Cross-Modal Interference During Visual Search:

Evidence from Eye Movements. NICOLE M. ARCO, *University at Albany, SUNY*, FEDERICA DEGNO, *Bournemouth University*, HEATHER SHERIDAN, *University at Albany, SUNY* — To explore how auditory interference impacts visual search performance for experts and novices, we monitored eye movements during a music-related visual search task. Participants encoded visually-presented search templates, while listening to distracting music that was high in similarity (from the same piece of music as the search array but not containing any of the same bars of music), low in similarity (the high-similarity music with the notes scrambled), or a silent condition (no music was playing). Next, they searched for the search template in a larger search array. Compared to novices, experts were more accurate and had longer initial dwells on the target region, and this expertise difference was greater in the high-similarity and silent conditions, compared to the low-similarity condition. The results imply that experts can rapidly focus their attention on relevant information, and this ability can be modulated by cross-modal interference during visual search tasks.

Email: Nicole Arco, narco@albany.edu

6:00-7:30 PM (3021)

How Does the Outcome of a Choice Impact the Specificity of Associative Memory for Deliberated Options in Younger and Older Adults?

JESSIE CHIEN, *University of Southern California*, TEAL EICH, *University of Southern California* — Deliberation during decision-making promotes relational processing between options and contributes to the formation of memory associations. These associative memories serve as “memory clues” that allow younger individuals to infer the values of the unchosen options based on the outcomes of the chosen options. Thus, associative memory between chosen and unchosen options plays a key role in guiding future decisions when faced with unchosen options. However, as outcomes of the choices are typically learned after deliberation, how might this learning modulate the associative memory between chosen and unchosen options in younger and older adults? Older adults often show a “positivity effect” in memory, such that positive, compared to negative, information tends to be better remembered. Based on this, we aimed to investigate 1) whether later learning of a positive (e.g., monetary gain) vs. a negative (e.g., monetary loss) choice outcome differentially strengthens the specificity of memory association between chosen and unchosen options and 2) whether these patterns are age invariant. These findings will shed light on how young and older adults’ associative memories may be differently impacted by the outcomes of their choices.

Email: Jessie Chien, chihyuan@usc.edu

6:00-7:30 PM (3022)

How We Remember: Age-Related Differences in Event Perception During Movie Viewing.

MOHSEN DAVOUDKHANI, *Kansas State University*, MATTHEW G. WISNIEWSKI, *Kansas State University*, MICHAEL TOLLEFSRUD, *Kansas State University*, KRISTEN MCGATLIN, *Kansas State University*, OLIVIA EDWARDS, *Kansas State University*, ALEXIA BOUSLOG, *Kansas State University*, TRASE BYARLAY-MCQUEEN, *Kansas State University*, MORGAN SKINNER, *Kansas State University*, HEATHER BAILEY, *Kansas State University* — Older adults segment and remember everyday activities less effectively than young adults. Previous fMRI studies (Bailey et al., 2013; Kurby & Zacks, 2019) indicate that both age groups recruit similar brain regions at event

boundaries, suggesting intact event model updating. In the current study, we evaluated whether age-related declines in event memory are due to age-related changes in event model maintenance, which was operationalized as EEG pattern similarity. To do so, 40 young (18-33) and 40 older adults (60-85) watched an episode of BBC’s *Sherlock* while their EEG was recorded, and then they completed event memory measures and a battery of standardized cognitive measures (NIH Toolbox) without EEG. EEG pattern similarity is calculated as a Pearson correlation of point-to-point spatiotemporal similarity for voltages across all electrodes over time. Previous work has shown that pattern similarity is higher within the same event versus across two different events. If age-related deficits in event processing are due to older adults’ inability to maintain a stable event model as an event unfolds, then older adults will show lower pattern similarity within events compared to young adults.

Email: Mohsen Davoudkhani, mohsen135@ksu.edu

6:00-7:30 PM (3023)

Individual Differences in Within- and Between-Network Connectivity for Emotional Memory Examined Through the Cam-CAN Dataset.

MICHAEL DIALOGERO, *Drexel University*, MEGHAN CAULFIELD, *Seton Hall University*, IRENE P. KAN, *Villanova University*, EVANGELIA G. CHRYSIKOU, *Drexel University* — Aging research reveals that older adults show declining memory functions. These changes in cognition are reflected in changes within and between large-scale brain networks, such as the salience and default mode networks. Taking an adult lifespan approach, this study examined how individual differences in salience and default mode network connectivity may be associated with memory performance. We used existing data from the Cambridge Centre for Ageing and Neuroscience (Cam-CAN) dataset, that included 299 participants (18-88 years old), who completed an emotional memory task, as well as underwent structural and functional MRI scans. Functional MRI data were pre-processed using SP8 and functional connectivity toolbox (CONN) pipelines. Statistical analysis within CONN revealed that individual differences in salience and default mode network connectivity might be able to predict emotional memory performance. These findings underscore the relationship between salience and default mode network connectivity and emotional memory and highlight the importance of

examining between- and within-network contributions to memory across the lifespan.

Email: Michael DiCalogero, mjd499@drexel.edu

6:00-7:30 PM (3024)

New Language Training to Measure and Promote Neurocognitive Resilience in Healthy Aging.

JEFFREY KUNATH, *University of Illinois Chicago*, HANNAH G. TREADWAY, *University of Florida*, MADELINE O'SULLIVAN, *University of Florida*, ELEONORA ROSSI, *University of Florida* — Language learning as a novel experience promotes neuroplasticity by engaging neurocognitive mechanisms, such as processing speed, working memory, and executive functions. In aging, these mechanisms experience natural decline. However, long-term engagement of neurocognitive mechanisms can result in greater cognitive and neural reserve. Previous research shows that language training programs induce rapid brain changes and improve cognitive functions in children and younger adults. Little is known about the effectiveness of novel, short-term language learning as a tool for promoting healthy neurocognitive reserve and resilience for older adults. We aim to test the effectiveness of short-term language training as a tool to increase neurocognitive reserve and reduce neurocognitive decline in healthy older adults. We use a longitudinal randomized design of 20 older adults, aged 60-85, assigned to either Language Training or Active Control, who undergo pre-and-post-training behavioral and neural measures. The effectiveness of this language training has important implications as an ecologically valid intervention that can be done at scale. Data collection for this pilot study is underway.

Email: Jeffrey Kunath, jkuna@uic.edu

6:00-7:30 PM (3025)

Older Adult ToM Ability Is Associated with Memory for (Im)Moral Behaviors. JAINA SPARLING, *Gordon College*, RYAN T. DALEY, *Gordon College* — Theory of mind (ToM) abilities decline in older adulthood, impacting the evaluation of others' moral and immoral behaviors. There is an open question concerning whether older adults have access to ToM-related memory content, such as (im)moral motivations, while they are evaluating others. This study investigates whether individual differences in trait ToM ability in older adults is related to the quality of memory content

recalled, particularly for others' (im)moral motivations and behaviors. Participants read 12 vignettes, in which, an agent had an initial motivational, engaged in a behavior, and then had a motivational reframing of the previous behavior. Participants completed a free recall task for each vignette, and completed the Reading the Mind in the Eyes test as a measure of trait ToM. Higher trait ToM ability was associated with better memory for agents' behaviors, but not their motivations. These preliminary findings suggest that although ToM aids memory for moral and immoral behaviors, it may not enhance the recall of motivational content in older adults. That is, memory for ToM content may not be impacted by trait ToM ability in older adulthood.

Email: Jaina Sparling, jaina.sparling@gordon.edu

6:00-7:30 PM (3026)

Putting Unitization to the Test: An Investigation into Retrieval Paradigm on the Mechanism Underlying Unitization as We Age.

CATHERINE CARPENTER, *The Pennsylvania State University*, NANCY A. DENNIS, *The Pennsylvania State University* — Associative memory declines with aging while memory for single items remains stable. Unitization is a memory support that mitigates associative memory deficits, theorized to create a unique item from two items (Bastin et al., 2013). While beneficial to older adults' memory, little is known about how retrieval paradigm affects the mechanism of unitization or if unitized pairs function as a single item. This is critical to understanding the mechanism of unitization and the implementation of unitization as an everyday strategy for older adults. The purpose of the current studies is aimed at testing three response paradigms that differ in the mechanism they probe (familiarity or recollection) on how we unitize information as we age. Results show that while both younger and older adults show a benefit of unitization, the mechanism underlying this benefit depends on the retrieval task. Additionally, results challenge a strict item account of unitization, specifically when items are tested against related lures.

Email: Catherine Carpenter, cmc84@psu.edu

6:00-7:30 PM (3027)

Retrieval-Induced Forgetting in Map with Older and Younger Adults: The Influences of Spatial and Semantic Organization. HARUKA IWANE, *University of Tsukuba*, ETSUKO T. HARADA,

University of Tsukuba & IdeaLab Inc. — Semantic organization has varying impacts on both semantic and spatial memory, such as retrieval-induced forgetting with word lists and semantic clustering in map memory among younger adults. This study aimed to examine phenomenon of retrieval-induced forgetting in map, in which space was divided into four sections and 16 nouns with category label were distributed semantically or randomly, while also examining the influence of age on this phenomenon. Older and younger adults were asked to find nouns in both a semantically organized and an unorganized map. After the partial retrieval practice phases, They were then asked to recall all the items on the map. We found that both older and younger adults showed retrieval-induced forgetting with an unorganized map but not with an organized one. Our exploratory analysis suggest that these results were related to integration through spatial rather than semantic organization. Previous study indicate that integrated items can protect memories from retrieval-induced forgetting, and this study showed that spatiality positively affects integration of semantic memory in both older and younger adults.

Email: Haruka IWANE, backspace.0327@gmail.com

6:00-7:30 PM (3028)

Stabilizing Access to Marginal Knowledge via Re-Study versus Retrieval Practice in Older and Younger Adults. SHARDA UMANATH, *Claremont McKenna College*, MEILAN UYENO, *Claremont McKenna College*, JASON BAO, *Claremont McKenna College*, SARA E. CAWLEY, *Claremont McKenna College*, RAGINI MOHAN, *Claremont McKenna College*, KATHRINE M. WHITMAN, *Claremont McKenna College*, JENNIFER H. COANE, *Colby College* — Across three experiments, we investigated strategies for recovering access to marginal knowledge (MK; information that is available but inaccessible) in younger and older adults. Participants attempted to answer 80 age-normed general knowledge questions. When unable to answer, they selected one of four behaviorally validated phenomenological retrieval failure experiences, ranging from tip-of-the-tongues to unavailable information. Next, participants were randomly assigned to complete an unrelated control task, a restudy of the GKQs with the answers, or a 4-alternative multiple-choice test. After either a 1-week or 1-month delay, participants were retested on the same questions. A subset of items initially identified as

inaccessible but answered correctly at retest can be considered recovered MK. Our results replicate previous research demonstrating that MK recovery systematically varies as a function of initial retrieval failure experience. After a 1-week delay, the restudy and multiple-choice conditions improved MK recovery for both age groups compared to the control. With a month delay, the same pattern held true for the interventions, but OAs showed better recovery for some types of MK.

Email: Sharda Umanath, sharda.umanath@gmail.com

6:00-7:30 PM (3029)

What is Proficiency? Characterizing Spoken Language Proficiency in Older Spanish-English Bilingual Talkers. DALIA GARCIA, *San Diego State University & University of California, San Diego*, TAMAR GOLLAN, *University of California, San Diego* — The present study applied detailed linguistic analysis to Oral Proficiency Interviews (OPI) with older Spanish-English bilinguals (n=28). We aimed to determine which cognitive, linguistic, and demographic factors enable speaking proficiently. In the dominant language, bilinguals with higher cognitive functioning scores had higher proficiency scores, and age effects were not significant after controlling for cognitive functioning. In the nondominant language, bilinguals with larger productive vocabulary scores, fewer speech errors, and higher education level had higher proficiency scores. Multiple OPI sub-measures were highly correlated across languages (e.g., fast talkers talked fast in both languages), and these same measures exhibited significant language dominance effects (e.g., bilinguals talked faster in the dominant than in the nondominant language). These results suggest it is critical to control for cognitive functioning when examining aging effects on language production, validate use of the OPI, and reveal powerful individual differences that affect how people talk regardless of language.

Email: Dalia Garcia, dlg005@ucsd.edu

6:00-7:30 PM (3030)

Dismantling the Mechanisms of Cognitive Reserve: The Role of Metacognitive Competence. CHIARA SCARAMPI, *University of Geneva*, SAM GILBERT, *University College London*, ANDREAS IHLE, *University of Geneva*, MATTHIAS KLIEGEL, *University of Geneva* — The concept of cognitive reserve accounts for individual differences in susceptibility to



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age-related cognitive or functional impairment and neuropathology. However, the mechanisms underlying the protective role of cognitive reserve in cognitive aging remain unclear. This pre-registered study explored the role of metacognition—the ability to monitor and control one's own cognitive processes—as a potential mechanism of cognitive reserve. An age-stratified sample of 300 healthy volunteers completed a delayed-intention task that allowed them to set reminders, enabling an assessment of how optimally participants balanced internal versus external resources. Before completing the task, participants also made metacognitive judgments. Cognitive reserve was measured using a composite index that included educational level, job demands, and engagement in leisure and physical activity. The findings shed light on how the effect of cognitive reserve on cognitive health is mediated by metacognitive competence, particularly the ability to implement effective strategies. Theoretical and practical implications will be further discussed.

Email: Chiara Scarampi, chiara.scarampi@unige.ch

6:00-7:30 PM (3031)

Word Learning in Older and Younger Adults:

Neural Mechanisms. SARTAJ SINGH, *University of North Carolina at Greensboro*, ROBERT W. WILEY, *University of North Carolina at Greensboro*, YUAN TAO, *Johns Hopkins University*, JENNIFER SHEA, *Johns Hopkins University*, BRENDA RAPP, *Johns Hopkins University* — While research has examined a wide range of cognitive changes associated with aging, word-learning skills have been scarcely studied. We had younger (age 18-35) and older adults (age 55-80) learn spoken and written names and semantic features for novel items. We found that older adults exhibited significantly more difficulty learning spoken and written word forms while showing similar learning of semantic features. Structural neuroimaging revealed that in older adults, semantic feature learning was specifically associated with gray matter volume outside the hippocampus. To identify relevant cortical mechanisms, we used fMRI to index brain responsivity across the language network. We found that responsivity in semantic processing areas (e.g., angular gyrus) was significantly associated with semantic feature learning, specifically in older adults, and that the effects were selective to semantic and not word-form learning. These findings further our understanding of the mechanisms supporting continued semantic learning with age.

Email: Sartaj Singh, s_singh5@uncg.edu

6:00-7:30 PM (3032)

Category Knowledge Decreases Sensitivity of Recognition Memory for Trapezoids.

STEPHEN DOPKINS, *The George Washington University* — Whereas many past results suggest that category knowledge can increase memory effectiveness, the present results suggest that category knowledge can decrease memory effectiveness. Recognition memory for trapezoids was tested. Typicality ratings served as indications of category knowledge; trapezoids were rated as more typical the more symmetrical they were. False alarms were more likely to lures that were more as opposed to less symmetrical than an asymmetrical to-be-remembered trapezoid. For to-be-remembered trapezoids with the same levels of symmetry as the more and less symmetrical lures, the hit rate did not differ. Overall, sensitivity decreased as symmetry increased. Thus, knowledge of the trapezoid category reduced the sensitivity of recognition memory for trapezoids. Finally, a limit was demonstrated to the influence of category knowledge in memory for trapezoids. With an asymmetrical to-be-remembered trapezoid, false alarms were not more likely to more symmetrical lures when these lures were almost completely symmetrical. By implication, memory for a particular asymmetrical trapezoid reflected knowledge of the typical symmetrical trapezoid and the fact that the particular trapezoid was deviant from this prototype.

Email: Stephen Dopkins, dopkins@gwu.edu

6:00-7:30 PM (3033)

Do People Prioritize Valuable Exemplars During Category Learning?

MORGAN D. SHUMAKER, *Texas Christian University*, ADDISON L. BABINEAU, *Texas Christian University*, UMA TAUBER, *Texas Christian University* — Category learning can be influenced by a variety of factors such as study order (Kornell & Bjork, 2008) and study strategy (Jacoby et al., 2013). One factor that has not yet been examined is how the value of the to-be-learned exemplars impacts category learning. Value can have a substantial impact in episodic tasks, such that high-value items are often prioritized over low-value items during encoding and retrieval (Knowlton & Castel, 2021). We explored the impact of value-directed remembering on category learning. Participants learned to classify categories of microorganisms (e.g., protozoa) that differed by point

value. Following study, participants completed classification tests on these categories. Analyses examined the impact of point value on category learning performance, yielding interesting results. Outcomes have significant implications for category learning and value-directed remembering. Moreover, investigating strategic remembering during category learning is directly relevant to educators and students.

Email: Morgan Shumaker, m.shumaker@tcu.edu

6:00-7:30 PM (3034)

Think Global or Think Local: Attentional Processing and Category Learning. MADELINE BLOOMBERG, *The University of Western Ontario*, JOHN PAUL MINDA, *The University of Western Ontario* — We investigated the influence of attentional processing style (global or local) on the formation of category representations during a novel classification task. We predicted that individuals with a global processing preference would be more likely to abstract and rely on prototypes; We also predicted that individuals with a local processing preference would be more likely to store and rely on specific exemplars. Our participants completed a Navon task (Gerlach & Poirel, 2018; Navon, 1977) as a global/local processing measure. They then learned to classify a set of cartoon fish based on a “5-4” categorization task adapted from Medin & Schaffer (1978). We found a relationship between Navon task reaction times, category learning, and categorization models, suggesting that processing style may influence how new categories are learned. Our research contributes to the investigation of individual differences in category learning and provides insights on global and local processing influences on category representations.

Email: Madeline Bloomberg, mbloomb@uwo.ca

6:00-7:30 PM (3035)

Uneasy on the Eyes: Manipulating the Appeal of Androgynous Faces Through Categorization.

MAR NIKIFOROVA , *University of Massachusetts Amherst*, JEFFREY J. STARNS, *University of Massachusetts Amherst*, ROSEMARY A. COWELL, *University of Colorado, Boulder Institute for Cognitive Science*, DAVID HUBER, *University of Colorado, Boulder* — How does the subjective experience of categorization interact with the perception of gender? When observers perform a binary categorization task on

stimuli manipulated along a continuous dimension, stimuli that can unambiguously fit into either category elicit more positive appraisals than those that cannot. A potential mechanism for this phenomenon is that the relative processing fluency of the categorization adds a positive valence to the associated stimuli (Winkielman et al., 2003). A 2016 study by Owen et al. demonstrated fluency effects with human cross-gender facial blends, which observers sorted according to conventional binary gender ("male" vs "female") and subsequently rated more androgynous faces as less attractive. We expand this paradigm by adding label conditions designed to center the androgynous faces rather than the gender-conforming ones. While the alternate categorical labels reliably changed RT and attractiveness ratings given to the stimuli, overall response patterns did not straightforwardly fit a task-based fluency account alone. We explore possible mechanisms for these results through linear modeling.

Email: Mar Nikiforova, mnikiforova@umass.edu

6:00-7:30 PM (3037)

People Infer Object Appearance from Communicative and Aesthetic Intent. SOPHIA KEIL, *Johns Hopkins University*, MIRIAM HAUPTMAN, *Johns Hopkins University*, BARBARA LANDAU, *Johns Hopkins University*, MARINA BEDNY, *Johns Hopkins University* — Blind people and large language models have knowledge of visual appearance, suggesting that direct sensory access is not required for such knowledge to emerge. For example, sighted and blind people report that two coins are more likely to have the same color than two cars (Kim et al., 2021). We hypothesized that people use the communicative and aesthetic intent of unseen artifacts to infer the number of colors they have. As predicted, sighted participants guess that artifacts for which color serves a communicative or aesthetic purpose (e.g., park map) have more colors than artifacts for which color does not serve such purposes (e.g., legal document) ($p<.0001$, replicated across two samples, $N=40$). Future experiments will test whether people born blind make similar predictions, since sighted participants may have relied on visual memory. We hypothesize that people can use information from language to construct causal mental models of visual appearance that enable object-color inferences.

Email: Sophia Keil, skeil4@jh.edu

6:00-7:30 PM (3038)

Reexamination of Category Variability Effect:

Single Category Recognition Account. LEE-XIENG YANG, *National Chengchi University*, TAI-LUN HUANG, *National Chengchi University* — The middle item between two categories differing in variance tends to be classified as the high-variability category, although it is more similar to the low-variability one. This is described as the category variability effect (CVE). In this study, we argued that this effect might result from the process of category recognition: any item which is not recognized as the low-variability category must belong to the high-variability one and vice versa. Experiment 1 conducted a single-category recognition task and showed that the middle item was not recognized as the learned category, no matter which category was learned. Experiment 2 showed that the CVE occurred when the low-variability category was emphasized in early training. An exemplar model for category recognition was proposed with the smallest within-category similarity as the response criterion for recognition. This model can account for all data of the two experiments. Specifically, it was revealed that the model tended to focus on the low-variability category as the target category for recognition when predicting the CVE, verifying our hypothesis.

Email: Lee-Xieng Yang, lxyang@gmail.com

6:00-7:30 PM (3039)

What Can Arousal Tell Us About the Association

Between Valence and Shape? OLEKSANDR V.

HORCHAK, *ISCTE-Instituto Universitário de Lisboa*, MARGARIDA V. GARRIDO, *ISCTE-Instituto*

Universitário de Lisboa — We tested whether emotion-eliciting abstract concepts are grounded in visual shapes and if arousal mediates the link between valence and shape. We also examined how much of this link is captured through language patterns using the word2vec technique. Study 1 involved participants' ratings, revealing that positive words are associated with rounded shapes and negative words with sharp shapes. A word2vec showed that this pattern is reflected in language, with positive stimuli more strongly related to rounded shapes and negative stimuli to sharp shapes. Study 2 used a lexical decision task and found that negative words elicited faster responses when presented inside sharp figures, and positive words when presented inside rounded figures. Interestingly, semantic similarity scores from Study 1 predicted response times (RTs) just

as well as visual shapes. However, participants' responses and word embeddings differed in predictions for arousal. Participants' RTs were faster when there was a match between word valence and shape and, crucially, when the word's arousal was moderate (not high). Conversely, arousal did not influence how similarity scores predicted the RTs. Thus, arousal is important for the link between valence and shape.

Email: Oleksandr Horchak, Oleksandr.Horchak@iscte-iul.pt

6:00-7:30 PM (3040)

Is Evidence Accumulation Jumpy? A Lévy-Flight Model for Perceptual Decision Making.

ANDREAS VOSS, *Heidelberg University* — In the last decades, the diffusion model (Ratcliff, 1978) has become a standard model for fast binary decisions, as it is able to map data from many different cognitive tasks. The diffusion model assumes that binary decisions are based on continuous evidence accumulation with constant drift and Gaussian noise. However, recently, it has been suggested that models with heavy-tailed noise distributions provide better fit especially for fast perceptual decisions. These so-called Lévy-Flight Models of decision making are characterized by jumps in evidence accumulation. In the present study, the goodness-of-fit of the standard diffusion model and the Lévy-Flight model are compared for four different tasks. Specifically, participants had to assess the direction of arrows (perceptual task) or the odd/even status of numbers (numerical task). Both tasks were administered in a single stimulus condition and a multiple stimulus condition, whereat in the latter condition, the task was to indicate the dominating stimulus type. Following previous results, we expected more jumpiness in evidence accumulation for the easier conditions (i.e., the arrow task and the single stimulus condition). Results confirmed these assumptions.

Email: Andreas Voss, andreas.voss@psychologie.uni-heidelberg.de

6:00-7:30 PM (3041)

The Contribution of rTPJ to Age Differences in Fairness-Related Decision-Making.

ISU CHO, *Sungkyunkwan University*, NICOLETTE BARBER,

Brandeis University, JOSHUA OON SOO GOH,

National Taiwan University, ANGELA GUTCHESS,

Brandeis University — Older people are less likely to consider others' intentions compared to younger adults when they make fairness-related decisions. As cortical

thickness in some regions is associated with the development of considering intentions in children (Sul et al., 2017), is it associated with changes across adult development? The current study examined how age-related differences in fairness-related decision-making using an ultimatum game are related to the cortical thickness and volumes of right temporoparietal junction (rTPJ), a region known to be related to understanding others' mental states. Computational modeling results showed that older adults employed outcome-based vs. intention-based decision utilities more than younger adults. Regardless of age, the degree to which individuals used outcome-based vs. intention-based decision utilities was negatively correlated with cortical thickness of rTPJ. However, age-related differences in strategy were not mediated by cortical thickness or volume of rTPJ. The results imply that rTPJ is associated with one's preference of considering others' intention vs. outcome in general, but it does not explain the age-related differences in decision-making preferences.

Email: Isu Cho, isu.cho07@gmail.com

6:00-7:30 PM (3042)

The Power of Visual Nudges: Implicit and Explicit Effects of Graphic Warning Labels on Tobacco Prevention. JOHANNA SÁNCHEZ-MORA, *Universidad Nacional de Colombia*, RICARDO M. TAMAYO, *Universidad Nacional de Colombia* — This study investigates the implicit and explicit effects of pictorial health warnings on smoking prevention. We integrated models of implicit cognition and bounded rationality to examine pictorial warnings as type 1 nudges based on automatic processing. To assess the consistency of the observed effects, we conducted two experiments using the Affect Misattribution Procedure (AMP). Participants were randomly assigned to a health warning or neutral condition. In Experiment 1, participants performed the AMP with a 75-millisecond prime exposure. Results showed significant differences in kanji pleasantness judgments and reaction times, indicating that warnings elicited more negative and faster implicit evaluations. Experiment 2 used a variation of the AMP in which participants explicitly rated the pleasantness of the prime with a 500-millisecond prime exposure. Results showed significant differences in prime pleasantness judgments and reaction times, consistent with Experiment 1, suggesting that warnings also produce explicit effects. The results suggest a process of translation from implicit to explicit effects,

which may shed light on the relationship between automatic and controlled processing in different types of nudges.

Email: Johanna Sánchez-Mora, cij Sanchezmo@unal.edu.co

6:00-7:30 PM (3043)

Understanding Age Differences in Health Decisions: The Role of Information

Comprehension and Source Credibility. TEAIRRA EVANS, *Louisiana State University*, SHEILA BLACK, *The University of Alabama*, ANDREA GLENN, *The University of Alabama* — This study examined age differences in decision-making in a healthcare context. We examined whether older adults may be more likely to rely on the recommendation of a credible source, especially when information is difficult to understand, and forgo systematic processing in a decision about their health. Ninety younger (ages 18-25) and 90 older (ages 55-85) participants were exposed to an advertisement in which a physician (presented as a credible source) promotes the use of a supplement. The advertisements presented varied in ease of comprehension, as this has been found to affect the likelihood of using either heuristic or systematic processing in decision-making, and the description of the quality of the supplement was also manipulated. After viewing the advertisement, participants indicated the likelihood that they would purchase the supplement. Consistent with existing literature, the quality of the supplement was shown to impact decision-making in both younger and older adults. Results indicate that older adults were not heavily influenced by the recommendation of the physician and based their decisions on the quality of the supplement.

Email: Teairra Evans, TZEVANS@LSU.EDU

6:00-7:30 PM (3044)

Unfairness Across Contexts: Investigating Generalized Reciprocity Across Different Tasks and Domains.

JOANNA RUDZIŃSKA-WOJCIECHOWSKA, *Kozminski University*, JERZY WOJCIECHOWSKI, *University of Warsaw*, KATARZYNA SEKŚCIŃSKA, *University of Warsaw* — People who receive a generous or unfair share of resources tend to treat alike a random third person (generalized reciprocity). In studies, participants are usually offered an opportunity to pay forward generous or unfair treatment to a third person using the same task in which they were wronged. Consequently, there is a

question of whether participants indeed pay unfair/generous treatment forward or their decisions simply mirror the behavior they have experienced. We test this in an experimental study ($n=640$) by providing participants with an experience of unfair/generous treatment in one task (financial or non-financial) and observing their choices in a different task (financial/non-financial) and conclude that, indeed, unfair treatment spills across tasks and domains and that emotions play an important role in this process.

Email: Joanna Rudzińska-Wojciechowska,
joanna.rudzinska@gmail.com

6:00-7:30 PM (3045)

What Does Coactive Look Like: Using Eye Tracking in Conjunction with Systems Factorial Technology to Infer Accumulation Dynamics.

LAURENCE SONIER, *Université de Moncton*,
BRADLEY HARDING, *Université de Moncton* —
Systems factorial technology (SFT) is an analysis suite that determines which processing architecture participants use when treating stimuli during cognitive tasks. In this experiment, eye movements were assessed to determine if they allow complimentary validation of the underlying architecture detected by SFT in two redundant target detection tasks, a paradigm which typically returns a coactive diagnosis. In Task 1, stimuli (letters) were coloured in blue, green, or red while in Task 2, stimuli were coloured in blue, indigo, or purple. SFT and race model inequality analyses results showed that, as expected, coactive processing was present in both tasks and eye tracking analyses demonstrated an increase in gaze-area variance in Task 2. Considering these results, we infer that participants were processing more “letter information” than “colour information” in the second task which implies that coactive processing is potentially dynamic during the accumulation stage, that some dimensions can be treated with more weight depending on task demands, or sometimes not/barely be processed at all, yet will still contribute to the collaborative nature at the heart of a coactive process.

Email: Laurence Sonier, els0407@umoncton.ca

6:00-7:30 PM (3046)

Is the Truth Sandwich Format Toast? No Advantages for the Correction of Misinformation. LUCY BUTLER, *Northeastern University*, BRIONY SWIRE-THOMPSON,

Northeastern University, DAVID N. RAPP, *Northwestern University* — The “truth sandwich” correction format, in which false information is bookended by factual information, is often presented by both researchers and the media as an optimal method for correcting misinformation. However, despite recurring recommendations, there is a lack of empirical evidence supporting its enhanced efficacy. In two studies (total $N=1,046$), we evaluated the effectiveness of the truth sandwich correction format against a “bottom-loaded” refutation format, which simply states the false claim prior to presenting accurate information. Across both experiments, we found no evidence that the truth sandwich format enhances the effectiveness of corrections either immediately post-correction or after a two-week delay period, with Bayesian analyses providing consistent evidence for a null effect of correction format. These findings suggest that advocations for the adoption of the truth sandwich correction format above other, simple corrections may be unwarranted. That is, clear and detailed corrections are likely to be effective regardless of the format they are presented in.

Email: Lucy Butler, l.butler@northeastern.edu

6:00-7:30 PM (3047)

Auditory Primes, Just Like Photos, Increase Truth Claims. DANIEL G. DERKSEN, *Simon Fraser University*, DEBORAH A. CONNOLLY, *Simon Fraser University*, DANIEL M. BERNSTEIN, *Kwantlen Polytechnic University* — People believe claims that appear with related photos more often than they believe claims that appear alone (truthiness). The fluency account proposes that related photos prime semantic information shared between the photo and the claim, increasing the speed and ease of processing (a truth cue). We tested the assumptions of the fluency account in two ways: (1) we measured truthiness and claim evaluation time concurrently and (2) we tested whether semantic auditory primes elicit similar effects alone and in combination with photo primes. We observed truthiness: Participants rated claims as true more often following both auditory and photo primes compared to claims appearing without auditory or photo primes. Our results support a fluency mechanism, indicating that auditory and photo primes speed subsequent truth claim evaluations. Moreover, our results show that truthiness is more general than a photo bias: Any media that primes semantic information may elicit belief in claims.

Email: Daniel Derksen, danielgderksen@gmail.com

6:00-7:30 PM (3048)

Designing Interventions for Deepfake-Fuelled Conspiracy Theories.

JOHN TWOMEY, *University College Cork*, CIAN O'MAHONY, *University College Cork*, CONOR LINEHAN, *University College Cork*, GILLIAN MURPHY, *University College Cork* —

Deepfake videos are regarded as a potentially powerful tool to spread misinformation and conspiracy theories. There is a well-intended focus on interventions and education to reduce these potential harms by warning the public about this technology. However, we argue that researchers must urgently consider that well-intentioned deepfake interventions may counterintuitively cause more harm than good, by undermining trust in media. The misinformation threat of deepfakes goes beyond creating fabricated media—we argue that the more concerning threat of deepfakes is the potential for real media to be falsely labelled as fabricated. The design of deepfake interventions that promote scepticism of deepfakes must not encourage people to lose faith in real media evidence. We propose six factors that researchers should consider when designing interventions for deepfake misinformation and conspiracy theories.

Email: John Twomey, johntwomeywork@gmail.com

6:00-7:30 PM (3049)

Dissecting the Reaction Times of Global and Local Processing.

DANIEL LOUGEN, *University of Oregon*, PAUL DASSONVILLE, *University of Oregon*, STEVEN SHOFNER, *University of Oregon* — Reaction time studies using hierarchical stimuli typically demonstrate that global processing is faster than local (global precedence effect), and that global interference during a local task has a greater impact than the opposite (global interference effect). However, the mental processes that underlie these effects are unclear, since RTs provide only a blunt measure of cumulative processing speeds. Here, we used a compelled response task (Stanford et al., 2010) to tease apart the durations of decision and non-decision processes. Participants reported the orientation of hierarchical C's (large C's made of small c's) at the global or local level in a blocked design. Although global precedence was mostly evident in decision processes, the global interference effect was reflected in almost equal measure in decision and non-decision times. Notably, the global interference effect was substantially larger in the compelled response

versus RT measures (71 vs. 10 ms), indicating that RTs underestimate the true impact of global interference. The ability of the compelled response task to provide precise measures of the components of a response indicates benefits of its use for examining individual differences in sensorimotor processing.

Email: Daniel Lougen, dlougen2@uoregon.edu

6:00-7:30 PM (3050)

Manipulating Candidate Preferences in the US Presidential and UK General Elections.

GEOFF COLE, *University of Essex*, JARED BUBB, *University of Essex*, PAUL A. SKARRATT, *University of Hull, UK* — Nudging actions to increase the likelihood that a person will behave in a manner beneficial to themselves has become popular within the past 15 years or so.

Behavior can, however, be influenced in a way that is not necessarily beneficial: the so-called Negative Nudge. In the present experiment we reveal how motor inhibition can mediate such a nudge. Participants were presented with the names of the two main candidates in the recent UK general election (N=200; UK adult citizens) and the US presidential election (N=200; US adult citizens). One candidate's name was shown on the left of the display, one on the right, and participants indicated which of the two they preferred by pressing either a left or right hand button. Immediately before this decision, participants performed a target discrimination task and responded by pressing one of the same two buttons. Results showed that preferences were influenced by the previous button press; the likelihood of preferring a candidate was reduced if, in order to make that choice, the same action (i.e., button press) needed to be performed. This illustrates how a person's own motor actions can influence a preference decision made immediately after.

Email: Geoff Cole, gcole@essex.ac.uk

6:00-7:30 PM (3051)

Modeling Delayed Gratification as a Value Accumulation Process.

BRIAN HOWATT, *Tarleton State University*, THOMAS J. FAULKENBERRY, *Tarleton State University* — Modeling waiting behaviors in dynamic delayed gratification tasks can pose significant challenges for standard statistical analyses because individuals' distributions of response times often exhibit strong bi-modalities (i.e., fast responses for impulsive choices mixed with slow responses for patient choices) and heterogeneous variance. The primary goal

of the present study is therefore to assess the degree to which a single-boundary accumulator mixture-model (a truncated normal distribution with a shifted-Wald distribution) can provide a statistically and psychologically interpretable description of individuals' full distribution of response times across different iterations of the Escalating Interest task (see Young & Howatt, 2022). Participants' model parameters were first estimated using a Bayesian hierarchical procedure, then we tested the impact of each experiment's manipulations on these parameters. In addition to sharing our results, we also discuss the advantages and limitations of using this accumulation process to model choices over longer and continuously unfolding time courses.

Email: Brian Howatt, bhowatt@tarleton.edu

6:00-7:30 PM (3052)

Nudges for People who Think. ABA SZOLLOSI, *University of New South Wales*, NATHAN WANG-LY, *UNSW Sydney*, BEN R. NEWELL, *UNSW Sydney* — The naiveté of the dominant "cognitive-miser" metaphor of human thinking hampers theoretical progress in understanding how and why subtle behavioral interventions – "nudges"—could work. We propose a reconceptualization that places the balance in agency between, and the alignment of representations held by, people and choice architects as central to determining the prospect of observing behaviour change. We argue that two aspects of representational (mis)alignment are relevant: cognitive (how people construe the factual structure of a decision environment) and motivational (the importance of a choice to an individual). Nudging thinkers via the alignment of representations provides a framework that offers theoretical and practical advances and avoids disparaging people's cognitive capacities.

Email: Aba Szollosi, aba.szollosi@gmail.com

6:00-7:30 PM (3053)

The Importance of Theorizing about Strength of Preference: A Case Study on the Model Complexity and Identifiability of Cumulative Prospect Theory. DANIEL R. CAVAGNARO, *California State University, Fullerton*, MICHEL REGENWETTER, *University of Illinois Urbana-Champaign* — Fechnerian models of preferential choice, such as Logit and Probit models, derive binary choice probabilities from utilities generated by a decision theory. These models capture the theoretical premise that

the more strongly a decision maker prefers one option to another the more likely they are to choose it. Implicit in each Fechnerian models is a theory relating utilities to strengths of preference. While much research theorizes in excruciating detail about hypothetical constructs giving rise to utilities, it stops short of theorizing in equal detail about strength of preference. To fill that gap, this work highlights the critical importance of the strength-of-preference theory in determining falsifiability, model complexity, and the identifiability of qualitative features, functional forms, and/or parameters in a core utility theory. We demonstrate that the strength-of-preference theory in a Fechnerian model is just as impactful in determining the predictions about observable behavior as the utility theory.

Email: Daniel Cavagnaro, dcavagnaro@fullerton.edu

6:00-7:30 PM (3054)

The Risk Literacy Difficulty Analysis: A Method for Estimating the Probability of Risk Misunderstanding. JINAN N. ALLAN, *Clemson University*, EDWARD T. COKELY, *University of Oklahoma*, ADAM FELTZ, *University of Oklahoma*, ROCIO GARCIA-RETAMERO, *University of Granada*

— What makes someone vulnerable to misunderstanding risk? While many factors affect judgment, statistical numeracy (i.e., practical probabilistic reasoning) is among the strongest general predictors of decision quality and risk literacy—i.e., the ability to evaluate and understand risk (Cokely et al., 2012, 2018). The current work presents a novel method for (i) estimating the difficulty of decisions and risk communications, which can be used across domains, to (ii) estimate the proportion of people who are likely to misunderstand a given risk, as well as the (iii) minimum level of numeracy skill needed to independently understand the risk. Using data from a representative sample of U.S. adults, this methodology relies on the development of a new test of risk literacy, and the development of numeracy norms—that is, a way to estimate the relative rank of scores, stratified by age, gender, education, and race. The Risk Literacy Difficulty Analysis is then demonstrated with an example from hurricane risk communications. Discussion focuses on theoretical implications, future methodological improvements, and ways future researchers and practitioners can use this method to compare the difficulty of various risky decisions.

Email: Jinan Allan, jinana@clemson.edu

6:00-7:30 PM (3055)

Empathy Strengthens Emotion's Effect on Beauty. ANNA BRUNS, *New York University*, DENIS PELLI, *New York University* — Past research shows that emotion affects beauty judgments of images and music. It is widely supposed that trait empathy affects aesthetic experience, so we tested whether it modulates the effect of emotion on beauty. One hundred sixty-four participants rated the perceived beauty, happiness, and sadness of 48 images and songs presented in two randomized blocks. They took the PANAS mood questionnaire before each block and viewed a mood induction video between blocks to increase either their happiness or sadness. Then they took the Questionnaire for Cognitive and Affective Empathy. We used structural equation models to analyze the effect of empathy on beauty, emotion—felt (mood questionnaire) and perceived (stimulus ratings) happiness and sadness—and the relationship between them. We find that empathy is associated with stronger positive relationships between emotion and the beauty of images and music ($\beta \sim 0.06$, $p < 0.001$). We also find that perceived emotion boosts beauty directly for images and music. However, the sadness effect is larger for music than images ($\beta = 0.51$ vs. 0.12 , $p < 0.001$), and empathy amplifies this relationship for music but not images. Our results indicate that, for more empathic people, more emotion produces more beauty.

Email: Anna Bruns, adb8485@nyu.edu

6:00-7:30 PM (3056)

Exploring the Modulation of Liking by Distance and Emotion Valence in Photos and Artwork. TZU-HSIN HSU, *Institute of Cognitive Neuroscience, National Central University*, DENISE WU, *National Central University* — Previous research has shown that emotional responses become more extreme when psychological or physical distances become closer. Whether the liking of stimuli is similarly affected by these distances and whether emotion valence modulates such relationships remain unexplored. To fill the void, emotionally positive and negative photos and artwork were selected as stimuli with a small and large psychological distance, respectively. Physical distance was also manipulated by changing the size of the stimulus, which was perceived as moving toward or away from participants. Participants' liking of individual stimuli exhibited a clear preference for positive over negative stimuli. Critically, both psychological distance

and valence modulated the effect of physical distance on liking, as the liking scores of positive artwork and photos that moved away decreased and only increased when positive artwork moved toward participants. In contrast, the liking scores of negative artwork and photos decreased when the stimulus moved toward participants but remained the same when it moved away. Taken together, our findings highlight the distinct effects of psychological and physical distance on liking of positive and negative stimuli.

Email: Tzu-Hsin Hsu, seilna102141@gmail.com

6:00-7:30 PM (3057)

Influence of Emotion on Strategy Selection, Execution, and Memory Performance: Age-Related Variations. JESSICA DEMIRJIAN, *Université Lumière Lyon 2*, ARNAUD FOURNEL, *Université Lumière Lyon 2*, HANNA CHAINAY, *Université Lumière Lyon 2* — We investigated the impact of emotional context and age on encoding strategy selection (Experiment 1a) and execution (Experiment 1b), and on recall performance. Young and older adults studied neutral words against the background of the IAPS images. In Experiment 1a, young adults favored mental imagery (MI) and repetition (REP) in the negative and positive context, respectively. Older adults consistently favored REP. Recall was not influenced by emotion in either group, but was always higher with MI. In Experiment 1b, regardless of age, imposed MI, compared to REP, enhanced recall exclusively in the neutral context. With imposed MI, recall was worst in negative context compared to neutral and positive, which showed no difference. These findings suggest that emotional contexts influence strategy selection solely in young adults, without impacting recall. However, when strategies are imposed, emotional contexts seem to affect recall differentially but consistently across age groups.

Email: Jessica Demirjian, jessica.demirjian@univ-lyon2.fr

6:00-7:30 PM (3058)

Interactions with Virtual and Animatronic Animals Influence Anxiety Levels. HANNA LONG, *The Pennsylvania State University Behrend*, AMANDA WELSBACHER, *The Pennsylvania State University Behrend*, VICTORIA A. KAZMERSKI, *The Pennsylvania State University Behrend* — College is a stressful adjustment for students, especially when their pets are left at home. Having an emotional support

animal can be helpful but is usually not feasible. Dog interactions, such as visits by therapy dogs, can help decrease stress effects but are hard to arrange. Thus, we explored how interactions with virtual and animatronic cats and dogs could influence anxiety levels. We used the computers are social actors (CASA) paradigm to suggest humans use the same schemas for therapy pets with animatronic pets. We predicted lower levels of anxiety, as measured by the state anxiety scale, heart rate, and blood oxygenation level, after interaction with both the virtual videos and the animatronic pets, and anxiety levels would show a larger decrease from the interactions with animatronic pets than the virtual pet videos. The State-Trait Anxiety Inventory (STAI) scores indicated an interaction between format and pet type, with both cat conditions and the dog videos decreasing anxiety more successfully than the animatronic dog. Contrary to our hypotheses, no reliable changes for the heart rate and oxygen saturation were found. The research suggests virtual videos are a low-cost, easily accessible, viable option for reducing anxiety experienced by college students.

Email: Hanna Long, hml5606@psu.edu

6:00-7:30 PM (3059)

Investigating the Influence of Attachment Style on Emotion Detection Using an Emotional Stroop Task.

KAELYN WOFFORD, *University of South Florida*, **KABEER TRIKKHA**, *University of South Florida*, **PAUL ATCHLEY**, *University of South Florida*, **RUTH ANN ATCHLEY**, *University of South Florida* — The Stroop Task has been widely used to study cognitive interference and yields data on processing speed, selective attention, and response inhibition. These cognitive mechanisms influence emotion processing, social interaction, and more traditional cognitive processing. A novel task was developed to study emotional cognition using valanced phrases with prosody that is congruent or incongruent with their semantics. Participants completed questionnaires regarding their attachment style before judging semantic or prosody valance on congruent and incongruent trials. We hypothesized individual difference factors likely modulate the ability to rectify incongruence in a Stroop task and modify emotional and social cognition. Results indicate that semantics impact prosody judgments, but not the inverse. Regression analyses show that participants struggle in the more difficult prosody task, but participants with avoidant attachment styles show a

stronger Stroop effect, as they account for a significant amount of the variance. These findings indicate that an emotional Stroop task may be useful in exploring individual differences in cognitive and emotion processing.

Email: Kaelyn Wofford, kwofford31@usf.edu

6:00-7:30 PM (3060)

Is Survival Positive? Examining Adaptive Memory for Positive and Negative Words.

DAILYN Q. CLARK, *University at Albany, SUNY*, **JEANETTE ALTARRIBA**, *University at Albany, SUNY* — Words encoded in terms of their survival relevance to a presented passage are better remembered than words encoded in terms of their relevance to moving or pleasantness (Nairne et al., 2007). Work examining the role of emotion in the survival paradigm has focused on the emotional content of the passages (Kazanas & Altarriba, 2018; Mangiulli et al., 2022). Two experiments were conducted to examine how neutral (e.g., anchor, bench) and emotion state words (e.g., happiness, anger) are processed within the survival paradigm. Experiment 1 compared how positive and negative emotion state words are processed within the survival paradigm. Experiment 2 compared the original words used in Nairne et al. (2007) to a list of neutral words. For both experiments, we expected to see an overall survival advantage, such that words rated for their fitness relevance are better remembered than words rated for their relevance to a moving scenario. Given the results from Clark (2024) we expected to see better memory for the positive emotion state words in Experiment 1, and better memory for the original Nairne words in Experiment 2. Findings are discussed from the perspectives of both the survival and emotion word processing literature.

Email: Dailyn Clark, dqclark@albany.edu

6:00-7:30 PM (3061)

Judging the Sincerity of Human Smiles and Emojis: An Eye-Movement Investigation.

MARIE-PIER MAZEROLLE, *Université de Moncton*, **ADELE GALLANT**, *Université de Moncton*, **MÉLODIE BEAULIEU**, *Université de Moncton*, **ANNIE ROY-CHARLAND**, *Université de Moncton* — Research on smile judgement suggests that human smiles containing the cheek raiser activation (enjoyment smiles) are judged as happier, more sincere, and more authentic than in the



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absence of this cue (non-enjoyment smiles). However, it's less understood if the use of different "facial features" in emoji smiles is comparable to the way they are used in human smiles. This study investigated sincerity judgements of smiles from both emojis and humans, while tracking participants' eye movements. Participants (n=29, 25 women and 4 men, Mage=20.82 years) judged smiles as either "really happy" or "not really happy." Smiles varied in sincerity (presence or absence of the cheek raiser) and in mouth activation (open or closed). Our results show that human-produced enjoyment smiles were perceived as happier than the non-enjoyment ones. Emojis were consistently perceived as happier, irrespective of sincerity cues. Closed mouth smiles were judged less happy than open mouth ones. We also found differences in proportion of time spent in the zones of the mouth and eyes, suggesting differing processing smiles based on encoder type.

Email: Marie-Pier Mazerolle, mariepiermaz@gmail.com

6:00-7:30 PM (3062)

Outcome vs. No Outcome: What Drives Hindsight Bias for Emotional Faces? EMILY BURGESS, *Oregon State University*, MEI-CHING LIEN, *Oregon State University*, PHILIP ALLEN, *University of Akron* — Hindsight bias occurs when individuals who learn an outcome overestimate how predictable that outcome had been in a naïve state. The current study explored how outcome manipulations affect visual hindsight bias for emotional faces. Across four experiments, participants viewed progressively clarifying blurred images of emotional faces in the foresight phase. They, then, in the hindsight phase adjusted the blur level to match their initial identification following presentation of either no outcome (Experiment 1), a conceptual outcome (Experiment 2), a high semantically related outcome (Experiment 3), or a low semantically related outcome (Experiment 4). Results showed that angry faces consistently produced a hindsight bias, while happy faces did not produce a bias in any experiment. Neutral faces only produced a bias following conceptual and high semantically related outcomes. Modeling analyses revealed that the bias increased with outcome relatedness. We extend the understanding of visual hindsight bias by demonstrating the relative contributions of the outcome.

Email: Emily Burgess, burgeemi@oregonstate.edu

6:00-7:30 PM (3063)

Person-Oriented Approach to Math Anxiety, Math Performance and Math Self-Efficacy Association. ALENA EGOROVA, *Worcester Polytechnic Institute*, STACY SHAW, *Worcester Polytechnic Institute*, JI-EUN LEE, *Worcester Polytechnic Institute*, ERIN OTTMAR, *Worcester Polytechnic Institute* — Research shows that anxiety in mathematics (MA) negatively correlates with mathematics performance (MP), but few studies examine how often students deviate from this pattern. To examine different relationships between these two constructs, in two consecutive studies (N=1,029 and N=801), we applied k-means clustering to middle-school students based on their MP and MA levels and the results revealed four groups of similar sizes. While two groups' profiles were in line with most previous studies—high MP low MA and low MP high MA—the other two clusters demonstrated a different pattern. Specifically, about one-fourth of the students showed low MP and low MA, and the rest of the participants demonstrated high MP and high MA. Moreover, clusters differed in their self-reported math self-efficacy, specifically, students with high MP low MA reported significantly lower math self-efficacy compared to students with low MP low MA.

Email: Alena Egorova, aegorova@wpi.edu

6:00-7:30 PM (3064)

The Contamination Effect Beyond Visual Cues: Exploring the Role of Different Sensory Inputs. SÓNIA M. P. SANTOS, *University of Aveiro*, NATÁLIA LISANDRA FERNANDES, *William James Center for Research*, JOSEFA N. S. PANDEIRADA, *William James Center for Research & University of Aveiro*, JOSEFA N. S. PANDEIRADA, *William James Center for Research & University of Aveiro* — From an adaptive perspective, memory should aid survival and reproduction. Avoiding contamination and promoting preventative behaviors would be a case in point. Studies, using predominantly static visual stimuli, have shown a memory advantage for objects previously associated with potential sources of contamination (vs. of non-contamination), known as the contamination effect. However, in everyday life, cues to potential contamination involve other sensorial modalities. We investigated how various sensory modalities of the (non)contamination cue (videos, muted videos, sounds and pictures; matched stimuli) influence this effect. Using the traditional procedure, during

encoding, objects were paired with sick or healthy cues of a given modality (between-subjects manipulation) and participants identified who touched each object (sick or healthy person; within-subject manipulation). Later, they were surprised with a free recall task for the objects. Our preliminary data showed a successful cue-object encoding in all modalities, except the visual condition (hence its recall data were not considered). The contamination effect was replicated in all sensory modalities with no interaction among conditions, stressing the effect's robustness.

Email: Sónia Santos, santos.s@ua.pt

6:00-7:30 PM (3065)

The Costs of Climate Anxiety on Cognitive Performance and Mind Wandering During a Sustained Attention Task. TAYLOR K.

TARDIBUONO, *University of Miami*, BROOKE SCHWARTZMAN, *University of Miami*, ANTHONY P. ZANESCO, *University of Kentucky*, EKATERINA DENKOVA, *University of Miami*, AMISHI P. JHA, *University of Miami* — The prevalence of climate anxiety—negative emotional reactions to the climate crisis—is globally on the rise. Yet very little is known about its cognitive consequences during task performance. This study examined the relationship between individual differences in climate anxiety, as measured by the Climate Change Anxiety Scale, and time-on-task effects during the Sustained Attention to Response Task in undergraduates (mean age=19, n=144). Using bivariate growth curve models, we found that the severity of climate anxiety corresponded with greater mind wandering and response time variability at the onset of the task, as well as with lower task accuracy and greater degradation in performance over time. These findings suggest that the negative effects of climate anxiety may impact not only well-being but also core cognitive functions, such as sustained attention, which play a critical role in complex problem-solving and risk assessment.

Email: Taylor Tardibuono, tkt20@miami.edu

6:00-7:30 PM (3066)

The Impact of Self-Compassion on Negative Emotions: Neurophysiological Evidence from a Cross-Cultural Electroencephalography (EEG) Study. HONGRU SONG, *University College Cork*, CHRISTIAN RYAN, *University College Cork*, JASON

S. CHAN, *University College Cork* — Self-compassion is an emotion regulation strategy was developed in the West. This study aims to provide cross-cultural (Western and East-Asian) evidence for the efficacy of self-compassion in terms of reducing negative emotions and explore underlying brain mechanisms. We also compare this effect with cognitive reappraisal which has been highly recognized across cultures. The findings will contribute to the design of self-compassion intervention cross culturally. Data was collected from Ireland and China. Participants first recall an upsetting memory, and then engage in writing exercises for both self-compassion and cognitive reappraisal—order is counterbalanced, during which brain activity is recorded using EEG. Participants reported decreased negative emotions after self-compassion training, and the effect is stronger in Chinese (Cohen's $d=1.64$) than in Western sample (Cohen's $d=1.53$). However, cognitive reappraisal is more effective in Western (Cohen's $d=1.38$) than in Chinese sample (Cohen's $d=1.27$). Decreased activation in the right-side compared to the left-side frontal cortex and decreased midline beta-band power is hypothesized to be observed, both of which have been implicated in reduced negative emotions.

Email: Hongru Song, hsong@ucc.ie

6:00-7:30 PM (3067)

The Role of Environmental Preferences for Forest and Urban in Nature-Based Interventions. CHUN-YI LEE, *National Taiwan University*, JOSHUA O.S. GOH, *National Taiwan University*, CHIA-PIN (SIMON) YU, *National Taiwan University*, ANGELA GUTCHESS, *Brandeis University* — Nature-based interventions (NBIs) have positive effects on cognition and mental health. Nature-walking groups, compared to urban ones, perform better in attention tasks with increased positive affect. However, different environmental preferences (EPs) of individuals might moderate the benefits of NBIs. We investigated how EPs mediate short-term NBIs effects on emotional and cognitive functions. Eight young adults were exposed to virtual nature and urban environments with pre- and post-testing examining changes in emotion and cognitive processing, via Victoria Stroop task (VST) and Lottery Choice Task (LCT) for attention and risk-taking. Regardless of EP, after exposure to nature, self-reported confusion, fatigue, depression, anger-hostility, and tension decreased, and vigor increased, whereas opposite trends occurred for urban exposure. Reaction time in the

VST decreased after nature intervention, suggesting improved attention. People with nature preferences showed higher lottery choice risk-taking compared to those with urban preferences. These data suggest that effects of nature or urban exposure remain despite real individual environmental preferences.

Email: Chun-Yi Lee, chunyilee0102@gmail.com

6:00-7:30 PM (3068)

The 'Norm' in Norming Databases of Affective Language.

HALSZKA BAK, Adam Mickiewicz University — This study is a meta-analysis that evaluates what we know about the nature of basic affective dimensions (valence, arousal, dominance) based on the most commonly used affective language norms. Variables such as the languages in which the norms were completed, the role of translation in the compilation of these databases, the participants' backgrounds, and the way affective dimensions were constructed within study designs were examined. The preliminary results show inconsistent reporting of study and translation procedures and marked variability in the constructs of affect. Among the existing norms, Germanic languages and female college-age populations are over-represented. Correlations between the norms of valence often reach ceiling values, but those for arousal and dominance range from low to moderate. Overall, the illusion of an abundance of affective language resources obscures certain problems with the norms many empirical studies rely on. The analysis concludes with recommendations for future directions in affective norming studies.

Email: Halszka Bak, hbak@amu.edu.pl

6:00-7:30 PM (3069)

Training Empathy Inter-Brain Coupling During Empathic Interactions.

SIMONE SHAMAY-TSOORY, University of Haifa, MARIO FRANCIS, University of Haifa — Although empathy occurs within social interactions, research on empathy has predominantly focused on the covert mechanisms of empathy in the observer (the empathizer), often neglecting how empathic reactions influence the distress of the target. In a series of experiments, we examined a feedback loop model describing the role of empathy-related brain regions in the interpersonal emotion regulation cycle. A central aspect of this model is the inter-brain coupling between regions in the observation-execution system (including the inferior frontal gyrus

and inferior parietal lobe) of interacting participants. Given that empathic interactions develop over time, it remains to be seen whether inter-brain coupling can increase through one or multiple interactions. We examined this hypothesis in two studies, demonstrating that inter-brain coupling contributes to distress regulation in the target. Furthermore, we show that empathy can be enhanced through a dyadic neurofeedback platform, enabling participants to increase their inter-brain coupling. This framework may elucidate how empathic responses improve over time and how we learn to adapt our responses mutually during social interactions.

Email: Simone Shamay-Tsoory, sshamay@psy.haifa.ac.il

6:00-7:30 PM (3070)

Decrease in the Left Digit Effect Across

ADREA L. PATALANO, Wesleyan University, KELSEY KAYTON, Ohio University, NICHOLAS ALIA, University of Minnesota, JORDAN GREEN, Wesleyan University, HILARY BARTH, Wesleyan University — The left digit effect in number line estimation is the phenomenon whereby a numeral's leftmost digit has a disproportionate influence on its placement (e.g., 298 is placed farther left of 302 than is warranted). In the present experiment, we investigated whether the magnitude of the left digit effect changes across adulthood. Participants (N=161) consisted of an age-stratified internet sample of adults aged 18-80 years, with a similar number sampled from ages 18-40, 41-60, and 61-80, who completed three blocks of 26 trials each of a 0-1,000 bounded number line task. A left digit effect was observed in all three age ranges, but this effect decreased reliably as a function of age ($r=-.22$, $p=.004$). The latter was in contrast to overall error on the task, which did not reliably change with age ($r=-.09$, $p=.236$). The relationship between the left digit effect and age remained even when controlling for response time (which increased with age; $r=-.20$, $p=.013$), and the left digit effect was not related to several demographic variables (gender, education, income) or individual difference measures (holism, impulsivity).

Email: Andrea Patalano, apatalano@wesleyan.edu

6:00-7:30 PM (3071)

On the Relationship of Math and Executive

FUNCTIONS. MARTIN BUSCHKUEHL, MIND Research Institute, YI FENG, University of California, Irvine, ANJA PAHOR, University of Maribor, SUSANNE M.

JAEGGI, Northeastern University — Research has consistently demonstrated an association between executive functions and solving math problems. We further investigated this relationship in 241 fourth-grade students across 12 classrooms. Correlational analyses revealed a significant relationship of math fluency with working memory tasks, i.e., the paced auditory serial addition task (PASAT; $r=.34$), and simple span ($r=.15$), but only negligible correlations with tasks capturing inhibition and flexibility such as Flanker, Rule Switch, and numerical Stroop. Our data indicate that in this grade, math fluency correlates only with certain executive function measures, especially if they are embedded in a math fluency context such as the PASAT. In contrast, three different tasks assessing fraction skills—tasks that were challenging for most students—revealed significant correlations with almost all executive function measures, suggesting that the involvement of executive functions varies as a function of math task familiarity and skill.

Email: Martin Buschkuehl, mbuschkuehl@mindresearch.org

6:00-7:30 PM (3072)

People's Magnitude Comparison and Numerosity Estimation Behavior Depends on the Statistical Cluster Structure and the Number of Clusters

Perceived. VIJAY MARUPUDI , *Georgia Institute of Technology*, SHUBH GOYAL, *University of Illinois Urbana-Champaign*, SASHANK VARMA, *Georgia Institute of Technology*, VIMAL RAO, *University of Illinois Urbana-Champaign* — People's ability to visually cluster items plays an important role in perception and problem-solving. For example, their clusterings are strongly associated with their solutions of the traveling salesperson problem, a computationally hard problem that people manage to solve surprisingly quickly and approximately optimally. We posit that visual clustering might represent a core ability, one that underlies many important parts of cognition such as the approximate number system (ANS). The ANS enables people to quickly estimate the numerosity of a set. Despite the importance of the ANS, the underlying mechanisms are relatively understudied. We posit that visual clustering plays an important role in the ANS by helping segment a large set into smaller sets that are each easier to enumerate. In this study, we generated sets of point cloud stimuli and asked participants to compare the magnitudes of stimuli, estimate their numerosities, and cluster their points. We find that the statistical cluster

structure of a stimulus and the number of clusters drawn by the participants drives their magnitude comparisons and numerosity estimates.

Email: Vijay Marupudi, vijaymarupudi@gatech.edu

6:00-7:30 PM (3073)

Studying Children's Use of the Inversion Principle Through Pen-and-Paper and Computerized Tasks.

CÉLINE POLETTI, *University of Lausanne*, SYLVAIN BRACONNIER, *École Collège Lycée Saint François*, CATHERINE THEVENOT, *University of Lausanne* — An important aspect of arithmetic development is understanding the inverse relations between arithmetic operations. In this study, 179 children aged between 11 and 15 years were asked to solve one set of addition/subtraction problems and one set of multiplication/division problems. For example, they were presented with $9 \times 7 \div 9$, and we observed whether they used a shortcut strategy by directly answering 7 without performing the multiplication and then the division. Our results show that the age at which children master the inversion principles has been underestimated in previous literature. These findings were confirmed when we recorded solution times in approximately 100 other children of the same age.

Email: Céline Poletti, celine.poletti@unil.ch

6:00-7:30 PM (3074)

The Power of the Base: Numerical Comparisons of Exponential Expressions.

MICHAL PINHAS, *Ariel University*, AMI FEDER, *Ariel University*, MARIYA LOZIN, *Ariel University*, NADAV NEUMANN, *Ariel University* — Exponential expressions, representing rapidly growing series like carbon pollution and disease spread, are often challenging. In two experiments, participants chose the larger of two exponential expressions. The experiments varied the distance between base/power components and their compatibility. In base-power compatible pairs, both the base and power of one expression were larger (e.g., 2^3 vs. 3^4), while in base-power incompatible pairs, the base of one expression was larger, but the power relationship was reversed (e.g., 3^2 vs. 2^4). In Experiment 1, the larger power always led to the larger result, while Experiment 2 included base-result congruent pairs where the larger base led to the larger result. Results showed a base-power compatibility effect, more pronounced with larger power distances. Moreover, base-result congruent

pairs were processed faster. These findings indicate that while both base and power components are considered, the base is more prominent, highlighting a misunderstanding of exponential expressions' syntax.

Email: Michal Pinhas, michalpi@ariel.ac.il

6:00-7:30 PM (3075)

Complexity, Grouping, and Similarity: Effects on

Numerosity Estimations. KEIGHLY HARRIS, *The University of Alabama in Huntsville*, JODI PRICE, *The University of Alabama in Huntsville* — The present study examined the effects that visual features like complexity, similarity, and grouping have on numerosity estimation accuracy and confidence ratings. Participants were asked to briefly look at images displaying groups of items, estimate the number of items displayed, and provide a retrospective confidence judgment (RCJ) regarding the accuracy of their estimates. Stimuli were either similar (e.g., all butterflies) or dissimilar (e.g., butterflies and turtles), and varied in their level of complexity, ranging from simple (single-color dots) to complex (multicolor graphic images). Stimuli were presented in either close, grouped patterns or spread out, distributed patterns. Estimation accuracy was higher for complex than for simple stimuli, and improved when the stimuli were presented in a distributed manner as opposed to clustered patterns. Similarity did not impact estimation accuracy. RCJs did not differ as a function of the stimuli characteristics. Results are interpreted in light of perceptual and cognitive theories.

Email: Keighly Harris, keighlyharris12@gmail.com

6:00-7:30 PM (3076)

Pragmatic Abilities in Italian-Speaking Patients with Frontotemporal Dementia: The Case of Scalar Implicatures (Preliminary Results). SILVIA DE MARCHI, *CUNY Graduate Center*, FEDERICA BIDDAU, *University of Padua*, MIRA GORAL, *The City University of New York (CUNY)* — Frontotemporal dementia (FTD) is a progressive neurodegenerative disorder affecting the frontotemporal lobes of the brain. Research indicates that it affects quantifier comprehension and number knowledge. This study investigates scalar implicatures (SIs), a type of pragmatic inference, and number knowledge in Italian-speaking participants diagnosed with CBS (n=1), bvFTD (n=2), and non-amnestic MCI along with healthy controls (HC) (n=10). A Truth-Value Judgment Task (TVJT) using the

gumball paradigm (Kursat & Degen, 2020) was used, assessing responses to statements involving quantifiers and numerical information. The CBS participant responded more accurately (97%) than the non-amnestic MCI (85%) and bvFTD patients, performing similarly to HC. Notably, the CBS patient outperformed bvFTD and MCI patients, particularly in underinformative some-statements. These results align with existing literature, indicating difficulties for bvFTD patients with quantificational terms. An unexpected finding is that the CBD patient performed nearly as well as HC. This warrants further investigation.

Email: Silvia De Marchi, sdemarchi@gradcenter.cuny.edu

6:00-7:30 PM (3077)

Role of Distinctiveness in Outlier Rejection

Processes in Scatter Plots. ÖZGÜR SAYDIR, *Koç University*, AYSECAN BODUROGLU, *Koç University* — Ensemble perception is known to support graph processing. In scatter plots, inferences made depend on many perceptual factors. Regarding the impact of outliers on trend-estimates, there are inconsistent findings in scatter plots. While we demonstrated that a single outlier could increase perceived relationship strength and causal bias, others have implied that outliers are excluded from extracted trends. In Experiment 1, we demonstrated that participants excluded outlier clusters more in their trend estimates compared to single outliers, hinting at the role of perceptual grouping. In ongoing work, we further investigate whether perceptual factors (e.g., color) increasing distinctiveness of outliers would increase outlier rejection in trend estimates as we control correlation strength, outlier position and horizontal compression. These studies bear the potential of increasing our understanding of scatter plot processing, graph-based reasoning as well as contributing to the literature on early selective rejection of outliers in ensemble perception.

Email: Özgür Saydir, ozgursaydir@gmail.com

6:00-7:30 PM (3078)

Investigating Mental Representations of Arithmetic Word Problems Through False Memories.

HIPPOLYTE GROS, *CY Cergy Paris University*, JEAN-PIERRE THIBAUT, *University Bourgogne Franche-Comté Laboratory for Research on Learning and Development (LEAD; CNRS UMR 5022)*, LUCAS RAYNAL, *University of Geneva IDEA Lab*,

EMMANUEL SANDER, *University of Geneva IDEA Lab* — This paper explores how false memories can reveal the determinants of mental representations formed when solving arithmetic word problems. We designed isomorphic word problems differing only in the semantic content of their statements, with half promoting ordinal encodings and the other half promoting cardinal encodings. In 3 experiments, conducted in French and English, participants ($N=310$) first solved the problems and then completed unexpected memory tasks: recalling problems or identifying experimenter-induced changes. In each problem, a specific mathematical relationship could be inferred, that allowed the use of the shortest solving strategy. We expected participants to only infer this relationship on problems inducing an ordinal encoding. We evaluated this by how often participants erroneously recalled this relationship as part of the original problem. Results confirmed that participants' false memories were linked to their mental representations and could predict their strategy choice. These findings offer insights into the relevance of the cardinal-ordinal distinction in numerical cognition and demonstrate the utility of memory tasks for investigating variations in mental representations of mathematical problems.

Email: Hippolyte Gros, hippolyte.gros@cyu.fr

6:00-7:30 PM (3079)

Spatial Position Affects Quantity Judgments And Product Preference. YONATAN VANUNU, *The University of Chicago*, KRISTIN DONNELLY, *The University of Chicago* — People frequently encounter products that contain assorted items, such as cookie platters or trail mix. How do they assess the relative quantities of different types of items? Recent findings from numerosity discrimination tasks indicates a proximity-to-center bias, where objects at the center of an array are more likely to be attended to and included in numerosity judgment compared to those at the periphery. The present work finds that this bias extends to judgments of products with assorted items, with important downstream consequences. We find that participants judged the type of item positioned closer, on average, to the center of the display as being more numerous, affecting choices and impressions of value. For example, participants favored bags of popcorn whose packaging depicted more of their preferred flavor (caramel or cheese) toward the center, even when there was less of that flavor overall. Similarly, flower

arrangements appeared more expensive when the more valuable flowers were more centrally located. Additional studies provide evidence that this proximity-to-center bias arises from selective attention and suggest that marketers can strategically place valuable items in the center to enhance perceived product value.

Email: Yonatan Vanunu, yv1984@gmail.com

6:00-7:30 PM (3080)

Do You Have a Source for That? Information Credibility Predicts Curiosity and Learning.

FELIX C. THIEL, *Umeå University*, LINUS HOLM, *Umeå University*, PAUL SCHRATER, *University of Minnesota* — Curiosity may act as a rational learning signal. If this is the case, the perceived reliability of the information should influence curiosity as well as its likelihood of inducing belief updating. In this experiment, 91 participants gave confidence ratings about the truth value of 100 zoological trivia statements. They then indicated their curiosity about the answer from one of three randomly assigned sources, including Reddit (75% accuracy), Wikipedia (90% accuracy), and Encyclopedia Britannica (99% accuracy). Participants then rated the credibility of- and satisfaction with the answer. All participants performed a retest, either 15 minutes, 1 day, or 1 week after completion of the experiment. There was a significant effect of source on curiosity: $R^2=0.18$, $F(2,9097)=1007$, $\beta_{\text{wiki}}=0.7$, $p<0.001$, $\beta_{\text{ency}}=1.0$, $p<0.001$, $(Mz(\text{Reddit})=-0.57$, $Mz(\text{Wikipedia})=0.15$, and $Mz(\text{Encyclopedia})=0.43$). A logistic regression revealed that the likelihood for updating beliefs increased by 74% per z-scored credibility rating ($OR=1.74$, $t=21.96$, $p<0.001$). We show that informational reliability influences both curiosity and learning, which provides a rational cognitive foundation for the polarizing effects of selective information foraging.

Email: Felix Thiel, felix.thiel@umu.se

6:00-7:30 PM (3081)

High-Resolution Pupilometry Indexes the Timecourse of Cognitive Effort in Motivated Cognitive Control in Children Varying in ADHD Symptomatology.

MEGAN LUCYSHYN, *University of Denver*, AUDREY NG, *University of Denver*, RACHEL E. BROUGH, *University of Denver*, LAUREN MCGRATH, *University of Denver*, KIMBERLY S. CHIEW , *University of Denver* — Attention-

deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder characterized by symptoms of inattention, hyperactivity and impulsivity. In adult individuals with ADHD, differences in motivation and cognitive control processes have both been characterized; however, it is unclear if such motivation and cognitive control differences interact and whether these processes present similarly in children. The present study examines reward modulation of proactive and reactive cognitive control in children (ages 8-16) varying in ADHD symptomology using a reward-incentivized AX Continuous Performance Task (AX-CPT) performed with concurrent collection of high resolution pupillometry as a measure of cognitive effort over time. Preliminary data (N=48) indicated increased proactive control with reward in the whole child sample, consistent with prior observations of motivated cognitive control in both young adults and children, as well as increased incentive-related response speeding with increasing ADHD symptomology. Pupillometric data will be examined as a measure of cognitive effort over time, specifically testing whether higher ADHD symptoms are associated with less efficient effort deployment in response to reward.

Email: Megan Lucyshyn, megan.lucyshyn@du.edu

6:00-7:30 PM (3082)

Impact of Non-Contingent and Contingent Reward on Task Choice and Performance in Self-Organized Task Switching. LARISSA WALTER, *University of Freiburg, Freiburg Institute for Basic Income Studies*, ANNE VOORMANN, *University of Freiburg*, IRINA MONNO, *University of Freiburg*, ANDREA KIESEL, *University of Freiburg* — Studies on the impact of non-contingent reward are rare and yield inconsistent results. To investigate the impact of non-contingent reward on task selection and task performance, we used the self-organized task switching paradigm. While participants chose between two tasks, the waiting time for the task repetition stimulus increased for each consecutive task repetition. Participants selected tasks while balancing the costs of switching tasks and waiting for the repetition stimulus (Mittelstädt et al., 2018). In our first experiment, neither switch costs, switch rates, nor cost balancing differed for trials following a non-contingent reward trial compared to a no-reward trial. Assuming that participants did not adequately process reward stimuli, we are conducting a second experiment, comparing non-contingent to

contingent and no-reward conditions which vary only between blocks. Based on Notebaert and Braem's (2015) framework, we assume that non-contingent reward enhances flexibility, as evidenced by reduced switch costs and higher switch rates compared to trials without reward or with contingent reward.

Email: Larissa Walter, larissa.walter@fribis.uni-freiburg.de

6:00-7:30 PM (3083)

Improving Sound Source Localization: the Effect of Money. JONATHAN CONRADY, *University of South Carolina*, JESSICA GREEN, *University of South Carolina* — Accurately localizing sounds in the environment is difficult for the human auditory system. Existing evidence indicates that sound processing can be enhanced by rewards, but less is known about whether this applies to localizing sources of tones in space. Here, a two-hemifield (+/- 45 degrees), horizontal sound array was constructed to manipulate the onset location of tones via amplitude panning. In each hemifield, tones were projected from one of four fixed locations. Correct localizations (correct mouse clicks in the corresponding, "virtual" location) in one hemifield resulted in \$0.05 (reward), and no reward in the other hemifield—a within-design, counterbalanced for each of the 34 participants. The results showed significantly higher sound source localization accuracy for rewarded compared to unrewarded hemifields. Reaction time was significantly slower for rewarded hemifields, indicating additional cognitive processing to increase the likelihood of obtaining the reward. Altogether, these findings suggest that rewards may improve sound localization.

Email: Jonathan Conrady, jconrady@email.sc.edu

6:00-7:30 PM (3084)

Incentivizing Accuracy-Related Motivations Using Myside Bias. AUSTIN L. KATZ, *University of South Florida*, SANDRA L. SCHNEIDER, *University of South Florida* — When viewing information online, myside biases can cause news to be processed based on consistency with beliefs rather than accuracy of content. Adding an expert fact check may increase the salience of accuracy-related motivations. We test whether attention to the fact check may be enhanced when the expert is associated with a favored political affiliation. In our study, hypothetical news headlines were presented with or without an expert fact check wherein the expert's political affiliation was identified. We test how

expectations about likelihood to read the news and expected accuracy of content may differ in response to the same news headlines with no fact check versus a high or low fact-check judgment from a favored fact-check expert group. Compared to news without expert fact judgments, we predict news judged by experts as high fact will be rated more positively and news judged as low fact will be rated less positively. Based on myside bias, we also predict that the effect of expert fact judgments will be stronger when the experts have a favored versus unfavored political affiliation. If the fact-check system is valid, this pattern of results may suggest a means of increasing consumption of accurate information.

Email: Austin Katz, austinkatz@usf.edu

6:00-7:30 PM (3085)

Investigating the Cost of Changes in Cognitive Effort Intensity. NATHAN K. MATHEWS, *McGill University*, ELIANA VASSENA, *Donders Institute for Brain, Cognition and Behaviour, Radboud University Medical Center*, SENNE BRAEM, *Ghent University*, ROSS OTTO, *McGill University* — We often adapt our mental effort to fit the needs of the situation at hand. Yet, while contemporary models of cost-benefit effort valuation assume that engagement of cognitive effort incurs a cost, it is unclear whether changes between effort intensity levels are also experienced as costly. To address this question, we conducted an experiment investigating the potential cognitive cost of changing effort intensity. In this study (N=75), participants engaged in a task-switching paradigm with two manipulations, incentive; high and low, and block length; short and long trial blocks. To investigate modulations in effort intensity, we examined differences in effort expenditure when participants transitioned from varying blocks. We found smaller changes in RT task switch cost, where lower costs suggest greater cognitive effort, when individuals transitioned from short than long blocks. In other words, within such transitions, participants exerted similar levels of mental effort, implying the occurrence of cognitive inertia and suggesting a possible reticence to switch effort intensity states. Thus, changes in effort intensity levels may be considered costly when individuals arrive from short, rather than longer effort-inducing periods.

Email: Nathan Mathews, nathan.mathews@mail.mcgill.ca

6:00-7:30 PM (3086)

Spatially Extended Instrumental Responses Are Organized in Functional Bouts. MATTHEW GILDEA, *Arizona State University*, FEDERICO SANABIRIA, *Arizona State University*, ADELINE HIBSHMAN, *Arizona State University*, BRISSA GUTIERREZ, *Arizona State University* — Operant behavior is typically organized in bouts that may be used to evaluate the underlying motivation of an animal. Such bouts may emerge, however, from the inherent proximity of the operant after each response. To test this proximity hypothesis, two-response sequences were intermittently reinforced: either pressing one lever twice (manipulandum proximal to response termination) or pressing each of two levers, located on either side of an operant chamber, once (manipulandum distal to response termination). Following stable behavior, both response types were extinguished. Rats produced bouts under both sequences. Response sequence affected both bout-initiation and within-bout response rates. Additionally, extinction was shown to progressively decrease bout-initiation rate for both response sequences. These findings rule out the proximity hypothesis and suggest that the functional analysis of response bouts is applicable to response sequences and for evaluating motivation for reinforcers.

Email: Matthew Gildea, mgildea@asu.edu

6:00-7:30 PM (3087)

Desirability Biases Perceptual Decisions in the Aversive Domain. HAENA KIM, *The University of Chicago*, ALICIA LIU, *The University of Chicago*, YUAN CHANG LEONG, *The University of Chicago* — People's perception often deviates from objective reality. When presented with ambiguous images, observers are biased to report seeing images associated with rewards. One explanation for this is that perceptual decisions are biased towards options associated with desirable outcomes. An alternative explanation is that they are biased towards options associated with motivationally salient outcomes, regardless of desirability. As stimuli associated rewards are both desirable and motivationally salient, discerning between these explanations is challenging. Here, we combined psychophysics and computational modelling to separate them in an aversive context involving financial loss. Participants categorised visual stimuli into one of two categories, with one category associated with a large loss. Decisions were biased away from loss-associated stimuli. Drift diffusion

model analyses attributed such bias to a shift in the starting point of evidence accumulation, effectively requiring more evidence for loss-associated decisions. This bias was stronger in participants with higher punishment sensitivity. Together, the results highlight the importance of desirability in modulating perceptual decisions.

Email: Haena Kim, kimhannah@uchicago.edu

6:00-7:30 PM (3088)

Pilot Evidence Supporting Temporal Discounting and Reward Learning as Predictors for Reduction of Cognitive Restraint Symptom in Eating Disorders. YIYANG CHEN, *University of Kansas*, KELSIE FORBUSH, *University of Kansas*, TIMOTHY PLESKAC, *Indiana University Bloomington*, TERA FAZZINO, *University of Kansas*, RICHARD YI, *University of Kansas* — Cognitive-behavior therapy (CBT) for eating disorders (EDs) are effective for only 40%-60% of patients. To date, no reliable predictors of treatment response to CBT interventions have been identified. We evaluated whether temporal discounting of reward and reward learning (adaptability to more rewarding behavioral patterns) predicted reductions in self-reported cognitive restraint (efforts to restrict food intake, regardless of amount consumed) during CBT treatment. Participants (N=30) were enrolled in an 11-week CBT treatment and completed measures of temporal discounting, reward learning, and cognitive restraint at baseline, Week 4, and end-of-treatment (EOT). Temporal discounting increased and cognitive restraint decreased during the first four treatment weeks, and temporal discounting and reward learning at baseline predicted reductions in cognitive restraint ($R^2=0.55$). After Week 4, reductions in cognitive restraint varied for each individual, and individual-level variance was predicted by temporal discounting and reward learning at Week 4 ($R^2=0.79$). Results provided pilot evidence that temporal discounting and reward learning may serve as cognitive predictors of treatment response to CBT interventions for EDs.

Email: Yiyang Chen, chenyiyang@ku.edu

6:00-7:30 PM (3089)

Always On, Always There: The Hidden Stress of Screen Time. MONSON VARGHESE, *St. John's University*, DANA CHESNEY, *St. John's University* — Over the past few decades, screens have become

ubiquitous in everyday life. Well over 90% of young adults in the United States now own a smart phone. Unfortunately, this constant connectivity might also be a source of stress. Indeed, neologisms describing mentally stressful online activity such as “doom-scrolling” have become part of common parlance. This study aimed to investigate the connection between screen time and self-reported stress levels among undergraduate students. We surveyed 50 undergraduate students (age M=19.78, SD=1.33) of St. John's University, New York. Students self-reported their daily screen time, and completed the PSS-10 stress scale. Mean daily screen time was 7h 32 min, (SD=3h, 51 min), mean PSS-10 score was 21.94 (SD=5.52). There was a significant, medium sized correlation between self-reported screen time and stress ($r(48)=0.3839$, $p=0.006$). These results are in line with prior findings indicating that screens may be a source of stress. Further research is needed to investigate the specifics of this connection.

Email: Monson Varghese, monsonkv1@gmail.com

6:00-7:30 PM (3090)

Cross-Cultural Comparison of Age Differences in the Neural Responses to Retrieval of False vs. True Memories. NICOLETTE BARBER, *Brandeis University*, ISU CHO, *Sungkyunkwan University*, JOSHUA O.S. GOH, *National Taiwan University*, ANGELA GUTCHESS, *Brandeis University* — The prevalence of false memory increases with age, yet little is understood about cultural influences. This study investigates the neural responses to false memories for similar lures vs. true memories for old items across younger and older American and Taiwanese adults. Based on prior literature, we focused on a medial temporal lobe (MTL) region encompassing bilateral hippocampal, parahippocampal, and fusiform regions. Behaviorally, older adults made more false alarms than younger adults. However, there was an increase in false memory for similar lures in older Americans compared to older Taiwanese. Younger Americans activated MTL regions more for false than true memories, whereas older Americans engaged the same cluster more for true than false memories. By contrast, older Taiwanese activated MTL regions more for false memories, and younger Taiwanese more for true memories. Age differences in activity for Americans tended to be larger than for Taiwanese, consistent with the behavioral memory data. These results indicate differences in false memory that may reflect what is culturally salient in memory.



2024 ABSTRACTS

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Email: Nicolette Barber, nicolettebarber@brandeis.edu

6:00-7:30 PM (3091)

Decoding Ambiguity: The Role of Collectivism in Meaning-Making. AMABEL Y. JEON, *University of Southern California*, DAPHNA OYSERMAN, *University of Southern California* — Collectivists focus on relational explanations in understanding ambiguous situations and, therefore, are more likely to engage in a meaning-making process. In five studies ($N=1528$, one preregistered), we investigated potential mechanisms behind this meaning-making process by 1) replicating the collectivism-to-meaning-making relationship, 2) testing whether the motivation to seek meaning is an active ingredient, and 3) exploring whether there is evidence for deeper processing of the message and the communicator. Undergraduates saw and rated the meaningfulness of each metaphor-like message ostensibly communicated by a member from an ingroup (their school) or an outgroup (their rival school), with an instruction to find meaning or accuracy. After the rating task, they completed a surprise memory task. Collectivism was associated with finding more meaning in ambiguous messages (Studies 1-5), potentially driven by the motivation to find meaning (Studies 2-4). We saw some evidence for deeper processing (Studies 1-5) but no time differences in deliberating ambiguous messages (Study 4). Our findings highlight the role of collectivism in finding meaning in ambiguity, shedding light on the underlying mechanisms driving this process.

Email: Amabel Jeon, youngbin@usc.edu

6:00-7:30 PM (3092)

From Facts to Feelings: the Evolution of Truth in Political Discourse and its Implications for Democracy. KIIA J. A. HUTTUNEN, *University of Bristol*, STEPHAN LEWANDOWSKY, *University of Bristol* — The concepts of truth and honesty have undergone significant changes in recent decades. Parts of society increasingly favour sincere expression of personal beliefs over verifiable facts. This trend has been accompanied by increasing norm violations by political elites which have been identified as a significant contributor to democratic backsliding, highlighting the need for a thorough examination of the nexus between norm violations and honesty perceptions. We present a series of studies that examined the conditions under which people acquiesce to democratic norm violations and politicians' dishonesty. We find that when

participants are asked to take a perspective of honesty that emphasises sincerity over accuracy, which we call "belief-speaking", they are more willing to accept norm violations by politicians. When a fictitious politician is presented as telling untruths, tolerance of norm violations is reduced compared to when the politician is presented as truthful. The findings highlight the need to develop a better understanding of how individuals interpret and respond to political leaders' behaviours, especially within the evolving landscape of truth perception and the ensuing threats to democratic stability.

Email: Kiia Huttunen, kii.a.huttunen@bristol.ac.uk

6:00-7:30 PM (3093)

Helpful or Harmful? The Effect of a Diagnostic Label and its Later Retraction on Person Judgements. AMY J. MICKELBERG, *The University of Western Australia*, NICOLAS FAY, *The University of Western Australia*, ULLRICH ECKER, *The University of Western Australia*, BRADLEY WALKER, *The University of Western Australia* — Diagnostic labels for mental health conditions can inadvertently reinforce harmful stereotypes and exacerbate stigma. This registered report examined the impact of a diagnostic label, and their subsequent retraction, on person judgements. Participants ($N=560$) read a vignette about a hospital patient who was either diagnosed with schizophrenia, diagnosed with major depressive disorder, or was not diagnosed with a mental health condition. The diagnostic labels were later retracted strongly, retracted weakly, or not retracted. Participants completed several stigma measures (desired social distance, perceived dangerous and unpredictability), plus several inferential-reasoning measures that tested their reliance on the diagnostic label. As predicted, each mental health diagnosis elicited stigma and influenced inferential reasoning. This effect was stronger for the schizophrenia diagnosis compared to the major depressive disorder diagnosis. Importantly, the diagnostic label continued to influence person judgements after a clear retraction (strong or weak), highlighting the limitations of corrections in reducing reliance on person-related misinformation and mental health stigma.

Email: Amy Mickelberg, amy.mickelberg@research.uwa.edu.au

6:00-7:30 PM (3094)

Reshaping the Past by Reshaping the Future: Network Science Approaches to Collective

Temporal Thought and Generational Change in China. ZIZHAN YAO, *University of California, Santa Cruz*, JEREMY K. YAMASHIRO, *University of California, Santa Cruz*, KRISTI S. MULTHAUP, *Davidson College*, PHIA S. SALTER, *Davidson College* — Collective temporal thought (CTT) refers to a group's recall and foresight of public events, mediated by cultural products and institutional ecologies of memory. We used network science to explore three questions: a) Are there clear landmark events in Chinese CTT?; b) do they align with Chinese historiographical narratives?; and c) are there generational differences in these patterns? Younger (18-39 yrs) and older (60+ yrs) Mainland Chinese participants (N=234) recalled past normative events and imagined future events, which were transformed into networks with nodes as events and edges as co-occurrences. Findings include: a) Chinese memory centralized around the anti-Japanese War, Nanjing Massacre, and Founding of PRC, with "the return of Taiwan" central in future thinking; b) CTT aligned with recent historiography, highlighting resistance against Japan and promotion of reunification with Taiwan; and c) logistic regression showed generational differences, with the aforementioned narrative gradually replacing older ones.

Email: Zizhan Yao, zyao29@ucsc.edu

6:00-7:30 PM (3095)

The Cognitive Processes Underlying Stereotype Threat in Gender Stereotype Domains: A Diffusion Model Analysis. KIM KELLER, *Heidelberg University*, MISCHA VON KRAUSE, *Heidelberg University*, ANDREAS VOSS, *Heidelberg University* — Stereotypes contribute to performance differences because negative stereotypes can be perceived as threatening, especially the threat of being judged negatively or inadvertently confirming the stereotypes. The primary goal of this study was to determine which cognitive processes underlie stereotype threat as it affects women in different domains. To the best of our knowledge, no study has examined stereotype threat as a cognitive process using diffusion modeling and reaction times. Four hundred men and 400 women were asked to complete a series of trials, either a mean estimation task or an emotion recognition task. Half of the group was told that we were interested in their perceptual abilities. The other half was told that we were testing their mathematical or their emotion recognition abilities and that we were interested in gender

differences, in order to induce stereotype threat. A diffusion model analysis and group difference analyses revealed higher thresholds for women in the stereotype threat condition, suggesting more liberal decision criteria and higher motivation. This is an important step in explaining stereotype threat and preventing the impact of negative stereotypes on marginalized groups and women in particular.

Email: Kim Keller, kim.keller@psychologie.uni-heidelberg.de

6:00-7:30 PM (3096)

The Culturally Sensitive Alternative Uses Test.

VISHEETA CHANDOLIA, *Texas A&M University*, STEVEN M. SMITH, *Texas A&M University*, ANIKA SANSGIRY, *Texas A&M University* — Our research concerns bias in cognitive testing, specifically, creative cognition. We developed the Culturally Sensitive Alternative Uses Test (CS-AUT), designed to detect cultural differences in response patterns. This study assesses the impact of culture and domain knowledge on generative ideation. Participants from two different cultures may have higher domain knowledge for their own culture and lower domain knowledge of the other culture. We hypothesized that people would respond with higher fluency, but lower creativity to items in their own domain. Participants identified whether they belonged primarily to a rural, urban, or suburban background, then listed responses to 6 ad hoc category generation cues and 6 alternative uses prompts for 3-minutes each. Responses were scored for fluency, flexibility, novelty, and creativity. Our findings demonstrate effects of culture and domain knowledge on creative generative ideation.

Email: Visheeta Chandolia, visheeta@tamu.edu

6:00-7:30 PM (3097)

The Roles of First- and Second-Order Co-Occurrence in Implicit Biases Across Natural Language Corpora. MOLLY APSEL, *Indiana University*, MICHAEL JONES, *Indiana University* —

Researchers have demonstrated that distributional semantic models (DSMs) develop associations that mirror human implicit biases after being trained on natural language data, suggesting that the statistical regularities observed in the language environment contribute to the acquisition of these biases. Caliskan et al. (2017) measured biases documented by past psychological experiments in a pretrained GloVe model using the Word Embedding Association Test, a metric

they developed to be analogous to the Implicit Association Test. DSMs like GloVe use distributional statistics and machine learning to infer the relationships between words from both direct and indirect co-occurrence patterns. To pinpoint the source of social biases in language, we used Caliskan et al.'s methods and stimuli to test whether the same associations can be captured by an algorithm measuring only first-order (direct) associations or only second-order (indirect) associations. Nearly all tests showed a significant effect for either first-order bias, second-order bias, or both, but the type of association present varied by stereotype. The role of first- and second-order statistics in transmitting a bias also seems to depend on the linguistic domain.

Email: Molly Apsel, mapsel@iu.edu

6:00-7:30 PM (3098)

Be Successful or Don't Bother: Limits to Voice

Assistants' Grounding. ELISE DUFFAU, *University of California, Santa Cruz*, JEAN E. FOX TREE, *University of California, Santa Cruz* — We investigated how people perceive the use of repair by a voice assistant (VA) in response to a loss of grounding. Participants listened to 10 short mini-lectures spoken by a VA and answered a question after each lecture. Lectures were difficult and encouraged signals of confusion (e.g., "Huh?," "What," "Um," long pause). In a WOz design, the VA attempted to clarify the confusion by using a repair (repeat, rephrase, or topic shift) when the participant produced a signal of confusion. Participants rated their experiences with the voice assistant. We observed no differences in how positively voice assistants were assessed depending on their grounding attempts (0 repairs, 1-3 repairs, 4+ repairs). We also observed no differences in participants' perceptions of likeability, intelligence, and creepiness. Attempting to create clarity to be seen as a contributor to the success of the conversation did not positively increase perceptions of a technological conversation partner.

Email: Elise Duffau, cduffau@ucsc.edu

6:00-7:30 PM (3099)

Constructing a Discourse Model Across

Modalities in Bilinguals. DIANA URIBE, *The University of Texas at El Paso*, ANA I. SCHWARTZ, *The University of Texas at El Paso* — Theories of discourse representation are based on studies examining the recall of written texts. A situation model of a

discourse involves the integration of information across modalities. We investigated whether discourse integration is affected by a match in modality. To examine the potential role of language proficiency in cross-modality integration we recruited Spanish-English bilinguals and compared performance across the dominant (L1) and non-dominant (L2) languages. Participants read and/or listened to expository passages that described two fictitious science facts. Each passage was divided into two halves, modality (text, audio) and language of each half was manipulated using a fully-crossed design. We examined free recall and responses to multiple-choice questions. L2 performance was negatively affected by a mismatch in modality, particularly when the first half of the passage was audio and the second half was written. Results will be discussed in terms of the encoding specificity principle and its connection to multimedia in educational contexts.

Email: Diana Uribe, duribe@miners.utep.edu

6:00-7:30 PM (3100)

Does the Reverse Cohesion Effect Extend from

Text to Python Code? RINA HARSCH, *University of Minnesota*, JEFFREY K. BYE, *California State University, Dominguez Hills*, YE WON KANG, *University of Minnesota*, PRITI OLI, *University of Memphis*, RABIN BANJADE, *University of Memphis*, ANDREW A. TAWFIK, *University of Memphis*, VASILE RUS, *University of Memphis*, PANAYIOTA KENDEOU, *University of Minnesota* — Text comprehension research finds a reverse cohesion effect, in which a text's cohesion—the extent to which the text's relations, concepts, and ideas are made explicit—and a reader's expertise in the topic of the text interact to predict their comprehension of that text. Novices' comprehension improves when the texts are more cohesive, while experts' comprehension benefits from less cohesive texts. In this experiment, we attempted to extend the reverse cohesion effect to code stimuli. We manipulated the overall cohesion of short Python scripts using factors known to affect code readability (e.g., natural language identifiers) and factors not yet tested in coding contexts (e.g., argument overlap). Participants who varied in coding experience read the scripts and answered comprehension questions. We hypothesized a reverse cohesion effect for code comprehension accuracy. Results of this experiment and their implications for our understanding of code comprehension and potential educational applications will be discussed.

Email: Rina Harsch, harsch@umn.edu

6:00-7:30 PM (3101)

Emojis Facilitate Inference Comprehension

During Reading. BONNIE STERN, *University at Albany, SUNY*, ANDRIANA L. CHRISTOFALOS, *University at Albany, SUNY*, HEATHER SHERIDAN, *University at Albany, SUNY* — When text meanings are ambiguous or unclear, emojis can provide additional visual cues to support reading. However, it remains unclear how emojis impact comprehension at the word-level and deeper inference-level. Participants in the present study read passages (e.g., Brad's doctor stressed that all snacks between meals should be low fat and rich in vitamins. He took this advice and ordered some crunchy slices instead of the fries that he usually gets.) that either ended in an emoji or no emoji. The presence of the emojis (compared to no emojis) led to higher comprehension accuracy. Also, we observed that emojis that directly mapped onto a word's meaning (e.g., the "fries emoji") facilitated comprehension of the surface form, and emojis related to inferred information in the passage (e.g., the "apple emoji") facilitated the comprehension of inferences. These results indicate that emojis can bridge comprehension gaps by providing salient visual cues that support higher-level reading comprehension.

Email: Bonnie Stern, bcstern@albany.edu

6:00-7:30 PM (3102)

Impacts of Topic Shifts on Language Production in Healthy Adults and Adults with Traumatic Brain Injury.

KELLY MARSHALL, *University of Maryland*, AVERY VESS, *University of Maryland*, JARED M. NOVICK, *University of Maryland*, L. ROBERT SLEVC, *University of Maryland* — Language production studies often focus on word- to sentence-level processes, but less is known about the role of higher-level discourse structure. We analyzed 15-minute samples of unstructured conversation from the TBIBank database. Participants were healthy adults or individuals with traumatic brain injury (TBI; N=20/group), who have deficits in following conversation topics. We identified topic boundaries and analyzed responses following new topics ("shift") and continuing topics ("no shift") to measure productivity (words/utterance), syntactic complexity (verbs/utterance), semantic complexity (idea density), fluency (filled, unfilled pauses/syllable), and revision (repetitions,

rephrasings/utterance). Following topic shifts, responses were shorter and simpler (fewer words, verbs, repetition/rephrasing instances) but included more filled pauses, reflecting increased planning difficulty. There were no group differences. This suggests that shifting discourse topics exerts costs on sentence-level production (e.g., grammatical encoding), but not semantic-level message encoding processes, and also suggests that discourse topics are a relevant consideration for sentence- and word-level production.

Email: Kelly Marshall, ksharer@umd.edu

6:00-7:30 PM (3103)

Investigating Phenomenological Experiences of Reading in First Versus Second Language.

PÜREN ÖNCEL, *University of Minnesota Twin Cities*, VISHAL KUVAR, *University of Minnesota*, LUPITA MEDINA, *University of Minnesota Twin Cities*, CAITLIN MILLS, *University of Minnesota*, LAURA ALLEN, *University of Minnesota* — Individuals exhibit significant variability in how their engagement with thoughts, particularly in visual imagery and inner speech experiences. Some people report having rich and vivid visual imagery, while others report a complete absence. Additionally, preliminary research suggest that visual imagery differs across first language and second language contexts. However, little is known about how these thoughts occur in naturalistic reading conditions and relates to comprehension. Our study investigates how thought characteristics such as visual imagery, verbal thinking, task-unrelated thoughts (TUT), and comprehension vary between reading in first and second languages. Participants fluent in both English and Spanish will read texts in both languages, periodically responding to thought probes. This presentation will include analyses on how participants' thoughts change across language contexts and relates to comprehension. We will further examine the consistency of results between English and Spanish reading conditions.

Email: Püren Oncel, puren.oncel@gmail.com

6:00-7:30 PM (3104)

Linguistic Alignment in Task-Oriented Dialogue.

DOUGLAS J. GETTY, *University of Pittsburgh*, SARAH BIBYK, *Air Force Research Laboratory* — Dialogue is joint language activity that requires tight coordination between multiple parties. Recent work on dialogue—and interpersonal coordination broadly—has investigated how alignment (the tendency to have shared

linguistic patterns) and complementarity (the tendency to contribute unique linguistic patterns) may both characterize successful coordination. We investigate these two phenomena in two corpora containing task-oriented dialogue: the AFRL Maze Task corpus and the HCRC Map Task corpus. Investigating lexical and syntactic n-grams, we find broad similarity across the two corpora, with lexical alignment occurring above chance and syntactic alignment occurring near-chance. We also find syntactic anti-alignment (below chance alignment that may indicate complementarity) that is conditional on the speaker role in the Map corpus. This anti-alignment stands in contrast to the findings of Reitter et al. (2014), who found in the Map corpus that task-oriented dialogue was characterized by syntactic alignment (albeit with a decay-based measure of syntactic repetition). We will discuss these findings with respect to models of dialogue, including the interactive alignment model and the dynamical systems framework.

Email: Douglas Getty, doug.getty@pitt.edu

6:00-7:30 PM (3105)

Noise-Induced Adjustments in Turn-Taking During Task-Based Dialogue. CATHERINE T. PHAM, *Purdue University & The Pennsylvania State University*, NAVIN VISWANATHAN, *The Pennsylvania State University*, SUSANNE BROUWER, *Radboud University* — Language users often contend with less-than-ideal communicative conditions. One aspect of production impacted by noise is turn-taking. Prior work has reported that floor-transfer offsets (FTO) broaden and shift to the right in noise. This study compares native and nonnative interactions across different speaking conditions to explore how turn-taking dynamics change in response to the challenges of conversing in noise. Pairs of participants completed a Diapix task in English, collaborating to identify differences between two images in silence and three different background babble conditions. Since our target language is English, we predict English babble will be the most difficult condition, eliciting the greatest adjustments in turn-taking, followed by Dutch and Mandarin, consistent with the target-masker similarity hypothesis. We also predict nonnative pairs will exhibit more difficulty than native pairs. Increased communicative difficulty should be reflected by a broader FTO distribution and increased median FTO. Other aspects of turn-taking (e.g., utterance duration and overlap duration) are also compared across conditions. This study explores how background speech

impacts conversational adjustments at the discourse level.

Email: Catherine Pham, ctp1030@gmail.com

6:00-7:30 PM (3106)

The Joint Effects of Source Credibility and Graph Presence on Communicating Climate Science. VICTORIA JOHNSON, *University of Minnesota*, PAULINE FRICK, *Leibniz-Institut für Wissensmedien*, PANAYIOTA KENDEOU, *University of Minnesota* — When communicating facts about climate science, several variables might influence whether people believe the presented information, including the use of graphs and source credibility. However, little work has systematically examined the combined effects of these factors. Therefore, we examined how the credibility of a source and the presence (or not) of a scientific graph influence belief in climate change claims within social media posts, and the role of trust in science/scientists as a moderator. Overall, while more credible sources led to higher belief in climate change claims, the presence of a scientific graph did not lead to higher belief in claims. To the contrary, scientific graphs even reduced the belief in these claims. However, when accounting for participants' overall trust in science and scientists, the negative effect of scientific graphs vanished. These findings suggest that adding graphs to science communication on social media with the goal of increasing belief in the information may not have the intended effect, and focusing on building source credibility and trust in science may be more fruitful for increasing belief in climate science.

Email: Victoria Johnson, joh19233@umn.edu

6:00-7:30 PM (3107)

Bilingual Experience Modulates Relationship Between Aperiodic Activity and N400 Amplitude During Lexical Prediction in Sentence Processing. KATHERINE SENDEK, *University of California, Davis*, TAMARA Y. SWAAB, *University of California, Davis* — It is debated if and how bilinguals predict in their L2, with current theories proposing differences between mono- and bilinguals in L2 being due to either L2-specific differences in experience or general bilingual effects. In the present study we examined effects of language experience in Mandarin-English bilinguals using EEG during reading. The goals of the study were to isolate the potential impact of

bilingual experience on prediction and examine if neural differences modulate predictive processing. We measured the amplitude of the N400 to critical words that were either highly predictable or not in the sentence context, and the slope of the aperiodic activity prior to the onset of the critical words. Preliminary analysis showed a significant N400 effect of cloze probability for both groups, supporting the presence of bilingual prediction. A significantly steeper aperiodic slope for the bilingual groups relative to the monolingual group was also found, suggesting increased connective efficiency for bilinguals. Finally, aperiodic slope was only a significant predictor of the size of the N400 effect for the monolingual group, suggesting that bilingual neural processing mechanisms may differ from monolinguals.

Email: Katherine Sendek, ksendek@ucdavis.edu

6:00-7:30 PM (3108)

Meaning in the N400: What Can Distributional Language Models Tell Us? CAROLIN DUDSCHIG, *Eberhard Karls Universität Tübingen*, FRITZ GÜNTHER, *Humboldt-Universität zu Berlin*, IAN GRANT MACKENZIE, *Eberhard Karls Universität Tübingen* — The N400 is a well-established ERP component associated with meaning comprehension. However, it is still debated what exact processes are reflected in the N400. Accounts range from (a) integration views—suggesting that the N400 reflects sentence integration processes—to (b) the lexical view—suggesting that the N400 is non-combinatorial in nature and reflects long-term memory associations, and (c) dominant prediction-based accounts focusing on the predictability of the critical word in a certain context. Developments in distributional models of language have opened up new avenues for investigating what processes are reflected in the N400. In this study, we examine the success of count-based models of word association (e.g., LSA) versus prediction-based learning models (e.g., word2vec) in explaining the N400 amplitude. The results indicate that prediction-based models outperform count-based models in explaining the N400. Overall, this presentation aims to bridge the gap between traditional N400 research and the emerging field of natural language modelling.

Email: Carolin Dudschg, carolin.dudschg@uni-tuebingen.de

6:00-7:30 PM (3109)

Unraveling the Lullabies of Learning: Exploring the Impact of Infant-Directed Speech on Adult

Word Acquisition. STEPHANIE LOPEZ, *Louisiana State University*, JANET L. MCDONALD, *Louisiana State University* — Children learn language more effectively from infant-directed speech (IDS) than adult-directed speech (ADS). The current study examines how two properties of IDS—pitch frequency and pitch variability—affected vocabulary learning in English-speaking adults. Participants hear nonsense carrier phrases in either IDS or ADS, ending with a target nonword that varies in mean pitch (normal, high) crossed with pitch variability (normal, high) while viewing novel objects obtained from the NOUN database. Participants complete both an immediate and delayed forced choice recognition test to see if they successfully mapped the target nonword to the correct object. We hypothesize that if IDS is effective for word learning because of the combination of mean pitch and pitch variability, test performance will be best in trials containing target words with high mean pitch and high pitch variability, regardless of the speech style of the carrier phrase. On the other hand, if the contrast between the carrier phrase and the target nonword is what aids language acquisition, performance will be greater in trials with high pitch variability where the mean pitch of the target nonwords differs from the mean pitch of the carrier phrase.

Email: Stephanie Lopez, slope23@lsu.edu

6:00-7:30 PM (3110)

Adult Processing of Child-Produced Speech With and Without Background Noise. MARZIEH SAMIMIFAR, *University at Buffalo, SUNY*, FEDERICA BULGARELLI, *University at Buffalo, SUNY* — Processing speech that is non-canonical (i.e., child-produced speech) and/or presented in background noise can pose challenges for listeners. We investigated how listening to child-produced speech affects young adults' word recognition under varying noise conditions. Participants (n=120) completed a two-picture eye-tracking task in one of three conditions: no background noise, pink background noise, and real-world background noise from LENA recordings. Participants heard a child or adult (Speaker) direct attention to a generic (e.g., keys) or child-specific (e.g., potty) item (ItemType). We examined the effect of Speaker and ItemType on participants' looking time. In silence, accuracy was high, but participants were more accurate for adult speech ($p=.013$) and generic items ($p=.006$). Both pink noise ($p<.001$) and real-world noise ($p<.001$) increased task difficulty, adding real-world noise

removed the effects of Speaker and ItemType, suggesting participants use background noise to predict who will speak and what they might speak about.

Email: Marzieh Samimifar, msamimif@buffalo.edu

6:00-7:30 PM (3111)

Alien vs. Book: Language Learning Is Facilitated in the Context of Humanoid Sources, as Evidenced by Event-Related Potentials.

MADELEINE WADE, *University of Colorado, Boulder*, ANGELA MONTIEL, *University of Colorado, Boulder*, ALBERT E. KIM, *University of Colorado, Boulder* — We investigated whether information about language producers guides comprehenders' exposure-driven contextual language learning using scalp EEG. In an exposure phase, subjects read 140 English sentences, half with standard American English grammar (Standard SG) and half with a novel variant grammar (NG). NG and SG sentences were always "produced" by one of two "sources" (each source produced one grammar) allowing for learning about sources. The sources were humanoids (aliens) or objects (books) (between subjects). A subsequent test phase presented both NG and SG sentences produced by one source which had been either the NG or SG source during exposure (between subjects). During exposure, NG forms elicited a P600 ERP effect (NG vs. SG), which diminished across trials. During the test phase, for those who saw humanoid sources, NG sentences produced by NG sources failed to elicit P600 effects during the test phase. For those who saw object sources, regardless of the source's grammar during exposure, NG sentences always elicited P600 effects. Thus, subjects learned that humanoid sources, but not object sources, predicted NG forms. Language users may learn novel linguistic patterns more effectively when attributable to a human source.

Email: Madeleine Wade, madeleine.wade@colorado.edu

6:00-7:30 PM (3112)

Auditory Statistical Learning in Varied Temporal Contexts.

RACHEL NELSON, *Binghamton University, SUNY*, SUNG-JOO LIM, *Binghamton University, SUNY* — Statistical learning (SL), the ability to detect regularities in the environment, is known to play an essential role in language learning, such as discovering linguistic patterns from continuous input. However, since SL has been primarily observed with temporally regular syllable sequences, it is unclear whether learning can

occur even with temporal variations in the input. Here, we tested whether the extent of SL is affected by the predictability of temporal rhythms in syllable sequences. We exposed 42 adults to repeating trisyllabic pseudoword sequences, in which timing between syllables had distinct rhythmic structures (isochronous, simple and predictable, or complex and unpredictable) independent of word boundaries. We found that across all rhythmic structures, listeners were equally sensitive to the transitional probability or syllable sequences. In addition, individuals' sensitivities to statistical structure were related to one's rhythmic processing abilities even after controlling for verbal working memory. Our results suggest that SL is robust even with temporal variability in speech input, and that sensorimotor synchronization contributes to statistical learning.

Email: Rachel Nelson, rnelson4@binghamton.edu

6:00-7:30 PM (3113)

Decoding Dialect Density with Whisper AI.

MATHEW CIEŚLA, *Northumbria University*, HAZEL I. BLYTHE, *Northumbria University*, VERA KEMPE, *Abertay University*, MICHAEL GRUGAN, *Northumbria University*, ANDRIY MYACHYKOV, *Northumbria University*, GLENN WILLIAMS, *Northumbria University* — The impact of linguistic variation on language acquisition and processing is a growing area of interest. Specifically, the effects of a speaker's dialect density are particularly important. Dialect density is defined as the extent of dialect-specific feature expression over and above the socially sanctioned linguistic standard. However, existing methods for estimating dialect density, such as phonetic and morphosyntactic feature counting (Brown et al., 2015, Charity et al., 2004) or questionnaires (LSBQ; Anderson et al., 2018, Kubota et al., 2023), are time-and resource-intensive, limiting research potential. This necessitates the need for a quick, easy, and reliable method of dialect density assessment. Whisper AI (Radford et al., 2022) is an automatic speech recognition and transcription model that provides transcription confidence ratings (TCR; Ardila et al., 2020). The model is trained on a large dataset of diverse audio input without dialect-specific tags; therefore, the AI lacks sensitivity to language variation, resulting in lower TCRs for higher dialect density. Our study aims to validate the use of Whisper TCRs as an estimate of dialect density by comparing its validity and reliability to existing methods.

Email: Mathew Cieśla, mat.ciesla@northumbria.ac.uk

6:00-7:30 PM (3114)

Evaluating Large Language Models (LLMs) Surprisal on Garden Path Ambiguity Difficulty in English and Mandarin.

ZEPING LIU, *Indiana University Bloomington*, CHIEN-JER CHARLES LIN, *Indiana University Bloomington*, NAZBANOU NOZARI, *Indiana University Bloomington* — Large language models (LLMs) are becoming increasingly capable of modeling key aspects in human sentence processing. Here, we examined how LLMs surprisal (the negative log probability of a word given previous context) captures processing difficulties in resolving temporarily ambiguous sentences in English and Mandarin. We used Transformer models, BERT and GPT, to derive surprisal values for critical word regions in three garden path sentences in English (Matrix Verb/Reduced Relative Clause, Noun Phrase/Sentential Complement, and Transitive/Intransitive) and one in Mandarin (Relative Clause/Complement Clause).

Surprisal values were then used to predict reading times from self-paced reading tasks. We found that surprisal is predictive of syntactic disambiguation difficulty in both English and Mandarin garden path sentences, with GPT outperforming BERT. Despite this success, surprisal did not accurately capture the magnitude of difficulty across sentence types, leaving open the question to what degree LLMs' processes mirror those of humans' sentence processing.

Email: Zeping Liu, zepliu@iu.edu

6:00-7:30 PM (3115)

Executive Function and Disfluency Production in Older Adults.

KATHRYN WALTERS, *The Pennsylvania State University*, JIE YAN, *The Pennsylvania State University*, MICHELE T. DIAZ, *The Pennsylvania State University* — Disfluencies in spontaneous speech (e.g., filled pauses, unfilled pauses, repetitions) have been associated with executive function (EF). Because cognitive performance has been shown to decline with age and speech disfluencies increase with age, we hypothesize that EF may mediate age-related increases in disfluencies. We used the AX-CPT task to examine proactive and reactive aspects of EF and relate these to language production in a speech elicitation task with older adults. Proactive control focuses on endogenous goal maintenance, while reactive control places more emphasis on exogenous stimuli. EF tendencies predicted disfluency production where

participants who relied more on reactive control tended to produce more disfluencies. Additionally, the group as a whole relied on reactive control, suggesting that older adults spent less time on speech preparation.

Email: Kathryn Walters, kbw5646@psu.edu

6:00-7:30 PM (3116)

Exploring the Impact of Dynamic Visual Environments in Virtual Reality.

NATASHA ALONSO-BERNAL, *Universidad Nebrija*, FRANCISCO ROCABADO, *Universidad Nebrija*, JON ANDONI DUÑABEITIA, *Universidad Nebrija* — Previous research aimed to understand cognitive processing in complex real-world situations. Recently studies have used virtual reality to replicate laboratory findings in word recognition and reading. In this project, we focused on dynamic, motion-based reading scenarios like reading while driving. Here we present a driving simulation experiment where participants performed a word identification and a naming task involving 400 high- and low-frequency words displayed on traffic panels. The simulated driving scenarios included sunny and rainy ambient conditions, making word visibility vary not only as a function of proximity to the target, but also of the meteorological situation. Results showed that weather conditions and word frequency influenced word identification in motion. Participants responded faster and more accurately to high-frequency words under sunny conditions. These findings illustrate that weather conditions significantly affect word recognition and naming over and above the lexical characteristics of the items. The results emphasize the importance of environmental factors in cognitive performance and their implications for traffic safety.

Email: Natasha Alonso-Bernal, naty.alonso.13@gmail.com

6:00-7:30 PM (3117)

Grounding Understanding in Noisy Communications.

SPENCER M. SEALS, *Air Force Research Laboratory Oak Ridge Institute for Science and Education*, SARAH BIBYK, *Air Force Research Laboratory* — Resilient communication is key to team success for both human-human teams and human-machine teams, particularly in environments with high amounts of noise. Traditional approaches to evaluating dialogue systems has focused on easily calculated metrics such as word error rate, consistent with traditional signal-in-noise based methods of analysis.

However, it is not clear how these metrics influence the pragmatic coordination behavior of human interlocutors. In this work, we investigate how dialogue system output influences the conversational grounding behavior of human interlocutors. Communication data were collected in a collaborative maze game intended to simulate communication between human users and an artificial intelligence dialogue system. We evaluate the relationship between properties of dialogue system output and variance in the conversational grounding acts that human interlocutors pose in response. Results suggest that a phoneme-based error rate inspired by the cognitive processes of humans explains more variance in conversational grounding behavior than traditional signal-based methods such as signal to noise ratio and word error rate.

Email: Spencer Seals, seals.25@wright.edu

6:00-7:30 PM (3118)

Individual Differences in Verbal Working Memory Impact Prediction Performance During Sentence Comprehension. YU LU, *Rice University*,

RANDI C. MARTIN , *Rice University*, SIMON FISCHER-BAUM, *Rice University* — Extensive research has shown that language comprehension involves predictive processing, but little work has explored the cognitive factors supporting prediction. Here we took an individual differences approach, investigating the role of verbal working memory (WM), as previous studies showed that semantic WM plays a critical role in sentence comprehension. Prediction performance was measured using a sentence completion task, where participants heard a sentence without its final word and produced the most appropriate single-word completion. The sentences varied in the amount of contextual information affecting prediction, including conditions with an irrelevant clause, which either intervened between or preceded clauses relevant to prediction. Participants' semantic and phonological WM were measured through multiple behavioral tasks. Main effects of sentence condition supported a role for WM. Multiple regression results showed a significant independent contribution of semantic WM, but not phonological WM in predicting performance on conditions with high relative to low WM demands.

Email: Yu Lu, y1206@rice.edu

6:00-7:30 PM (3119)

Investigating Rational Adaptation of World Versus Linguistic Knowledge During Comprehension in L1 English and L2 English Comprehenders. COLE CAUDLE, *University of Pittsburgh*, TESSA WARREN, *University of Pittsburgh*, MICHAEL WALSH DICKEY, *University of Pittsburgh & VA Pittsburgh Health Care* — This study explores whether L2 English (L2E)/less-proficient speakers rationally adapt by relying more on world knowledge than syntactic knowledge compared to L1 English (L1E)/more-proficient speakers to guide language comprehension. We tested 64 L1E and 62 L2E speakers who additionally completed the LexTale, the Author Recognition Task, and a language history questionnaire. We manipulated sentence reversibility (reversible vs. irreversible subjects/objects) and syntactic complexity (simple vs. complex sentences) and measured accuracy on multiple-choice comprehension questions,. To avoid ceiling effects, complex sentences ranged somewhat complex (passives) to extremely complex. Data collection is complete and analysis is ongoing. Critically, we predict a three-way interaction between reversibility, syntactic complexity, and speaker group/proficiency, with the impact of reversibility in complex sentences being larger for L2E/less-proficient speakers. We expect L2E speakers to exhibit lower accuracy in the complex-reversible condition compared to L1E speakers. This is because L1E speakers should have reliable access to syntactic structure, whereas L2E speakers must rely on world knowledge (reversibility) to interpret sentences.

Email: Cole Caudle, coc82@pitt.edu

6:00-7:30 PM (3120)

Moses Illusion, Fast and Slow. JÉRÉMIE BEUCLER, *LaPsyDE (UMR CNRS 8240 & Université Paris Cité)*, AIKATERINI VOUDOURI, *LaPsyDE (UMR CNRS 8240 & Université Paris Cité)*, WIM DE NEYS, *LaPsyDE (UMR CNRS 8240 & Université Paris Cité)* — When asked “How many animals of each kind did Moses take on the Ark?”, most people answer “Two,” not realizing that it was Noah who took the animals in the Ark. Traditional dual process accounts posit that incorrect reasoners are not sensitive to their error and that overcoming the illusion requires deliberate correction of an intuitive erroneous answer. We used a two-response paradigm in which participants had to give their initial answer under cognitive load and time

pressure. Next, participants could take all the time they wanted to deliberate and select a final answer. This enabled us to identify the intuitively generated response preceding the final, deliberate response. Our results show that participants do not necessarily need to deliberate to avoid the illusion and that incorrect respondents consistently display intuitive error sensitivity (as reflected in decreased confidence). Both reasoning performance and error sensitivity in the initial, intuitive stage tended to be driven by the semantic relatedness between the anomalous word (e.g., "Moses") and the undistorted word (e.g., "Noah"). This leads to a revised model where the response to semantic illusions depends on the interplay of both incorrect and correct intuitions.

Email: Jérémie Beucler, jeremie.beucler@gmail.com

6:00-7:30 PM (3121)

Multiparty Audience Design in Adults with Moderate-Severe Traumatic Brain Injury.

MELISSA J. EVANS, *Vanderbilt University*, SOPHIA KEKES-SZABO, *Vanderbilt University*, SHARICE CLOUGH, *Max Planck Institute for Psycholinguistics*, SARAH BROWN-SCHMIDT, *Vanderbilt University*, MELISSA DUFF, *Vanderbilt University* — A critical component of successful communication is audience design—tailoring your speech to the knowledge of the people you address (Clark & Murphy, 1983). A classic finding is the use of shorter, more definite, less disfluent utterances when speaking to groups of people who are more vs. less knowledgeable about the topic at hand (Yoon et al., 2019). We test the impact of moderate-severe traumatic brain injury (TBI) on this process. 30 adults with TBI and 30 matched non-brain-injured adults (NCs) described abstract images to pairs of addressees (A) who varied in their familiarity with the images. In both groups, image description length tracked with A knowledge, with the shortest descriptions when both were familiar, and the longest when neither was familiar. The TBI group showed significantly less discrimination between groups with 2 vs 1 knowledgeable As. Similar findings were observed for expression fluency and definiteness. We conclude that TBI impacts the ability to engage in audience design, consistent with patient reports that socially situated language use is a challenge.

Email: Melissa Evans, melissa.j.evans@vanderbilt.edu

6:00-7:30 PM (3122)

Analyzing the Relationship between Sequence Features and Cognitive Demand in the Corsi

Block Tapping Task. ZECHUN ZHAO, *Northeastern University*, FREYA JOESSEL, *University of Wisconsin-Madison*, SUSANNE M. JAEGGI, *Northeastern University*, AARON R. SEITZ, *Northeastern University*, C. SHAWN GREEN, *University of Wisconsin-Madison* — Visuospatial working memory (VSWM), which encompasses the ability to orient attention to, process, and retain information about spatial locations, plays a key role across the lifespan—from predicting early educational achievement, to workplace success, to independence in aging. As such, effective measurement of VSWM is of paramount importance. One commonly used task to measure VSWM is the Corsi Block Tapping Task, where participants first see a sequence of spatial locations and then are asked to replicate that sequence perfectly. Critically, although some approaches assume that all sequences of the same length are of equivalent difficulty, this is not remotely the case. From a purely measurement perspective, this is a threat to reliability; yet, it is also an opportunity to explore the nuances of human VSWM. Using both data- and theory-driven approaches, we explored relevant sequence features and their relationship with performance in a digital Corsi Block task. Interestingly, most simple characterizations (e.g. number of crossings) were not good predictors of difficulty. These results are consistent with theories describing VSWM as a dynamic process and may also intersect with literatures on intrinsic memorability of visual images.

Email: Zechun Zhao, candyzechun@gmail.com

6:00-7:30 PM (3123)

Conditioned Features Are Selectively Encoded into Working Memory.

NIYA YAN, *Texas A&M University*, RICHARD JIANG, *Texas A&M University*, ANGELLINA OCHOA, *Texas A&M University*, BRIAN A. ANDERSON, *Texas A&M University* — Previous studies have explored the effect of conditioning on working memory, but its impact on working memory encoding when people are not intentionally encoding their experience remains unclear. This study addresses this by using the attribute amnesia task, which involves a surprise test. Participants experiencing a color-reward association (reward conditioning group) and color-electric shock association (aversive conditioning group) were asked to report the location of a color-singleton letter. Surprisingly, when unexpectedly asked to identify the color-singleton letter rendered in the reward/shock-predicting color during the surprise trial, their

performance was no better than individuals who did not undergo conditioning (control group). Additionally, both conditioning groups showed lower accuracy in identifying the color-singleton in the trial immediately following the surprise trial, where the color-singleton was still presented in the conditioned color, compared to the control group. These findings suggest a limitation in the ability of learned stimulus-outcome associations to enhance working memory encoding. Moreover, encoding a conditioned feature may interfere with the encoding of other stimulus features.

Email: Niya Yan, yanniya@tamu.edu

6:00-7:30 PM (3124)

Decisions Bias Working Memory Precision for Facial Emotions. SEAN DAGEFORDE, *University of Notre Dame*, JAMES R. BROCKMOLE, *University of Notre Dame* — We investigated whether and how decisions about memoranda affect the precision with which they are represented in working memory. Morphed images of faces combined neutral and angry expressions in different relative proportions. In Experiment 1, participants viewed one face and had to decide if the depicted person looked threatening. Participants were then shown two faces, one slightly angrier and one slightly less angry than the judged face and indicated which one they thought was most like the face they saw. Faces judged as threatening were remembered as being angrier while faces judged as non-threatening were remembered as more neutral than they were. In Experiment 2, participants decided if the initial face was calm rather than threatening. Faces that were not considered calm were remembered as being angrier than they were. Experiment 3 returned to assessments of threat, but participants were given an audio cue with each face that indicated if the depicted face was threatening or not. Similar, but diminished, memory biases were observed. Thus, volitional decisions can bias memory precision, over and above that which can result from provided information.

Email: Sean Dageforde, sdagefor@nd.edu

6:00-7:30 PM (3125)

Differences in Visuospatial Working Memory Performance Using Spatial and Non-Spatial Pre-and Retro-Cues. JOHN SOLORZANO-RESTREPO, *Texas Christian University*, FREDERICK ZENNY, *Texas Christian University*, ALEX RANDALL, *Texas Christian University*

Christian University, KENNETH LEISING, *Texas Christian University* — Including a cue before (pre) or after (retro) the sample (target) object increases recognition accuracy and reduces reaction time. It is not clear if non-spatial and spatial cues provide a differential benefit during WM tasks that require judgements regarding the identity (non-spatial) or location (spatial) of a target object. Participants performed a change-detection task, which consisted of target stimuli presented on the left (identity target) and right (location target) side of the screen. A probe stimulus was then presented on either the left or right, signaling which judgment (e.g., compare the identity of sample and probe stimuli on the left or position of stimuli on the right) was required. Experiment 1 evaluated the effect of non-spatial pre and retro-cues (colored backgrounds), and Experiment 2, spatial cues. Results suggested faster RTs on spatial trials in both experiments, however, sensitivity (d') showed different patterns. Non-spatial cues showed an advantage on identity while spatial cues on location. In addition, spatial pre-cues were more advantageous than non-spatial. These results reveal an interaction between cue type and cue timing.

Email: John Solorzano-Restrepo, jfsolorzanor@unal.edu.co

6:00-7:30 PM (3126)

Hebb-Repetition Learning in Players of the Video Game *Counter-Strike*. ELEANOR R. A HYDE, *University of Sheffield*, ROBERT SCHMIDT, *Ruhr-Universität Bochum*, DANIEL J. CARROLL, *University of Sheffield*, CLAUDIA C. VON BASTIAN, *University of Sheffield* — First-person shooter (FPS) games, such as *Counter-Strike*, are fast-paced, dynamic video games requiring various cognitive abilities to play. Previous research demonstrates that FPS players outperform non-video game players in a range of cognitive domains such as perception, attention, and spatial cognition (Bediou et al., 2023; 2018). Green and Bavelier (2012) hypothesised that these cognitive benefits arise from FPS play through enhanced task learning via probabilistic inference, a skill closely related to efficient working memory use (Brady & Tenenbaum, 2013). In this study, we examine the association between FPS expertise and learning in a visuospatial Hebb repetition paradigm (Musfeld et al., 2023). Participants recall sequences of six coloured squares, each presented for 200ms in a grid. Unbeknownst to them, one "Hebb" sequence is repeated on average every fourth trial, while other "filler" sequences are not repeated. Preliminary

results reveal significant differences between Hebb and filler trial accuracy for 19 participants (Learners). N=27 showed no Hebb-repetition benefits (Non-Learners). Furthermore, Learners have significantly higher FPS expertise rankings than Non-Learners.

Email: Eleanor Hyde, erahyde1@sheffield.ac.uk

6:00-7:30 PM (3127)

How Do We Represent Prior Knowledge in Working Memory? Assessing the Electrophysiological Consequences of Long-Term Learning on Visual Working Memory

Representations. PHILIPP MUSFELD, *University of Zurich*, WILLIAM NGIAM, *The University of Adelaide*, KIRSTEN C.S ADAM, *Rice University*, OLGA KOZLOVA, *Rice University*, OLYA BULATOVA, *University of Toronto Mississauga*, KEISUKE FUKUDA, *University of Toronto Mississauga* — Working memory (WM), our central system for temporarily holding information, is limited in capacity. We use prior knowledge from long-term memory (LTM) to overcome WM capacity limits, but how this occurs is not well understood. Here, we assessed how prior learning affects visual WM load, using multivariate load classification and EEG. Participants (N=30) learned a 6-color visual array to criterion, and then completed a WM task including both new and pre-learned arrays.

Crucially, new arrays differed in set size (0, 1, 2 or 6), which we used to train a multivariate classifier to identify WM load from the EEG data. After establishing strong classification accuracy (~55%; chance=25%), we asked the classifier to predict the load elicited by pre-learned arrays. We find evidence that the availability of LTM for pre-learned arrays reduced WM load, as the classifier predicts a load of 1 or 2, instead of 6—the actual set size of pre-learned arrays. However, further exploration revealed that LTM representations were dissociable from pure WM representations. Our results suggest that learning reduces WM load by recruiting LTM but leads to qualitative different representations as indicated by distinct changes in multivariate neural signals.

Email: Philipp Musfeld, philipp.musfeld@psychologie.uzh.ch

6:00-7:30 PM (3128)

Looking at Nothing Does Not Vary With Long-Term Memory Strength. JOÃO SILVA VIEIRA, *University of Porto*, ALESSANDRA S. SOUZA,

University of Porto, AGNES ROSNER, *Leibniz University Hannover*, RUHI BHANAP, *University of Zurich* — When retrieving information from memory, people tend to gaze toward the empty spatial location where this information appeared before, a behavior known as "looking at nothing" (LAN). It is unclear whether LAN is modulated by memory processes, such as the strength of representations in long-term memory. Here, memory strength was manipulated through the frequency of color-shape bindings in a visual working memory task. Participants encoded a sequence of four colored shapes across four locations. Some bindings had high and low probability (e.g., the triangle was red 80% of the time, and another color in 20% of the trials), while others were random. After a 3s interval, one shape was presented auditorily, and participants recalled aloud its color. Eye movements of 68 participants were recorded with an Eyelink 1000 Hz. Binding frequency did not influence LAN even though it monotonically increased working memory performance. LAN was higher in correct trials, regardless of binding condition, pointing to a relation between working memory accuracy and LAN. In sum, we found no evidence that memory strength caused variations in LAN, defying the notion that the eyes are frequently guided to locations where stronger traces were encountered.

Email: João Vieira, joaosvieira1998@gmail.com

6:00-7:30 PM (3129)

Visual Working Memory Does Not Directly Alter Perception.

ZEXUAN NIU, *University of Iowa*, ANDREW HOLLINGWORTH, *University of Iowa* — Visual working memory (VWM) has been proposed to interact dynamically with ongoing perceptual processing to alter perceptual discrimination thresholds, consistent with "sensory recruitment" models of working memory. An alternative explanation is that such effects are generated, instead, by interactions within VWM itself. To test these alternatives, we adapted a paradigm developed by Teng & Kravitz (2019). Participants completed a color discrimination task while holding a color in VWM. The color discrimination stimuli were either spatially separated (standard method) or adjacent. When separated, color comparison requires a shift of attention (and often a saccade) between the two stimuli, which must be bridged by VWM, allowing for interactions within VWM to influence discrimination performance. When adjacent, the two stimuli can be compared without a shift of attention, isolating the effect of VWM on

perception. Replicating earlier studies, we found that VWM content altered discrimination thresholds in the separated condition. Critically, there was no effect of VWM content in the adjacent condition. Thus, although interactions within VWM can influence performance, VWM content does not appear to alter perceptual experience.

Email: Zexuan Niu, zexuan-niu@uiowa.edu

6:00-7:30 PM (3130)

Phenomenological Characteristics of Autobiographical Memories: The Role of Sensory Experience Ratings and Synesthetic-Like Experiences. DOMINKA Z. WOJCIK, *Universidad de Salamanca*, SILVIA HUELMO, *Universidad de Salamanca*, EMILIANO DÍEZ, *Universidad de Salamanca*, MARÍA A. ALONSO, *Universidad de la Laguna*, ANTONIO M. DÍEZ-ÁLAMO, *Universidad de Salamanca*, ANGEL FERNANDEZ, *Universidad de Salamanca* — We examined the phenomenological characteristics of autobiographical memories (AM) evoked with cue-words drew from a Spanish sensory-experience ratings (SER) normative study (Díez-Álamo et al., 2019). For half of the cue-words, we used items rated as high in evoking a sensory/perceptual experience (high SER), and for the other half, we used items with medium SER.

Additionally, the relationship between synesthetic-like experiences in participants and their AM was examined. As expected, participants reported more spatial and sensory references for AM evoked with high SER than medium SER cue-words and rated them as more emotionally laden. Other phenomenological aspects of AM, such as the number of entities present, the amount of thoughts/emotions/actions, and the perspective taken (observer vs. first-person), were unaffected by the cue-word type. There was no relationship between AM and synesthetic-like experiences. To better understand the contribution of synesthesia-like experiences in AM, future research should consider recruiting participants with confirmed synesthesia. Our findings are discussed within the embodied cognition framework.

Email: Dominika Wojcik, d.z.wojciek@usal.es

6:00-7:30 PM (3131)

Recalling Autobiographical Memories of Childhood and Adulthood Play and Shopping: Effects on Play Attitudes and Purchase

Intentions for Toys and Games. ALEJANDRA ZARAGOZA SCHERMAN, *Center on Autobiographical Memory Research (CON AMORE), Aarhus University*, SINUÉ SALGADO, *Aarhus University*, JENNIFER M. ZOSH, *The Pennsylvania State University Brandywine*, SUSAN BLUCK, *University of Florida*, DORTHE BERNTSEN, *Center on Autobiographical Memory Research, Aarhus University* — Nostalgia, often experienced when recalling past events, can influence future behavior. This study examined how autobiographical memories of play and shopping from childhood and adulthood affect attitudes toward play and purchase intentions for toys and games. In a mixed design with repeated measures, 374 US parents recalled memories of childhood/adulthood play or shopping, rated the nostalgia evoked, and completed measures of play attitudes and purchase intentions (pre- and post-recall). Childhood play memories evoked greater nostalgia than adulthood shopping memories. A mixed repeated-measures ANOVA revealed that attitudes toward play became more favourable post-recall, regardless of the condition. Purchase intentions for toys and games increased from pre- to post-recall for those who recalled both childhood and adulthood play memories. These findings suggest that nostalgia may increase positive attitudes towards play and that specifically recalling play memories can enhance consumer purchase behavior for toys and games, providing a potential avenue for intervention to increase positive parent-child interactions.

Email: Alejandra Zaragoza Scherman, alejandra@psy.au.dk

6:00-7:30 PM (3132)

Mapping Individual Memory: A Network Approach to Autobiographical Recollection. ISIK KARLI, *Koç University*, NILÜFER GÖKTAS, *Koç University*, EZGI AYÜTK, *Koç University* — Autobiographical memory (AM) has traditionally been studied through use of large-sample factor analyses being useful in determining "nomothetic" laws that are "true in general." However, for findings to be generalizable, they need to hold for the individuals that make up the population. The study investigated whether individual differences in AM are only quantitative, or whether there are also qualitative differences between individuals. We collected intensive longitudinal data with 15 participants ($M_{age}=30.2$, $SD=13.4$) reported a total of 105 AMs for 11 days followed by rating of qualitative characteristics of AMs. Within-person network analysis was used to

examine the interdependence of the indicators of AM for each participant. To visualize the network model, graphical VAR model was utilized. Then, centrality and pairwise connections between items are estimated for each individual. Differential network structures provided evidence to enhance the theoretical framework for practical applications of AM using network approach.

Email: Isik Karli, ikarli18@ku.edu.tr

6:00-7:30 PM (3133)

Sweet Child of Mine: Attenuated Memory Self-Reference Effect for Mothers and their Children.

HARRISON PAFF, *University of Dundee*, JOSEPHINE ROSS, *University of Dundee*, SHEILA CUNNINGHAM, *Abertay University*, ADA KRITIKOS, *The University of Queensland* — Retrieval of self-referenced memories is more accurate for self than stranger-related information (memory self-reference effect; mSRE), and is usually attenuated for close others (friend, mother) in interdependent but not independent cultures. We investigated the mSRE when the other is one's child in an Australian population. Female mothers of young children (5-10 years) rated trait words in relation to themselves or another. Participants (total N=160) were primed with "mother" questions prior to the task. When the other was their own child they were either primed or not primed with questions about their child. In the remaining groups the other was an unknown child or adult. Then, participants reported whether the words had been associated with themselves, the other or were new. We calculated source memory for self and other. We show a mSRE when the other is a stranger adult or child, consistent with previous literature. Conversely, the mSRE is abolished when the other is the participant's own child, regardless of mother-child role priming. We speculate that the abolished mSRE in both the mother-own-child groups shows an extension of the self in an independent culture that is, moreover, not based on semantic / memory priming.

Email: Harrison Paff, hpaff001@dundee.ac.uk

6:00-7:30 PM (3134)

Episodic Details Are Better Remembered in Likely Relative to Unlikely Counterfactual Simulations.

RICARDO MORALES, *Center for Cognitive Neuroscience, Duke University*, KAYLEE MICELI, *Center for Cognitive Neuroscience, Duke University*, SHENYANG HUANG, *Center for Cognitive*

Neuroscience, Duke University, KARL SZPUNAR, *Toronto Metropolitan University*, FELIPE DE BRIGARD, *Center for Cognitive Neuroscience, Duke University* — People often engage in episodic counterfactual thinking, or simulating how the past might have been different from how it was. A common held view of this behavior is that simulating alternative event outcomes aids in managing future uncertainty and improving behavior, for which episodic counterfactuals need to be remembered. Yet, the phenomenological factors influencing the memorability of counterfactuals remain unclear. To investigate this, we conducted two experiments using a paradigm where participants recalled autobiographical memories. After one week, they created upward, downward, and neutral counterfactual simulations of these memories, integrating a new object into each and rating them on various phenomenological characteristics. Memory for these counterfactual simulations was tested either 10 minutes later or the next day by recalling the new object. Across the two experiments we found that more plausible counterfactuals were better remembered compared to implausible counterfactuals. Our findings suggest that generating simulations perceived as closely aligned with past experience enhances their memorability, in a similar way to other memory phenomenon in which schematic knowledge improves subsequent episodic memory.

Email: Ricardo Morales, rim11@duke.edu

6:00-7:30 PM (3135)

Making Time for the Future: Effects of Emotion on Duration in the Mind's Eye.

OMRAN K. SAFI, *The University of British Columbia*, OLIVER BONTKES, *The University of British Columbia*, DANIELA PALOMBO, *The University of British Columbia* — Individuals tend to remember emotional events as having elapsed for a longer time than neutral events and longer than they were. Such temporal distortions hold implications for how individuals make predictions and plan for upcoming events. This raises the intriguing question: does emotion produce such temporal distortions when simulating future events? In the present study, we examined whether participants would demonstrate such temporal errors in memory when imaging emotional versus neutral future events. We hypothesized that episodic simulation would follow the same pattern as recall, wherein negative imagined events will be reported as having a longer duration than neutral events; we formed no specific hypotheses for positive

events given the uncertainty in the literature. In a discovery sample, we found duration estimates were longer for positive versus neutral ($p < .001$) events but slightly lower for negative versus neutral ($p = .04$) events. In a replication sample, duration estimates were longer for positive versus neutral ($p < .001$) events, with no differences between negative and neutral events. Though these analyses are preliminary, they shed light on the delicate dynamics of time in the mind.

Email: Omran Safi, omranksafi@gmail.com

6:00-7:30 PM (3136)

Phenomenological Differences Between Memories of Fiction and Real-Life

Autobiographical Memories. OSMAN GÖRKEM ÇETİN, Koç University, SAMI GULGOZ, Koç University — The majority of autobiographical memories stem from real-life experiences. Recent research suggests an overlap with memories formed from fictional narratives. The precise nature of this resemblance in terms of phenomenological nature and the variations based on the format of the fictional media warrant further exploration. Based on previous literature, we expected differences between media types in emotional intensity, sensory vividness, and confidence about recall. Two hundred ninety-one participants were asked to recall a personal autobiographical memory and a memory derived from fictional media (books, films, or video games). They then rated these memories on phenomenological dimensions and rated their motivations for engaging with fiction. The results revealed significant variations in phenomenology across different media types and discrepancies in the level of resemblance to real-life memories. Absorption was a good predictor for being engrossed in the fictional world. Escapism was identified as a prevalent reason for engaging with fictional narratives. Exploratory analyses also revealed that the first-person perspective was associated with higher confidence ratings, self-definingness, and frequency of thinking in memories of fiction.

Email: Osman Görkem Çetin, ocetin21@ku.edu.tr

6:00-7:30 PM (3137)

The Goal-Motivated Use of Redemption in Negative Autobiographical Memories. GRACE M. WASINGER, Iowa State University, KRISTI A. COSTABILE, Iowa State University — The present

study examined how individuals narrate low point autobiographical memories in self-presentation contexts with particular attention on the use of redemptive sequences (i.e., negative beginnings to positive conclusions). In the experimental phase, self-presentation was manipulated through the two-component model of impression management. In the rater phase, participant low point autobiographical narratives ($N=409$) were evaluated by third-party raters to determine the efficacy of narration motivated by self-presentation goals. Results indicated that participants in contexts in which self-presentation goals were salient were more likely to narrate their low point memories with redemptive themes than were participants in contexts in which self-presentation goals were less salient. Moreover, the use of redemption themes, in turn, led to more positive evaluations by third-party raters, highlighting the efficacy of the goal-motivated use of redemption in low point autobiographical memories.

Email: Grace Wasinger, wasinger@iastate.edu

6:00-7:30 PM (3138)

Memories Elicited by One's Imagined Death: Effects of the Nature of Emotional Cues on

Autobiographical Remembering. IMRE TEZEL, Boğaziçi University, ALI TEKCAN, Ozyegin University — Research showed that cues that are used to elicit memories affect characteristics of the memories recalled, such as valence, vividness of imagery, link to self, and importance. The present study addresses a specific type of cue: imagining one's death vs. the most important memory. Undergraduate students and adults were given two cues: one asking about their most important memory and the other asking for the single memory they would take with them to the "other side" (Cyr & Hirst, 2019). After recalling each memory participants filled out the Memory Experiences Questionnaire (Luchetti & Sutin, 2015) and Centrality of Events Scale (Berntsen & Rubin, 2006) and to date the memory. Each memory was coded for specificity and integration (Blagov & Singer), and event content (Thorne & McLean). There was no effect of cue type or age on word length, specificity, and meaning making involved in the narratives. However, there was an effect of age on vividness such that middle aged adults rated their memories more vividly than younger adults. This main effect was qualified by an interaction; older adults' death memories were rated more vividly than the important memories, however there was no age difference for important memories.

Email: Imre Tezel, imretezel@gmail.com

6:00-7:30 PM (3140)

Scaffolding the Episodic Future Self: Using Storybooks to Improve Preschoolers' Future-Oriented Reasoning. SYDNEY ROSSITER, *University of Ottawa*, CRISTINA ATANCE, *University of Ottawa* — Young preschoolers show present-state bias when reasoning about the future (e.g., Suddendorf, 2010). For example, when 3- to 5-year-olds are asked to predict what they will prefer when they are “all grown up,” only 5-year-olds predict a preference for adult (e.g., coffee) over child (e.g., juice) items (Preferences Task; Bélanger et al., 2014). This may be because younger preschoolers have difficulty imagining possible future events and projecting themselves into them. If so, then “scaffolding” these abilities using storybooks may be a means to improve children’s reasoning. This approach has been used to improve children’s reasoning about near future events (Leech et al., 2019), and we wondered whether it could also be used to scaffold preschoolers’ reasoning about distant future events. A sample of 138 3.5- to 5-year-olds will complete the Preferences Task after being read a story about a generic adult (Adult condition), themselves as an adult (Self-Future condition), or themselves as a dog (control). If imagining future events is difficult for preschoolers, they should benefit equally from the Adult and Self-Future conditions. However, if projecting oneself into the future is critical, they should perform best in the Self-Future condition.

Email: Sydney Rossiter, sross060@uottawa.ca

6:00-7:30 PM (3141)

After-Death Beliefs and the Simulation of Post-Lifetime Events. JAGRUTI PERSHAD, *Rotman Research Institute, Baycrest Hospital*, DONNA ROSE ADDIS, *Rotman Research Institute, Baycrest Hospital*, KARL SZPUNAR, *Toronto Metropolitan University* — Although culture is known to shape prospective cognition, the relation of after-death beliefs to future time extension (FTE) and the simulation of events beyond one’s lifetime remains unknown. In this online study, participants (N=450; aged 18-78 years) completed questionnaires measuring FTE and the strength of three after-death beliefs: reincarnation (RE), spiritual embodiment (SE) and annihilation (AN). They also completed a post-lifetime event simulation task. Controlling for age, stronger RE and SE beliefs correlated with longer FTE, while stronger AN beliefs

correlated with shorter FTE. Higher RE and SE scores were correlated significantly with imagining events rated as more vivid and personally important. Strength of SE was also correlated with imagining more positive events with a stronger first-person perspective, and believed more likely to occur. Conversely, strength of AN beliefs correlated significantly with imagining events rated as more negative, less likely to occur, and lower in vividness and importance. Our results suggest that after-death beliefs influence both FTE and post-lifetime event simulation, highlighting the importance of cultural beliefs in research on prospective cognition.

Email: Jagruti Pershad, jpershad@research.baycrest.org

6:00-7:30 PM (3142)

Children’s Episodic Memory and Future Thinking: Exploring Children’s Internal and External Details in Past and Future Events. EGE KAMBER, *Brock University*, CAITLIN MAHY, *Brock University* — Episodic memory (EM) and episodic future thinking (EFT) share a similar developmental trajectory, with EFT developing slightly later than EM. Limitations in EFT often lead to poor future event generation and elaboration. The current study examined the content in children’s past/future event descriptions to understand the differences between EM and EFT. In the study, 8- to 10-year-old children (N=88) described one future and one past event. Internal and external details in their descriptions were coded. Past events were more detailed and contained more internal details than future events. Ten-year-olds reported more (internal and external) details than younger children in future events only. When detail type (event, time, place, perceptual, emotion, and semantic) was examined, children mentioned event details the most and emotion and semantic details the least. Children reported more event, perceptual, emotion, and semantic details in past events than future events. Ten-year-olds provided more emotion details than younger children in the future events. Overall, past event descriptions were more detailed and had richer content, but future events become more detailed and richer with age.

Email: Ege Kamber, nk20wv@brocku.ca

6:00-7:30 PM (3143)

Differing Effects of Value on Time-Based and Event-Based Prospective Memory. DONNI A. STALEY, *University of California, Los Angeles*,

BARBARA J. KNOWLTON, *University of California, Los Angeles* — Every day we must remember to complete tasks which may vary in value and importance. In retrospective memory, increased value has been demonstrated to have a significant positive effect on memory performance. Here, we aim to determine if value has an effect on two different types of prospective memory, which require spontaneous retrieval of information to different degrees. Participants completed a computerized memory game with embedded prospective tasks that were either time-based or event-based and could earn either high or low-value point rewards. There was a significant interaction of prospective memory type and value so that an increase in value resulted in improved prospective memory performance in the event-based tasks but led to a decrease in prospective memory performance in the time-based tasks. These results suggest that value may not enhance prospective memory when there is little cue support for retrieval.

Email: Donni Staley, dstaley@ucla.edu

6:00-7:30 PM (3144)

Simulation of the Approximal Future: Investigating the Role of Individual Differences and Memory. KATRIEL READ, *Toronto Metropolitan University*, KARL SZPUNAR, *Toronto Metropolitan University* — People often experience spontaneous simulations of the approximal future—something that might happen next in the context of ongoing experience. Although future-oriented cognition is typically characterized by positive events related to goals, simulations of the approximal future tend to be associated with threat detection. The purpose of the present study was to expand the generalizability of this phenomenon and to assess the potential role of memory-based mechanisms. Canadian (N=81) and American (N=79) participants from across the lifespan completed a Prolific survey that required them to describe up to five instances in which they had previously experienced approximal simulations, to rate the valence of those simulations, and to indicate whether those simulations were related to some past personal, vicarious, or public event. Consistent with previous findings, approximal simulations focused on threat detection irrespective of age, gender, and nationality, and were most related to personal past experiences.

Email: Katriel Read, katriel.read@torontomu.ca

6:00-7:30 PM (3145)

The Waning Effect of Episodic Simulation on Future Choice. AZARA LALLA, *McGill University*, SIGNY SHELDON, *McGill University* — Episodic simulation can shift the perceived plausibility of future events, which may in turn alter the activities we choose to do. Across three experiments, we investigated whether simulating the outcome of potential activities shifted choice across repeated appearances of the activity. In Experiment 1 and 2, participants either simulated or completed a control task for everyday activities (e.g., taking a walk). They then made a series of choices indicating which of two activities they would prefer to do in the future. Options included all possible combinations of simulated and control activities, with each activity appearing multiple times in novel choices. Simulated activities were significantly more likely to be chosen than control activities, but only for the initial repetitions. In Experiment 3, we found evidence that this waning effect of simulation on choice was specifically due to the simulating the outcome of the activity (e.g., walking) rather than planning how to engage in the activity (e.g., planning to take a walk). These results have important implications for understanding how—and for how long—episodic simulation affects decision-making.

Email: Azara Lalla, azara.lalla@mail.mcgill.ca

6:00-7:30 PM (3146)

Using Future Thinking to Reduce Delay Discounting During COVID-19. JULIA HALIOVA, *York University*, CAITLIN TEROA, *York University*, SAMUEL FYNES-CLINTON, *Rotman Research Institute*, DONNA ROSE ADDIS, *Rotman Research Institute*, *Baycrest Hospital*, R. SHAYNA ROSENBAUM, *York University* — Delay discounting, one's tendency to favor immediate over delayed rewards is linked to COVID-19 vaccine hesitancy, but may be reduced by cueing people to imagine future personal events. We investigated the impact of a future-imagining induction on delay discounting in a multinational sample of 7,667 individuals tested during the pandemic. Participants were randomly assigned to future-imagining or control conditions. Participants then rated their degree of future thinking and completed a measure of delay discounting in which they were asked to choose between smaller, immediate rewards (\$1,000 now) vs. larger, delayed rewards (\$2,000 one month from now). Individuals in the future-imagining condition reported increased future thinking and reduced delay discounting

compared to individuals in the control condition. Future research should examine the efficacy of this induction in increasing uptake of public health measures that could inform government responses to future health crises.

Email: Julia Halilova, gkhhalilova@gmail.com

6:00-7:30 PM (3147)

Assessing Spontaneous Goal-Oriented Cognition in Relation to Goal Accomplishment and Well-being in Younger and Older Adults: A Think-Aloud Approach. VANNIA A. PUIG RIVERA, *University of Arizona*, KATE CHAMBERS, *University of Arizona*, QUENTIN RAFFAELLI, *University of Calgary*, MATTHEW GRILLI, *University of Arizona*, JESSICA ANDREWS-HANNA, *University of Arizona* — Achieving one's goals contributes significantly to well-being. Yet, the characteristics of spontaneous cognition that support goal-pursuit and well-being remain unclear, including in relation to typical aging. Across two studies, 189 adults (ages 18-84) engaged in a think-aloud protocol in which they voiced their unprompted thoughts for 10 minutes. Participants' thoughts were coded for presence and degree of spontaneous engagement in mental contrasting, the process of mentally elaborating on what is needed to achieve one's goals. Across studies, trait-mindfulness exhibited a positive relationship with spontaneous engagement in the full spectrum of mental contrasting, whereas depression and anxiety symptoms exhibited negative relationships. When thinking about goals, engagement in the full spectrum of mental contrasting was positively related to goal-accomplishment, whereas trait-depression predicted the opposite. Finally, although older adults exhibited fewer goal-oriented thoughts than younger adults, they engaged in more productive goal elaboration and exhibited similar goal progress. Collectively, these findings offer insight into the aspects of spontaneous cognition that support goal-pursuit in younger and older adults.

Email: Vannia Puig Rivera, vapuigrivera@arizona.edu

6:00-7:30 PM (3148)

A Cross-Cultural Investigation of Luck Beliefs: How Would Past Experience Influence the Future? CLAIRE WEI, *Queen's University*, LI-JUN JI, *Queen's University*, XINQIANG WANG, *Jiangxi Normal University* — Does past experience influence future luck anticipation? We first explored cultural

differences between Chinese and Canadian undergraduates in their beliefs about luck's dynamics. Participants assessed statements about past luck predicting future luck. Chinese participants were more likely than Canadians to believe that more past good luck would predict less future good luck, and similarly for bad luck. They also believed that missed good luck events would be compensated by future ones, suggesting a strong belief in the balance of luck over time. Furthermore, we examined how past deeds influenced people's anticipation of future luck. Chinese participants were more likely to expect good luck to increase after good deeds and to decrease after bad deeds. Such results were not found among Canadian participants. Thus, compared to Canadians, Chinese participants held stronger beliefs that good deeds could lead to future good luck and bad deeds to bad luck. The findings revealed substantial cultural differences in prospective cognition concerning luck, offering interesting and important implications for everyday decision-making and future anticipations.

Email: Claire Wei, zijiao.wei@queensu.ca

6:00-7:30 PM (3149)

Do Our Goals Have a Future? How Challenge and Threat Perceptions of Obstacles Spur Reevaluation of Personal Goals and Influence Effort. TYLER THORNE, *Carleton University*, MARINA MILYAVSKAYA, *Carleton University* — Pursuing personal goals requires prospective thinking to plan out our paths to success. This sometimes includes reevaluating the current and future costs and benefits, known as an action crisis, which is more likely to occur when facing obstacles, and may eventually lead to goal disengagement. Yet could the way we perceive obstacles, as a challenge (vs. a threat), lead to fewer action crises and subsequent goal disengagement? Using collected data from a week-long experience sampling study ($n=287$ participants and $n=2,055$ observations of obstacles) we analyze whether challenge and threat perceptions of goal-related obstacles relate to experiences of action crises, short and medium-term goal-related effort, and likelihood of disengaging from one's goal 1 and 3 months later. This research examines an important nuance in how perceptions of goal-related obstacles initiate prospective evaluations of goal pursuit and its implications for short and medium-term goal engagement.

Email: Tyler Thorne, TylerThorne@cmail.carleton.ca

6:00-7:30 PM (3150)

Assessing the Generalizability of Source Expertise and Vested Interest Contributors to the Continued Influence Effect.

DAVID N. RAPP,
Northwestern University, JAMIE S.-H. KIM,
Northwestern University, JOSIE A. HOLOHAN,
Northwestern University, MANDY M. WITHALL,
Northwestern University, MATTHEW GOLDRICK,
Northwestern University — When people learn about the causes of events, they can demonstrate a reticence to take up retractions of earlier stated causes. People's reliance on earlier stated but discounted causes has been termed the continued influence effect (CIE). Recent work suggests characteristics of a retracting source, including their expertise and potential vested interest in their retraction, mediate CIEs. Specifically, CIEs are more likely when a source offering a retraction has (a) low versus high expertise and (b) a clear vested interest in the retraction. However, work to date showing these patterns has relied on limited stimulus sets (i.e., a single event, usually involving a warehouse fire). The current project attempted to test the generalizability of these findings. Across four texts describing different events, participants showed consistent CIEs even with an explicit discounting statement. CIEs increased when discounting sources had clear vested interests in their retractions. Expertise also mattered, but specifically when a discounting source's vested interest was low and not high. These results help elucidate when and why CIEs might obtain as people learn about the causes of events.

Email: David Rapp, rapp@northwestern.edu

6:00-7:30 PM (3151)

Memory for Spatial Location of Information When Reading on a Screen.

AIMEE CALLENDER,
Wheaton College, NANCY WOLFF, *University of Kentucky* — Comprehension and memory of text is generally superior when reading on paper compared to reading on a screen (Delgado et al., 2018), yet the underlying mechanisms are unclear. This study investigated how memory for spatial information differs based on reading modality and how it influences free recall. Participants completed a spatial memory task either on the computer or on paper. Participants then read one of two texts (OER textbook chapters) either on screen or on paper. There were no differences between the structure or organization of the texts based on presentation modality. Participants then completed an

immediate free recall task as well as various tasks that assessed memory for spatial information about the text including a concept location and figure location task. There were no differences in correct identifications on the spatial memory task, but there were more incorrect responses in the screen condition. Reading modality also did not affect performance on the free recall task. Importantly, memory for where concepts and figures were located did predict free recall, but performance on these measures did not differ based on whether participants read the text on screen or on paper.

Email: Aimee Callender, aimee.callender@wheaton.edu

6:00-7:30 PM (3152)

That's Wrong, Dummy: Can Insulting Corrections Remediate Inaccurate Understandings?

MANDY M. WITHALL,
Northwestern University, CLAIRE MASON, *University of California, San Diego*, DAVID N. RAPP,
Northwestern University — The negative effects of exposures to inaccuracies are well-documented. Thankfully these effects can be remediated when inaccuracies are immediately corrected. But corrections can take many forms, and if social media is any indication, they need not be provided amicably. We examined the effectiveness of neutral and insulting corrections. In three experiments, participants read simulated Twitter posts that conveyed accurate or inaccurate ideas, with inaccuracies sometimes followed by a neutral or insulting corrective reply. Participants subsequently completed a general knowledge test that included questions related to ideas in the posts. Participants were overall more likely to reproduce inaccurate ideas to answer questions after reading posts conveying those inaccuracies than they were to spontaneously produce the same inaccuracies after reading posts conveying accurate ideas. These inaccurate reproductions were reduced when participants read corrective replies that were always insulting or always neutral (i.e., the replies were manipulated in a between-subjects design). However, when intermixed with neutral corrections (i.e., in a within-subjects design), insulting corrections were less effective at encouraging correct responses.

Email: Mandy Withall, amandawithall2026@u.northwestern.edu

6:00-7:30 PM (3153)

Effect of Task Relevance on Cognitive Engagement and Reading Comprehension in Fourth- and Fifth-Grade Students: Evidence from Concurrent Recordings of Postural and Eye Movements. UGO BALLENGHEIN, *Université Paris-Est Créteil*, LÉA LACHAUD, *Université Paris-Est Créteil* — The relevance effect refers to the influence that instructions have on readers' attention and learning. The present study examined whether relevance influences elementary school students' reading comprehension and cognitive engagement. To measure the latter, eye movements and postural sway were recorded in 42 fourth- and fifth-graders aged 9.3-11.6 years. Eye movements were recorded with infrared-based eye-tracking glasses, and postural sway with an infrared-based motion capture system. Children read two texts, one task-relevant and one task-irrelevant, and answered surface and inference questions. Results showed that children scored better on surface and inference questions about the relevant text than about the irrelevant one. As for eye movements, readers made more fixations on the relevant text and spent more time reading it. There was also less postural sway during the reading of the relevant text. These results indicate that cognitive engagement during reading is embodied in fourth- and fifth-grade students, with postural stability probably reflecting cognitive engagement and promoting the construction of meaning during reading tasks.

Email: Ugo Ballenghein, ugo.ballenghein@u-pec.fr

6:00-7:30 PM (3154)

Length, Frequency, and Surprisal Effects and Reading Efficiency: Evidence from a Corpus Analysis of Deaf and Hearing Readers' Eye-Movements. FRANCES G. COOLEY, *Rochester Institute of Technology*, ELIZABETH R. SCHOTTER, *University of South Florida*, EMILY SAUNDERS, *San Diego State University*, GRACE C. SINCLAIR, *University of South Florida*, KAREN EMMOREY, *San Diego State University* — Deaf readers who are L1 signers are a unique group of efficient readers. Despite reading in their L2, they demonstrate increased skipping and decreased fixation durations without a negative impact on comprehension compared to matched L1 hearing readers, unlike L2 hearing readers. While skilled deaf readers have a wider visual perceptual span to the left and right of fixation, it remains unknown how deaf

readers process information in their enhanced visual spans to support efficient reading. We report a corpus analysis comparing word length, frequency, and surprisal effects on skilled deaf and hearing readers' word skipping and gaze durations while reading 200 sentences. Results suggest that deaf readers' efficiency is primarily driven by easy to process words: they perform fewer and shorter fixations on short, high frequency, low surprisal words compared to hearing readers and perform similarly on long, low frequency, and high surprisal words. Deaf signers' wider perceptual span may allow easier words to be processed at multiple time points throughout the timecourse of reading. This pattern may reflect a prioritization of resources towards harder items because easier items are preprocessed to the right or confirmed to the left.

Email: Frances Cooley, cooley.frances@gmail.com

6:00-7:30 PM (3155)

The Moderating Effect of Relationships on Memory Collaborative Behaviors. CHUN-YU KUO, *National Taiwan Normal University* — This study aims to explore whether individuals remember information relevant to their partner's task, even if it is not pertinent to their own tasks. In Experiment 1, participants completed a categorization task both individually and in pairs, followed by an unexpected free recall test. Participants engaged in the task alone and together. The results demonstrated that in the paired condition, memory for items related to the partner's category was higher than in the individual condition. Experiment 2 delved into the effects of intimacy by adjusting the psychological distance between participants, classified into three groups: strangers, moderate acquaintances (classmates), and close partners (friends or significant others). The findings revealed that at low intimacy levels, participants had higher recall rates for their own categories than for their partner's or unassigned categories. As intimacy increased to a medium level, the recall rate for the partner's category significantly improved. When intimacy reached the highest level, the recall rate for the partner's category equaled the recall rate for their own category.

Email: Chun-Yu Kuo, chunyukuo@ntnu.edu.tw

6:00-7:30 PM (3156)

The Primacy of Thematic Conceptual Relations in Shaping Episodic Memory. WEIJIA CAO, *Drexel University*

University, OMRI RACCAH, Yale University, PHOEBE CHEN, New York University, DAVID POEPPEL, New York University & Ernst Strüngmann Institute for Neuroscience, ALEXA TOMPARY, Drexel University — Semantic associations across items have been known to facilitate subsequent retrieval for these items, and this effect scales with measures of semantic relatedness. In the field of concepts and categories, the processing of taxonomic (e.g., dog-bird) versus thematic (e.g., dog-leash) conceptual relations has been a topic of extensive interest. In a cued recall task ($n=79$), we show that word pairs with thematic relations led to shorter reaction time and better memory performance, followed by taxonomic relations, and finally unrelated pairs. In a follow-up experiment to study whether the thematic advantage resulted from their higher accessibility in one's semantic memory, the same pattern in memory performance is found when participants perform a forced-choice memory test given response options which share the three different relations to the cued word (3AFC). Our study provides evidence that conceptual relations differ in the extent to which they facilitate memory performance, suggesting that factors like accessibility may modulate their interaction with episodic memory.

Email: Weijia Cao, wc2420@nyu.edu

6:00-7:30 PM (3157)

Spacing Meets Cross-Situational Word Learning: How the Temporal Structure of Naming Events Affects Word Learning. YI TONG, *University of Wisconsin–Madison*, MELINA L. KNABE, *The University of Texas at Austin*, HALEY VLACH, *University of Wisconsin–Madison* — The temporal distribution of learning events can impact how well information is retained: spacing out information promotes retention more than presenting information in immediate succession. Limited work has considered how the temporal distribution (massing, clumping, spacing) of naming events affects word learning in ambiguous contexts, like the cross-situational word learning paradigm, across real-world periods of time, such as a week. Adults were presented with 24 novel words across six different temporal schedules for four consecutive training days. Each training day consisted of 35 cross-situational word learning trials. Word learning was tested immediately after learning ($N=56$) or after a 1-week delay ($N=57$). Results revealed that adults could disambiguate the meanings of words presented on all learning schedules and at both test times, except for the

massed and most spaced schedule at a 1-week delay. Moreover, younger adults demonstrated poorer word learning after a 1-week delay relative to older adults. The results suggest that temporal distribution effects emerge across extended timescales (1 week), but there might be constraints on the amount of spacing that is beneficial for word learning.

Email: Yi Tong, tong33@wisc.edu

6:00-7:30 PM (3158)

Comparing Encoding Techniques: Insights from Mixed- and Pure-List designs.

SOPHIA H. N. TRAN, *University of Waterloo*, MYRA A. FERNANDES, *University of Waterloo* — We compared the effectiveness of production and drawing as encoding techniques, on recall of concrete and abstract words, using mixed- and pure-list designs. We varied stimulus and list types to examine whether the magnitude of memory benefit from these strategies was sustained. Words were encoded by silently reading, reading aloud, writing, or drawing. Words were presented within-subjects, intermixed (Exp.1), mixed (Exp.2), or between-subjects in a pure-list design (Exp.3). Reading aloud, writing, and drawing improved recall compared to silent reading in within- and mixed-list designs, with drawing leading to the largest benefit. Only the drawing benefit persisted in a between-subjects design. Recall was higher for concrete than abstract words, for only drawn items. Results suggest drawing enhances memory via semantic- and imagery-based mechanisms while the production effect is more perceptually-based. Importantly, results show drawing's benefit, unlike production, cannot be explained by a distinctiveness account as it was relatively unaffected by study design.

Email: Sophia Tran, sophiahtran@uwaterloo.ca

6:00-7:30 PM (3159)

Do Storytelling and Survival Processing Have Additive Effects on Recall Performance?

ZOE H. FISCHER, *The University of Mississippi*, MATTHEW REYSEN, *University of Mississippi* — Both survival processing and storytelling have been shown to enhance memory performance relative to control conditions. We examined the extent to which combining these two techniques improves participants' memory abilities relative to comparable control conditions. In Experiment 1, participants ($n=100$) were randomly assigned to write sentences using unrelated common nouns in a control,

storytelling, survival, or survival plus storytelling condition. Participants who were instructed to write a story about survival were predicted to remember more words on a subsequent free recall test than participants in the other conditions. Mechanistically, we predict that combining predominantly item-specific processing (survival) with predominantly relational-processing (storytelling) will lead to an additive effect, thereby resulting in superior recall performance. Results indicate that storytelling, survival, and survival plus storytelling conditions led to a higher number of recalled items compared to the control condition but there was not a significant difference between the three experimental conditions.

Email: Zoe Fischer, zfischer@olemiss.edu

6:00-7:30 PM (3160)

EEG Oscillatory Activity Distinguishes Forward and Backward Deliberation During Free Recall.

ROMAN M. GUTIERREZ, *University of Missouri*, BRITTNEY BISHOP-CHRZANOWSKI, *University of Missouri*, ALLIYA PADIAK, *University of Missouri*, JEFFREY D. JOHNSON, *University of Missouri* — Free recall tasks have been instrumental in our understanding of how retrieval strategies and search processes are guided by the temporal, contextual, and associative organization of memories. The current study investigates how the retrieval search proceeds in a forward versus backward manner, with a specific goal of characterizing the neural signature of such distinction. Scalp EEG data from the openly available Penn Electrophysiology of Encoding and Retrieval Study (PEERS; Kahana et al., 2024) were re-analyzed (based on approximately 200 subjects tested in multiple sessions). Oscillatory EEG activity during the deliberation period (about 1-2 seconds) immediately preceding the verbal report of recalled items revealed enhanced high-frequency (gamma) activity over frontal scalp for backward relative to forward recall transitions. This novel finding of a neural signature of directional retrieval search is presented in the context of confounding factors (e.g., recall position, latency) and discussed in relation to the broader time-related processes that might drive retrieval.

Email: Roman Gutierrez, rmgz26@umsystem.edu

6:00-7:30 PM (3161)

Encoding Variability of Item and Relational Features. MIKOŁAJ WIECZÓR, *Adam Mickiewicz*

University, MACIEJ HANCZAKOWSKI, *Adam*

Mickiewicz University, KATARZYNA ZAWADZKA , *Adam Mickiewicz University* — The encoding variability effect refers to a memory advantage observed when the same materials are learned across multiple cycles in such a way that different features of those materials are highlighted at each presentation. It has been proposed that variability can operate at the level of either individual item features or relational features linking various items. When either item or relational features are subjected to variable encoding, the effects of such encoding can only be detected by tests in which performance depends on either item or relational features, respectively. Here we examined these postulated mechanisms of variable encoding for both item and relational features, using item-specific (semantic orienting questions) and relational (story creation) encoding tasks in constant or variable versions and memory tests of either associative cued recall or free recall. Our results show a reliable encoding variability effect when item, but not relational information is elaborated at encoding.

Email: Mikołaj Wieczór, wieczor.mikolaj@gmail.com

6:00-7:30 PM (3162)

Influence of Directed Forgetting on Memory Accuracy and Precision Across Delays.

CURTIS ROGERS, *University of Illinois Urbana-Champaign*, LILI SAHAKYAN, *University of Illinois Urbana-Champaign* — The differences in decay of a memory's details and gist over time are largely unexplored. Past research suggests that, while a memory's availability decays across time, details of memory's precision are unaffected (i.e., Berens et al., 2020). Recent research indicates that directed forgetting accelerates the loss of memory accuracy (Nick & Bauml, 2023; Whitlock et al., 2024). It remains unknown whether the acceleration of decay is unique to a memory's accuracy or if this effect extends also to a memory's precision. Research has already established that directed forgetting impairs both memory accuracy and precision at immediate testing, although its effects on delayed testing remain largely unknown. In the current study, we sought to examine directed forgetting's impact not only on memory accuracy but also precision across time. We tested 100 participants at three different delay intervals (immediate, 1 hour, and 24 hours) for memory accuracy via old/new recognition of words and memory precision for paired location information. Forgetting curves were fit to assess

the impact of directed forgetting on decay for both memory measures and we found varying differences in forgetting rates across directed forgetting conditions for each.

Email: Curtis Rogers, crr9@illinois.edu

6:00-7:30 PM (3163)

Investigating a Mental Effort Explanation of the Generation Effect Using Pupillometry.

ANIA GRUDZIEN, *University of Oregon*, NASH UNSWORTH, *University of Oregon* — The "generation effect" is a phenomenon whereby people have better memory for information which is self-generated compared to information which is passively read. In a series of paired-associate memory experiments, we investigated a mental effort explanation of the generation effect using pupillometry, a measure of mental effort. Across experiments, we found a larger pupillary response for generated words compared to words which were read, and this was accompanied by a behavioral effect. Our results suggest that mental effort is associated with the generation effect and the subsequent memory boost.

Email: Ania Grudzien, aniag@uoregon.edu

6:00-7:30 PM (3164)

Investigating Costs and Benefits of Collaboration When Learning Foreign-Language Word Pairs.

ALEXANDER G. KNOPPS, *North Dakota State University*, KATHRYN T. WISSMAN, *Otterbein University* — Collaboration is a fundamental skill for students to be successful as they are often asked to work with peers to engage with and learn course content. Thus, one growing area of cognitive psychology research has examined the impact of collaborative learning with a focus on the costs and benefits (Marion & Thorley, 2016). The current research adds to and expands upon this literature by investigating a type of to-be-learned material students are likely to encounter in many classroom settings: foreign-language word pairs. Participants individually studied Swahili-English word pairs, followed by retrieval practice that occurred either individually or as a dyad. All participants then took an individual, final test. Results suggest no learning cost during practice and a potential benefit on later memory. These outcomes have important implications for understanding the impact and consequences of using collaboration in authentic, learning environments.

Email: Alexander Knopps, alexander.knopps@ndsu.edu

6:00-7:30 PM (3165)

Development of a Spatial Bias in the Processing of Ordinal Information.

MORGANE FTAÏTA, *Basque Center on Cognition, Brain & Language (BCBL), CNRS, & Université Côte d'Azur*; MAËLISS VIVION, *Université Côte d'Azur, BCL, & CNRS*, ALESSANDRO GUIDA, *Université Rennes 2, LP3C*, FABIEN MATHY, *Université Côte d'Azur* — Spatialization refers to the mental organization of serial information onto a horizontal line, a phenomenon presumably caused by individuals' reading and writing habits. In Westerners, the initial items of a memorized sequence are preferentially associated with the left side of the mental line, while late items correspond to the right. Considering that previous studies have shown a similar bias in animals (e.g., chicks), the current study investigated the development of spatialization in children. Using a paradigm inspired by West & McCrink (2021), in which an item was repeatedly hidden in the same location on a vertical axis, 724 children aged 2 to 12 years old and 125 adults were asked to retrieve the target location after the axis was transposed horizontally. Results indicated a leftward bias from preschool onwards, meaning that the left-hand side was

preferentially chosen as a reference to initiate the search process. However, depending on the type of transposition that varied between conditions and either induced or hampered mental rotation, the leftward bias was not systematic. We discuss the developmental aspects underlying the emergence of spatial biases and their putative impact on serial processing in short-term memory.

Email: Morgane Ftaïta, morgane.ftaita@univ-cotedazur.fr

6:00-7:30 PM (3166)

Do Gestures Help Novel Word Learning?

ELISABETH D. KNIGHT, *University of Sheffield*, SRITI YADAV, *University of Colorado, Boulder*, CLAUDIA C. VON BASTIAN, *University of Sheffield*, ALICIA FORSBERG, *University of Sheffield* — Gestures are frequently used when novel verbal information is communicated. These can be iconic gestures depicting semantic information. Research suggests that observing iconic gestures facilitates the learning of new words, although findings have been mixed. In a sample of 120 young adult participants, we measured short- and longer-term retention of novel verbal items when these were heard alongside more iconic gestures, alongside less iconic gestures, and

without gestures. Gesture stimuli were inspired by a corpus of lexical British Sign Language signs and rated for iconicity by non-signing participants in a separate norming study. On average, there was no effect of gesture on short- and longer-term retention of novel words. However, large individual differences were found in whether gestures aided memory. This may be partially explained by the variety of strategies participants reported using during the memory task. Iconic gesture may interact with individual differences and aid word learning for some people.

Email: Elisabeth Knight, EDKnight2@sheffield.ac.uk

6:00-7:30 PM (3167)

Examining the Effects of Transcranial Photobiomodulation on Working Memory Task Performance. STEPHEN CAMPBELL, *University of Notre Dame*, LAUREN D. GARNER, *University of Notre Dame*, MATTHEW K. ROBISON, *University of Notre Dame* — Transcranial photobiomodulation (tPBM) is a relatively new and non-invasive intervention which recent research has suggested improvement in cognitive performance after treatment. Zhao et al., (2022) found improvement in participants working memory capacity after 1064-nm tBPM treatment when applied to the right prefrontal cortex. The present study sought to replicate their behavioral results and utilized the same methodology, with the exception of administering tPBM treatment with a Neuronic Neuradiant 1070 device. We utilized a within-subjects design where participants completed two different sessions separated by a week, and were randomly assigned to begin with either an active tPBM or sham-control treatment. After active or sham treatment, participants completed an orientation change detection task which included trials with set sizes of 2 or 4. We failed to replicate their effect, with a paired-samples t-test finding no significant differences in working memory task performance at set sizes 2 or 4 after active tPBM treatment compared to the sham control.

Email: Stephen Campbell, scampbe6@nd.edu

6:00-7:30 PM (3168)

Grouping Effects on Serial Ensemble Statistics. DANIIL GRIGOREV, *Koç University*, BUGAY YILDIRIM, *Koç University*, AYSECAN BODUROGLU, *Koç University* — Visual perception and working memory studies typically assume independence of trials.

However, recently across-trial biases involving serial dependence and temporally extended summaries have been reported. This study specifically investigates how sequentially presented stimuli are summarized. Fidelity-based accounts of summarization state that higher precision representations are weighed more than others, noting positional influences (e.g. recency) on summaries. By comparing the perceptual summaries of six Gabor patches presented either in a continuous stream or in a temporally grouped fashion (as two triplets), we tested whether visual working memory limitations and time-based decay reducing representation fidelity can selectively impact perceptual summarization.

Participants effectively summarized consecutively presented Gabors, but a recency effect was only seen in summaries of continuous sequences. The lack of recency on summaries of temporally grouped sequences suggests that factors beyond fidelity, possibly linked to visual working memory limitations, may impact temporal summarization.

Email: Daniil Grigorev, daniil.a.grigorev@gmail.com

6:00-7:30 PM (3169)

Individual Differences in Working Memory Capacity and General Intelligence in Hypothesis Sampling Behavior. YOONSANG LEE, *Georgia Institute of Technology*, RANDALL W. ENGLE, *Georgia Institute of Technology* — Hypothesis sampling, essential for reasoning and decision making, involves generating and evaluating potential explanations from observed data. While previous research indicates that working memory capacity (WMC) and intelligence impact hypothesis generation, the specific role of general intelligence remains unclear. This study hypothesizes that higher general intelligence, beyond WMC alone which is believed to maintain the pool of hypotheses, improves performance in hypothesis sampling tasks by better disengaging from rejected hypotheses. Hypothesis sampling behavior was observed by a task where the participants tried to deduce the “correct” combination of letters from a set of certain number of letters based on feedbacks. Also, WMC and general intelligence were measured with a set of cognitive tasks. We expect that general intelligence, compared to WMC, to predict better task performance in terms of not resampling already tested hypothesis, clarifying their roles in cognitive processes underlying hypothesis sampling behavior.

Email: Yoonsang Lee, yoonsang.lee@gatech.edu

6:00-7:30 PM (3170)

Interactions Between Working Memory and Long-Term Memory: The Role of Attentional Refreshing. POURIA RAHGOSHA, *Mississippi State University*, JARROD MOSS, *Mississippi State University* — The interaction between working memory and long-term memory is crucial given the pivotal roles these systems play in many tasks. The current study investigated whether attentional refreshing in working memory plays a role in association learning and in recall of these associations from long-term memory. In the association learning task, blocks of stimuli were paired with key presses, and a delayed recall test was used to examine long-term memory of the associations. Duration of the inter-trial interval during learning and the type of testing were manipulated. Increasing the inter-trial interval should allow more time for refreshing. The results indicate that increasing the time between trials from 0.25 ms to 1 s enhances learning accuracy and retrieval accuracy at testing. This finding supports the hypothesis that attentional refreshing is being used to maintain associations during learning. Besides, participants recalled associations with higher accuracy when stimuli were presented as a block, in a similar manner as during learning, compared to when they were presented in random order at test. The results are consistent with the idea that attentional refreshing during learning increases recall from episodic memory during test.

Email: Pouria Rahgosha, pr677@msstate.edu

6:00-7:30 PM (3171)

Memory and Foreknowledge: Eye Movements During the Encoding and Maintenance of Spatial and Verbal Information. TEODOR Y. NIKOLOV, *Cardiff University*, CANDICE C. MOREY, *Cardiff University* — It is still largely unclear to what extent and how we use our eyes during the maintenance of memory for verbal and spatial features, and whether looking back at memorised locations of items is associated with a memory benefit. We investigated oculomotor behaviour during encoding and maintenance of verbal or spatial features using a retro-cue paradigm. The task involved sequentially presenting letters in different locations and recalling either the letters or the locations of the letters, with the correct order for recall (forward or shuffled) of all items indicated by digit retro cues referring to each of the serial positions of the presented letters. Results

revealed that fixation probability on to-be-remembered items was lower during spatial encoding compared to verbal encoding. More looks towards the locations of previously presented items were found when maintaining spatial compared to verbal information, especially when the recall order was unpredictable. Fixation patterns during encoding and maintenance were not associated with a clear memory benefit or cost. These findings suggest that both the type of features to be recalled and the predictability of recall order influence oculomotor behaviour during memory maintenance.

Email: Teodor Nikolov, nikolovt@cardiff.ac.uk

6:00-7:30 PM (3172)

Semantic Content, Concreteness, and Verbalization Effects on Spatialization in Verbal Working Memory. MAËLISS VIVION, *Université Côte d'Azur, BCL, & CNRS*, ALESSANDRO GUIDA, *Université Rennes 2, LP3C*, STEPHEN RAMANOËL, *Université Côte d'Azur, LAMHESS, Sorbonne Université, Inserm, & CNRS*, FABIEN MATHY, *Université Côte d'Azur* — The SPoARC effect refers to the mental spatialization of non-spatial ordinal information in working memory. Although this effect has been preferentially linked to semantic processing, the origin of the phenomenon remains unclear. In this study we thus investigated the role of semantic content and concreteness of stimuli in the emergence of the effect. We asked 141 participants to memorize sequences of four items and to perform a subsequent recognition test using lateralized keys. Spatialization was assessed by the difference in response times between the right and left hand as a function of the position of the item. Semantic properties were manipulated by using either pseudowords, abstract words, or concrete words. The effect was significant for both abstract and concrete words, as expected by semantic processing, with a stronger effect observed for concrete words. However, a significant effect was observed for pseudowords, which challenges the semantic hypothesis suggested in the literature. Overall, our findings suggest that verbalization is the primary driver of the SPoARC, although the observed facilitation for concrete words compared to abstract words raises questions about the role of mental visualization in this phenomenon.

Email: Maëlliss Vivion, maeliss.vivion@univ-cotedazur.fr

6:00-7:30 PM (3173)

The Benefit of Removing Information from Working Memory: Increasing Cognitive Resources or Reducing Interference? CHENYU LI, *University of Zurich*, GIDON T. FRISCHKORN, *University of Zurich*, HANNAH DAMES, *University of Zurich*, KLAUS OBERAUER, *University of Zurich* — Removing information from working memory is considered to free up capacity and benefit the retention of other information. However, this benefit has only been demonstrated when items are removed immediately after encoding (immediate removal) but not when items are removed after the complete memory set has been encoded (delayed removal). In two experiments, we measured the benefit of removal, varying the interval between encoding and removal continuously. Experiment 1 showed that both immediate and delayed removal failed to remove the to-be-forgotten items from working memory but benefited the memory for item-location bindings of other items held in working memory. Experiment 2 showed that removal only facilitated the binding memory of items that were encoded afterward. Therefore, we conclude that both immediate removal and delayed removal cannot reduce the interference from the to-be-forgotten items but free up cognitive resources from the to-be-forgotten items, which can be reallocated to improve binding memory for subsequently encoded items.

Email: Chenyu Li, chenyu.li@uzh.ch

6:00-7:30 PM (3174)

The Impact of Working Memory Recognition Testing on Long-Term Associative Memory Depends on Initial retrieval Success. KATHY XIE, *VA Boston Healthcare System & Boston University*, PATRICIA REUTER-LORENZ, *University of Michigan, Ann Arbor* — The mechanistic role of working memory (WM) processes in subsequent episodic memory (EM) remains unclear. For example, does re-exposure to word-pairs during WM recognition testing improve associative EM? Are benefits from WM re-exposure greater after retrieval practice compared to restudy? Three online experiments ($N=380$) addressed these questions. Immediately after initial encoding of 2, 3, or 4 word pairs, studied pairs were re-exposed during forced-choice trials that either did (WM recognition test) or did not (WM restudy) require memory retrieval. Our results indicate that WM recognition testing can benefit

associative EM minutes later compared to restudying when the EM analyses were limited to pairs recognized correctly during WM. Negative effects of WM recognition testing (restudy > test) emerged when errors were included in the analyses and initial test performance was relatively poor (<65%). Taken together, the present results suggest that while WM re-exposure to studied pairs is beneficial to associative EM, the emergence of a “WM-based testing effect” depends on the level of initial retrieval success.

Email: Kathy Xie, kathyxie@umich.edu

6:00-7:30 PM (3175)

Which 'Working Memory' Are We Talking About? Complex Span Tasks Versus N-Back. MARIEL BARNETT, *Purdue University*, ALEXANDER P. BURGOYNE, *Human Resources Research Organization (HumRRO)*, DAVID J. FRANK, *Youngstown State University*, BROOKE MACNAMARA , *Purdue University* — Psychologists and neuroscientists often use complex span tasks or the n-back to measure working memory capacity, but evidence for their convergent validity is mixed. We recruited a large and diverse sample using a multi-site approach ($N=1,272$; community and university participants) and had them complete multiple working memory capacity, updating, and fluid intelligence tests. We found strong evidence for a dissociation between complex span and n-back tests, and more broadly, between working memory capacity and updating factors.

Observed correlations between complex span and n-back performance were modest ($r=.25$), and at the latent level, the two factors shared only 20% of their variance. Each explained unique variance in fluid intelligence, and each was more strongly related to fluid intelligence than to each other, with updating measures demonstrating stronger relations to fluid intelligence. We suggest that what distinguishes updating measures from working memory capacity measures is their relative emphasis on disengagement from outdated information; disengagement drives their strong relation with fluid intelligence because problem solving requires generating hypotheses but also discarding hypotheses discovered to be false.

Email: Mariel Barnett, barnet98@purdue.edu

6:00-7:30 PM (3176)

Working Memory Creation: Encoding Resource vs. Short-Term Consolidation. DILLON A.

QUIÑONES, *University of South Dakota*, JOSHUA SANDRY, *Montclair State University*, TIMOTHY J. RICKER, *University of South Dakota* — Two competing models of working memory creation have strong experimental support: the encoding resource (ER) and short-term consolidation (STC) models. The ER model describes a limited resource necessary to encode information into working memory. The resource depletes with every item encoded but gradually replenishes over time. The STC model describes a ballistic, attentional blink process whereby consolidation of an item must complete before further attention-based processing begins. This may cause any trailing item or task to be missed or delayed. A key finding differentiating these two models is whether additional time between memory items in a list has a global or local effect. The ER model predicts that lengthening this time will benefit memory for all items following the lengthened delay. The STC approach predicts that only the item immediately following the lengthened delay will see a benefit. We replicate two key experiments testing global versus local effects of inter-item time: Mizrak & Oberauer (2021, E2b) which supported global effects and Ricker & Hardman (2017, E4) which supported local effects. Results of these replications and implications for theory are discussed.

Email: Dillon Quiñones, dillon.quinones@coyotes.usd.edu

6:00-7:30 PM (3177)

Goal-Directed Representation of LTM-Supported Familiar Items in WM. EDA MIZRAK, *University of Oxford*, SANJAY MANOHAR, *University of Oxford* — Humans have the remarkable ability to hold onto information—preserving it in working memory (WM) where it is ready for ongoing thought and action. Although WM is undisputedly limited to storing only small amounts of information, it is clear that we can extend this capacity by capitalizing on existing knowledge in long-term memory (LTM). But how do we connect prior knowledge in LTM to benefit WM? We hypothesized that familiar stimuli that exist in LTM will go through a different encoding process than unfamiliar stimuli during which LTM representation for familiar stimuli will be activated. To test this, we examined EEG activation during encoding time-course of familiar and unfamiliar stimuli in a WM task (i.e., colored objects).

We found a) higher recollection signal for familiar stimuli (i.e., P600 component) and b) cross-decodability of features shared between familiar and unfamiliar stimuli. These results suggest that while both familiar and unfamiliar stimuli are encoded with similar sensory representations, explicit LTM retrieval occurs for familiar stimuli. This indicates that a recognition process during encoding may be the starting point for the WM-LTM connection for familiar items affecting their representation in WM.

Email: Eda Mizrak, edamizrak@gmail.com

6:00-7:30 PM (3178)

Modelling Individual Differences in Attentional Control and Relational Integration Costs as Cross-Level Interactions of Random-Effects in the Relation Monitoring Task. DAMIAN P.

BIRNEY, *The University of Sydney*, YUETING ZHAN, *The University of Sydney*, STEVEN LI, *The University of Sydney*, JENS F. BECKMANN, *Durham University* — Attentional-control and relational-integration are working-memory processes related to fluid reasoning (Gf). They have been studied in the Relation Monitoring Task (RMT), which requires participants to rapidly (≤ 5 s) search a matrix of three-digit strings (e.g., "5 4 2") to verify the presence of a relational rule (e.g., ending digits in a row or column ascend). The RMT correlates highly with Gf (up to $r=.61$), although the reason it does so remains unclear. Covariance modelling has been used to isolate variance due to within-task process manipulations (e.g., bivariate SEM). Yet, it is more common to use simple composite scores for each manipulation as OLS regression predictors of Gf. To understand the limitations of this approach, we report on three RMT-Gf studies ($N=146, 177, 214$) with different attentional-control and common relational-integration manipulations. The OLS approach is contrasted with 1) linear-mixed effects regression, where processing-cost manipulations are formalised as random-slopes in interaction terms with Gf, 2) random-effects extracted as predictors of Gf, and 3) bivariate SEM. Results suggest substantive interpretational differences due to analytic methods. Implications for theory development will be discussed.

Email: Damian Birney, damian.birney@sydney.edu.au

6:00-7:30 PM (3179)

Distracted But Still Listening: How Cognitive Load Impacts Audiovisual Enhancement. AARON

MITCHEL, *Bucknell University*, EDWARD LEE, *Bucknell University* — There is ongoing debate whether multisensory integration (MSI) is pre-attentive and automatic or is a later process subject to top-down attentional control. A recent study investigated this by manipulating the availability of attentional resources in a dual-task paradigm, finding that when the demands of the secondary task increased, susceptibility to non-speech audiovisual illusions also increased (Michail & Keil, 2018). This was taken as evidence for the role of post-attentive, top-down control during integration. In the present study, we extend this logic to explore the role of attentional processes in audiovisual integration of speech. Participants completed an audio and audiovisual speech-in-noise task interleaved with an n-back task (0, 1, or 2). We found that as cognitive load increased, speech recognition accuracy decreased in audio and audiovisual stimuli; however, there was no interaction between cognitive load and speech modality. Contrasting prior findings, our results suggest that audiovisual integration of speech occurs pre-attentively.

Email: Aaron Mitchel, adm018@bucknell.edu

6:00-7:30 PM (3180)

Visual-Auditory Congruency Effects in Gender Processing Based on Faces and Voices: Evidence for Visual Dominance in Children and Adults.

SUJATA MAYA HUESTEGGE, *Baden-Wuerttemberg Cooperative State University*, WIENKE WANNAGAT, *Julius-Maximilians-Universität Würzburg*, TIM RAETTIG, *Julius-Maximilians-Universität Würzburg*, EVA LANDMANN, *Julius-Maximilians-Universität Würzburg*, LYNN HUESTEGGE, *Julius-Maximilians-Universität Würzburg*, GERHILD NIEDING, *Julius-Maximilians-Universität Würzburg* — Gender processing is an important facet of multi-modal person perception. Here, we focused on visual-auditory processing asymmetries. We presented participants with videos showing male or female faces uttering digits while manipulating auditory-visual gender congruency (e.g., female face shown with male voice: incongruent). Participants responded to (visual vs. auditory) gender (Experiment 1) or digit category (Experiment 2) within a task-switching paradigm. Results revealed strong visual dominance effects: Conflicting gender information from the visual (vs. auditory) channel was harder to ignore. In addition, digit categorization suffered from visual-auditory gender incongruity, even though gender information was completely task-irrelevant. Experiment

3 focused on developmental trajectories of visual dominance by assessing performance across three age groups (5-year-olds, 9-year-olds, adults), showing that visual dominance in gender processing was even stronger in children. A comparison with other modality dominance effects reported in the literature suggests that these are rather flexible (both in general and in terms of their developmental trajectories) and strongly depend on the type of to-be-processed information.

Email: Sujata Maya Huestegge, sujata.huestegge@gmail.com

6:00-7:30 PM (3181)

Combined Visuohaptic Bimodality Improves Defects Perception. FLAVIEN THUAIRE, *CHU Clermont-Ferrand*, CLEMENT BELLETIER, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS*, MARIE IZAUTE, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS* — Humans are often more accurate than machines at detecting the many possible defects in complex objects. This task is often multisensorial because defects may be found using touch or vision, or both. A recent multisensory processing theory suggests it may be the case that different sensory modalities have their own independent resources but rely on a central attentional system if their principal resources are exceeded. Conversely, different sensory modalities may be combined to exploit redundancies and complementarities to improve sensitivity. The present research study was designed to investigate in two experiments visuohaptic sensitivity with the aim of improving methods for detecting defects. The main result of these experiments is that when participants benefited from both visual and haptic information they were more accurate at detecting defects than when using only visual or haptic information. This improvement only occurred if the same defect was examined with both modalities.

Email: Flavien Thuaire, flav.pimousse@hotmail.fr

6:00-7:30 PM (3182)

Cardiac Afferent Signals Can Bias Visual

Dominance in Binocular Rivalry. JOHN P. VEILLETTE, *The University of Chicago*, FAN GAO, *The University of Chicago*, HOWARD C. NUSBAUM, *The University of Chicago* — Sensory signals from the body's visceral organs (e.g., the heart) can influence the perception of exteroceptive sensations, and this interoceptive-exteroceptive interaction has been argued to underlie bodily self-awareness by situating one's

perceptual awareness of exteroceptive stimuli in the context of one's internal state. In this study, we presented separate grating stimuli to each of subjects' eyes as in a classic binocular rivalry paradigm—measuring the duration for which each stimulus dominates in perception. However, we caused the gratings to “pulse” at specific times relative to subjects' real-time electrocardiogram, manipulating whether pulses occurred during cardiac systole, when baroreceptors signal to the brain that the heart has contracted, or in diastole when baroreceptors are silent. Dominance durations were greater for systole-trained stimuli, indicating interoceptive-exteroceptive integration. Further, we show that this cardiac-dependent rivalry effect is preserved in subjects who are at-chance discriminating between systole-trained and diastole-presented stimuli in a separate interoceptive awareness task, suggesting that our results are not dependent on conscious access to heartbeat sensations.

Email: John Veillette, jpvillet@gmail.com

6:00-7:30 PM (3183)

Individual Differences in Multisensory Illusory Perception.

MAGGIE BAIRD, *Occidental College*, ALEKSANDRA SHERMAN, *Occidental College*, STEPHANIE NELLI, *Occidental College*, CARMEL LEVITAN, *Occidental College* — The sound-induced flash illusion (SIFI) and the McGurk effect are two widely used paradigms for demonstrating multisensory interactions. However, there are substantial individual differences in the experience of illusory percepts. We conducted an experiment ($N=87$) in which we used behavioral and EEG measures to quantify variability between participants and across sessions. Additionally, we investigated whether susceptibility to these two illusions is correlated. We found robust individual variability across both illusions such that some participants always, never, or sometimes experienced each of the illusions. Susceptibility to each illusion was stable over time: participants remained either “seers,” “non-seers,” or “sometimes-seers”. However, there was no relationship between susceptibility to the two illusions. Individual differences in propensity to experience the illusions was reflected in distinct neural signals as measured from central and occipital sites. Trial by trial EEG signals were predictive of whether participants would experience an illusory percept, highlighting the important impact that transient

fluctuations in brain state can have on our perceptual experience.

Email: Maggie Baird, maggiebaird10@gmail.com

6:00-7:30 PM (3184)

Congruency and Trial History Affect the Speed-Up of Multisensory Responses.

KALVIN ROBERTS, *University of St Andrews*, INES JENTZSCH, *University of St Andrews*, THOMAS U OTTO, *University of St Andrews* — The speed-up of responses to multisensory compared to unisensory signals is typically attributed to target redundancy, where a correct response is triggered by the constituent signal that is processed fastest in a given trial (redundant signal effect; RSE). Here, we show that the RSE is modulated by signal congruency and trial history. We presented congruent or incongruent auditory and visual stimuli and asked participants to respond with the same response to multi- or unisensory target stimuli. We found that the RSE is larger for congruent than incongruent combinations and was also affected by trial history, with a larger RSE following a stimulus switch compared to stimulus repetition. Interestingly, these two effects were additive. Our analysis of the RSE at the distribution level and a large-scale modelling analysis suggest that congruency contributes to the RSE and is independent of trial history effects. Consequently, we consider potential contributors to the congruency modulation of multisensory responses.

Email: Kalvin Roberts, kalvinedwardroberts@gmail.com

6:00-7:30 PM (3185)

Does Children's Ability to Categorise Objects Benefit from Additional Cues of Motion and Sound?

EIMEAR M. MCKENNA, *Trinity College Dublin*, DOAA KARAM, *Trinity College Dublin*, ALAN O'DOWD, *Trinity College Dublin*, REBECCA J. HIRST, *Trinity College Dublin*, FIONA N. NEWELL, *Trinity College Dublin & New York University Abu Dhabi* — Children's ability to categorise objects emerges early in development, but it is unclear whether additional cues to object identity further benefit this process. We investigated whether object movement and sound influences object categorisation in 108 children (5-7, 8-10 and 11-13 years). Children first learned to categorise novel moving object shapes presented with correlated sound (e.g., increasing pitch with object elevation) to accuracy criterion (75%). Categorisation performance was then tested based on a 3x3x2 mixed-design with age,

object movement (learned shape-movement pairing, novel pairing, or static shapes) and sound (un/correlated) as factors. Older children were faster than other children at categorising objects. There were no main effects of object motion or sound. However, a significant two-way interaction suggested that categorisation performance of children aged 5-7 years benefitted from learned object motion. Our findings suggest that children as young as 5 years can combine visual cues in the formation of object categories.

Email: Eimear McKenna, mckennei@tcd.ie

6:00-7:30 PM (3186)

Ice Packs Produce Equivalent Cold Pressor Stress Compared to Ice Baths. ABIGAIL

KORTENHOEVEN, *Texas Tech University*, MICHAEL J. SERRA, *Texas Tech University Health Sciences Center*, MIRANDA SCOLARI, *Texas Tech University* — Researchers commonly induce stress in the laboratory by having participants place their hands in ice water for several minutes, referred to as the cold pressor task (CPT). Although effective, the procedure can lead to spills which could damage electronic equipment. We compared the standard ice bath procedure to a version using frozen ice packs in resealable plastic bags with water, both at 35.6 degrees F. Stress groups completed the Maastricht Acute Stress Task (MAST), alternating a mental arithmetic task with exposure to either the ice bath or the ice packs. Control groups alternated between the arithmetic task and room temperature water baths or icepacks. We used self-reported stress measures and blood pressure and pulse readings to assess participant stress levels prior to and following the main task. Self-reported stress was significantly higher post-task for stress groups in both conditions compared to control groups but did not differ from one another. Physiological measures did not differ across groups. These findings suggest that the ice pack method is a viable alternative to ice baths for inducing cold pressor stress.

Email: Abigail Kortenhoeven, abkern@ttu.edu

6:00-7:30 PM (3187)

Manipulating the Statistics of Sensory Information in Multisensory Category Learning. REBECCA J. HIRST, Trinity College Dublin, ALAN O'DOWD, Trinity College Dublin, FIONA N. NEWELL, Trinity College Dublin & New York University Abu Dhabi, MEIKE SCHELLER — Our environment

exposes us to natural correlations between multisensory dimensions of the stimuli we encounter, and these correlations can help when categorising stimuli. However, the statistics of sensory information we encounter undergoes natural variability, and variance can differ between sensory modalities. In this study, participants categorised novel stimuli defined by a combination of auditory and visual dimensions (e.g., pitch and size). One category was positively correlated whilst another was negatively correlated. Participants learned under one of three conditions, such that category information was similarly easy to derive from both sensory modalities, or easier to derive from one sensory modality compared with the other. Following initial learning, the relative weighting of modalities was assessed, to determine whether the ease by which sensory information can be applied in learning influences later categorical decisions. Across conditions, participants learned acquired category knowledge despite differing statistics, suggesting adaptation. We discuss the adaptive effects observed in the context of real-world scenarios, wherein we must adapt to alterations in the statistics of the sensory input received.

Email: Rebecca Hirst, hirst@tcd.ie

6:00-7:30 PM (3188)

Rule-Based Audio-Visual Category Learning Is Influenced by the Correspondence of Previously Learned Information. ALAN O'DOWD, Trinity College Dublin, REBECCA J. HIRST, Trinity College Dublin, FIONA N. NEWELL, Trinity College Dublin & New York University Abu Dhabi — Category learning is

influenced by sensory processing and prior knowledge. We investigated whether prior unimodal exposure to corresponding or non-corresponding information influences cross-modal category learning. Participants first unimodally categorised stimuli using visual and, separately, auditory dimensions. The categories were either defined by a crossmodal correspondence rule only or a crossmodal non-correspondence rule only. All corresponding and non-corresponding exemplars were subsequently categorised based on audio-visual correspondence (corresponding/non-corresponding) and varied in their category predictability. Learning patterns were generally more complex for less predictable exemplars. Differences in bimodal categorisation accuracy were observed between those who previously experienced the unimodal non-correspondence rule versus those who previously experienced the unimodal

correspondence rule. Although categories are flexible, the correspondence and predictability of previously learned information influences the ability to update category representations in crossmodal rule-based category learning. Future studies will investigate if these findings arise in response to different crossmodal correspondence pairs.

Email: Alan O'Dowd, alodowd@tcd.ie

6:00-7:30 PM (3189)

Simon Effect Reveals Crossmodal Spatial Binding Based on Emotional Congruence in Audiovisual Speech Perception. PATRICK BRUNS, *University of Hamburg*, BRIGITTE RÖDER, *University of Hamburg* — The perceived location of a voice is typically attracted toward a co-occurring face, known as the ventriloquist illusion. Yet it has remained elusive which features determine crossmodal binding in more ambiguous situations with multiple speakers. Here we presented disyllabic pseudowords together with two competing faces that could either match the spoken pseudoword or the affective expression (happy, angry, or fearful) in which it was spoken. The voice was either presented on the side (left or right) of the matching face or centrally between the two faces. As an objective measure of perceived sound location, we assessed the Simon effect: Responses in a loudness (high vs. low) discrimination task were faster when the location of the voice matched the side of the correct response button compared to contralateral responses. Importantly, a significant Simon effect was also observed with central presentation of the voice, indicating crossmodal binding with the matching face (i.e., a ventriloquist illusion). The Simon effect, and thus the strength of crossmodal binding, was of comparable size in the pseudoword-matching and emotion-matching conditions, suggesting that emotion is a strong binding feature in audiovisual speech perception.

Email: Patrick Bruns, patrick.brunz@uni-hamburg.de

6:00-7:30 PM (3190)

Does Spatial Suppression Affect Tactile Rotation? MAKAYLA PIATT, *George Fox University*, CHRIS KOCH, *George Fox University* — Koch and VanderYacht (2022) found that tactile mental rotation was similar to visual mental rotation. Since mental rotation activates working memory (e.g., Bruyer and Scailquin, 1998), this study was conducted to examine

how tactile information is processed in working memory. Three sets of blocks were created similar to the geometric shapes used by Shepard and Metzler (1971). As in the original visual task, participants were presented two shapes and asked to determine if the shapes were the same or different. All participants were blindfolded and held the target shape in their right hand and the comparison shape in the left hand. Approximately half of the participants completed the experiment performing a visual spatial suppression task. The results suggest that tactile information is not converted to a visual code in working memory and support the idea that working memory may include a separate component for haptic information (cf. Morimoto, 2020).

Email: Makayla Piatt, mpiatt21@georgefox.edu

6:00-7:30 PM (3191)

Discriminating Vibrotactile Frequencies: The Role of Active and Passive Movements at Varying Spatial Separations. JOSE JAMES, *Bentley University*, THAER BURGAN, *Bentley University*, MUNA MOHAMED, *Bentley University*, MOUNIA ZIAT, *Bentley University* — This research study explores how participants distinguish between two frequencies (LF-HF) delivered at varying spatial separations in passive (externally initiated) and active (self-initiated) conditions during touch. Four experiments with ten participants each were conducted to identify the higher frequency. Experiments 1, 2, 3, and 4 used frequencies from 50-250 Hz in 50 Hz steps, 50-150 Hz in 25 Hz steps, 50-100 Hz in 12.5 Hz steps, and 50-75 Hz in 6.25 Hz steps, respectively. Frequencies were delivered using the PinArray, a custom-made device with 12 vibrotactile pins that moved along the medial-lateral direction. Each experiment had 32 conditions (four frequency pairs, four distances: 2, 6, 10, 14 cm; two types of movement: passive and active), resulting in 192 trials, with each condition repeated six times. Results showed significant effects of movement type and distance ($p < .05$). Active touch generally performed better, especially at greater distances. The 2-cm distance consistently showed lower performance across all experiments, particularly for certain frequency pairs. These results suggest that active touch is more effective for frequency discrimination, especially over larger spatial separations.

Email: Jose James, josejames@bentley.edu

6:00-7:30 PM (3192)

Representational Similarities Between Tactile and Auditory Stimuli. CHAERY PARK, *Jeonbuk National University*, JONGWAN KIM, *Jeonbuk National University* — The purpose of this study was to compare the representational affective similarities between tactile and auditory stimuli. The experimental conditions were tactile dimensions (roughness and hardness) and stimulus modalities (tactile and auditory). Participants were presented with each stimulus and asked to rate their responses on tactile and emotion scales. We conducted representational similarity analysis and two-way repeated measures ANOVA. The results showed that tactile and emotional ratings for music were the most similar, indicating the tactile properties exhibit similarities with affective responses to auditory stimuli. This suggests that emotional responses could be predicted based on tactile properties. Repeated measures ANOVAs revealed that the roughness model explained the data better than the hardness model. Additionally, a significant interaction between stimuli and scale types indicated that while tactile and emotional responses to auditory stimuli were similar, these two types of responses were distinct for tactile stimuli.

Email: Chaery Park, sweet0527@jbnu.ac.kr

6:00-7:30 PM (3193)

A Multisensory VR Experience: Exploring the Effect of Smell on Memory. RAHELEH SARYAZDI, *Trent University*, PARJANYA PARIKH, *University of Toronto*, RUOQI HUANG, *University of Oxford*, LAURENCE R. HARRIS, *York University*, BEHRANG KESHAVARZ, *KITE Research Institute, Toronto Rehabilitation Institute, University Health Network*, JENNIFER D. RYAN, *Rotman Research Institute*, JENNIFER L. CAMPOS, *KITE Research Institute, Toronto Rehabilitation Institute, University Health Network* — The presence of multiple, redundant sensory inputs improves perceptual, behavioral, and memory-related outcomes through multisensory integration. Older adults tend to experience heightened multisensory integration compared to younger adults. Although we know much about the integration of visual and auditory sensory cues, including age-related changes, comparatively little is known about the integration of olfactory inputs (smell). The present study investigated the effect of object-associated smells on object recall and context-dependent memory compared to visual inputs alone in older and younger adults. Using

immersive virtual reality, participants first completed a perceptual search task in which they located objects in a virtual environment, including during unimodal (visual-only) and bimodal (visual+smell) conditions. Participants then completed a recall task (naming objects) and a context-dependent memory task (recognizing a change to the scene in which the object appeared). Our preliminary results ($N=20$) suggest that the addition of smell may improve object recall but not context-dependent memory.

Email: Raheleh Saryazdi, rhelehsaryazdi@trentu.ca

Poster Session IV

Friday, November 22, 2024, 7:45-9:15 PM US EST

7:45-9:15 PM (4001)

Meta-Control Adjustments in the Context of a Dynamic Drift Diffusion Framework. CLIFFORD E. HAUENSTEIN, *The Johns Hopkins University School of Medicine*, DEREK M. SMITH, *The Johns Hopkins University School of Medicine* — Meta-control is a poorly understood set of mechanisms responsible for the monitoring and regulation of controlled processing. A better theoretical conception of meta-control may expand our understanding of the many micro-adjustments of cognitive control observed in experimental paradigms and in the real world. We present a simple computational account of meta-control that builds off the well-established drift diffusion model of information processing, but allows for ongoing adjustments in the boundary separation parameter. Specifically, the model proposes that individuals continuously make predictions about future control demands and performance; and monitor the discrepancy between prediction and observation. Furthermore, individuals differentially update their next prediction based on the magnitude of these discrepancies, and adjust their response caution accordingly. A set of simulations is carried out to demonstrate the performance of the model (in terms of parameter recovery) under common data collection conditions. Subsequently, the model is applied to response data from a go/no-go task, and individual differences in prediction updates are established and discussed.

Email: Clifford Hauenstein, chauens2@jh.edu

7:45-9:15 PM (4002)

Pupil Dilations Reveal Distinct Processes of Maintenance and Disengagement in Relation to Cognitive Abilities. JASON S. TSUKAHARA,

University of Miami, MARK PILLAI, Georgia Institute of Technology, CODY A. MASHBURN, Kennesaw State University, RANDALL W. ENGLE, Georgia Institute of Technology — The maintenance of relevant information and the disengagement from no-longer relevant information are two attention control functions that have been proposed to account for the highly correlated, yet distinct, relationship between working memory capacity and fluid intelligence, respectively. The n-back task is classically considered a “working memory” task but this task has consistently been shown to be related more to fluid intelligence than to working memory capacity. Nevertheless, the n-back task requires both processes of maintenance and disengagement to keep a running update of the last n memory items. In the present study, we investigated whether we can distinguish processes of maintenance and disengagement using pupil dilations in 1-back and 3-back tasks. We found that pupil dilations for no-longer relevant items (e.g., 5-back lures in a 3-back task) were larger when the item was misidentified (failure to disengage) as a target (e.g., 3-back) than when it was correctly rejected (successfully disengaged) as a non-target. We also found that individual differences in cognitive abilities were related to pupil dilations on different types of trials in the 1- and 3-back tasks.

Email: Jason Tsukahara, jason.tsukahara@gatech.edu

7:45-9:15 PM (4003)

Reason or Speed? How ADHD Symptomatology and Executive Functioning for Black and/or Latiné Youth Affects Different Mathematics Skills. TERUMI S. RANDLE, *Loyola University Chicago*, VICTORIA GRANT, *Loyola University Chicago*, MARCUS FLAX, *Loyola University Chicago*, ZOE SMITH, *Loyola University Chicago* — Youth with attention-deficit/hyperactivity disorder (ADHD) have an observed difficulty with executive functioning (i.e., fluid reasoning, working memory, processing speed) that can lead to poor math performance (Gaye, 2023). As Black and/or Latiné children with ADHD are affected by biases regarding their academic performance (Metzger, 2021), it is particularly important to understand how their ADHD related impairment affects academic success. Thus, we examined if ADHD symptomatology and executive functioning was associated with math ability. Data was collected from 55 Black and/or Latina/e/o adolescents with ADHD. Executive functioning and mathematics were assessed using the WISC, WIAT, and WASI. Only fluid reasoning was associated with numeric operations

($\beta=.21$). Higher levels of processing speed was associated with better scores on math fluency ($\beta=.24$). ADHD inattentive symptoms were negatively associated with math fluency ($\beta=-.22$). Therefore, providing specialized accommodations for youth with ADHD, especially inattention, can encourage better performance if they struggle with time-based math assignments.

Email: Terumi Randle, tsmithrandle@gmail.com

7:45-9:15 PM (4004)

Selection for Action: Visuospatial Attention Involves Connectivity in the Theta-Band Between Visual and Midfrontal Areas. DARIUSZ ASANOWICZ, *Jagiellonian University*, BARTLOMIEJ PANEK, *Jagiellonian University*, ILONA KOTLEWSKA, *Jagiellonian University*, ROB VAN DER LUBBE, *University of Twente* — Functional connectivity in the theta-band between posterior (visual) and midfrontal areas may be an intrinsic part of a “selection-for-action” system. To test this hypothesis, we used a variant of the flanker task, in which a bilateral stimulus array (consisting of a target and congruent or incongruent flankers at one hemifield, and neutral distractors at the other) was preceded by an orienting cue (100% valid or neutral). In the cue–target interval, a major burst of medial frontal theta power was observed, which was largest in the valid cue condition. In the latter condition, a posterior theta increase was observed that was larger over sites ipsilateral to the forthcoming target. This posterior theta was phase-synchronized with the midfrontal theta. No such effects were observed in the neutral cue condition. After target onset, a major burst in posterior theta activity was observed in both cue conditions, but it was larger ipsilaterally to the target location. This posterior theta was in all cases synchronized with the midfrontal theta. Taken together, the findings suggest an inhibitory role of a fronto-posterior theta network in a mechanism of integration and synchronization of stimulus and response selection processes.

Email: Dariusz Asanowicz, d.asanowicz@uj.edu.pl

7:45-9:15 PM (4005)

The Impact of Mind Wandering Intentions and Dynamics on Convergent and Divergent Thinking. BERNA ALTUNISIK, *Mississippi State University*, ANDREW F. JAROSZ, *Mississippi State University* — The current study examined whether

different mind-wandering task features can lead to different outcomes in subsequent creative thinking tasks. Mind wandering was assessed according to multiple definitions, and attention control, divergent thinking, and creative problem-solving ability were measured. Results showed a positive association between attention control and creative thinking measures. The deliberate mind wandering trait positively predicted creative problem-solving above and beyond attention control. Freely moving thought did not predict creative thinking scores. Off-task behavior during the mind wandering tasks was not observed. Future research may benefit from examining the effects of deliberate disengagement on creative problem-solving tasks.

Email: Berna Altunisik, ba925@msstate.edu

7:45-9:15 PM (4006)

Unwanted Memories Can Be Forgotten Using Direct Suppression But Not Mindful

Suppression. KEVIN VAN SCHIE, *Tilburg University*, ZAHIRA Z. COHEN, *MRC Cognition & Brain Sciences Unit, University of Cambridge*, MICHAEL C. ANDERSON, *MRC Cognition & Brain Sciences Unit, University of Cambridge* — Stopping the retrieval of unwanted memories can cause forgetting, an outcome often attributed to the recruitment of inhibitory control. In two experiments ($N=66$, $N=120$), we used the think/no-think paradigm to compare forgetting as a result of two distinct approaches: direct suppression and mindful suppression. Participants were first trained on cue-target word pairs; then, they were repeatedly presented with the cue and asked to either think or avoid thinking about the target memory. To achieve the latter, participants were assigned to different groups and were instructed to exclude the unwanted memory from awareness when they were cued (direct suppression) or instead by gently letting the memory go and refocusing their attention on the cue, analogous to the approach advocated in meditative practices (mindfulness). We found that direct suppression induced forgetting (regardless of valence of the unwanted memory), but that mindful suppression did not produce forgetting. This suggests forgetting of unwanted memories is better achieved by directly suppressing retrieval of the unwanted memory compared to merely refocusing attention as is often the case in mindfulness.

Email: Kevin van Schie, k.vanschie@tilburguniversity.edu

7:45-9:15 PM (4007)

Focusing on High-Conflict Trials to Better Measure Attention Control. CODY A.

MASHBURN, *Kennesaw State University*, KATE COLE, *Georgia Institute of Technology*, JASON S. TSUKAHARA, *University of Miami*, RANDALL W. ENGLE, *Georgia Institute of Technology* — Theories of working memory, intelligence, and executive functioning often propose a flexible, multi-purpose ability for controlling attention (Baddeley & Hitch, 1974; Shipstead et al., 2016). Yet, many commonly utilized tasks meant to measure attention control do not strongly correlate with each other. One explanation for this failure of convergent validity could be that there is no general “attention control” ability. Alternatively, the tasks most often used are psychometrically flawed, such that no substantial cross-task correlation can be detected. Recently, Moretti et al. (2023) found that a revised method of scoring common attention control tasks improved their reliability and convergent validity, as evidenced by stronger cross-task correlations. In particular, they attempted to control for speed-accuracy tradeoffs and congruence sequencing effects. We reanalyzed archival data on the flanker and Stroop tasks ($N \approx 400$) according to the specifications of Moretti et al. (2023). We also incorporated data from other attention control tasks and criterion constructs. This allowed us to extend Moretti et al.’s findings, exploring both convergent and criterion-related validity more broadly.

Email: Cody Mashburn, cmarshburn3@gatech.edu

7:45-9:15 PM (4008)

Attentional Resource Availability Influences the White Bear Effect. MAKAYLA SZU-YU CHEN,

University of Canterbury, JULIA NEWLANDS, *University of Canterbury*, ZHE CHEN, *University of Canterbury* — The attentional white bear (AWB) effect refers to the allocation of attention to expected distractors. This effect is triggered by a mandatory “process-all” mechanism, where attention is diffusely distributed to every expected item. We investigated the roles of attentional resources in the AWB effect. Participants performed a flanker task intermixed with an occasional temporal order task. In the latter task, two dots were simultaneously displayed, one at an expected distractor location and the other at an empty location. The results showed that the dot at the expected distractor location was more likely to be perceived to occur earlier, indicating the AWB effect. However, when the target

letter of the flanker task was embedded in a rapid serial visual presentation, the AWB effect was eliminated. These results indicate that the AWB effect is contingent on the availability of attentional resources, and the “process-all” mechanism is not “process-always” and can be overridden in certain circumstances.

Email: Makayla Chen, makayla.chen@pg.canterbury.ac.nz

7:45-9:15 PM (4009)

Establishing the Affective Consequences of Oculomotor-Control Mechanisms for Visual Stimuli.

NIYATEE NARKAR, *University of Guelph*, KAYA BARTLEWSKI, *University of Guelph*, CASSIDY D. DARECHUK, *University of Guelph*, MARK J. FENSKE, *University of Guelph* — Mechanisms of selective attention and motor-response control can determine emotional responses for visual stimuli. Items that are ignored or from which a motor-response is withheld, for example, receive more negative ratings than targets of attention/response. Using screen-based eye-tracking, we explored similar effects associated with saccadic eye-movements. In a selective-looking task (Experiment 1), shifting gaze away from individual stimuli led to their affective devaluation relative to looked-at stimuli. To test whether the affective status of visual stimuli is specifically altered by oculomotor inhibition, beyond any fluency-related affective enhancement from foveal processing, we examined the affective consequences of suppressing the urge to make eye-movements in both an anti-saccade task (Experiment 2) and an oculomotor go/no-go task (Experiment 3). Taken together, our results suggest the mechanisms underlying "distractor devaluation" and "no-go devaluation" effects in other selective-attention and motor-response control domains may be similar to those influencing stimulus value in the oculomotor domain.

Email: Niyatee Narkar, nnarkar@uoguelph.ca

7:45-9:15 PM (4010)

Adaptations in Cognitive Flexibility Are Influenced by Factors Beyond Previous Task Difficulty.

THERESA G. MOWAD, *Lehigh University*, CATHERINE ARRINGTON, *Lehigh University* — Cognitive flexibility can be measured through switch rate in a voluntary task-switching experiment. One factor known to influence cognitive flexibility is categorization difficulty (easy vs. hard stimulus discriminations). This study investigated the impact of block-wise difficulty

(80% easy vs. 80% hard trials) on cognitive adaptation effects from the previous trial to the current trial.

Participants performed luminance and size judgments on stimuli that allowed for easy or hard categorization. Adaptation effects predict that when the previous trial is an easy trial it should promote more cognitive flexibility and thus increase task switching on the following trial. However, block-wise difficulty may alter this pattern if participants shift strategic control on a block-wise basis. The interaction of Block Difficulty x Prior Trial Difficulty was significant; for 80% easy blocks participants switched more often following an easy vs a hard trial. However, for 80% hard blocks, participants switched more often following a hard vs. easy trial. Altogether, adaptations in cognitive flexibility are influenced by factors beyond previous task difficulty, varying based on expectations about task difficulty within a block.

Email: Theresa Mowad, tgm320@lehigh.edu

7:45-9:15 PM (4011)

Effects of Using Social Media on Attention and Cognitive Absorption.

ADRIAN VON MUHLENEN, *University of Warwick*, JANELLE KOLAS, *University of Warwick* — Previous research has indicated that experiences of flow and cognitive absorption during the use of social networking sites (SNS) may be a predictor of SNS addiction. Following on from evidence of enhanced cognitive performance following video game play, the present study aimed to uncover any temporary cognitive enhancements that may make the SNS experience feel optimal for some users. Participants were randomly assigned to one of two groups: One group was asked to use their favourite SNS on their smartphones for 5 minutes, whereas the other group completed a dot-tracking task on paper. Afterwards, participants completed three attentional tasks: the attentional blink task, the global-local letter task, and the attention network task. They also filled in questionnaires measuring cognitive absorption, frequency and style of SNS use, and social media disorder. Results showed that the attentional focus was more locally biased in the group using SNS than in the control group. However, the two groups did not differ in the other attention measures or in terms of cognitive absorption and SNS use.

Email: Adrian von Muhlenen, a.vonmuhlenen@warwick.ac.uk

7:45-9:15 PM (4012)

Neural Correlates of Perceptual Learning in Multiple Object Tracking. SHANNON HEALD, *The University of Chicago*, JUDAH HUBERMAN-SHLAES, *The University of Chicago*, COLBY LUNDAK, *The University of Chicago*, FELIX NOBLE, *The University of Chicago*, HOWARD C. NUSBAUM, *The University of Chicago* — Skilled performance has been shown to rely on the ability to selectively attend to multiple objects. While prior research has demonstrated that it is possible to improve one's ability to track multiple objects, there are differences in the degree of this improvement! Here we examined individual differences in neural responses to generalized learning in an adaptive multiple object tracking task (AMOT). Analysis of long-latency visual evoked potentials to the presentation of targets-to-be-tracked revealed that activity during the P1 and N1 time period was predictive of individual differences in perceptual learning in the AMOT task. These findings support the view that the ability to improve one's ability to selectively attend and track multiple objects relies on attentional mechanisms to selectively modify early visual processing sensitivity. This finding mirrors neural mechanisms for generalized learning in the auditory domain, suggesting there are common mechanisms for generalized perceptual learning across sensory modalities.

Email: Shannon Heald, smheald@gmail.com

7:45-9:15 PM (4013)

The Relationship Between Autistic Traits and Visual Information Processing. HIDEYA KOSHINO, *California State University, San Bernardino*, BARBARA SOSA, *California State University, San Bernardino*, ROBERT RICCO, *California State University, San Bernardino* — The empathizing-systemizing (E-S) theory claims that empathizing and systemizing are two independent dimensions to characterize autistic traits. Empathizing involves predicting and responding to people's behavior by understanding their mental states and emotions. Systemizing involves understanding and predicting the behavior of non-human systems by analyzing their rules. The E-S theory claims that autistic individuals typically show impaired empathizing and enhanced systemizing. However, the theory's relation to findings that individuals with autism exhibit superior visual information processing is unclear. This study examined the relationship between autistic traits as measured with

the Emphasizing Quotient (EQ), Systemizing Quotient (SQ), and Autism Quotient (AQ), and visual perception using face processing (pareidolia), Matching Familiar Figure (MFFT), and Hidden Figures (HFT) tasks. Results showed that one or more measures of autistic traits was associated with face processing, MFFT, and HFT. The relations between autistic traits and perception will be discussed.

Email: Hideya Koshino, hkoshino@csusb.edu

7:45-9:15 PM (4014)

Individual Differences in Theory of Mind, Fluid Intelligence, and Attention Control. MANALI PATHARE, *New Mexico State University*, ESTER NAVARRO, *St. John's University*, ANDREW VIALLOBOS, *New Mexico State University*, ANDREW CONWAY, *New Mexico State University* — Understanding other people's perspectives is crucial for effective social interactions. Theory of mind (ToM), the ability to attribute mental states to oneself and others, plays a significant role in interpreting behaviors that differ from our own (Premack & Woodruff, 1978). While all individuals possess ToM to varying degrees, research has shown that individual differences in ToM can be influenced by cognitive abilities such as fluid intelligence, our ability to reason and solve novel problems (Cattell, 1963; Navarro, 2022), and attention control (our ability to maintain focus and manage competing stimuli; Kane & Engle, 2002; Dumontheil et al., 2010). The current study explored how these cognitive factors predict ToM abilities. Our findings highlight the prominent roles of fluid intelligence and attention control, demonstrating their critical influence on ToM. Furthermore, preliminary models indicate that attention control may mediate the relationship between fluid intelligence and ToM, suggesting that the ability to control attention might be a key mechanism through which fluid intelligence impacts ToM abilities.

Email: Manali Pathare, manalipathare27@gmail.com

7:45-9:15 PM (4016)

Assessing the Construct Validity of 'Squared' Attention Control Tasks with Probed Mind Wandering Reports. ALYSSA OQUENDO, *Nova Southeastern University*, SHAINI LAL, *Nova Southeastern University*, KORTE BAJOR, *Nova Southeastern University*, MATTHEW S. WELHAF, *Washington University in St. Louis*, JONATHAN B.

BANKS, *Nova Southeastern University* — Traditional attention control (AC) tasks are often lengthy and, in some cases, produce poor reliability estimates for individual differences studies. Burgoyne and colleagues (2023) developed a set of brief AC tasks that reduces this time burden and improved measurement reliability. The current work examined the relationship between the “squared” AC tasks and traditional measures of working memory capacity (WMC), AC, and mind wandering to further test the construct validity of these measures. Participants (N=243) completed a series of WMC, traditional AC (in which some presented thought probes to assess mind wandering), and the “squared” AC tasks. Confirmatory factor analyses suggested the best fitting model was a bifactor model in which common AC variance was simultaneously modeled with WMC-specific and “squared” AC-specific factors. Consistent with prior work (Banks & Welhaf, 2022; Kane et al., 2016; Welhaf, et al., 2024), mind wandering (both negatively and positively valenced) was directly predicted by general AC. In contrast, the “squared” residual factor positively predicted negatively valenced mind wandering. We interpret these findings as further evidence of the construct validity of the “squared” AC tasks.

Email: Alyssa Oquendo, ao684@mynsu.nova.edu

7:45-9:15 PM (4017)

Attentional Breadth Measurement: A Latent Variable Approach. DOUG CHABOT, *Brock University*, KAREN M. ARNELL, *Brock University* — Attentional breadth refers to allocating attentional resources to the global (forest) or local (trees) level of a stimulus. Laboratory breadth tasks that use hierarchical stimuli have shown good reliability, but these measures have not shown significant associations with each other in several previous studies. The present study used three different attentional breadth tasks each with hierarchical stimuli. Each task had an identical counterpart differing only at the stimulus level (shape vs. letter) and >100 undergraduate participants performed each of the tasks in two separate testing sessions a week apart. Structural equation modeling (SEM) isolated significant shared variability across testing sessions and stimulus types which was then used to build a latent attentional breadth factor. The use of two testing sessions, different stimuli, and SEM allows researchers to remove task-irrelevant noise and state-specific and stimulus-specific factors,

thereby affording a greater opportunity to show common variance across attentional breadth tasks.

Email: Doug Chabot, dc19mx@brocku.ca

7:45-9:15 PM (4018)

Feasibility and Reliability of Measuring Children’s Attentional Control with 3-Minute Tests. ANGELA M. AUBUCHON, *Boys Town National Research Hospital*, ALEXANDER P. BURGOYNE, *Human Resources Research Organization (HumRRO)*, BRYNN GOLDEN, *Boys Town National Research Hospital*, RICHARD PAK, *Clemson University*, RANDALL W. ENGLE, *Georgia Institute of Technology* — Tests of children’s attention control often use RT difference scores or fail to account for both speed and accuracy. Not only do these tests have psychometric issues, but they also tend to be appropriate for only a narrow age range of children. We modified the three-minute “squared” tests of attention control (Flanker Squared, Simon Squared, Stroop Squared) developed by Burgoyne et al. (2023) to be appropriate for children. This trio of tasks, which we call “Conflict Jr.,” incorporate administration and scoring changes which improve measurement of individual differences in adults. Here, we present preliminary data from children ages 4;0 to 13;11 demonstrating the feasibility (testing time, children’s subjective ratings), internal consistency, and test-retest reliability of Conflict Jr. compared to the NIH Toolbox flanker task and conflict tasks available via the Psychology Experiment Building Language (PEBL) test battery. Results revealed that the 3-minute Conflict Jr. tests of attention control demonstrated greater feasibility and reliability than current measures. Further, after accounting for age, Conflict Jr. tasks predicted performance on the Redmond Sentence Recall task, a clinically relevant language measure.

Email: Angela AuBuchon, angela.aubuchon@boystown.org

7:45-9:15 PM (4019)

Impact of Mind Wandering on Performance and Cognitive Processes in Attention Deficit/Hyperactivity Disorder: an ERP study. GABRIELA HORAKOVA, *Université de Strasbourg*, SÉBASTIEN WEIBEL, *Institut National de la Santé Et de la Recherche Médicale (Inserm)*, UGO TISSOT, *Institut National de la Santé Et de la Recherche Médicale (Inserm)*, BICH-THUY PHAM, *Institut National de la Santé Et de la Recherche Médicale (Inserm)*, ELENA

COSTACHE, *Université de Strasbourg*, ANNE BONNEFOND, *Institut National de la Santé Et de la Recherche Médicale (Inserm)* — Attention Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by the presence of symptoms of inattention and/or impulsivity/hyperactivity. Mind-wandering (MW), an unintentional shift of attention towards internal thoughts, is often described as excessive in ADHD. The aim of our study was to examine the impact of MW on performance and cognitive processes, using EEG. Twenty-eight patients and 28 healthy controls completed a 40-minute sustained go/no-go task with embedded probes assessing their attentional state (MW or on-task). Our results show a higher MW frequency in patients compared to controls and a deleterious impact of MW on performance compared to on-task periods: increase of commission errors in patients and reaction times in controls. The ERP analysis highlights a deleterious impact on P1 (perceptual decoupling) and P3b amplitudes (cognitive decoupling) during MW, in both groups. A better understanding of cognitive processes impaired during MW is necessary to improve attentional difficulties of ADHD patients.

Email: Gabriela Horakova, gabriela.horakova@etu.unistra.fr

7:45-9:15 PM (4020)

Idiographic Profiles of Cognitive Abilities: Insights from Daily Assessments of Health, Socioemotional, and Cognitive Functions. GENE BREWER, *University of California, Riverside*, PHIL PEPPER, *University of California, Riverside*, MATTHEW K. ROBISON, *University of Notre Dame*, HOLLY O'ROURKE, *University of California, Riverside* — Understanding variation in cognitive abilities requires not only the identification of general patterns but also exploration of individual variations. A small cohort of participants (N=10) engaged in daily evaluations over a 75-day period, covering health metrics from Fitbit wearables, socioemotional states from surveys, and cognitive assessments including the psychomotor vigilance, visual working memory, and flanker tasks. Group Iterative Multiple Model Estimation was used to create individualized cognitive profiles that estimate daily fluctuations in health, socioemotional well-being, and cognitive performance. Our findings reveal significant within-person variability and intricate patterns unique to each participant, underscoring the value of idiographic analysis in cognitive research. This study

contributes to individual differences assessment by demonstrating the feasibility of idiographic methods in cognitive research, providing rich, individualized insights that complement traditional nomothetic findings. The detailed profiles generated from this research could inform tailored strategies to enhance cognitive performance and well-being on an individual basis.

Email: Gene Brewer, gene.brewer@asu.edu

7:45-9:15 PM (4021)

Individual Differences in State and Trait Mind-Wandering Impact Episodic Memory and Retrieval Dynamics. DILLON H. MURPHY, *University of California, Riverside*, GENE BREWER, *University of California, Riverside* — Mind-wandering is a cognitive state in which attention shifts away from a primary task to unrelated thoughts, and there may be both a state and trait component of mind-wandering such that some people may have a higher propensity to mind wander. We investigated the relationship between mind-wandering and episodic memory. Specifically, we explored how both state and trait mind-wandering affect overall memory performance and the dynamics of retrieval. State mind-wandering negatively correlated with recall and uniquely predicted memory. Additionally, participants prone to state mind-wandering showed a decreased likelihood of initiating recall with the first word studied. In contrast, while both state and trait mind-wandering were negatively associated with recall performance, trait mind-wandering did not uniquely influence memory performance. Moreover, evidence suggested that high trait mind-wandering may impair the lag-recency effect, indicating challenges in leveraging temporal contextual cues for memory retrieval. These findings suggest that while in-the-moment mind-wandering can disrupt memory formation, a predisposition towards mind-wandering does not necessarily impair memory ability but may impact the dynamics of retrieval.

Email: Dillon Murphy, Dillon.Murphy@asu.edu

7:45-9:15 PM (4022)

Characterizing Individual Differences in Sustained Attention, Attentional Control, and Long-Term Memory. CHONG ZHAO, *The University of Chicago*, ANNA CORRIVEAU, *The University of Chicago*, JIN KE, *The University of Chicago*, EDWARD VOGEL, *The University of Chicago*, MONICA



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ROSENBERG, *The University of Chicago* — Individuals differ in their ability to sustain attention. However, whether differences in sustained attention reflect differences in attentional control (AC) or long-term memory (LTM) or whether these abilities comprise largely separable processes remains unknown. We conducted an online study measuring participants' sustained attention, AC, and LTM. We measured sustained attention with an audio-visual continuous performance task (avCPT) in which participants responded to visual or auditory stimuli while inhibiting responses to infrequent targets, AC with Square tasks, and LTM with recognition and source memory tests. Factor analyses revealed that sustained attention formed a distinct factor from LTM and AC. Furthermore, sustained attention robustly predicted LTM and, to a lesser extent, AC factors. To test how neural signatures of sustained attention related to AC and LTM, we analyzed fMRI functional connectivity patterns collected as 20 participants performed the avCPT. A pre-trained connectome-based model of sustained attention predicted participants' performance on out-of-scanner LTM, but not AC, tasks. Together this suggests that differences in sustained attention, although correlated with AC, are more closely related to LTM.

Email: Chong Zhao, chongzhao@uchicago.edu

7:45-9:15 PM (4023)

Environmental Regularities Shape Visual Search

Strategies. CHRISTOPHER AHN, *Washington University in St. Louis*, WOUTER KOOL, *Washington University in St. Louis* — We search the visual world using different strategies, some of them relying on bottom-up salience, others on top-down expectations. However, little is known about how we arbitrate between them. Here, we report a study investigating whether people are sensitive to environmental regularities that incentivize different strategies with differential effort requirements. To test this, we used a visual search task in which people need to search a target in a field of items, each of which is printed in one of two colors. This task allows us to parametrically manipulate bottom-up salience by varying the number of items with the less numerous ("minority") color, and top-down expectations by adjusting the probability that the target is contained in the set with the minority color. We found that even though people's attention tended to be captured by the group of items with the minority color, they used environmental regularities to adapt their strategy to

improve search efficiency. Interestingly, we found that people could only be biased away from their natural inclination to be captured by salient information if the task promotes serial visual search, suggesting an asymmetry in how top-down expectations can modulate bottom-up tendencies.

Email: Christopher Ahn, a.christopherhahn@wustl.edu

7:45-9:15 PM (4024)

Exploring Sense of Agency as a State-Based

Construct. JAMIE M. TROST, *University of Notre Dame*, BRADLEY S. GIBSON, *University of Notre Dame* — Sense of agency has traditionally been approached predominantly as a trait-based construct. However, recent research supports this construct as a dynamic, state-based phenomenon influenced by experiences and situational considerations. In a forced-choice paradigm, trait-based agency predicts consistent context selection, while a state-based approach suggests variability based on prior outcomes. Two studies tested the impact of experience on agency by examining circumstances in which participants were inclined to alter their context selection. Results from a multilevel binomial regression model showed that factors from previous trials (increased response times, encountering invalid cues, responding erroneously) increased the probability of context switching likelihood. Moreover, manipulations of volition, assessed by manipulating the validity of context selection, failed to exert discernible effects on context switching behaviors. This highlights agency's state-based nature during visual search and the interplay between agency and experience.

Email: Jamie Trost, jtrost@nd.edu

7:45-9:15 PM (4025)

Perceptual Load Effects on Attention Orientation

in 3D Space. DYLAN NACEUR, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS*, MARIE IZAUTE, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS*, FRANÇOIS MARMOITON, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS*, GERHARD RINKENAUER, *Leibniz Research Centre for Working Environment and Human Factors*, LAETITIA SILVERT, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS* — Depth information (stereoscopic) could be considered as an important feature in attentional guidance. However, few studies have taken this dimension into account, often with



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inconsistent results. Perceptual load is one factor that could explain these discrepancies. In 2 studies using virtual reality simulated by a headset, we investigated how perceptual load modulates selective attention in depth. A cue informed about the conditionality of the response (go/no-go paradigm). In the "go" condition, participants had to discriminate the tilt of the target bar. The cue was presented in the mid-depth plane. The target could be presented either in the same depth plane or in the front or back plane. We hypothesized that perceptual load would influence the focus of selective attention in depth. The results of these experiments partially support the existence of an observer-centered attentional gradient that may not depend on perceptual load.

Email: Dylan Naceur, dylan.naceur@uca.fr

7:45-9:15 PM (4026)

Temporal Overlap—Not Task Complexity—Determines the Optimal SOA for the Alerting Effect. NADJA JANKOVIC, *Simon Fraser University*, AMANJOT GREWAL, *Simon Fraser University*, VINCENT DI LOLLO, *Simon Fraser University*, THOMAS M. SPALEK, *Simon Fraser University* — Simple visual search involves a single step: find a target (e.g., a red ring) among distractors (e.g., green rings). In contrast, compound search involves two steps: i) find the target in the display and ii) identify a feature of the target (e.g., the tilt of a line inside the target). Performance is facilitated when the display is preceded by an alerting stimulus (e.g., a brief brightening of the screen). Studies using simple searches show alerting occurs at stimulus-onset asynchronies (SOAs) of 100ms and beyond. Our previous work using a 100ms SOA showed that while alerting occurred in simple search, it did not in compound search. A temporal-period model was proposed to account for these findings. The present work tested predictions from that model by varying SOA and number of required task steps. In Experiment 1, we used a compound task with four SOAs: 50, 100, 150, and 200ms. We found alerting occurred only at an SOA of 150ms. Experiment 2 tested whether task complexity influences the optimal SOA for alerting by using a three-step compound task. Contrary to the complexity account, alerting was observed at similar SOAs as in the two-step task. The temporal-period model was revised to account for this pattern of results.

Email: Nadja Jankovic, njankovi@sfu.ca

7:45-9:15 PM (4027)

The Impact of Spatialized Auditory Distraction on Visual Search Performance. SYDNI M. NADLER, *Tufts University*, NATHAN WARD, *Tufts University*, HOLLY A. TAYLOR, *Tufts University Center for Applied Brain and Cognitive Sciences* — Visual search—the ability to find targets amongst distractors—is a skill used daily in personal and professional settings. As an attention-guided skill, however, visual search is susceptible to both visual distractions and distractions in other modalities. This is especially notable if the distraction is spatialized (i.e., appearing to come from a specific direction), though this remains untested for auditory distractions. The present study sought to investigate how spatialized auditory distractions impact visual search performance as a function of task requirements and individual differences in attention styles. Results indicate that visual search trials with auditory distractions, regardless of visual distractions, produced significantly longer response times and lower target identification accuracy than trials without auditory distractions. An interaction between self-reported attention style and visual distraction condition was also present. These findings highlight the potential for multi-modal distractions to impact visual search in the real-world, where distractibility may contribute to dangerous situations. However, individuals with attention-shifting tendencies may be more adaptable to visually distracting conditions.

Email: Sydni Nadler, sydni.nadler@tufts.edu

7:45-9:15 PM (4028)

Voluntary Attention Control Is Independent of Selection History. REBECCA N. WARREN, *University of Notre Dame*, BRADLEY S. GIBSON, *University of Notre Dame* — A critical aspect of voluntary attention control is the experience of agency—the feeling of being in control of where attention is oriented. This poster examines the extent to which voluntary control can be influenced by experience-based factors such as the repetition of task-relevant stimulus locations. Repeatedly presenting a target stimulus in the same location during a visual search task should speed the selection of the target, but the effect of selection history on agency has never been directly tested. Across two studies, four levels of target location repetition (0%, 25%, 50%, and 75%) were examined. Feelings of agency were self-reported on a Likert scale from 1-7 after each block of trials. A linear growth curve analysis

consistently showed that target location repetition did speed response times, but it had no effect on agency ratings. These findings are important because they demonstrate that voluntary attention control is independent of selection history.

Email: Rebecca Warren, rebecca.nicole.warren@gmail.com

7:45-9:15 PM (4029)

Waldo and the Mind's Eye: Exploring Visual Search and Individual Differences in Mental Imagery. ASHLEY P. MATHIS, *New Mexico State University*, MICHAEL C. HOUT, *New Mexico State University* — Research has shown that aphantasia—poor/absent visual imagery abilities—affects people's ability to conduct visual search. Previous studies have dichotomized people into those with aphantasia vs. those who have mental imagery, primarily used relatively simplistic tasks, and measured only response times as a metric of performance. Questions remain as to whether the effects are distributed across the entire range of visual imagery ability and whether the difficulty of the task moderates these effects. Here, participants completed the Vividness of Visual Imagery Questionnaire, then performed visual search through scenes from the hidden object picture book series *Where's Waldo?* Scenes varied in difficulty level depending on clutter, prevalence of Waldo-like distractors, and degree to which Waldo was obstructed from view. We measured RTs and accuracy, also using balanced integration scores to account for speed-accuracy tradeoffs. Our goal was to determine whether visual imagery ability was related to performance and whether the difficulty of the task would impact this relationship. Ongoing work involves tracking eye movements to determine the oculomotor correlates of performance differences.

Email: Ashley Mathis, apmathis@nmsu.edu

7:45-9:15 PM (4030)

Explicit Cues Produce Transient Benefits in Attentional Control Strategy. ANDREW CLEMENT, *Millsaps College*, JONATHAN REAGAN, *Texas A&M University*, BRIAN A. ANDERSON, *Texas A&M University* — Recent evidence suggests that implicit learning can lead to persistent benefits in attentional control strategy. Here, we examined whether explicit cues can produce similarly lasting benefits. Participants searched through an array of colored squares

and identified a digit located within a red or blue target square. Each trial contained both a red and a blue target, and participants were free to choose which target to search for. On each trial, more squares were presented in one color than the other color. Thus, the optimal strategy was to search through the smaller subset of colored squares. In an initial training phase, one group of participants was given a word cue indicating the optimal color on each trial, one group was given a display preview allowing them to identify the optimal color on each trial, and one group was given no cue. In a subsequent test phase, these cues were removed. Both the cued and preview groups showed clear benefits in the training phase, locating the target faster and making a larger proportion of optimal choices. However, these benefits were eliminated in the test phase. These findings suggest that unlike implicit learning, explicit cues produce only transient benefits in attentional control strategy.

Email: Andrew Clement, clemear@millaps.edu

7:45-9:15 PM (4031)

Is Statistical Learning Inflexible and Does It Require Attention? DOMINIQUE LAMY, *Tel Aviv University*, AIDAI GOLAN, *Tel Aviv University*, ANIRUDDHA RAMGIR, *Tel Aviv University* — Statistical learning plays an important role in visual search: we can learn to attend to a target's most frequent location and to ignore a salient distractor's most frequent location. In Study 1, we examined whether such learning is flexible. Search and probe trials were intermixed. On search trials, targets appeared more frequently in one location during learning and were equally distributed during extinction. One group was informed of the transition and encouraged to stop attending to the high-probability location, whereas the other group was not. Results indicated that the attentional bias was proactive, long-lasting, and inflexible. In Study 2, we examined whether statistical learning requires that attention be paid to the statistical regularity. Participants searched for a shape target and a salient color distractor was sometimes present. During learning, the distractor occurred more frequently in one location. For one group, attention was diverted from the distractor by precuing the target's location with 100% validity, whereas the other group received a neutral cue. During extinction, all distractor locations were equiprobable and there was no cue. Results showed that attention was necessary for statistical learning.

Email: Dominique Lamy, domi@post.tau.ac.il

7:45-9:15 PM (4032)

Statistical Regularities Can Reverse Typicality Effects in Categorical Search. ARRYN ROBBINS, *University of Richmond* — Exposure to regularly occurring category features enables searchers to develop and utilize category-specific statistical knowledge, thereby enhancing search efficiency (e.g., categorical cuing; Bahle et al., 2021). This study explored how category representations dynamically adapt to exposure to atypical features encountered throughout a search session. Participants searched for categories of objects (e.g., animal) and encountered targets with either typical or atypical features (cat or clam). Importantly, the category prototype (dog) appeared as a target at different time points throughout the search session. Results indicated search efficiency (examined with response time and eye tracking) decreased to prototypes and increased for atypical items throughout the session when searchers encountered atypical targets. Conversely, efficiency to prototypes remained unchanged for searchers exposed to more typical targets. The results reflect an adaptation of category representation to accommodate regularly encountered features and demonstrate how visual attention is guided by learned category structures in a single search session.

Email: Arryn Robbins, a Robbins@richmond.edu

7:45-9:15 PM (4033)

Should You Use That Background to Stand Out in a Virtual Call? YELDA SEMIZER, *New Jersey Institute of Technology*, RUTH ROSENHOLTZ, *Massachusetts Institute of Technology* — The use of video conferencing tools for remote communication has rapidly increased in recent years; however, there is limited research assessing the design of these tools from the perspective of perceptual processes. We quantified the display clutter present in virtual backgrounds and measured human performance in visual search tasks relevant for video conferencing. Participants searched for the current speaker (Experiment 1) or the raised-hand symbol (Experiment 2) in video conferencing displays while we recorded their search time and tracked their eye movements. The displays were manipulated to alter the background complexity (clutter) and the number of attendees (set size) in the call. A mathematical model of clutter was implemented to measure the display clutter. Results showed that search times and fixation counts

increased as display clutter and set size increased. Image-based analysis showed that these effects were mediated by the choice of backgrounds, suggesting that some virtual backgrounds were not optimal when perceptual processes were considered.

Email: Yelda Semizer, yelda.semizer@njit.edu

7:45-9:15 PM (4034)

Age-Related Changes in Selective Listening: Investigating Cognitive and Sensory Factors in Auditory Attention. LUIGI FALANGA, *RWTH Aachen University*, THOMAS DEUTSCH, *Institute for Hearing Technology and Acoustics, RWTH Aachen University*, JANINA FELS, *Institute for Hearing Technology and Acoustics, RWTH Aachen University*, DENISE N. STEPHAN, *RWTH Aachen University*, IRING KOCH, *RWTH Aachen University* — Age-related impairments in selective listening may result from a mixture of the relative contributions of attentional and sensory factors. In the present study, young and old adults were tested in two sessions with a task-switching variant of selective listening. Guided by a visual cue, participants categorized the target speech at the to-be-attended location using manual responses, while simultaneously ignoring distractor speech from the other location. We additionally assessed participants' hearing thresholds. The results showed age-related general slowing. In both age groups, performance decreased when the target location switched (switch cost) and when the target-distractor pair elicited opposite responses (congruency effect). Importantly, the congruency effect in error rates was greater in older adults than in young adults. Moreover, young adults showed a stronger practice-related reduction of switch costs in Session 2 compared to older adults, suggesting better adaptation to the task requirements in young adults. The observed age-related performance differences may be due to a reduced ability to selectively allocate auditory attention in space, even when taking into account age-related sensory differences in hearing ability.

Email: Luigi Falanga, luigi.falanga@psych.rwth-aachen.de

7:45-9:15 PM (4035)

Influence of Aging and Task Preparation on the Stimulus-Response Modality Compatibility Effect. LUDIVINE A. P. SCHILS, *RWTH Aachen University*, IRING KOCH, *RWTH Aachen University*, PI-CHUN HUANG, *National Cheng Kung University*,

SHULAN HSIEH, *National Cheng Kung University*, DENISE N. STEPHAN, *RWTH Aachen University* — Stimulus-response modality compatibility (MC) refers to the mapping between a stimulus modality and its response related sensory consequences. In task-switching, larger switch costs were observed with incompatible (auditory-manual and visual-vocal) compared to compatible modality mappings (auditory-vocal and visual-manual). Previous research on dual tasks indicates that older adults are more affected by MC than young adults. Additionally, studies have shown that older adults are less efficient in using prolonged preparation time, although MC itself is not modulated by task preparation. We aimed to investigate age-related performance regarding MC in task-switching by exposing young and older adults to compatible and incompatible modality mappings, while varying preparation time. Older adults displayed both a larger modality compatibility effect and larger switch costs for modality incompatible mappings. There was no clear age-related difference in terms of preparation benefits, but longer preparation time lead to a decreased effect of modality compatibility. We suggest that older adults suffer from decreased performance in multitasking, stemming from a lower capacity in shielding against task irrelevant, competing task sets.

Email: Ludivine Schils, ludivine.schils@gmail.com

7:45-9:15 PM (4036)

Testing the Microblog Memory Advantage in Healthy Older Adults: Does Message Consistency Matter? MELISSA CHEN, *University of California, Santa Cruz*, LAUREN L. RICHMOND, *Stony Brook University*, SUPARNA RAJARAM, *Stony Brook University* — Social media and news outlets are two major sources that people use to access news information. Yet, people of different ages may engage with these sources differently, which may impact memory. Previously, Peña et al. (2023) reported a microblog memory advantage in young adults regardless of whether sources conveyed conflicting messaging. We examined how information consistency impacts memory for social tweets and news headlines in young and older adults. In Experiment 1, we tested young adults in a modified procedure from Peña et al. (2023) using recognition memory to develop a more suitable design for older adults. We replicated the microblog memory advantage regardless of information consistency. In Experiment 2, we tested older adults who, relative to

young adults, may have less experience with social media microblogs and rely more on official news sources. Older adults also exhibited better memory for social tweets than news headlines regardless of information consistency. However, the microblog memory advantage was dampened for older adults in the context of inconsistent information from the more credible news source. The microblog memory advantage may not simply be due to young adults having more social media experience.

Email: Melissa Chen, mchen249@ucsc.edu

7:45-9:15 PM (4037)

Cognitive Benefits of a Digital Active Aging with Resilience Program Among Canadian Older Adults. CASSANDRA SKROTZKI, *Toronto Metropolitan University*, LIXIA YANG, *Toronto Metropolitan University* — This study assesses the effect of a digital multidomain active aging training program that delivers social, cognitive, and physical exercises. It also examines the potential add-on benefits of a resilience training program. Canadian older adults ages 65+ assigned to 3 training groups (a workshop control (AC), an active aging training (AA), and an active aging with added resilience training (AR) group) will complete 4 weeks of multidomain training. All participants complete the Cogniciti Brain Health Assessment indexing participants' memory and executive functioning at pretest and posttest. Immediate training benefits are analyzed with a 3 (condition: AC, AA, AR) x 2 (session: pretest, posttest) mixed model ANOVA on Cogniciti Brain Health Assessment scores. We predict that AR will experience a larger benefit relative to AA and then AC. The results provide insights on the cognitive benefits of a multi-domain training program, and the additional benefits of integrated resilience training.

Email: Cassandra Skrotzki, cskrotzki@torontomu.ca

7:45-9:15 PM (4038)

Cognitive Overload: Age-Dependent Shifts in Insight Problem-Solving. FEBE DEMEYER, *KU Leuven*, HANS STUYCK, *KU Leuven*, CÉLINE GILLEBERT, *KU Leuven*, EVA VAN DEN BUSSCHE, *KU Leuven* — As we age, analytical step-by-step problem-solving strategies that rely on executive functions decline. Alternatively, problems can also be solved using insight, which is characterized by a sudden realization of the solution (i.e., “Aha!” experience).

Because insight is thought to be less dependent on executive functions, it may remain intact or even improve with age. We compared insight and analytical problem-solving between older adults and intelligence-matched young adults using the Compound Remote Associates test. In this task, participants receive word puzzles that can be solved analytically or with insight. Preliminary results show that older adults solved more problems with insight but fewer analytically compared to young adults. Next, we introduced an additional working memory load to study its impact on participants' problem-solving performance. Both age groups solved fewer problems with insight in this dual-task condition compared to the single-task condition, but the decrease was larger for older adults. These results suggest that the advantage older adults have over young adults in insight problem-solving disappears when executive functions are additionally taxed.

Email: Febe Demeyer, febe.demeyer@kuleuven.be

7:45-9:15 PM (4039)

Cognitive Status Impacts Patterns of Community Mobility in Young Adults. MELANIE BUTT, *The University of British Columbia*, TODD HANDY, *The University of British Columbia* — Work in gerontology has established that in older age, maintaining community mobility depends on maintaining executive cognitive functions. However, does the relationship between cognitive function and patterns of community mobility extend to younger individuals in their cognitive prime? Towards addressing this question, here we collected phone-based GPS data from student participants ($N=173$) for two weeks; they filled out baseline measures of executive functioning, memory, metacognition, and cognitive failures in-lab, as well as daily questionnaires assessing cognition and mood. We found that at the two-week aggregate level, greater daily cognition and baseline executive functioning were associated with less time spent at home, but these measures did not provide predictive value in regression models. Greater daily positive mood was predictive of greater distances travelled, but we did not find support for cognition impacting distances travelled. Taken together, our findings suggest that community mobility patterns in young adults do vary with cognitive status, although the extent of these effects may be less than in older adults experiencing cognitive decline.

Email: Melanie Butt, mbutt@psych.ubc.ca

7:45-9:15 PM (4040)

Cognitive-Motor Dual-Task Cost as a Risk Factor: Retrospective Analysis of Older Adults' Falling History. TIAN ZHOU, *University of Freiburg*, ELISA STRAUB, *University of Freiburg*, ANDREA KIESEL, *University of Freiburg*, DOMINIC GERING, *University of Freiburg*, URS GRANACHER, *University of Freiburg*, AARON HASLBAUER, *University Hospital for Geriatric Medicine and Rehabilitation Felix Platter in Basel*, RETO W. KRESSIG, *University of Basel University Department of Geriatric Medicine Felix Platter*, ROLAND RÖSSLER, *University of Basel University Department of Geriatric Medicine Felix Platter* — The inevitable process of aging exacerbates difficulties in performing cognitive and motor tasks simultaneously. Older adults' fear of falling and their history of falls significantly alter their task-solving strategies, necessitating additional cognitive control to compensate for the increased fall risk. Building on Theill et al. (2011), this retrospective study analyzed over 3,300 participants from an elderly population (aged 60-100) to elucidate the impact of cognitive interference on gait. Participants engaged in animal name enumeration and backward counting tasks while seated or walking at self-assigned speed on a walkway that registered their spatiotemporal gait data. Additionally, they walked at self-assigned, fast, and slow speeds without any cognitive task. Preliminary results indicate performance deterioration in both cognitive and motor domains. Cognitive and motor costs were not correlated, aligning with previous studies on older adults' compensation strategies. We will develop multilevel structural equation models to further investigate dual-task costs and their potential predictability for falls.

Email: Tian Zhou, tian.zhou@psychologie.uni-freiburg.de

7:45-9:15 PM (4041)

Does Cholinergic Functioning Impact Episodic Memory in Older Adults? ARIANA YOUNG, *University of Toronto*, MELANIE COHN, *Krembil Brain Institute, Toronto Western Hospital, University Health Network*, KATHERINE DUNCAN, *University of Toronto* — Computational models predict that high levels of acetylcholine are required for pattern separation (PS) and low levels for pattern completion (PC). As aging is associated with changes in cholinergic function, we aimed to test whether older adults' performance is reduced on tasks that demand PS but enhanced on tasks that assess PC. We developed two tasks that respectively

tax PS and PC: the Verbal Discrimination Task and the Verbal Completion Task. Notably, our stimuli do not rely on visual acuity, which declines with age, and we assessed many different cognitive domains in a neuropsychological battery. We investigated if individual differences in older adults' memory related to cholinergic function by associating their performance on each task to (1) their sustained attention performance (a function strongly and positively related to acetylcholine) and (2) fMRI measures of cholinergic basal forebrain responsivity. Notably, we found that better sustained attention was uniquely associated with higher VDT performance but reduced VCT performance when controlling for executive function and language abilities. We also confirmed that older adults' basal forebrains responded to incentive magnitude in our MRI task.

Email: Ariana Youm, arianayoum@gmail.com

7:45-9:15 PM (4042)

Event Tagging: A Novel Technique to Remediate Age Differences in Event Memory.

SARAH HENDERSON, *Brock University*, SERENA D'ANGELO, *Brock University*, KAREN L. CAMPBELL, *Brock University* — We experience the world as a continuous flow of information, but segment it into discrete events to be encoded into long term memory. While younger adults have been shown to build stronger associations within than between events, some work has shown that less distinct event boundaries may contribute to episodic memory differences in older adults. Leveraging this information, we developed an intervention aimed at improving event memory in older adults by making boundaries more distinct and reinforcing within-event associations. In the present study, we test our intervention using a large online sample of younger ($N=185$) and older ($N=197$) adults, finding that across both age groups, memory for a film is benefited by the event tagging intervention over a control task and normal viewing. This benefit was greater for within than between event memory suggesting that our intervention may be helpful in reinforcing associations within events while maintaining distinct boundaries between them.

Email: Sarah Henderson, sh14jm@brocku.ca

7:45-9:15 PM (4043)

How Does Source Impact Memory for Complex Health-Related Information and Cognitive

Offloading Choice Behavior? Age Comparisons for Recall and Recognition Performance. RYAN TAYLOR, *Stony Brook University*, LOIS K. BURNETT, *Baylor University*, LAUREN L. RICHMOND, *Stony Brook University* — Older adults show deficits in a variety of memory domains including episodic memory and source memory. Cognitive offloading (the use of physical action to reduce cognitive demand) can be used to circumvent memory limitations, and may therefore be particularly useful for older adults. However, the extent to which offloading can benefit source memory is not known; the current study addresses this gap. Young and older adult participants studied health-related facts presented by one of two sources; in one block, participants had to rely on internal memory only, whereas in the other block participants had the opportunity to offload during encoding. Memory performance was tested via free recall and recognition. Replicating prior work, young adults' recognition performance was better than older adults when using internal memory alone, and cognitive offloading improved task performance for both age groups. Both age groups offloaded at similar rates. Novel to the current study, source did not play a role in what participants chose to offload. However, offloading rates for both groups were near ceiling. Future research should address how source may impact offloading behaviors when the amount of information that can be offload is limited.

Email: Ryan Taylor, ryan.taylor@stonybrook.edu

7:45-9:15 PM (4044)

Where Are the Context Effects? XIAOHONG CAI, *Indiana University Bloomington*, TIMOTHY PLESKAC, *Indiana University Bloomington*, JUN FANG, *Indiana University Bloomington* — Context effects, including attraction, similarity, and compromise effects, have been widely studied. These effects occur when choices among existing alternatives are impacted by adding new alternatives to the choice set. The addition of a new alternative impacts the relative choice share (RCS) for one alternative compared to another. Here we report a meta-analysis of all three effects asking how reliably, across 23 papers with 29,538 observations, these effects impact the RCS. The results revealed that these three context effects robustly impacted the RCS of an option. Results further showed that the context effects depend on the configuration of attributes across the choice set, yet nearly all the studies to date have focused on a very

specific configuration. Altogether our results establish a great need to map out how these context effects change over a wider range of configurations of alternatives.

Email: Xiaohong Cai, ca14@iu.edu

7:45-9:15 PM (4045)

Applying Drift Diffusion Models to Investigate Slower Processing in Children With and Without Developmental Language Disorder and/or Low Nonverbal Ability. NIC ZAPPARRATA, *College of Staten Island, CUNY*, C. DONNAN GRAVELLE, *CUNY Graduate Center*, PETER J. JOHNSON, *CUNY Graduate Center*, CAROLA A. MILLER, *The Pennsylvania State University*, PATRICIA J. BROOKS, *College of Staten Island, CUNY* — Children with developmental language disorder (DLD) often exhibit longer reaction times (RTs) than age-matched neurotypical children, leading to the hypothesis that generalized slowing characterizes the disorder. Drift diffusion modeling is a method for estimating parameters influencing RT distributions. The drift-rate represents the rate at which information accumulates whereas non-decision time represents other factors influencing RTs (e.g., attentional control and motor coordination). Using RWiener, we estimated both parameters using mental rotation and visual search RT data collected from third-graders with/without DLD and/or low nonverbal ability (N=279, Miller et al., 2001, 2006). Children with DLD exhibited a lower drift rate compared to neurotypical peers in performing mental rotation, but not visual search, and did not differ in non-decision time. In contrast, children with low nonverbal ability exhibited lower drift rate and higher non-decision time than neurotypical peers across tasks. A challenge to the current analysis was the limited number of RTs per participant. Further analyses using a Bayesian framework may offer a more robust approach to parameter estimation in studies of developmental disabilities.

Email: Nic Zapparrata, nzapparrata@gradcenter.cuny.edu

7:45-9:15 PM (4046)

Black Woman's Double Jeopardy: Race, Rape Myth Acceptance, and Victim Blaming Decision Making. ALESHA BOND, *Davidson College*, OLIVIA RITTENHOUSE, *Davidson College* — One in five Black women in adulthood report they have been raped (West & Johnson, 2013; Ujima, 2018). Black women face both sexism and racism in unique ways. This double-edged

sword is referred to as double jeopardy (Beal, 2008). Negative stereotypes (e.g., Jezebel) associated with the category "Black woman" impact the judgments and decisions made regarding this group. Previous literature has found that Black women are more likely to be blamed for scenarios of sexual assault compared to White women. Participants in this study were 100 women (50 Black and 50 White) who first reviewed a mock sexual assault scenario where only the name (either stereotypically Black or White) of the victim was manipulated. Participants then completed a scale of rape myth acceptance (RMA) and a novel race-sexualization implicit association test (IAT). Results showed that for White victims, there was no difference in victim blaming by people who were low compared to high in RMA. However, for Black victims, those high in RMA made significantly higher victim blame decisions compared to those low in RMA. Preliminary results from the IAT further supported the association between Black women with sexual words compared to White women.

Email: Alesha Bond, albond@davidson.edu

7:45-9:15 PM (4047)

Context-Dependent Valuation in Reinforcement Learning. WILLIAM HAYES, *Binghamton University, SUNY* — Context-dependent valuation occurs when the subjective value of a reward is influenced by the surrounding context. This effect has been widely documented in studies of reinforcement learning (RL) using multi-armed bandit tasks. I will present three key findings from our research in this area. First, context-dependent RL is well-described by cognitive models that track the frequency with which an option "wins" (i.e., provides better relative outcomes), consistent with decision by sampling and range-frequency theory. Second, context-dependent RL is not solely driven by choice repetition: Individuals exhibit the effect even when they passively observe outcomes without making any choices. Third, context-dependent RL is not limited to biological agents: Large language models display similar biases when faced with multi-armed bandit problems. These findings underscore the widespread nature of context-dependent valuation in RL and suggest the need for further research into its underlying causes, moderators, and functional form.

Email: William Hayes, whayes2@binghamton.edu

7:45-9:15 PM (4048)

Effects of Head Injury on Cognitive and Motor Impulsivity in a Non-Clinical Undergraduate Sample.

TODD ALLEN, University of Northern Colorado, ALEJANDRO INTERIAN, VA New Jersey Healthcare System, CATHERINE MYERS, VA New Jersey Healthcare System, VIBNA REDDY, VA New Jersey Healthcare System — An emerging literature indicates increased impulsivity in patients with a history of traumatic brain injury (TBI). In a recent study, veterans with mild TBI had increased cognitive, but not motor, impulsivity. Cognitive impulsivity refers to a preference for smaller immediate rewards (i.e., less willing to wait for larger rewards) while motor impulsivity refers to difficulty inhibiting a motor response. This study extended these results to a non-clinical sample of undergraduates self-reporting head injury. One hundred and sixteen undergraduates, fifty of whom reported a history of head injury (HI+) and sixty-six reported no head injury (HI-), participated on an online study via Qualtrics. They completed an online version of a go/no-go task for motor impulsivity, as well as the Monetary Choice Questionnaire (MCQ) for cognitive impulsivity. HI+ individuals exhibited cognitive impulsivity measured as a reduced willingness to wait in the MCQ. There were no significant differences in the Go/No-Go task between the HI+ and HI- groups. Overall, these findings of head injury in a non-clinical sample being related to cognitive impulsivity, but not motor impulsivity are consistent with finding from Veterans diagnosed with mild TBI.

Email: Todd Allen, michael.allen@unco.edu

7:45-9:15 PM (4049)

Exploring Non-Invasive Neuromodulation as a Method for Enhancing Decision-Making Under Stress.

WILLIAM R. AUE, Air Force Research Laboratory, EMMA MACNEIL, DCS Corporation, KEVIN ALEXANDER, Oak Ridge Institute for Science and Education, REESHAV SHRESTHA, BAE Systems, Inc., YONG YUAN, Oak Ridge Institute for Science and Education, ADAM W. FENTON, Oak Ridge Institute for Science and Education — Real-world decision-making involves rapidly assessing nuanced situations and making critical choices with potentially life-or-death consequences. For example, intelligence analysts must make threat assessments and target verification decisions under tight time constraints. As a result, it is vital that

novel interventions supporting decision-making in stressful scenarios are developed. The current study aims to investigate an approach for enhancing time-constrained decision-making tasks using neuromodulation. Three tasks were used to capture different aspects of decision making: 1) a satellite image target verification task to assess complex perceptual decision making, 2) a variation of a multi-armed bandit task to assess risky decision making and resource allocation, and 3) a recognition memory task. Cervical transcutaneous vagus nerve stimulation (tVNS), a non-invasive electrical stimulation technique, was used by participants prior to speeded or self-paced DM tasks. Performance metrics of response times and response accuracy were compared between the control and treatment groups. Implications and considerations for enhancing human decision-making with neuromodulation are discussed.

Email: William Aue, william.aue@gmail.com

7:45-9:15 PM (4050)

Functional Characterization of the Motor Component in Decision Making: Response Control or Bias? Maybe None of Them.

MICHELE SCALTRITTI, University of Trento, SAMAN KAMARI SONGHORABADI, University of Trento, SIMONE SULPIZIO, University of Milano-Bicocca — Growing evidence indicates that decision processes propagate into response execution. We investigated the functional characterization of the motor component of decision making and, in particular, its link with mechanisms of online response control and response bias. Within lexical decision tasks requiring manual responses, single trial electromyographic (EMG) traces were used to partition reaction times into a premotor (PMT, the time elapsing from stimulus onset until the onset of the EMG burst) and a motor time (MT, the interval between the onset of the EMG burst and the button-press). Experiment 1 manipulated online response control processes via speed-accuracy tradeoff instructions. Experiment 2 manipulated response bias, by changing the proportion of word vs pseudoword responses (.25, .50, .75). The lexicality effect (i.e., slower responses for pseudowords compared to words) surfaced on both PMT and MT. Moreover, speed-accuracy tradeoff manipulations and the proportion of pseudowords modulated the lexicality effect just at the level of PMT, whereas the effect on MT remained constant. This suggests that the lexicality effect

on MT is not straightforwardly associated with response control mechanisms or response bias.

Email: Michele Scaltritti, michele.scaltritti@unitn.it

7:45-9:15 PM (4051)

How Does Cognitive Load Affect Judgment and Decision Making? A Meta-Analysis. JANINA A. HOFFMANN, *University of Bath*, SARAH-SOPHIE SIEMGLÜSS, *University of Bremen*, THORSTEN PACHUR, *Technische Universität Munich*, BETTINA VON HELVERSEN, *University of Bremen* — Decision researchers have often invoked cognitive limitations to explain why human decision-making systematically deviates from rationality. Although many studies have found that cognitive limitations predominantly harm decision performance, the evidence is scattered across the literature. Further, sometimes limitations even seem to benefit decision performance. We synthesized evidence on the impact of cognitive load on decision performance in a meta-analysis. Our literature search identified 108 matching articles, comprising 240 effect sizes for decision performance. A three-level meta-analytic hierarchical model estimated that cognitive load was associated with lower decision accuracy to a small to moderate degree, $d = -.34$, 95%-CI = [-0.40; -0.29]. Task complexity moderated this effect; the quality of participants' decisions declined more in tasks with a higher number of attributes, but load hurt performance less in non-linear decision tasks. The type of load did not alter decision performance. Taken together, our findings indicate that cognitive load generally diminishes decision accuracy, with the degree of impact varying by task complexity.

Email: Janina Hoffmann, jah253@bath.ac.uk

7:45-9:15 PM (4052)

Is the Surprisingly Popular Method in Group Decision Making as Good as Advertised? SHENGHUA LUAN, *Chinese Academy of Sciences*, YUGANG LI, *Chinese Academy of Sciences*, BAIZHOU WU, *Chinese Academy of Sciences*, YUQI HUANG, *Chinese Academy of Sciences*, JUN LIU, *Chinese Academy of Sciences* — One drawback of the majority rules in group decision making is that once the majority is wrong, the group decision is doomed to be wrong as well. The "surprisingly popular" (SP) method is supposed to mitigate this problem by leveraging individuals' metacognitive knowledge to better exploit

the wisdom of a minority of informed individuals. Though shown effective by its original proposers, there have been few studies that systematically examined the method's efficacy across multiple domains. In three studies that spanned forecasting various future events (N=197, #Events=47), predicting winners of professional basketball games (N=302, #Games=69), and judging fake news (N=145, #News=66), we found that the SP method consistently outperformed the simple majority and the confidence-weighted simple majority rules in accuracy. Moreover, the method led to more pronounced accuracy improvements with an increasing group size, indicating that there may be a wisdom-of-the-crowds effect on metacognitive judgment in addition to judgment. These findings suggest that the SP method is indeed as good as advertised, significantly enhancing performance of group decision making over a wide spectrum of tasks.

Email: Shenghua Luan, luansh@psych.ac.cn

7:45-9:15 PM (4053)

Learning to Tell Fact from Fiction: Exemplar-Based Training Improves Discernment of Misinformation But Only for Similar Headlines. TOBY PRIKE, *The University of Adelaide*, LUCY BUTLER, *Northeastern University*, ARIANA MODIRROUSTA-GALIAN, *University of Southampton*, PHILIP HIGHAM, *University of Southampton*, JAKUB BIJAK, *University of Southampton*, ULLRICH ECKER, *The University of Western Australia* — This preregistered study examined the effectiveness of exemplar-based training for improving misinformation discernment. True and false headlines were selected and edited to enhance the salience of one of three characteristics: writing quality, emotionality, or logical fallacies. Participants (N=625) completed pre and post-tests that contained exemplar and non-exemplar true and false news headlines. In the training condition, participants viewed and rated the truthfulness of exemplar headlines and were provided with feedback. In the control condition, participants instead only viewed the same headlines but in non-exemplar (i.e., unedited) form. The training significantly improved discernment between true and false exemplar headlines. However, there was no improvement for non-exemplar [real-world] headlines. There were no changes in discernment for the control group. These findings suggest that exemplar-based training may be effective for improving misinformation discernment for headlines with similar characteristics,

but these benefits may not generalize to true and false headlines more broadly.

Email: Toby Pike, toby.pike@adelaide.edu.au

7:45-9:15 PM (4054)

Effects of Verbal Reminding on Person-Action Conjunction Errors in Eyewitness Memory.

ALAN W. KERSTEN, *Florida Atlantic University*,

JULIE L. EARLES, *Florida Atlantic University*,

ROSELYN E. DIAZ, *Florida Atlantic University* —

Witnessed actions are often recounted verbally to convey the story of what happened. An action description may thus be presented by a person who was not directly involved in the event. What impact do such verbal reminders have on source memory for the person who actually perpetrated the described actions? In the present research, we investigated this issue by presenting participants with videos of actions performed by various actors, interspersed with videos of actors speaking action phrases that sometimes described previously performed actions. Participants were later tested for recognition memory for who performed each action. In some test items, the conjunction items, an action was now performed by a different actor than the one who had performed it previously. For some of these conjunction items, the actor had previously been seen verbally describing the action that they now performed. Participants were more likely to falsely recognize these conjunction items than they were to falsely recognize conjunction items involving actions that had been described by a different person who did not appear in the test item. The impact of the similarity of the original actor and the person issuing the reminder will also be discussed.

Email: Alan Kersten, akersten@fau.edu

7:45-9:15 PM (4055)

Readers Use Larger Temporal Structure to Remember Specific Event Order. YINING DING

 , Washington University in St. Louis, DEVON R.

ALPERIN, Washington University in St. Louis,

JEFFREY M. ZACKS, Washington University in St.

Louis — Memory for the temporal order of events is important for anticipating how new event sequences will unfold. Previous studies have found that changes in perceptual context disrupt item-level associative links, impairing order memory for item pairs spanning across perceptual boundaries. However, these paradigms

preclude the use of larger event structure to scaffold memory for time. Using narrative stimuli with a two-level hierarchical structure, we found that readers could use information about the order of higher-level events to reconstruct the order of sub-events that spanned narrative boundaries. Memory for temporal order across events depended on source memory for which higher-level event each sub-event belonged to. Further, confidence in sub-event temporal order memory was related to confidence in memory for the order of higher-level events. We also replicated our previous finding that participants could use semantic constraints at either level to improve order memory. Together, these results suggest that when people remember the temporal order of naturalistic events, they utilize multiple sources of information including semantic knowledge and episodic links at multiple timescales.

Email: Yining Ding, d.yining@wustl.edu

7:45-9:15 PM (4056)

Keeping It Together: Context Matters More Than Prediction Error in Event Segmentation.

BERNA GÜLER, *Sabancı University*, FATIH SERİN,

University of Cambridge, EREN GÜNSELI, *Sabancı University* — Human episodic memory is segmented.

Within each segment, memories are temporally compressed and more strongly associated than across segments. Two prevailing theories explain this segmented memory structure. The prediction error view suggests that encountering prediction errors generates event boundaries, thereby forming segments. The contextual stability view posits that transitions across stable contexts drive segmentation. In our study, we manipulated contextual stability to distinguish between these two views. Participants evaluated consecutive images. In Experiment 1, there was a different object category, task rule, and reward value in every 6 images to create prediction error. In Experiment 2, the same factors alternated every 6 images, forming stable contexts. Segmentation measured via temporal distance and order judgments was present only in Experiment 2 despite stronger prediction errors in Experiment 1, indicated by a larger reaction time cost on boundary items. This finding suggests that contextual stability, not prediction errors, is the driving factor for event segmentation.

Email: Berna Güler, berna.guler@sabanciuniv.edu

7:45-9:15 PM (4057)

Completely Task-Irrelevant Images as Retrieval

Cues in Task-Switching. BENJAMIN RANGEL,
Brown University, DAVID BADRE, *Brown University* — Influential theories of human cognition posit that we automatically store and retrieve episodic representations of our environment ("event-files"), which can guide future behavior. Prior work has shown that a stimulus need only be presented once for it to be included in an event-file and remain durable for long periods of time. However, these studies used stimuli which were all task-relevant—as task cues, as the subjects of categorization, or serving as central targets. We explored if completely task-irrelevant stimuli are also automatically integrated into event-files, by presenting task-irrelevant items (images) prior to each trial of a task-switching paradigm. The same item was presented only twice with a minimum of two trials between presentations. Following the second presentation, the target location could match or differ from its location during the first presentation. Responses were faster when the target location matched, and slower when it differed from that prior event, relative to baseline performance. These results suggest that task-relevancy is not required for ancillary stimuli to be encoded into event-files, nor is it required for those same stimuli to act as retrieval cues.

Email: Benjamin Rangel, benjamin_rangel@brown.edu

7:45-9:15 PM (4058)

The Impact of Language Proficiency on Situational Model Updating.

ASHLEY S. BANGERT, *The University of Texas at El Paso*, OMAR CARRASCO, *The University of Texas at El Paso*, CHRISTOPHER KURBY, *Grand Valley State University* — When reading, people construct a situational model to comprehend the unfolding story; this model is updated at meaningful changes to reflect current information which requires attention and working memory. However, it is unclear how language proficiency impacts this process. In this study, bilingual English and Spanish speakers read stories in their dominant and non-dominant languages and performed a recognition task related to changes in character or spatial information to evaluate whether they updated only information about the changed dimension (incremental) or all dimensions of the text (global). Participants with lower language proficiency exhibited patterns inconsistent with either incremental or global updating, suggesting difficulties in situational model construction and updating. However, those with higher

language proficiency differentially updated spatial and character information. Namely, spatial information was updated regardless of the changed dimension (more global pattern), but character information was reactivated rather than updated. Thus, individuals with higher language proficiency build more cohesive situational models and may reallocate attentional resources to story aspects (character) they deem relevant.

Email: Ashley Bangert, asbangert2@utep.edu

7:45-9:15 PM (4059)

Implicit Boundary Events Are Recalled Better Than Implicit Non-Boundary Events.

TEJAS SAVALIA, *University of Massachusetts Amherst*, JEFFREY J. STARNS, *University of Massachusetts Amherst*, ANDREW L. COHEN, *University of Massachusetts Amherst* — In a typical temporal context experiment, participants are sequentially exposed to a series of items that are separated into distinct contexts, or sets of items. A change of context, that is, sequentially observing items from two different contexts, has been shown to improve episodic memory for these boundary items relative to non-boundary items. In most of these studies, however, changes in context have been explicitly marked, for example, through perceptually obvious visual or auditory stimuli. In the current work, we explore how episodic recall of items is impacted when context change is operationalized implicitly, that is, when context change is defined solely by the order of item presentation. Participants, were exposed to a rotation judgment cover task for 15 randomly generated polygon items. Items were either presented in a random order or according to a probabilistic structure in which six items formed boundaries between three contexts. In alignment with prior findings using explicit context, we show that boundary items are better remembered than non-boundary items when context is determined implicitly.

Email: Tejas Savalia, tsavalia@umass.edu

7:45-9:15 PM (4060)

Limits on the Effect of Action on Event Memory.

SOPHIE (XING) SU, *Washington University in St. Louis*, JEREMY COHN, *Washington University in St. Louis*, JEFFREY M. ZACKS, *Washington University in St. Louis* — Performing actions boosts memory for descriptions of those actions; this is called the "enactment effect." However, it is unclear if this effect generalizes to naturalistic materials that include linked sequences of actions and multimodal information. In four

studies, we tested for enactment effects using naturalistic movies. Study 1 successfully replicated the enactment effect using descriptions of actions from the movies. In Study 2, participants read or acted out action descriptions and then watched a movie including those actions; no enactment effect was found. In Study 3, participants watched the movies while simultaneously copying the actions that the actors performed; again, no enactment effect was observed. Finally, Study 4 examined whether enactment affected event segmentation within the movies, where once again, no enactment effect was observed. These results suggest that during naturalistic comprehension viewers may obligatorily engage motor simulations, rendering enactment manipulations redundant and thus ineffective.

Email: Sophie (Xing) Su, s.sophie@wustl.edu

7:45-9:15 PM (4061)

Prediction Error and Prediction Uncertainty in Neural Event Representation Updating. TAN NGUYEN, *Washington University in St. Louis*, MATTHEW A. BEZDEK, *Washington University in St. Louis*, JOSET A. ETZEL, *Washington University in St. Louis*, SARAH J. MORSE, *Washington University in St. Louis*, JEFFREY M. ZACKS, *Washington University in St. Louis* — Humans form sequences of stable representations of the world—event models—to predict unfolding activities. To be effective and efficient, the cognitive system needs to update the current event model when one thing ends and another begins—event segmentation. Two potential triggers for updating are prediction uncertainty and prediction error. To assay their roles, we trained two computational models, one segmenting based on prediction uncertainty and the other segmenting based on prediction error, on 18 hours of human activity recordings. We then compared the models' performance to human segmentation and fMRI data from 1 hour of held-out activity. Each model captured unique variability in behavioral segmentation and fMRI activity. Moreover, boundaries from the two models were associated with different network-to-network communication patterns. These results suggest that humans may rely on both prediction error and prediction uncertainty for event model updating.

Email: Tan Nguyen, n.tan@wustl.edu

7:45-9:15 PM (4062)

How Does It End? Endpoints of Boundaries Lead to Completion in Macro Events. AYSE CANDAN SIMSEK, *Leibniz-Institut für Wissensmedien*, TOLGAHAN AYDIN, *Leibniz-Institut für Wissensmedien*, MARKUS HUFF, *University of Tübingen* — Event completion is a psychological phenomenon previously demonstrated with micro events such as kicking a ball. In such an event, the contact with the ball can be missing but incorrectly identified as seen, if the event is continued in a causal manner (i.e., the ball flying off). In two experiments, we used a detection performance test to study event completion in macro events such as preparing breakfast. We used event summaries formed from event boundary and non-event boundary information. Experiment 1 tested the effect of event boundary (with vs. without) and macro end (present vs. absent) on event completion. We observed an interaction indicating more completion for event boundary summaries with macro ends. Experiment 2 tested which portion (beginning vs. end) of event boundary or non-boundary information leads to more event completion. We found that the ends of event boundaries were the driving factor in this process. The results support backward inferences hypothesis suggesting that event completion relies more on deductions formed after the fact based on event endings. These results help further understand event completion on a macro-level.

Email: Ayse Candan Simsek, a.simsek@iwm-tuebingen.de

7:45-9:15 PM (4063)

Individual Differences in the Effect of Event Segmentation on Event Memory in Healthy Older Adults. MAVERICK E. SMITH, *Washington University in St. Louis*, LUCY E. TINDEL, *Washington University in St. Louis*, RACHEL MEMBRENO, *Washington University in St. Louis*, CAMERON TSAI, *Washington University in St. Louis*, NICK CLONEY, *Washington University in St. Louis*, ANDREW J. ASCHENBRENNER, *Washington University in St. Louis*, JASON HASSENSTAB, *Washington University in St. Louis*, JEFFREY M. ZACKS, *Washington University in St. Louis* — Instructing individuals to attend to how they spontaneously segment an activity improves recall compared to instructions to intentionally encode in younger, but not older, adults. Can individual differences explain why this intervention is ineffective in

older adults? The representational substrate hypothesis predicts the intervention benefits those with better episodic memory because aging reduces the fidelity of the mechanisms that support episodic memory. In contrast, the attentional control hypothesis predicts the intervention benefits those with poorer attentional control because aging reduces the automatic engagement of control processes that form adaptive memories. One-hundred seventy-five older adults intentionally encoded four movies. Then, half either segmented or intentionally encoded four additional movies. Participants completed recall and recognition memory tests on the movies and a battery of cognitive tests from 30 minutes up to 1 month later. Contrary to both hypotheses, neither episodic memory nor attentional control measures predicted differences in who benefited from attention to segmentation. Results suggest that attention to event segmentation is not an effective intervention for improving memory in older adults.

Email: Maverick Smith, mavericks@wustl.edu

7:45-9:15 PM (4064)

Investigating Age-Related Differences in Episodic Encoding Evoked by the Variation in Causal Connectivity Between Naturalistic Events.

RUJUTA PRADHAN, *Kansas State University*, KRISTEN MCGATLIN, *Kansas State University*, MORGAN BRUCKS, *Hoglund Biomedical Imaging Center, University of Kansas Medical Center*, LAURA MARTIN, *Hoglund Biomedical Imaging Center, University of Kansas Medical Center*, MORGAN SKINNER, *Kansas State University*, ELLIE WARNES, *Kansas State University*, TRASE BYARLAY-MCQUEEN, *Kansas State University*, HEATHER BAILEY, *Kansas State University* — Research has established the impact of prior knowledge on episodic memory in older adults, including the effects of schemas, scripts, expertise, and stereotypes. In the current study, we investigated whether causal connectivity facilitates encoding of new episodic information similarly in young and older adults. To do so, participants watched an episode of BBC's *Sherlock* in an fMRI scanner and then completed free and cued recall tasks outside of the scanner. Cued recall was scored in terms of episodic details and gist-based information. Preliminary results (n : older adults=21, young adults=34) show that causal connectivity between the cue and the target increased across-event recall of episodic details for both age groups, but it also remarkably increased across event

gist-based memory for young adults and within event gist memories for OAs. Although event boundaries are thought to reduce the associative binding of information (as in the across-event condition), better knowledge of causal connections may help older adults bridge the gap and retain memory for the episodic details of events. Additionally, we will evaluate the relationship between mPFC synchrony during encoding and recall of causally connected event information.

Email: Rujuta Pradhan, rujuta@ksu.edu

7:45-9:15 PM (4065)

Relationship Between Artistic Inclinations and the Strength of Synesthetic Tendencies.

KAZUHIKO YOKOSAWA, *Japan International University*, AKO TSUTSUI, *Japan International University*, MICHIKO ASANO, *University of Tokyo* — This study examines the relationship between artistic inclinations and synesthetic tendencies by investigating grapheme-color mapping characteristics in art college students. We used the degree of temporal consistency in the mapping to measure the strength of the synesthetic tendency. Art college students ($N=318$) intuitively chose the most suitable color for 40 graphemes from the 11 basic color names. We repeated the identical test after approximately three weeks and compared the results with those from a previous study involving non-art college students (Nagai, Asano, & Yokosawa, 2015). The findings indicate that art college students exhibited greater consistency in grapheme-color mapping than non-art college students in Nagai et al. (2015). However, the color choice patterns were similar between the two groups. These results suggest a stronger synesthetic tendency in art college students than non-art college students and a commonality in how both groups associate graphemes and colors.

Email: Kazuhiko Yokosawa, kazyokosawa@gmail.com

7:45-9:15 PM (4066)

Rule Representation: A Cross-Cultural

Perspective. ROLAND PFISTER, *Trier University* — Rules become ingrained deeply into the human mind. Even when human agents aim to break rules, they are haunted by the original rule, as is evident in a range of behavioral and neural markers. A particularly prominent index of automatic rule retrieval emerges in studies that analyze movement trajectories in simple rule-following tasks. Here we generalize previous evidence from such

tasks across cultures using both online and offline data to corroborate the pervasive nature of rule-abiding tendencies.

Email: Roland Pfister, mail@roland-pfister.net

7:45-9:15 PM (4067)

Synesthetic Association Task to Investigate the Underlying Mechanisms of Synesthetic-Like Associations and Metaphors.

TAKASHI KUSUMI, *Kyoto University*, KAZUHIKO YOKOSAWA, *Japan International University*, MICHIKO ASANO, *University of Tokyo*, SAYAKA HARASHIMA, *University of Tokyo*

— This study investigated the common mechanisms behind synesthetic associations and metaphors, emphasizing individual differences in associating information from different modalities. We developed and conducted three large-scale online survey experiments among the general population ($N_s=811, 940, 487$). In addition to posing questions on synesthetic experiences (Eagleman et al., 2007) and administering tasks measuring the consistency of grapheme-color associations (Nagai et al., 2016) and comprehensibility ratings of synesthetic metaphors (Kusumi, 1988; e.g., "sweet sound"), we developed a new task to measure the consistency of synesthetic-like associations other than grapheme-color associations, such as selecting a color for "the sound of the piano" from 11 color names (Experiment 1). This was refined by adjusting and reducing the number of items (Experiments 2 and 3). The results revealed positive correlations among the consistency of synesthetic-like associations, frequency of synesthetic experiences, and degree of synesthetic metaphor comprehensibility in the last two experiments, validating the tasks and suggesting the underlying mechanisms of synesthetic-like associations and synesthetic metaphor comprehension.

Email: Takashi Kusumi, kusumi.takashi.7u@kyoto-u.ac.jp

7:45-9:15 PM (4068)

Habituation of the Pupil Response to Visual Events.

JAN BRASCAMP, *Michigan State University*, BOBICHENG ZHANG, *Michigan State University*, HALEY FREY, *University of California, Berkeley*, VASILI MARSHEV, *Michigan State University* — Many cognitive processes are accompanied by changes in pupil size, and pupillometry is widely used in experimental psychology. But effective use of pupillometry depends on our understanding of the pupil response's basic

properties, and this understanding is surprisingly limited. We examined two such properties: additivity (whether superimposed responses combine linearly) and stationarity (invariance in the pupil response across repetitions of an event). We studied these properties for two pupil response types: effort-related dilations and visually evoked constrictions. In both cases, response-triggering events occurred either in temporal isolation or in pairs of events spaced 2 s apart so that their responses overlapped. We found that all events demonstrate additivity: pupil responses to successive events can be reasonably predicted by linear sum. However, while for effort-related dilations both events in a pair yielded similar responses (stationarity), visually evoked constrictions were weaker for the second event in the pair (non-stationarity). Thus, our findings suggest that an additivity assumption is acceptable, but a stationarity assumption is not: some types of pupil responses habituate and this must be accounted for.

Email: Jan Brascamp, brascamp@msu.edu

7:45-9:15 PM (4069)

Impaired Neurocognitive Function in Individuals with a History of Concussion.

MELISSA A. MATERIA, *University of North Texas*, RYAN OLSON, *University of North Texas* — Concussions affect nearly 2 million Americans each year. Self-report measures of concussion symptoms and severity are commonly used in the diagnosis of concussions, but these assessments may lack the sensitivity to detect subtle functional changes in the brain. Thus, there is a need for more sensitive biologically based measures of concussion, such as event-related potentials (ERPs), to detect these disruptions. The purpose of this study was to examine the relationship between concussions and neurocognitive function indexed by the P3 ERP. Fifty participants with ($n=25$) and without ($n=25$) a history of concussion completed 200 trials of the classic oddball paradigm while brain activity was recorded. Individuals with a history of concussion displayed a reduction in P3 amplitude ($F(1,48)=5.04$, $p=0.029$, $\eta^2 p=0.095$) and increase in P3 latency ($F(1,48)=4.47$, $p=0.04$, $\eta^2 p=0.085$) compared to individuals without a history of concussion. No differences in behavioral reaction time or response accuracy were found ($p > 0.05$). Results were consistent with previous investigations suggesting concussions may have chronic effects on brain function associated with attentional resource allocation and cognitive processing speed.



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Email: Melissa Materia, MelissaMateria@my.unt.edu

7:45-9:15 PM (4070)

Look Away! Exploring How High Trait Resilience Reduces the Negativity Bias in Memory Recall. MAREIKE B. WIETH, *Albion College*, VICTORIA BALOG, *Albion College* — Research has shown a negative relationship between trait resilience and attentional bias towards negative emotional stimuli (Schäfer et al., 2015). The current study explored the relationship between trait resilience, emotion, and memory for peripheral and central details. College students completed the Brief Resilience Coping Scale (Smith et al., 2008) and watched a series of pictures accompanied by either an emotional or non-emotional audio narrative. Participants answered 25 questions about central or peripheral details of the narrative. Consistent with previous research, in the emotional condition participants with lower trait resilience showed greater memory for central details than participants with higher trait resilience. No differences in memory for peripheral details were found between individuals with higher or lower trait resilience in the emotional condition. Furthermore, no differences in memory were found in the non-emotional condition. These findings indicate that the negative relationship between trait resilience and memory may be due to individuals with higher trait resilience shifting their attention away from negative information while individuals with lower trait resilience continue to show a negativity bias.

Email: Mareike Wieth, mwieth@albion.edu

7:45-9:15 PM (4071)

Rating Versus Ranking: How Diverse Response Options Can Reveal More About People's Beliefs and Opinions. MARK LACOUR, *University of Louisiana at Lafayette*, RACHEL MCGRAW, *University of Louisiana at Lafayette*, NOAH HALL, *University of Louisiana at Lafayette* — Likert scales are often used for studying attitudes and beliefs. However, people often endorse any (and all) statements aligning with their attitudes, regardless of the relative importance of these statements. In the case of vaccines, people will equally disagree with statements about their safety, efficacy, or necessity. These data can give a false impression of equivalence between people's beliefs. We recruited people with negative vaccine attitudes (NVAs) to participate in a survey ($n=242$). They were given 7

statements potentially justifying NVAs. They were allowed to veto some of these statements or add their own. They ranked the remnants from "most important" to "least important" and rated how strongly they agree with each. In 45% of cases, Likert data would have been insufficient to differentiate the relative importance of NVA statements. The most frequently cited statements involved distrust in the pharmaceutical industry and epistemic concerns (e.g., not enough known about side effects). The least cited reasons involved pain from injection and religious beliefs. Conservatives had the most diverse set of reasons compared to liberals. Liberals tended to rank pain from injection higher than other reasons.

Email: Mark LaCour, mslacour87@gmail.com

7:45-9:15 PM (4072)

The Canonical Size Effect in Children.

MAGDALENA SZUBIELSKA, *The John Paul II Catholic University of Lublin*, MONIKA PASTERNAK, *The John Paul II Catholic University of Lublin*, KATARZYNA PASTERNAK, *The John Paul II Catholic University of Lublin*, PAWEŁ AUGUSTNOWICZ, *The John Paul II Catholic University of Lublin*, DELPHINE PICARD, *Centra PsyCLÉ, Aix-Marseille University* — The canonical size effect refers to the representation of real-object size information. The current study investigated this phenomenon by drawing from memory among children aged 5, 7, and 9 years ($N=72$). The participants were asked to draw (on regular paper sheets or special foils to produce embossed patterns) common objects whose actual sizes varied at eight size rank levels (from a key to a house). The participants were either sighted or blindfolded. We predicted that the drawn size would linearly increase with increasing size rank of objects (H1) and that this effect would be more salient when producing drawings under than without visual control, especially among younger children (H2). The findings supported H1 among all age groups. This means that children aged 5 to 9 represent real-world size information about everyday objects and are sensitive to their size subtleties. The pattern of results concerning the relation between real-world object size and drawn size was similar in a visual and blindfolded condition; hence, H2 was not supported. These findings align with the recent evidence of the spatial character of the canonical size phenomenon.

Email: Magdalena Szubielska, magdasz@kul.pl

7:45-9:15 PM (4073)

Blue Light in a New Light: Testing an Intervention for Deficits Due to Sleep Deprivation.

MANVIR BAMRAH, Michigan State University, CLAUDIO NUHAJ, Michigan State University, ERIK M. ALTMANN, Michigan State University, KIMBERLY FENN, Michigan State University — We investigated blue wavelength light, which enhances alertness and increases functional connectivity, as an intervention to remediate cognitive deficits from sleep deprivation. Our previous work focused on attention and placekeeping, the ability to accurately follow a task sequence, and found that sleep deprivation increased attentional lapses and placekeeping errors. Interventions (e.g., caffeine, napping) had some ability to remediate attentional lapses but had no effect on placekeeping. Here, in a between-participants design, we manipulated sleep and blue light exposure. In the evening, participants completed attention and placekeeping tasks and were randomly assigned to either sleep in their habitual sleeping environment or stay awake overnight. In the morning, participants were exposed to blue light or sham control for 30 minutes and performed the tasks again, following 24 hours of wakefulness for the sleep-deprived group. Blue light reduced attentional lapses for sleep and deprivation groups but did not affect placekeeping. This work adds evidence that interventions improving alertness do not improve higher-level cognitive processing and do not specifically reverse effects of sleep deprivation.

Email: Manvir Bamrah, bamrahma@msu.edu

7:45-9:15 PM (4074)

A Cognitive and Neural Framework for Cognitive Flexibility: Perspectives from Traumatic Brain Injury.

HAYLEY O'DONNELL, Drexel University, EVANGELIA G. CHRYSIKOU, Drexel University, KIAH PATEL, Drexel University — Cognitive flexibility (CF) is generally defined as the ability to adapt to unexpected challenges in our environment using novel solutions. However, the integration of CF within the broader context of cognitive regulation remains unclear. Here, we propose a novel framework for CF that includes four subfunctions—salience detection, inhibition, set-shifting, and creative thinking—and examine its validity with behavioral data from traumatic brain injury (TBI) patients and control subjects. The neurological profile of TBI presents an

opportunity to examine potential dissociations among these proposed subfunctions; set-shifting and inhibition deficits commonly follow TBI, and salience detection deficits are frequent after severe injuries; in contrast, TBI is not associated with declines in creative thinking. Participants (aged 25-45) completed tasks measuring each proposed subfunction of CF. Results show dissociable responses between the groups, with TBI patients being significantly impaired on tasks targeting inhibition and set-shifting, and less so on salience detection and creative thinking. These findings support the proposed framework of CF and the dissociation between CF and other cognitive processes.

Email: Hayley O'Donnell, hayleyodo@gmail.com

7:45-9:15 PM (4075)

Cortical Thickness and Gray Matter Volume Supporting Object-Based and Egocentric Perspective Transformations.

MARJAN RASHIDI, University of California, Irvine, MARY HEGARTY, University of California, Santa Barbara, ELIZABETH R. CHRASTIL, University of California, Irvine — Spatial visualization is a cognitive ability that enables one to mentally represent spatial relationships between objects. There are two classes of mental spatial transformation: object-based transformations that require the imagined rotation of objects relative to the reference frame of the environment (e.g., mental rotation) and egocentric perspective transformations, which involve imagining how a scene looks like from a different viewpoint(e.g., perspective taking). Here, we addressed the question of whether shared or distinct brain structures—based on grey matter volume and cortical thickness—support object-based and egocentric perspective transformations. For region-level analysis of cortical thickness we used Freesurfer and for whole-brain network analysis we used Advanced Normalization Tools. We calculated gray matter volume using manual segmentation of the hippocampus and hippocampal subfields. The preliminary results showed that cortical thickness in the brain networks involving the precuneus and posterior cingulate cortex play a role in object-based and egocentric transformations. There is a significant correlation between grey matter volume in the dentate gyrus and performance in object-based transformation tasks

Email: Marjan Rashidi, fatemer@uci.edu

7:45-9:15 PM (4076)

Cross-Cultural Differences in Understanding Altercentric Spatial Information: A Comparative Study Between the UK and China. MING YE, *University of Cambridge*, NICOLA S. CLAYTON, *University of Cambridge* — Cultural traits are the fundamental basis for formulating the concept of “self,” which is crucial for understanding visuo-spatial information from others’ perspectives, known as visuospatial perspective taking (VSPT). While cross-cultural differences in processing visual perspectives have been studied, their impact on spatial information processing remains underexplored. This study employs a novel task where participants navigate from another’s perspective through a series of routes, each with 16 continuous moves, to investigate VSPT between Chinese and UK participants. The results reveal that Chinese participants respond slower in the second move, while similar to British counterparts in the first and last steps. Additionally, when manipulating the angular disparity between the avatar’s perspective and self-perspective, Chinese participants exhibit prolonged reaction times during 270° compared to 90° clockwise rotations, whereas UK participants show consistent reactions across angular disparities. These findings suggest that individuals from collectivistic cultures, such as China, may face greater challenges in continuously processing others’ spatial information compared to those from individualistic cultures such as the UK.

Email: Ming Ye, my388@cam.ac.uk

7:45-9:15 PM (4077)

Individual Differences in Personal Wayfinding Preferences in People with Visual Impairments. DOMINIQUE BLOKLAND, *Experimental Psychology & Helmholtz Institute, Utrecht University*, KRISTA E. OVERVLIET, *Experimental Psychology & Helmholtz Institute, Utrecht University*, NATHAN VAN DER STOEP, *Experimental Psychology & Helmholtz Institute, Utrecht University* — People with visual impairments (VIPs) often participate in orientation and mobility (O&M) training to learn how to navigate to their chosen target locations. We investigated individual differences in navigational strategies and preferences during route-learning. For this purpose, interviews were held with 11 VIPs and 11 O&M trainers. We concluded from our thematic analysis that, depending on the severity of the visual impairment, VIPs tend to choose and fall back on

one the following strategies: a strategy with a focus on hearing (e.g., using echo-localization), a focus on haptics (e.g., using a cane to identify landmarks), a focus on sight (e.g., using contrast), or a combination of cues. We also found differences in personal preferences regarding level of independence (e.g., frequency of asking for asking for help, or amount of preparation for the journey) and level of confidence (e.g., attitude towards making errors while navigating).

Email: Dominique Blokland, d.p.h.blokland@uu.nl

7:45-9:15 PM (4078)

Local and Global Strategies for Navigational Learning. DAISY A. VARGAS, *University of California, Irvine*, TAYLOR LE, *University of California, Irvine*, ELIZABETH R. CHRASTIL, *University of California, Irvine* — Strategies can aid learning, but the use of explicit strategies in the acquisition of spatial knowledge requires further investigation. We hypothesize that using explicit strategies that specifically highlight local and global acquisition of one’s surroundings will result in increased spatial knowledge. In an immersive walking virtual reality maze, subjects first undergo an exploration phase, where they learn 9 target object locations. Critically, they are split into three strategy groups. Subjects in the Painting Association group are told to form target object-painting associations. Those in the Hallway Connections group are told to learn the main and branching hallways of the maze. The control group is not given a strategy. In the test phase, all subjects navigate and point between target object pairs, assessing wayfinding success and angular error. We hypothesize that both strategy groups will have higher wayfinding success and lower absolute angular error compared to the control, with the Hallway Connections group showing higher wayfinding success but higher absolute angular error than the Painting Association group. We hope to gain insight into the effectiveness of using local and global strategies for navigation training.

Email: Daisy Vargas, daisvav@uci.edu

7:45-9:15 PM (4079)

Natures of Spatial Codes for Gaze Directions: Horizontal vs. Vertical. CHAEWON LEE, *Korea University*, YANG SEOK CHO, *Korea University* — Although gaze direction has known to convey spatial information, the properties of its spatial coding remain

largely unexplored. In our previous study, no congruency sequence effect (CSE) was observed between horizontal and vertical gaze-based Simon tasks, indicating the formation of distinct spatial codes for each direction. The present study aimed to explore the different natures of spatial codes for each axis of gaze direction. Participants performed horizontal and vertical Simon tasks utilizing gaze direction alongside another mode of spatial information. Gaze-based and location-based Simon tasks were employed in Experiment 1, gaze-based and word-based Simon tasks in Experiment 2, and gaze-based and arrow-based Simon tasks in Experiment 3. The horizontal gaze-based Simon task showed cross-task CSEs with the vertical location-based and arrow-based Simon tasks, while the vertical gaze-based Simon task demonstrated cross-task CSEs with the horizontal word-based Simon task. No cross-task CSE was observed in all other experiments. These results suggest that horizontal gaze direction shares visuo-spatial codes with physical location and arrow, while vertical gaze direction shares semantic-spatial codes with location word.

Email: Chaewon Lee, chwon1203@gmail.com

7:45-9:15 PM (4080)

Predicting One's Memory and Remembering Landmarks on a Map. LAUREN A. MASON, *Tufts University*, AYANNA K. THOMAS, *Tufts University*, HOLLY A. TAYLOR, *Tufts University Center for Applied Brain and Cognitive Sciences* — Maps are rich with information, including landmark names that hold semantic meaning, such as ‘coffee shop’ being a place to get a caffeinated beverage. One can also identify the coffee shop’s location relative to surrounding landmarks. When we reflect on our likelihood to remember where a coffee shop is located relative to our hotel, we are essentially making a metacognitive judgment of learning (JOL). How learners predict what they will remember from maps remains understudied. We examined the role of three map features (landmark complexity, salience, and language) for JOL rating magnitude, memory, and their relationship. Learners studied landmark pairs from maps, made JOLs about their likelihood to remember landmark locations, and were tested. JOL rating magnitude varied as a function of map features, time across the learning span, and self-rated sense of direction ability. These findings shed light on factors that contribute to spatial memory predictions.

Email: Lauren Mason, lauren.mason@tufts.edu

7:45-9:15 PM (4081)

Reinforcement Learning for Spatial Graph Knowledge through Explicit Predictions During Active versus Passive Exploration. TAYLOR LE, *University of California, Irvine*, VAISAKH PUTHUSERYPPADY, *University of California, Irvine*, MICHAEL J. STARRETT AMBROSE, *University of California, Irvine*, ELIZABETH R. CHRASTIL, *University of California, Irvine* — Previous research has found an advantage of active decision-making for spatial navigation, but the specific cognitive mechanisms underlying this advantage are poorly understood. We theorize that active decision-making allows people to make predictions and receive feedback on upcoming encounters during exploration, facilitating reinforcement learning. To address this, healthy young adults (18-35 years) completed a walking immersive virtual reality maze task. In the exploration phase, subjects were assigned to one of four groups in a 2 (Decision-Making: Active & Passive Exploration) x 2 (Reinforcement Learning: Making Explicit Predictions & Feedback, Making Selections) between-subjects factorial design, and learned the locations of nine target objects. In the test phase, subjects navigated between target object pairs without feedback, and their wayfinding success and path efficiency were measured. Preliminary results suggest no significant differences between any of the four groups across either variable. Further data is currently being collected to assess whether these results persist for a more powered sample. The results of this study may provide insight into training mechanisms to improve human navigational abilities.

Email: Taylor Le, taylorlemk@gmail.com

7:45-9:15 PM (4082)

The Effects of Topology, Metric Information, and Directionality on Navigational Graph Learning. TIFFANY RABER, *University of California, Irvine*, ELIZABETH R. CHRASTIL, *University of California, Irvine* — This study investigates how prior navigational experience with a graph's structure influences learning a new, related graph. A graph is a series of place nodes linked by path edges, and is largely defined by the topology of the connections, rather than the metric distances and angles between locations. Participants first learn a baseline maze and then they learn one of four similar mazes, differing in topology, metric information, and directionality (mirrored maze; right and left turns are



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reversed). We hypothesize that changes in graph structure will affect learning outcomes: 1) If topology is the primary factor, then participants will struggle with topologically and metrically different mazes. 2) If metric information is key, then difficulties will arise with topologically equivalent but metrically different mazes. 3) If directionality is most significant, then mirrored and topologically different mazes will pose challenges. This research aims to elucidate the distinct roles that features of the environmental structure have on navigational learning and knowledge transfer.

Email: Tiffany Raber, traber@uci.edu

7:45-9:15 PM (4083)

The Role of Working Memory Ability on Path Integration Performance. ALINA S. TU, *University of California, Irvine*, MICHAEL J. STARRETT AMBROSE, *University of California, Irvine*, MARIE KARPINSKA, *University of California, Santa Barbara*, MARY HEGARTY, *University of California, Santa Barbara*, ELIZABETH R. CHRASTIL, *University of California, Irvine* — Path integration, the continuous updating of one's position and orientation in space through self-motion cues, is integral to spatial navigation, yet its underlying cognitive processes remain poorly understood. One cognitive process implicated in spatial navigation is working memory, which is responsible for temporary storage and manipulation of information, but its specific role in path integration has not been thoroughly studied. To test the role of working memory on path integration, over 200 healthy, young participants completed four working memory tasks using a desktop computer (symmetry span, reading span, spatial n-back, and verbal n-back) and two path integration tasks (triangle completion and loop closure) using an immersive, walking virtual reality interface. Given the finite processing capacity of working memory, we anticipated stronger associations between working memory ability and path integration accuracy in trials covering larger physical spaces and in participants with slower walking speeds. Furthermore, we predicted that better spatial, but not verbal, working memory would correlate with more accurate path integration. This investigation offers insights into the cognitive mechanisms underlying path integration.

Email: Alina Tu, alinat2@uci.edu

7:45-9:15 PM (4084)

To Visualize or Not? Investigating the Effects of Strategy Instruction on Paper Folding Performance.

PHUC XUAN NHI NGUYEN, *Mississippi State University*, TANNER M. GRUBBS, *Mississippi State University*, ALLISON J. JAEGER, *Mississippi State University* — Spatial training has been shown to enhance spatial skills (Uttal et al., 2013). Research also indicates that using different strategies can improve performance on some spatial tasks (Hegarty, 2018). This research examined the effect of strategy instruction (analytic or visualization) and item presentation (blocked or mixed) on paper-folding (PF) performance. The analytic strategy focused on eliminating incorrect answer choices by examining the number of folds and hole punch location. The visualization strategy focused on mentally visualizing folding and unfolding the paper. There were 3 types of PF items: 1) analytic strategy could eliminate all incorrect options, 2) analytic strategy could eliminate only some incorrect options, and 3) analytic strategy could not eliminate any incorrect options. Item types were presented in separate blocks or mixed. Preliminary results suggest the visualization instruction led to better PF performance than the analytic instruction. Further, there was an interaction between strategy condition and item presentation; participants in the visualization condition performed best when item type was mixed, while those in the analytic condition performed best when item type was blocked.

Email: Phuc Xuan Nhi Nguyen, pn297@msstate.edu

7:45-9:15 PM (4085)

Children Rely on the Geometry of Navigation and Object Recognition When Thinking About Abstract Geometry.

YI LIN, *New York University*, MOIRA DILLON, *New York University* — How do children's developing intuitions about abstract points, lines, and figures relate to the geometries humans and other animals use for everyday navigation and object recognition? One hundred eighty 7- to 12-year-old children watched videos of angles being drawn on an otherwise blank screen and were asked to indicate what happened next. Minimally different language framed these videos as stops and paths of a navigating agent, corners and edges of an object, or points and lines on an infinite surface. Children formed open shapes in the context of navigation but closed shapes in the context of

object recognition, and these patterns became stronger through development. Visuals described using abstract language, moreover, elicited responses that resembled a combination of the navigation and object contexts.

Uniquely human abstract geometric intuitions might thus call upon geometric intuitions used for everyday navigation and object recognition that humans share with other animals.

Email: Yi Lin, yl8476@nyu.edu

7:45-9:15 PM (4086)

Navigating Uncertainty: Age- and ADRD-Related Differences in Explore-Exploit Tradeoffs Across Gambling and Navigation.

ELIANY PEREZ, *University of Florida*, **ADAM J. BARNAS,** *University of Florida*, **JEFFREY KUNATH,** *University of Illinois Chicago*, **DAWN BOWERS,** *University of Florida*, **PETER D. KVAM,** *The Ohio State University*, **NATALIE C. EBNER,** *University of Florida*, **STEVEN M. WEISBERG,** *University of Florida* — Many choices require either exploring new options or exploiting known ones. Recent work predicts a shift in the explore/exploit framework, such that younger adults prefer to explore whereas typical older adults and those with Alzheimer's disease and related dementias (ADRD) prefer to exploit, a shift we refer to as a decline in risk tolerance (i.e., the willingness to select novel options under uncertainty).

Here, we used a modified gambling task and an established navigation task to assess risk tolerance across domains. Both tasks allow us to contrast participants' decisions to exploit previously learned advantageous options with their decisions to explore new, unknown options. Our results suggest a domain-general trait of risk tolerance ($r=.19$, $p=.03$), correlating exploration across domains in younger adults. Additionally, typical older adults and those with subjective cognitive impairments explore significantly less than younger adults ($d=.57$), indicating potential shifts with age and cognitive decline. These findings will inform the development of intervention tools, such as personalized training programs, aimed at enhancing decision-making and spatial navigation skills in older adults with people with ADRD.

Email: Eliany Perez, elianyperez@ufl.edu

7:45-9:15 PM (4087)

Spatial Abilities Are Enhanced in Expert Speed Jigsaw Puzzlers.

MARGARET R. TARAMPI, *University of Hartford*, **WEDNESDAY BUSHONG,** *Wellesley College*, **EB CARON,** *University of Hartford*, **NATASHA SEGOOL,** *University of Hartford*, **NAYOMI WALTON,** *University of Hartford* — Spatial thinking is integral for problem solving, decision making, and navigation with the potential for improvement through structured practice and direct experience. Spatial ability may be more pronounced in experts such as speed jigsaw puzzlers, who can often complete a 500-piece jigsaw puzzle in under an hour. No previous research has examined the cognitive abilities of speed puzzlers, who engage in extensive, often daily, training that seems to increase puzzling speed. Domain-specific expertise has been associated with greater cognitive abilities, though few studies have shown domain-general transfer. This study investigates domain-general spatial abilities involved in speed puzzling. Initial results ($n=62$) suggest that speed puzzling experts have enhanced spatial ability (on measures of spatial visualization) compared to hobby jigsaw puzzlers. Clarifying the nature of these differences could have practical implications for development of training interventions aimed at improving cognitive ability.

Email: Margaret Tarampi, tarampi@hartford.edu

7:45-9:15 PM (4088)

How Adults' Experience with Words Changes Over Time: Insights from Five Years of the Wesleyan Word Experience Project.

BARBARA JUHASZ, *Wesleyan University*, **GRACE DEVANNY,** *Wesleyan University*, **ABBY FRANKENBERG,** *Wesleyan University*, **AVA GALDENZI,** *Wesleyan University*, **CONSTANCE HIRWA,** *Wesleyan University*, **WIRALPACH NAWABUTSITTHIRAT,** *Wesleyan University*, **MEIWEN SHAO,** *Wesleyan University* — This study explored how adults' experiences with words may change over time. Ratings of age-of-acquisition (AoA) and familiarity were collected on 499 words from introductory psychology students each semester, for a total of five years. Across the 10 semesters, ratings were collected from over 1,000 students. One goal of this multiyear project was to explore whether it is possible to assess lexical change for particular words. Regression analyses were used to track the trajectory of the words. Based on the analyses, words were categorized into three different groups: words that remain consistent in AoA and familiarity, those with upward trajectories, and those with downward trajectories. The project also explored how AoA and familiarity relate to each other over time as

well as their internal consistency. AoA was found to have the highest correlation with itself between the first five semesters and the last five semesters of the project.

Email: Barbara Juhasz, bjuhasz@wesleyan.edu

7:45-9:15 PM (4089)

Is the Missing Letter Effect Due Primarily to the Test Word Containing the Target Letter or to the Word Context? ALICE F. HEALY, *University of Colorado Boulder*, JAMES A. KOLE, *University of Northern Colorado*, VIVIAN I. SCHNEIDER,

University of Colorado, Boulder — A letter detection task, in which readers mark target letters in prose passages, has revealed the missing letter effect, in which letter detection accuracy is especially low on frequent function words. Healy et al. (2023) explored whether the missing letter effect is due to the test word containing the target or to the words surrounding the test word. In a passage including unrelated sentences that were either intact or randomly rearranged, test words differed in word frequency but were surrounded by the exact same words. There was an effect of word frequency but no effect of passage type. In the present study, function words varying in word frequency occurred in two prose passages, with the passage theme provided either before or after reading the passage, and with some test words in each passage correctly spelled and others misspelled. Students read both passages and marked the target letter. Both word frequency and word spelling affected the magnitude of the missing letter effect. The location of the passage theme did not affect letter detection errors although it did affect comprehension ratings. The results provide further evidence for the influence of the test word, but not of the word context, on the missing letter effect.

Email: Alice Healy, alice.healy@colorado.edu

7:45-9:15 PM (4090)

Nature of Semantic Activation Route for Japanese Kanji Words and their Katakana Transcriptions. YASUSHI HINO, *Waseda University*, JURI TESHIMA, *Nagasaki Court of Domestic Relations Sasebo Branch*, STEPHEN J. LUPKER, *The University of Western Ontario* — In our experiments, we measured ERPs as well as collecting behavioral data in masked priming lexical decision tasks with kanji targets. In Experiment 1 the contrast was between homophonic but orthographically and semantically unrelated kanji word

pairs and non-homophonic pairs. If semantic activation is mediated by phonology, a masked prime should activate not only the phonology of a homophonic target but also the meaning of that target. Hence, a significant priming effect should emerge in N400 amplitudes. In contrast, if semantic activation arises directly from orthography, no N400 priming effect is expected. A (small but) significant homophone priming effect was observed in the behavioral data and in N250 amplitudes but not in N400 amplitudes. When the kanji primes were transcribed into katakana, a second experiment produced a significant priming effect not only in the behavioral data and in N250 amplitudes but also in N400 amplitudes. Assuming that the N400 priming effect is semantically-based, these results suggest that semantic activation arises mainly from orthography when reading kanji words. In contrast, phonologically-mediated semantic activation arises when the orthographic forms are transcribed into katakana.

Email: Yasushi Hino, hino@waseda.jp

7:45-9:15 PM (4091)

Pseudo-Morphological Priming with Phonologically Inconsistent Targets: Evidence from Response Time and ERP Data. JOANNA MORRIS, *Providence College*, EMMA G. KEALEY,

Providence College, ETHAN MOORE, *Providence College*, CRISMAR RAMOS-MARTE, *Providence College*, ALEKSANDRA KURYLOWICZ — Masked morphological priming effects have been found whenever a prime and a target share orthographically defined (pseudo-) morphemes, suggesting the existence of form-based morphological (morpho-orthographic) representations. In the bimodel interactive activation model of word recognition, orthographic representations are mapped onto their corresponding phonological representations at a central orthography-phonology interface, which suggests that both types of form representations affect morphological constituency, and should influence complex word recognition. To test this hypothesis, we investigated masked morphological priming effects using phonologically consistent (corner-corn) and inconsistent (tower-tow) pseudo-morphological prime-target pairs, and measured ERPs to track the time course of any effects. Differential priming effects are discussed within the framework of the bi-modal interactive-activation model.

Email: Joanna Morris, jmorris6@providence.edu

7:45-9:15 PM (4092)

Does Mirror-Image Disrupt Orthographic Processing in Logographic Scripts? An Investigation Using Masked Priming Paradigm and Japanese Kanji Words. MASAHIRO

YOSHIHARA, *Tohoku University*, XUE JUNYI, *Waseda University*, YASUSHI HINO, *Waseda University*, MARIKO NAKAYAMA, *Tohoku University* —

Orthographic processing in logographic scripts might be more tolerant of visuospatial changes than that in alphabetic scripts: While previous research found no masked repetition priming effect for $>90^\circ$ rotated primes in alphabetic scripts, we observed a significant effect for 180° rotated primes in logographic scripts (Yoshihara et al., 2024). In the present masked priming experiments, we examined whether orthographic processing of logographic scripts is more tolerant of another visuospatial change, namely, mirror images. Previous research in alphabetic scripts observed a smaller repetition priming effect for mirrored primes than for canonical primes (Pittrich & Schroeder, 2022). If logographic scripts are more resilient, priming effects from mirrored kanji primes, as compared with canonical kanji primes, would not decrease as much. We found, however, that mirrored primes produced significantly smaller priming than canonical primes, indicating that mirror images disrupt orthographic processing similarly in logographic and alphabetic scripts.

Email: Masahiro Yoshihara, masahiro.yoshihara.b6@tohoku.ac.jp

7:45-9:15 PM (4093)

Hemispheric Processing Asymmetry in Left-to-Right Script: Insights from Parafoveal Word Manipulation. SANGYUB KIM, *Chonnam National University*, KICHUN NAM, *Korea University* —

This study examined hemispheric processing in left-to-right scripts using a self-paced rapid serial visual presentation paradigm. This method allowed us to investigate hemispheric asymmetry by presenting words parafoveally in both left-to-right and right-to-left orientations. By comparing these orientations, we aimed to understand the hemispheres' roles in left-to-right script. We hypothesized that in left-to-right presentation, the right visual field (RVF)/left hemisphere (LH) engages in early processing, while right-to-left presentation engages the right hemisphere (RH), exhibiting similar congruency effects. However, late processing at the left visual field (LVF)/RH in left-to-

right presentation and at RVF/LH in right-to-left presentation is expected to show different congruency effects. Proficient left-to-right readers are not expected to exhibit semantic congruency effects in the LVF/RH, while such effects are expected at RVF/LH due to the LH's unfamiliarity with right-to-left reading. Our study reveals an asymmetric pattern of syntactic and semantic congruency effects at the parafoveal word, offering insights into the asymmetric mechanisms of hemispheric processing in reading, influenced by reading direction.

Email: Sangyub Kim, sangyub0310@jnu.ac.kr

7:45-9:15 PM (4094)

Individual Differences in Language Experience and their Effects on the Semantic Processing of Nonwords. FABIO MARSON, *University of Milano-Bicocca*, ROLANDO BONANDRINI, *University of Milano-Bicocca*, SIMONA AMENTA, *University of Milano-Bicocca*, MARCO MARELLI, *University of Milano-Bicocca* —

Extraction of semantic information from words is a fundamental process underlying human language processing. Nonwords, generally considered meaningless strings of letters, were recently found to convey semantic information too. We hypothesized that the sensitivity to semantic information conveyed by nonwords would be related to language experience and affected by individual differences (ID). To test this hypothesis, we extracted indices of semantic load for each nonword using a computational model exploiting distributional properties of nonwords' sublexical elements. Reaction times from a vocabulary size task on ~303k nonwords from ~300k participants from the English Crowdsourcing Project were analyzed. Semantic load indices, three ID measures (age, education, vocabulary size), and their interactions were found to significantly modulate RTs. These results suggest that individual differences related to language exposition affect sensitivity to semantic information carried by nonwords. Finally, these results support the generalization of language experience effects on out-of-vocabulary linguistic materials.

Email: Fabio Marson, fabio.marson@unimib.it

7:45-9:15 PM (4095)

Investigating the Facilitative Effects of Syllable Frequency During the Recognition of Korean Noun Eojeols: An ERP study. SEOYEON KWON, *Korea University*, JOONWOO KIM, *Korea University*,

SOLBIN LEE, *Korea University*, MIN-MO KOO, *Korea University*, KICHUN NAM, *Korea University* —

Although the syllable frequency effect is usually regarded as inhibitory, previous results have revealed a facilitative effect during the visual recognition of Korean noun and verb Eojeols, a spacing unit in Korean. To explore the temporal dynamics of this facilitative effect, we conducted a lexical decision task while recording event-related potentials (ERPs). Given that morphology can modulate the syllable frequency effect, we manipulated both syllable frequency and stem length. According to behavioral data, noun Eojeols with higher syllable frequencies elicited faster and more accurate responses than those with lower frequencies. The ERP results revealed that the P300 time window reflects the initial syllable processing of noun Eojeols, with low-frequency syllables yielding greater amplitudes than those with high-frequency ones. Contrary to the behavioral results, the interaction between syllable frequency and stem length was significant across all time windows of interest. Our findings suggest that the initial syllable may assist in the visual recognition of noun Eojeols at an early stage. Furthermore, stem length can modulate the effect of syllable frequency only at the neurophysiological level.

Email: Seoyeon Kwon, s2eyeon@korea.ac.kr

7:45-9:15 PM (4096)

Latent Lexical Dimensions: Effective Predictors

of Reaction Times. REBECCA KNOPH, *University of Oslo*, JOSHUA LAWRENCE, *University of Oslo* — This study investigates the utility and robustness of word-level latent lexical dimensions by comparing predictive models for lexical decision reaction times. While individual measures (e.g., word length based on number of letters vs. syllables) are commonly used to control for lexical properties in analyses, single individual measures rarely capture entire lexical dimensions (e.g., one word frequency measure derived from a solely written corpus), and multiple individual measures can lead to multicollinearity and uninterpretable models. When we compare predictive models using five latent dimensions (word frequency, structural complexity, neighborhood proximity, meaning polysemy, and usage diversity) versus the 22 individual measures that created the dimensions, we find that the latent dimensions are more intuitive and explain a roughly similar amount of variance (Adjusted R²=52% versus 58%, respectively; both p<.001) without issues of multicollinearity.

Moreover, a dominance analysis shows latent dimensions consistently outperform their individual measures in predictive power. Our findings support using the latent dimensions and highlight the utility of their estimates, particularly as robust controls.

Email: Rebecca Knoph, rebecca.knoph@create.uio.no

7:45-9:15 PM (4097)

Orthographic Effect on Mental Lexicon: Contrast Between Cantonese Braille Readers and Sighted Chinese Readers.

DONALD SHI PUI LI, *Johns Hopkins University*, WINSY WONG, *The Hong Kong Polytechnic University*, MEIHUA SU, *The Hong Kong Polytechnic University*, BRENDA RAPP, *Johns Hopkins University* — There are various ways to represent spoken languages. For instance, alphabetic languages use alphabets to represent phonemes, and logographic languages use symbols to represent morphemes. Studying the orthographic effect on the mental lexicon is challenging because a language's writing system is often predefined. Here, we examined a unique case where spoken Cantonese is represented by two distinct writing systems: logographic Chinese characters and phonetic based Cantonese Braille. Cantonese has many homophones where the same pronunciation corresponds to multiple written characters. Previous studies argue that the semantic competition activated by the same sound causes slower reaction times in the auditory lexical decision for words with higher homophone density. In our experiment, six congenitally blind braille readers performed an auditory lexical decision task and did not show a homophone density effect ($t(323)=0.96$, $p=0.34$) as the sighted readers because of the one-to-one mapping between phoneme and Cantonese braille. The results suggested the homophone density effect is an orthographic effect and demonstrated how the writing system can shape language processing even in tasks that do not involve orthographic processing.

Email: Donald Li, shipui2005@hotmail.com

7:45-9:15 PM (4098)

Testing the Familiarity Check Assumption of E-Z Reader Using Concurrent Eye-Tracking and Magnetoencephalography.

ROSLYN WONG, *Macquarie University*, JUDY ZHU, *Macquarie University*, LILI YU, *Macquarie University*, AARON VELDRE, *University of Technology Sydney*, IAIN



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GIBLIN, *Macquarie University*, PAUL SOWMAN, *Auckland University of Technology*, ERIK D. REICHLE, *Macquarie University* — According to the E-Z Reader model of eye-movement control, the decision about when to move the eyes during reading depends on the completion of an early stage of lexical processing: the familiarity check. The present study used concurrent eye-tracking and magnetoencephalography (MEG) to identify the neural correlates of lexical processing that occur prior to eye movements and that predict when the eyes move from one word to another. Participants made lexical decisions about pairs of letter strings, with one displayed centrally and the other displayed randomly in the left or right periphery, while their brain activity was recorded by MEG. The frequency of centrally displayed words was manipulated. The results were analyzed by aligning the MEG data to saccade onset from centrally displayed words and then examining the time course of brain activity modulated by word frequency prior to this decision to move the eyes, from early visual encoding through word identification and saccadic programming. The implications for the neural underpinnings of the eye-mind link in reading will be discussed.

Email: Roslyn Wong, roslyn.wong@mq.edu.au

7:45-9:15 PM (4099)

The Influence of Emotion in Letter Identity Coding.

ANA BACIERO, *Universidad Complutense de Madrid*, CELIA MARTÍNEZ, *Universidad Complutense de Madrid*, MANUEL PEREA, *University of València*, CLAUDIA POCH, *Universidad Nebrija*, ROCÍO CALVILLO, *Universidad Complutense de Madrid*, JOSÉ ANTONIO HINOJOSA, *Universidad Complutense de Madrid* — Recent lexical decision experiments have shown that one-letter-replacement pseudowords are responded to more slowly when created from emotional words than from neutral words (e.g., carcinoma [base word: carcinoma] vs. camelto [base word: camello]). One explanation for this finding is that emotional words convey important information that would elicit a higher activation of their representations than neutral words, thus slowing down “no” responses to pseudowords. Here, we tested whether emotional words modulate letter identity encoding during lexical processing. Specifically, we examined whether the visual letter similarity effect, negligible with common words in lexical decision experiments (violin produces similar response times as viocin [base word: violin]), was sizeable with misspelled emotional words. The pseudowords were created by

replacing one letter of a word (positive, neutral, or negative) with either a similar vs. letter (e.g., forfun vs. forcuna [base word: fortuna]). Results and implications for models of word recognition will be discussed.

Email: Ana Baciero, anbacier@ucm.es

7:45-9:15 PM (4100)

Production of Normed Novel Abstract Concepts Reveal the Role of Contextual Diversity in Adult Abstract Concept Learning.

DOUNIA LAKHZOUM, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS*, MARIE IZAUTE, *Université Clermont Auvergne & LAPSCO UMR 6024 CNRS*, LUDOVIC FERRAND, *CNRS & LAPSCO*, RENÉ ZEELENBERG, *Erasmus University Rotterdam*, DIANE PECHER, *Erasmus University Rotterdam* — Researchers face challenges in adult word-learning experiments due to the scarcity of normed materials, often relying on low-frequency words, risking prior knowledge interference. We developed novel abstract concepts, which depict familiar situations but lack existing word references in English, offering better control over prior knowledge. Our 42 novel abstract concepts, structured through 126 scenarios composed of 900 pairs of similar and dissimilar exemplars were rigorously normed across three studies. The approach's success was demonstrated in an additional word-learning experiment. We used our normed novel abstract concepts to explore the effects of exemplar similarity vs. contextual diversity on abstract concept learning in adults. We found improved concept learning when studied exemplars were dissimilar to each other. These findings align with previous research on the role of diversity in generalization where learners are able to identify relevant common core features disregarding irrelevant features between dissimilar exemplars. This project fills a gap in the literature, providing researchers with a valuable resource for exploring adult semantic abstract concept learning, an area hitherto unexplored.

Email: Dounia Lakhzoum, dounia.lakhzoum@uca.fr

7:45-9:15 PM (4101)

Qualitatively Different Feedback Effects in Recurrent Network Models of Spoken Word Recognition.

ISABELLA M. FERNANDEZ, *University of Connecticut*, JAMES S. MAGNUSON, *University of Connecticut & Basque Center on Cognition, Brain & Language (BCBL)* — Magnuson et

al. (2003) trained simple recurrent networks (SRNs; Elman, 1990) to predict the current word given a sequence of phonemes to simulate spoken word recognition (SWR). SRNs exhibited human-like phonological competition dynamics, which are attributed to lexical-sublexical feedback in interactive activation models (TRACE; McClelland & Elman, 1986). While SRNs are formally interactive (Magnuson & Luthra, 2024), SRN feedback may be qualitatively different from lexical-sublexical feedback. We compared 3 partially-recurrent networks: an SRN, an SRN with direct output-to-hidden (lexical-sublexical) feedback added (SRNfb), and a Jordan network (JN; with output activations from the previous time step fed back to hidden units; Jordan, 1986). We trained networks to activate the current word from phoneme sequences. Each model achieved 100% accuracy. The SRN and SRNfb were qualitatively similar (with activations roughly approximating [but systematically undershooting] conditional probabilities of words given input sequences) but distinct from the JN (where activations come to correspond to conditional probabilities exactly early in training). We discuss theoretical implications for models of SWR.

Email: Isabella Fernandez, isabella.fernandez@uconn.edu

7:45-9:15 PM (4102)

Striking a Note: Tuning into How Thai Tone Learning and Musical Ability/Training Harmonize.

DIYA GOYAL, *University of Pittsburgh*, L. ROBERT SLEVVC, *University of Maryland*, NATASHA TOKOWICZ, *University of Pittsburgh* — For learners whose first language is not a tonal language, hearing the difference between tones in a language such as Thai can be difficult (Francis et al., 2008; Kaan et al., 2007). Furthermore, better tone perception is also associated with higher musical ability (latent sensitivity to naturally facilitate understanding of music) and musical training (formal learning of an instrument or music theory (e.g., Slevc & Miyake, 2006). The current study investigates whether a relationship exists between Thai tone perception and learning and musical ability and/or musical training for monolingual English speakers with no prior exposure to a tonal language. We did not find a significant relationship between Thai tone learning and musical training/ability, which contrasts with previous literature. However, an interaction between musical ability and musical training was found in association with perception, which suggests that ability

and training together contribute to more accurate perception.

Email: Diya Goyal, pdg10@pitt.edu

7:45-9:15 PM (4103)

The Influence of Bilingualism on Statistical Word Learning.

MATILDE ELLEN SIMONETTI, *RWTH Aachen University*, IRING KOCH, *RWTH Aachen University*, MEGAN LORENZ, *Augustana College*, TANJA C. ROEMBKE, *RWTH Aachen University* — Bilinguals are often thought to be better at learning novel words than monolinguals. While we were able to confirm an overall bilingual advantage in a recent meta-analysis, we observed considerable variability, with some studies suggesting a general bilingual advantage extending to all possible word-learning situations and others only showing an advantage under specific conditions. Therefore, we are conducting a highly powered, pre-registered study that compares word learning using the cross-situational statistical learning paradigm between English-German bilinguals and English monolinguals. Participants will learn 1:1 mappings (where one word corresponds to one object) and 1:2 mappings (where one word corresponds to two objects). Unlike previous studies, we will continuously measure learning and closely analyze trial-by-trial behavior to understand subtle learning differences between the language groups. Consistent with previous research, we hypothesize that it will generally be easier to learn 1:1 mappings than 1:2 mappings. More importantly, we predict that bilinguals will outperform monolinguals, specifically in the context of 1:2 mappings, indicating a specific bilingual advantage. Data collection is ongoing.

Email: Matilde Ellen Simonetti, simonetti@psych.rwth-aachen.de

7:45-9:15 PM (4104)

The Influence of Ethnicity and Nationality on the Perceived Validity of Arguments Containing Informal Fallacies.

DUN-YA HU, *Texas A&M University*, JYOTSNA VAID, *Texas A & M University* — Informal fallacies appear in various forms of argumentation and are often influenced by factors unrelated to the logical structure of the argument itself. Previous research has demonstrated that the social status and gender of the argument maker can influence persuasiveness ratings of arguments, both valid and invalid. Less is known about the impact of the argument maker's ethnicity and nationality on perceived argument

validity. With increasing globalization and diversity of information sources, understanding these effects is crucial. In this study, we investigate whether the ethnicity and nationality of the argument maker affect the persuasiveness ratings of valid arguments and arguments containing informal fallacies. Participants were presented with arguments attributed to individuals of various ethnic and national backgrounds and were asked to judge the validity of these arguments. Our findings suggest that the revealed ethnicity and nationality of the source significantly influence participants' reasoning abilities and their judgments of argument soundness. These results highlight the importance of considering cultural and identity-related factors in the study of argumentation and persuasion.

Email: Dun-Ya Hu, dunyahu@tamu.edu

7:45-9:15 PM (4105)

Variations in Pause Dynamics in a Question-Answer Paradigm. ANUJA MARIYAM THOMAS, *Florida State University*, MICHAEL P. KASCHAK, *Florida State University* — Timing is crucial to successful conversation. This is especially true when it comes to the intricacies of pause dynamics. Violating implicit rules of pause dynamics by waiting too long to respond can be detrimental toward conversational outcomes. But how long is too long? We present work that addresses this question. Participants were presented with audio recordings of question-answer turn exchanges. The delay between the question and response varied between 500 msec and 1300 msec in 100 msec increments. Participants were asked to indicate whether they believed that the respondent waited too long to answer the question. Overall, we found that participants indicated that a response took too long about 50% of the time when the delay between the question and response was ~1000 msec. The timing of this "too long" threshold varied across individuals (some indicating that responses took too long at shorter delays than others) and items (some items elicited "too long" responses at shorter delays than others). We will discuss hypotheses about the source of this individual variation.

Email: Anuja Mariyam Thomas, anujat725@gmail.com

7:45-9:15 PM (4106)

Alignment Through Dyadic Least Effort in Task-Oriented Conversations. CHRISTOPHER KELLO, *University of California, Merced*, POLYPHONY

BRUNA, *University of California, Merced* — Conversational partners must align the meanings of words to have productive interactions. One process of alignment is lexical entrainment whereby partners mirror and abbreviate their word usage to converge on shared terms for referents relevant to the conversation. The present study investigates the process of alignment in Danish conversations in which partners learned to categorize unfamiliar "aliens" through talking and trial-and-error feedback. Performance improved as interactions became more abbreviated in terms of lower word entropy but also as partners diverged in their word usage, contrary to lexical entrainment. We explain these results by adapting a model of speaker and listener effort that shows how partners may align their referents, and thereby support task performance, by minimizing the entropy of their joint word distribution, as well as entropy conditioned on their individual referents. We conclude that the principle of least effort proposed to shape language evolution may also support conversational alignment.

Email: Christopher Kello, ckelo@ucmerced.edu

7:45-9:15 PM (4107)

Brain Electrophysiology Reveals Effects of Domain Knowledge on Word-by-Word Reading Among Older Adults. MELISSA TROYER, *University of Nevada, Las Vegas*, ELIZABETH A.L. STINE-MORROW, *University of Illinois Urbana-Champaign*, KARA FEDERMEIER, *University of Illinois Urbana-Champaign* — Though language use is largely preserved in healthy aging, older and younger adults may achieve successful language comprehension using different mechanisms and/or representations. Older adults out-perform young adults on measures of crystallized knowledge but show declines in fluid abilities, perhaps leading to age-related changes in dynamic activation of semantic networks. We recorded ERPs during word-by-word reading to examine how specific domain knowledge would influence language processing dynamics among older adults (aged 50-81). As in young adults, greater domain knowledge was associated with larger N400 effects of contextual support (supported < unsupported) for words completing sentences about that domain. However, unlike young adults, older adults' domain knowledge did not reliably modulate N400 responses to inappropriate but contextually related words. Older adults may thus be less likely than younger adults to maintain a wide scope of

activation during language comprehension, perhaps due to age-related differences in fluid abilities, structure of lexical-semantic networks, or both.

Email: Melissa Troyer, melissa.troyer@gmail.com

7:45-9:15 PM (4108)

Can Contrastive Focus Be Primed? ANDRÉS BUXÓ-LUGO, *University at Buffalo, SUNY*, VICTORIA TRAVIS, *University at Buffalo, SUNY*, JOSEPH FAVARA, *University at Buffalo, SUNY* — How do listeners maintain prosodic representations in their mind? Recent research has attempted to probe prosodic representations by using priming, but results have been mixed. One possibility for why there has been no strong evidence for prosodic priming is that previous studies have used ambiguous sentences where a change in prosody would result in a completely different message. We investigate whether prosody can be primed by focusing on uses of contrastive accents in sentences where it is optional to include them. Participants alternated between following two instructions and producing two instructions. When following instructions, participants heard a recording that instructed them to click on an object. The second of these could contain a felicitous contrastive accent ("Click on the RED square"). Participants then produced two instructions to click on a shape. Crucially, the second shape sometimes only differed from the first in color, licensing a contrastive accent on the modifier. Based on 60 productions from 48 participants, we use acoustic and impressionistic measures to compare the likelihood of producing a contrastive accent after exposure to instructions that contained them vs. instructions that did not.

Email: Andrés Buxó-Lugo, buxolugo@buffalo.edu

7:45-9:15 PM (4109)

Do Listeners Become Lenient When Hearing a Person with a Second Language Accent or a Language Disorder? PEIYAO CHEN, *Haverford College*, HEATHER CHAU, *Hofstra University*, SCOTT SCHROEDER, *Hofstra University* — Both second-language and language-disordered speakers are prone to adverse communicative experiences, but their conversational partners might act in ways that facilitate the interaction. Here we ask, when second-language and language-disordered speakers produce an ill-formed sentence that does not make literal sense, do listeners

give such speakers the benefit of the doubt? For example, if a speaker says "he gave the apple the teacher" and the listener knows the speaker is a second-language or language-disordered speaker, does the listener interpret the sentence to mean that he gave the apple to the teacher? We had participants listen to sentences with errors and indicate whether the intended meaning was conveyed. Some participants heard the sentences in a second-language accent; others heard a native-speaker and were told that the speaker has a language disorder; and others just heard a native-speaker. Listeners were more lenient toward second-language speakers but not language-disordered speakers.

Email: Peiyao Chen, pchen2@haverford.edu

7:45-9:15 PM (4110)

Individual Differences in Classic N400 and P600 Effects Are Predicted by Language Knowledge and General Working Memory Capacity.

ALBERT E. KIM, *University of Colorado, Boulder*, SHANNON MCKNIGHT, *Fort Lewis College*, DON BELL-SOUDER, *University of Colorado, Boulder*, AKIRA MIYAKE, *University of Colorado, Boulder* — We investigated what cognitive ability or abilities are associated with individual differences in the classic N400 and P600 ERP effects elicited by outright semantic and syntactic anomalies during sentence comprehension. At the group level ($N=174$), semantically anomalous (The spider was eaten by the boat) and syntactically anomalous (The spider was eaten by for bird) sentences elicited N400 and P600 ERP effects, respectively, relative to well-formed control sentences. We also administered a host of cognitive measures to construct latent variables representing (a) domain-general working memory (GWM), assessed with both verbal and nonverbal tasks; (b) verbal working memory (VWM) unique to verbal measures, and (c) language knowledge (LK). Individual differences in the magnitude of the N400 and P600 effects in the standard time windows were both associated with LK, but in the opposite directions: Greater LK were associated with smaller N400 effects, but with larger P600 effects. Additionally, the amplitude of an extended N400 negativity to semantic anomalies was related to GWM. These results highlight the multifaceted nature of individual differences in the classic ERP effects during sentence processing.

Email: Albert Kim, albert.kim@colorado.edu

7:45-9:15 PM (4111)

Neural Pre-Activation During Language

Comprehension Predicts Future False Memory.

RYAN HUBBARD, *University at Albany, SUNY*, KARA FEDERMEIER, *University of Illinois Urbana-Champaign* — During language comprehension, individuals can use contextual information to generate predictions about upcoming words. Recent work has identified a robust phenomenon: when participants read sentences in which the prediction is violated (e.g., “Father carved the turkey with a smile”), and are later tested on their memory, they often falsely remember seeing the predictable word (“knife”). One hypothesized cause of this phenomenon is that features of the predictable word are pre-activated prior to its occurrence, leading to encoding of the word into memory. Testing this hypothesis, we used representational similarity analysis to compare participants' elicited EEG activity prior to the onset of the predictable word during reading, with the neural representation of the word during the memory test. Neural similarity was greater for false alarms compared to correct rejections, and in fact could predict the memory response made at test in a logistic regression. Control analyses ruled out that this effect was driven by the response made during the test, or reflected memory search. These results provide compelling evidence that false memory for predictable words is likely due to encoding of pre-activated features into long-term memory.

Email: Ryan Hubbard, rhubbard2@ualbany.edu

7:45-9:15 PM (4112)

Online Eye-Tracking and Self-Paced Reading

Measures Are Only Portable at the Item Level.

VAN RYNALD LICERALDE, *Vanderbilt University*, TESSA WARREN, *University of Pittsburgh*, ARIEL JAMES, *Macalester College*, DUANE WATSON, *Vanderbilt University* — Psycholinguists often predict that findings in self-paced reading (SPR) studies of sentence processing would hold in analogous eye-tracking studies and vice versa. This assumes that eye-tracking and SPR measures are portable, i.e., that these measures directly map onto each other. We evaluate this assumption and ask (1) at what sampling level (observation, item, subject) and (2) at what unit of aggregation (grand average, averaging within region/word, no averaging) are eye-tracking and SPR measures portable. One hundred seventy-five subjects read the same 120 experimental English sentences in the

same order in separate eye-tracking and SPR sessions that were separated by 7+ days. We estimated portability by correlating the SPR RTs with their matching eye-tracking measures (e.g., gaze duration, go-past, total time). We observed portability for region/word averages at the item level. However, we did not find subject-level or observation-level portability, which indicates that people's performance and single observations are unlikely to map across methods. We discuss how these results relate to work comparing psycholinguistic effects across methods and to studies of individual differences using these methods.

Email: Van Rynald Liceralde, vrtliceralde@gmail.com

7:45-9:15 PM (4113)

The Role of Empathy in Children's Processing and Comprehension of Written Irony.

HENRI OLKONIEMI, *University of Oulu*, TUOMO HÄIKÖ, *University of Turku*, MATTI LAINE, *Åbo Akademi University*, PENNY M. PEXMAN, *The University of Western Ontario* — Comprehending verbal irony requires understanding the speaker's intention, which is different from (sometimes even the opposite of) the literal meaning of a phrase. This is challenging for children, because the underlying skills needed to detect irony may not be fully developed. One of the skills that is proposed to be important for irony detection is the ability to understand other people's feelings. We investigated how 10-year-old children's empathy skills are related to their processing and comprehension of written irony. We analysed data from two of our previous eye-tracking experiments, in which children (n=97, 46 girls) read both ironic and literal sentences embedded in story contexts, and answered text memory and comprehension questions. In addition, children's reading and empathy skills were assessed. The results showed that children with stronger empathy skills showed better irony comprehension and were less likely to reread ironic sentences. These findings have implications for current theories of figurative language comprehension and its development.

Email: Henri Olkoniemi, henri.olkoniemi@oulu.fi

7:45-9:15 PM (4114)

Feature Extraction of Regional Spanish Accent

Varieties for Accent Recognition.

ZIXIN TANG, *The Pennsylvania State University*, CRISTAL GIORIO, *The Pennsylvania State University*, JANET G. VAN

HELL, *The Pennsylvania State University* — Speech is shaped by various regional accents within a given language. Sociolinguistic factors, geographical distance, and cultural differences influence distinct word pronunciations, resulting in accent varieties that are recognizable by native listeners. However, automatic speech recognition (ASR) and dialogue systems predominantly rely on a "standard" accent variety, limiting their effectiveness across users of various regional varieties. Expanding accent identification beyond standard accent varieties is crucial to improve these systems' inclusivity. Spectral features, like Mel-Frequency Cepstral Coefficients (MFCC), offer a promising solution for accent detection as they capture the vocal tract features crucial for distinguishing accents. For Spanish, the standard varieties of peninsular Spain and Mexico are typically used as defaults. However, since Spanish is the official language in over 20 countries, a multitude of regional varieties exist. This study utilized MFCC features from seven Spanish varieties (Argentina, Colombia, Dominican Republic, Mexico, Panama, Puerto Rico, and peninsular Spain) to categorize accent differences using the machine learning method.

Email: Zixin Tang, zqt5035@psu.edu

7:45-9:15 PM (4116)

Lexical Activation Across Different Streams of Speech. ROCHELLE S. NEWMAN, *University of Maryland*, KATIE NGUYEN, *University of Maryland* — Previous research has demonstrated lexical access that "crosses" talker boundaries (Newman, 2016): after hearing a male talker say "my" and a female say "great," participants showed a speeded lexical-decision response to the visual item "geese" (related to "migrate"). This effect was equally large when the two monosyllabic words were spoken by different-gendered talkers as when produced by a single talker, suggesting both that acoustic cues indicating multiple talkers are insufficient to disrupt lexical access, and that activation of lexical representations is not limited to those occurring within a single-talker stream. Here, we try (and fail) to push this effect further, by having the two speakers each produce a two-word sequence. A sample trial might include a male say, "My. Floor" and a female say, "Bag. Great." Speakers then make a lexical decision response to the visual item "geese" (related to "migrate"). Here, showing priming to "geese" would require that lexical activation not only crossed a word boundary, and a talker voice

change, but also a clear change in streams. Data from 40 participants to date suggests that there is no crossover priming in this condition.

Email: Rochelle Newman, rnewman1@umd.edu

7:45-9:15 PM (4116)

Perceptual Identification of Regional Variation in Scottish English. VERA KEMPE, *Abertay University*, HAJAR BENHARRAF, *Abertay University*, MARTA BRZOSKA, *Abertay University*, NEIL KIRK, *Abertay University* — Identifying speaker regional origin is a core sociolinguistic competence. However, in situations of diglossia regional varieties exist alongside a standard, and language users are exposed to, and may switch between both a regional and the standard variety. We examined how perception of speaker regional origin differs between standard and regional varieties. Sixteen talkers from four areas of Scotland produced a sentence in both Standard Scottish English (SSE) and their regional Scots dialect. Using a free classification paradigm, we found that 214 native Scottish listeners' sorting by perceptual similarity was above chance for all regional varieties although accuracy was significantly higher for Scots dialects than for regional variants of SSE. This suggests that speaking SSE obscures regional origin to some extent but not entirely. Exploratory analyses showed that overall sorting accuracy was higher in listeners who were active Scots speakers compared to those with passive Scots exposure confirming the role of experience in identification of linguistic variation. Our data will serve as adult baseline for cross-cultural extensions of research on the development of sociolinguistic competence to native speakers of Scottish English.

Email: Vera Kempe, v.kempe@abertay.ac.uk

7:45-9:15 PM (4117)

Phonological Neighborhood Density Effects on Word Learning: What Happens After Sleep? EFTHYMIA C. KAPNOULA, *Basque Center on Cognition, Brain & Language (BCBL) & Ikerbasque*, ARTHUR G. SAMUEL, *Basque Center on Cognition, Brain & Language (BCBL); Ikerbasque; Stony Brook University* — Novel words with many real-word neighbors (i.e., with high neighborhood density; ND) are learned better compared to those with few neighbors. A possible mechanism behind this effect is that hearing a novel word (e.g., "leef") triggers the co-activation of

similar-sounding words (e.g., "lit," "leap," "wheat"), aiding the formation of links between novel and familiar words and facilitating the integration of the novel word into the mental lexicon. Another factor that has been found to boost word learning is offline consolidation (e.g., during sleep). In this study, we examine the trajectory of the (facilitatory) ND effect on word learning over two consecutive days (i.e., before and after sleep-driven consolidation) in order to better understand its underlying mechanism(s). Specifically, if the ND and Consolidation effects are additive, this would point to independent mechanisms, whereas a ND \times Consolidation interaction may be indicative of overlapping processes.

Email: Efthymia Kapnoula, kapnoula@gmail.com

7:45-9:15 PM (4118)

Studying Linguistic Release from Masking During Speech-in-Speech Recognition Using a Closed Set Task. PERRY L. DRUGAN, *The Pennsylvania State University*, MADISON G. KILDUFF, *The Pennsylvania State University*, NAVIN VISWANATHAN, *The Pennsylvania State University* — How listeners overcome the presence of competing speech to attend to a target speaker is a well-studied, yet poorly understood, question in speech perception. In this study, we examine Linguistic Release from masking—the finding that listeners' performance improves when the target and background speech are mismatched in their language. We do so by using sentences from the CRM database that require listeners to correctly identify the mentioned color and number. By using these closed-set responses we assess the accuracy and response times to English targets in the presence of competing English, Dutch, and Mandarin backgrounds. In addition, we compare the perceptual patterns of primarily monolingual English speakers with those of Dutch-English bilinguals. Data collection is ongoing, and we make two primary predictions. First, performance will be inversely related to the linguistic similarity between target and masker languages (Mandarin > Dutch > English). Second, Dutch-English bilinguals will show smaller effects compared to English monolinguals. The implications of our choice of task and the obtained results will be discussed.

Email: Perry Drugan, pld5153@psu.edu

7:45-9:15 PM (4119)

Using Complexity Invariant Distance Metrics to Assess Production of Mandarin Tonal Contrasts in Adult Learners. CHEN GAO, *CUNY Graduate Center*, SHAN JIANG, *CUNY Graduate Center*, C. DONNAN GRAVELLE, *CUNY Graduate Center*, PATRICIA J. BROOKS, *College of Staten Island, CUNY* — Mandarin Chinese is a tonal language where voice pitch variants distinguish lexical meanings. Learning tonal contrasts presents enormous challenges for adult learners who speak non-tonal languages like English. Using a pretest/posttest design, we examined adult learners' tone production via listening-and-repeating Chinese disyllabic nouns. Undergraduates (N=60) completed a computer-assisted language learning protocol via Zoom. Word-level pitch contours were extracted using the Parselmouth library in Python. To allow point-by-point comparisons of learners' productions and native speaker models, pitch contours were resampled so that all contours had a uniform number of pitch points, with frequency and time normalized. Accuracy of learners' pitch productions was accessed at pretest/posttest via a quantitative metric: complexity invariant distance (CID; Batista et al., 2011), which measures the distance between two time series (learner vs. native speaker productions) taking into account their complexity. CID scores were significantly lower at posttest, following three blocks of training in word-picture matching. Further analyses will examine individual differences in tone production in relation to musical and nonverbal abilities.

Email: Chen Gao, cgao1@gradcenter.cuny.edu

7:45-9:15 PM (4120)

When Non-Speech Tone Contexts Shift Speech Perception, Do They Also Impact Speech Production? CRAIG A. THORBURN, *The University of Texas at Austin*, LORI L. HOLT, *The University of Texas at Austin*, NAZBANOU NOZARI, *Indiana University Bloomington*, FREDERIC DICK, *University College London* — Context can shift how speech acoustics map to perceptual targets, such as phonemes and syllables. Sometimes, these perceptual effects influence speech production, as well. Sensorimotor models of speech posit a "speech map" of acoustic targets that guides the detailed outcomes of production and may provide a means of explaining the transfer of perceptual effects to production. To better understand the



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limits of these effects and the nature of a putative speech map, we tested whether passive listening across statistical distributions of simple, non-speech tones—known to influence speech perception (Holt, 2005)—have a corresponding influence on speech production. Adult participants passively listen to a distribution of tones, then hear one of two speech targets, categorize it, hear it again, and repeat it aloud. Across two conditions, we arrange the tone distributions to shift two ambiguous /ga/-/da/ targets to be more (or less) perceptually distinct, examining how these shifts might change listeners' production of the targets. Preliminary results suggest that the statistical patterns embedded in tones affect not only speech perception, but also influence the acoustics of speech productions.

Email: Craig Thorburn, craig.thorburn@austin.utexas.edu Lori Holt, lori.holt@austin.utexas.edu

7:45-9:15 PM (4121)

Does Mask-Wearing Hinder Cantonese Tone Identification? JIAQING ZU, *The University of Hong Kong*, TIANYU CHU, *The University of Hong Kong*, WILLIAM CHOI, *The University of Hong Kong* — Since the outbreak of COVID-19, wearing masks has become a popular protection against droplet-spread respiratory diseases. However, previous studies have suggested that wearing masks can attenuate sound energy and remove visual cues, making speech perception more difficult. Tone languages rely on pitch changes to convey lexical meaning. Nevertheless, it remains unclear if mask-wearing hinders tone perception. Thus, this study investigated whether Cantonese tone perception was more difficult in masked speech, compared with unmasked speech. Native Cantonese listeners completed a Cantonese tone identification task with mask (masked speech and unmasked speech) and noise (quiet and noisy) manipulated. Bayesian analysis showed that Cantonese tone identification was equally accurate in masked and unmasked speech, regardless of noise. Our findings suggest that mask-wearing does not hinder Cantonese tone identification.

Email: Jiaqing Zu, jiqingz@connect.hku.hk

7:45-9:15 PM (4122)

Individual Differences in Acoustic-Phonetic and Contextual Cue Use: Considering Relationships to Hearing and Cognitive Functions. ANNE MARIE CRINNION , *University of Connecticut*,

EMILY MYERS, *University of Connecticut*, JAMES S. MAGNUSON, *University of Connecticut & Basque Center on Cognition, Brain & Language (BCBL)* — Recent research has suggested that individuals differ in the extent to which they rely on certain cues to process speech. Understanding why some individuals rely more on acoustic-phonetic cues in the signal while others rely more on global semantic cues is crucial for understanding the mechanisms by which listeners resolve ambiguities in the speech signal as they process speech. In a two-part experiment, we assessed the extent to which individuals rely on acoustic-phonetic and semantic cues in a well-validated sentence listening task. We also collected many measures of cognitive and hearing abilities. Preliminary relationships across these measures suggest that reduced access to low-level details of the speech signal may induce greater reliance on semantic constraints. Ongoing work seeks to explore this with a wider range of participants.

Email: Anne Crinnion, anne.crinnion@uconn.edu

7:45-9:15 PM (4123)

Do Individual Differences in Phonetic Category Structure Predict Successful Accented Speech Perception? PORTIA WASHINGTON , *University of Connecticut*, EMILY MYERS, *University of Connecticut* — Speech perception relies on the quick mapping of spectral-temporal cues onto meaningful units in one's language. Recent work suggests that the structure of one's phonetic category (or access to category information) has downstream influences on perceiving challenging speech (e.g., speech in noise). We predict that phonetic category structure may also impact accented speech perception. In this study we use a Visual Analog Scale (VAS) task where listeners rate items from a stop voicing continuum, to characterize individual differences in mapping to the phonetic category. We extract the slope of a participant's categorization function, and the consistency with which they assign a token a given rating, and use these indices of phonetic category perception to predict accented speech perception. Preliminary results (n=60) suggest that listeners are less accurate when listening to a non-native talker and when that talker's speech is embedded in noise. Further, listeners show a range of VAS functions, suggesting variability in phonetic category structure.

These results inform the extent to which an individual's ability to overcome ambiguity in the incoming speech

signal is linked to differences in phonetic category structure.

Email: Portia Washington, washingtonpns@gmail.com

7:45-9:15 PM (4124)

Does Orthography Change Phonological Representations? ELSA SPINELLI, *Grenoble University*, AUDREY BURKI-FOSCHINI, *Lausanne University*, PAULINE WELBY, *CNRS & Aix-Marseille University* — French participants learned to associate pictures of novel objects with their spoken names (e.g., /ləsp/). Half of these words were presented with the auditory form only (Audio), while half were also presented with their orthographic form (Audio-Ortho). In the learning session, participants heard the words pronounced by a speaker of North American English. In the test session, they heard those words pronounced by either an English (/ləsp/), or a French speaker (/ləsp/), and performed an Old/New categorization task and a word-picture mapping task. If seeing the orthographic form of a word shapes its phonological representation, we expect an interaction between learning Modality (Audio, Audio-Ortho) and Talker accent in the test session (French, English). For words learned without orthography, responses should be faster when the words are produced by an English native speaker. But for words learned with the orthography, responses should be faster when the words are produced à la française, because this pronunciation, although never been heard, corresponds to the orthographic form, via the French Grapheme to Phoneme Correspondences.

Email: Elsa Spinelli, elsa.spinelli@univ-grenoble-alpes.fr

7:45-9:15 PM (4125)

Individual Differences in Speech Perception Gradiency in the Visual Analogue Scale Task: How Stable Are They? NIKOLE GIOVANNONE, *Villanova University*, EFTHYMIA C. KAPNOULA, *Basque Center on Cognition, Brain & Language (BCBL) & Ikerbasque*, JOSEPH C. TOSCANO, *Villanova University* — Individual differences in speech perception gradiency have been observed using a visual analogue scale (VAS) task. Even though previous work speaks to the validity of the VAS task as a measure of gradiency, additional work is needed to establish the stability of performance within individuals and the degree to which responses are affected by procedural details. The current study aims to assess test-retest reliability of the VAS and

examine the degree to which performance is affected by the instructions provided. Experiment 1 provides baseline data from 57 subjects regarding their speech sound category boundaries, categorization slopes, and response consistency. In Experiment 2, subjects complete the VAS task at two time points to evaluate the stability of these metrics within individuals. Additionally, an instructional manipulation at the second time point assesses whether these metrics may change with explicit instruction. Together, the results of these experiments clarify the degree of stability of subjects' responses in the VAS task, helping to validate it as a paradigm for studying perceptual gradiency.

Email: Nikole Giovannone, ndgiovannone@gmail.com

7:45-9:15 PM (4126)

Perceptually Judging Speech Onset Times from Lip Motion: Audiovisual Speech Perception, or Simple Movement Detection? PETER A. KRAUSE, *California State University, Channel Islands* — We previously presented evidence that participants produce faster keypress responses to the onset of spoken turns when simultaneously presented with visualizations of speakers' lip movements (created from face-tracking data), than when presented with verbal audio alone. This leaves open the possibility that participants simply press the response key upon detecting any movement in the lip visualization. We now present two follow-up experiments intended to address whether integrated audiovisual speech perception mechanisms contribute to the effect. Participants responded via keypress to the beginnings of speech turns drawn from an audiovisual corpus of natural conversations. In Experiment 1, participants responded fastest when lip visualizations were presented without accompanying verbal audio. Despite this, they still responded faster to combined lip-visualization/audio stimuli than to verbal audio presented alone. Experiment 2 again found an RT advantage for combined lip-motion/audio stimuli, compared to audio-only stimuli, but demonstrated that this advantage was strongest for utterances with linguistically relevant lip constraints (e.g., beginning with /m/).

Email: Peter Krause, peter.krause@csuci.edu

7:45-9:15 PM (4127)

Comparing True and False Memories from AI- and Human-Generated Deese-Roediger-McDermott Lists. DUSTIN P. CALVILLO, *California*

State University, San Marcos, KEANU ZARGHAMI, California State University, San Marcos, BIANCA DELIA, California State University, San Marcos — The Deese-Roediger-McDermott (DRM) task uses lists of words that are semantically related to a word that is not presented, the critical lure. DRM word lists are usually created by using word association norms to select words associated with critical lures. These word lists, therefore, are limited by available word association norms.

Researchers may want specific DRM lists that cannot be created from existing norms. AI offers a possible solution to this problem. The present study compared true and false memories from existing DRM word lists to those created by generative AI (ChatGPT). College students ($N=114$) completed a DRM task that contained AI- and human-generated DRM lists. True and false recognition rates did not differ between AI- and human-generated word lists, and Bayesian analyses and equivalence testing found strong evidence that both word lists yielded equivalent true and false memories. The use of AI can overcome existing limitations to create DRM list tailored for specific purposes.

Email: Dustin Calvillo, dcalvill@csusm.edu

7:45-9:15 PM (4128)

Media, Memory, and the Mind. LUDMILA ISURIN, *The Ohio State University* — This study focuses on how ideologically biased media, both in Russia and in the United States, have covered the events of 2014-2018 in Ukraine, and how the individual minds, both in Russia and the United States, consumed this often biased and distorted information. Based on a specific event—takeover of Crimea in 2014—this study demonstrates how ideological bias, distortion, and schemata in both Russian and American media outlets work to reestablish a Cold War-like narrative and, by extension, reignite perceived enmities in the individual minds and collective memories of both nations. The study examines this old phenomenon at the interface of conscious media distrust among individuals who subconsciously embrace these constructs, forming memories along the ideological lines promoted by the same institutions they question. The results of the media analysis (qualitative) and empirical data (quantitative) provide foundation for the presentation.

Email: Ludmila Isurin, isurin.1@osu.edu

7:45-9:15 PM (4129)

The Effect of Integrative Item-Context Encoding

on True and False Memory. JASON ARNDT, *Middlebury College*, LEAH MOWRY, *Middlebury College*, NICOLE GRULLON, *Middlebury College*, ADDY HAYMAN, *Middlebury College*, LIZ TORREZ, *Middlebury College*, MARIA JOSE GONZALES, *Middlebury College*, JAHAANI CHORARIA, *Middlebury College* — Previous work in our lab (Valle Flores, et al., 2016) has demonstrated that integrative item-context encoding increases true and false memory in the DRM paradigm relative to a control task, pleasantness judgments. This result could have been caused by the effects of integrative encoding or that the control task did not require attention to the context in which study items occurred. In the present research, we evaluated the conclusion that integrative encoding was the causal factor in our prior results by using a control encoding task that encouraged non-integrative attention to items as well as their contexts. We presented study lists in different encoding contexts (fonts). For half of the lists, participants completed an integrative encoding task designed to enhance binding of words and contexts. For the other half of the lists, participants rated words twice, once for pleasantness and once for font legibility, which encouraged separate encoding of items and contexts. At test, participants judged the old/new status of studied items, lure items, and unrelated new items. Studied items and lure items were tested in fonts that either matched or mismatched the font used to show their themes during encoding.

Email: Jason Arndt, jarndt@middlebury.edu

7:45-9:15 PM (4130)

A Meta-Review for Simplified Conjoint

Recognition Paradigm. X. LIU, *Cornell University*, C. J. BRAINERD, *Cornell University* — Distinction between verbatim and gist memory traces are instrumental for addressing phenomena in various fields, including false memory, decision making and so forth. A simplified conjoint-recognition model was developed to measure verbatim and gist memory and has been extensively employed. However, the validity of this model remains understudied. We conducted a meta-review on the accumulated data to examine whether the model is able to decompose verbatim and gist memory and whether it measures verbatim and gist memory accurately. The first perspective was tested by a factor analysis. Results proved the model's validity on



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separating verbatim and gist memory as the verbatim-based and gist-based parameters loaded on distinct dimensions. The second question was justified by the sensitivity of verbatim and gist parameters to a set of experimental manipulations that are known to affect verbatim memory or gist memory selectively. A series of comparisons across experimental manipulations demonstrated that verbatim parameters were affected by verbatim manipulations like presentation duration and gist parameters were impacted by gist manipulations like strength of semantic association. Deficits of the model were also discussed.

Email: X. Liu, xl435@cornell.edu

7:45-9:15 PM (4131)

Evaluating False Memories for Context Details in an Associative List Paradigm. ALEXA TRINGALI, *The University of Southern Mississippi*, MARK J. HUFF, *The University of Southern Mississippi* — Studying lists of associatively related words often produces false recognition of non-studied lures. This false memory illusion can be found both when word lists are directly related to a critical lure (CL) as in the DRM paradigm (e.g., water, bridge, run, for the CL river; Roediger & McDermott, 1995), and when words are indirectly related to CLs through nonpresented mediators (e.g., faucet[water], London[bridge], jog[run], for the CL river; Huff et al., 2021). Mediated false memory is strong evidence for activation-monitoring processes over gist extraction or global matching. In the present study, we evaluated whether context details of studied lists (font color) are attributed to CLs when they are falsely recognized. Participants studied directly related and mediated lists presented in one of two font colors, followed by a source test which required specification of the font color for recognized test items. When CLs were falsely recognized, participants were able to identify the font color of the CL's origin list for both list types at a greater than chance rate. Because mediated false recognition reflects implicit activation, this pattern indicates that activation processes may include both semantic and contextual details.

Email: Alexa Tringali, alexa.tringali@usm.edu

7:45-9:15 PM (4132)

Variability in Learning: Assessing Conjunction Errors in Repeated Encoding Versus Repeated Review. DONNELLE DIMARCO, *University of*

Guelph, HARVEY MARMUREK, *University of Guelph* — Memory conjunction errors stem from source confusion, where elements or features previously encountered become erroneously combined. We examined whether repeated encoding or repeated review more effectively minimizes these errors. Repeated encoding involves processing of the same information multiple times as if newly encountered, potentially strengthening the distinctiveness and stability of memory traces. In contrast, repeated review, although beneficial for memory reinforcement, may increase the likelihood of conjunction errors due to the similarity of contexts during review sessions and final testing. We hypothesize that repeated encoding will reduce the likelihood of conjunction errors, whereas repeated review will likely increase their occurrence. The study assesses commonly used learning strategies, aiming to identify more effective approaches for reducing conjunction errors and preventing the formation of false memories.

Email: Donnelle DiMarco, dimarcod@uoguelph.ca

7:45-9:15 PM (4133)

Assessing the Effects of Misleading Post-Event Information Using Multinomial Processing Tree Models. MACKENZIE R. RIGGENBACH, *Ball State University*, SCOTT D. GRONLUND, *University of Oklahoma* — Studies have shown that misleading post-event information can alter memory. Three hypotheses (no-conflict, coexistence, destructive updating) have been proposed and mathematically formalized to gain a comprehensive understanding of the predictions regarding false memory formation (Wagenaar & Boer, 1987). We utilized multinomial processing tree (MPT) models to test these hypotheses and implemented the Loftus (1978) misinformation paradigm to apply MPTs to the data. In two experiments, we found support for the no-conflict and coexistence models. When only the top-performing participants were examined, we found strong evidence for the coexistence model. In Experiment 2, we categorized participants based on their perceptions of what happened to their memory and used these distinctions to determine if there was a correspondence between perceptions and model fits. We found correspondence between those endorsing No-Conflict and Coexistence. Surprisingly, we did not replicate the misinformation effect that we found in Experiment 1 but did find it for participants classified as Coexistence and Destructive Updating, suggesting that participants who acknowledged a conflict were affected by it.



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Email: Mackenzie Rigganbach, m-riggenbach@ou.edu

7:45-9:15 PM (4134)

Does Explanatory Role of Post-Event Suggestion Exacerbate Susceptibility to Multifaceted Questions?

BLAIR BRAUN, *University of Wisconsin-Platteville*, QUIN CHROBAK, *University of Wisconsin Oshkosh*, TRINITY FLINT, *University of Wisconsin-Platteville*, MCKENNA HOLTERMAN, *University of Wisconsin-Platteville*, TREVOR HUDSON, *University of Wisconsin-Platteville*, DARA HEROLD, *University of Wisconsin-Platteville*, BRENNON HEIDTKE, *University of Wisconsin-Platteville*, JOSH LANDOWSKI — The present study sought to investigate factors that influence eyewitness accuracy.

One well-documented source of inaccuracies in eyewitness memory is exposure to post-event misinformation (i.e., the misinformation effect). Numerous studies have documented that this effect is exacerbated by factors that occur at both encoding and retrieval. For instance, witnesses are more likely to develop false memories for suggested misinformation that explains a consequential outcome—the explanatory role hypothesis (Braun et. al, 2021; Chrobak & Zaragoza, 2013; Rindal et al., 2017). In addition, the misinformation effect is exacerbated when witnesses are tasked with answering complex questions at the time of final test (Chrobak et al., 2015, 2021). The goal of this study was to investigate how these two factors interact. Contrary to expectations, it was found that multifaceted questions exacerbate susceptibility to multifaceted questions, regardless of the explanatory nature of the misinformation.

Email: Blair Braun, braunbl@uwpplatt.edu

7:45-9:15 PM (4135)

False Memories in High Definition. KARMIN PEARN, *University of Central Oklahoma*, JACLYN MAASS, *University of Central Oklahoma* — Encouraging people to visually imagine events through guided imagery can induce false memories (Muschella & Schonborn, 2021) but much of this research uses situations where people are specifically told to visualize. The present study will test for differences in false memories when asked to visualize compared to not being prompted to do so and will test for a moderating effect of visual imagery vividness. After watching a 10-minute video, participants will answer subtly misleading questions. The experimental group will be instructed to

visualize themselves completing the tasks they are questioned about, while the control group will answer the questions without being prompted to visualize. After a 2-day delay, participants will complete a recognition task about the video and complete the Vividness of Visual Imagery Questionnaire (Mark, 1973). We predict that those who are asked to visualize will produce more false memories than those who are not prompted. We also predict that for those who are prompted to visualize, the effect on false memory will be greater when their imagery abilities are especially vivid. This has important implications for forensic interviewing techniques, which often include a visualization component.

Email: Karmyn Pearn, kpearn@uco.edu

7:45-9:15 PM (4136)

False Memory Generator: Software for the Automatic Generation of DRM Stimulus Lists from Vector Spaces. MARCO PETILLI, *University of Milano-Bicocca*, MARCO MARELLI, *University of Milano-Bicocca*, GIULIANA MAZZONI, *University of Sapienza*, MICHELA MARCHETTI, *University of Sapienza*, LUCA RINALDI, *University of Pavia*, DANIELE GATTI, *University of Pavia* — The Deese-Roediger-McDermott (DRM) paradigm is a widely used task to study false memory generation. In DRM, participants first memorize a list of words and then indicate if words in a new list were part of the original list. Previous studies using DRM demonstrated a crucial role of semantic processes in false memory, showing that new words semantically similar to the studied ones tend to be erroneously recognized as part of the memorized list. Despite its strengths, the DRM task faces major limitations in list construction due to its reliance on human-based association norms, posing practical and theoretical concerns. To address these issues, we developed the False Memory Generator (FMG), an automated software that generates DRM lists based on similarity relationships between items in a vector space. We present FMG and demonstrate the validity of the generated lists in replicating well-known semantic effects on false memory production. Notably, FMG has potentially broad applications as it can leverage similarity relationships between any type of items (such as words in any language or other stimuli like images or sounds) as long as they can be represented in a vector space, allowing false memories to be tested in various domains.

Email: Marco Petilli, marco.petilli@unimib.it

7:45-9:15 PM (4137)

Individual Differences in Gist-Based False Memories in the DRM Paradigm. CHEYNA WARNER, *University of Oregon*, DASA ZEITHAMOVA, *University of Oregon* — The Deese-Roediger-McDermott (DRM) paradigm has been designed to induce false memory in the laboratory. Participants study and recall lists of semantically related word lists (e.g., bed, dream, pillow). False memory manifests by recall of critical lures: words that are semantically related to the list items but never presented (e.g., sleep). False memory in the DRM is thought to rely on the extraction of a "gist" across the related information. But what mechanisms underlie "gist"? Two main theories state that gist reflects either a lack of specificity in memory trace or an adaptive generalization process. We address this question by testing how individual differences in DRM false alarms relate to the ability to recall differentiating details versus the ability to apply learned information to new scenarios. Participants completed the DRM paradigm and measures of memory specificity and generalization. DRM false alarms rates were negatively related to specificity measures and unrelated to generalization measures. These findings indicate that DRM false alarms are driven by a lack of specificity in the memory trace rather than a constructive generalization process.

Email: Cheyna Warner, cheyna@uoregon.edu

7:45-9:15 PM (4138)

Neural Mechanisms of False Memory Correction: A Comparative Study of the tDCS Effects over the Left Anterior Temporal Lobe and Dorsolateral Prefrontal Cortex. MARIA JESUS MARAVER, *Mind, Brain, and Behaviour Research Centre (CIMCYC) at the University of Granada*, MARIA DOLORES LINDE, *Mind, Brain, and Behaviour Research Centre (CIMCYC) at the University of Granada*, TANIA VALLE, *University of Jaen*, CARLOS J. GOMEZ-ARIZA, *University of Jaen* — Transcranial Direct Current Stimulation (tDCS) has the potential to demonstrate the causal role of key brain regions in semantic/episodic memory such as the left Anterior Temporal Lobe (lATL) or the Dorsolateral Prefrontal Cortex (IDLPFC). Across two experiments, we investigated if modulating neural activity in the lATL and IDLPFC affects the formation and correction of semantically driven false memories. Using sentences that

contain pragmatic inferences, samples of healthy younger adults performed retrieval tests before and after the presentation of corrective feedback and received anodal tDCS during the initial encoding phase. In Experiment 1, anodal tDCS over the lATL reduced inference errors and improved correct recall as compared to sham. In Experiment 2, we delved deeper into these results and replicated the previous design but added a new stimulation condition over the IDLPFC—a site in which the positive effects of tDCS on correct recall have been previously demonstrated. Our findings contribute to our understanding of the neural mechanisms underlying memory formation and its correction, supporting the malleability of memory and its susceptibility to being modified.

Email: Maria Jesus Maraver, mjmaraver@ugr.es

7:45-9:15 PM (4139)

The Effect of Misinformation on Memory for True Events. GEOFFREY MCKINLEY, *Minnesota State University, Mankato*, DANIEL PETERSON, *Skidmore College* — Exposure to false information can have a direct effect of fostering endorsement of that information, but it also has a potential indirect effect of impacting how people encode related information that is factual. In the current study, participants read a true or false article about the relationship between strictness of gun laws and gun violence in each state of the United States. Afterwards, participants read stories of actual shootings with details that were either consistent with the false news article, or consistent with the true news article. Following a brief distractor task, participants are asked to recall as much as they can about each story. We discuss the outcomes with respect to how false information impact recollections of true events.

Email: Geoffrey McKinley, geoffmck59@gmail.com

7:45-9:15 PM (4140)

Understanding the Interaction of Misinformation and Acute Stress in Army Reconnaissance. GREGORY HUGHES, *U.S. Army Combat Capabilities Development Command (DEVCOM) Soldier Center*, LEAMARIE GORDON, *Assumption University*, AMY SMITH, *Blank Slate Technologies* — Successful military intelligence reporting involves accurate memory retrieval under conditions of acute stress. Prior research in controlled, laboratory settings with civilian populations has established that the accuracy of memories can easily

be compromised by exposure to false information (e.g., the misinformation effect) and acute stress. However, the interaction of stress and misinformation is not well established. We aimed to replicate established misinformation and stress effects in a field study involving Army soldiers, as well as examine the interaction of stress and misinformation in this realistic setting. Specifically, we investigated how these factors influenced the accuracy of soldiers' memory of events that occurred during a realistic area reconnaissance mission. During the mission, Soldiers gathered intelligence about enemy activities, experienced a surprise attack to induce stress, and were exposed to misinformation about witnessed events before taking a memory test. Misinformation, but not acute stress, harmed soldiers' memory accuracy. More than two-thirds of soldiers who gathered intelligence during the mission reported witnessing false details about the event.

Email: Gregory Hughes, gregory.hughes@tufts.edu

7:45-9:15 PM (4141)

Word Memorability and Susceptibility to False Memory with Megastudy Approaches: Evaluating Lexical, Associative, Semantic, and Embodied Factors with the DRM Procedure and Neural Correlates. EMILIANO DÍEZ, *Universidad de Salamanca*, MARÍA A. ALONSO, *Universidad de la Laguna*, SILVIA HUELMO, *Universidad de Salamanca*, DOMINIKA Z. WOJCIK, *Universidad de Salamanca*, ANTONIO M. DÍEZ-ÁLAMO, *Universidad de Salamanca*, ANGEL FERNANDEZ, *Universidad de Salamanca* — Megastudy approaches to investigate intrinsic factors of word memorability have become increasingly common. Unlike factorial studies, megastudies allow for greater variation in word properties, offering deeper insights into their impact on memory. This poster presents results from several memory megastudies, involving over 400 participants using the DRM procedure, with 54 word-lists maintaining constant backward associative strength. We evaluated the relative importance of lexical, associative, semantic, perceptual, sensory, motor, and emotional properties of words for both correct and false recall and recognition. For a subset of subjects, brain activity was recorded using concurrent electroencephalography and functional near-infrared spectroscopy during word list encoding and retrieval. The results revealed differential effects of specific variables on memory performance, highlighting the importance of representational features

such as accessibility, similarity, emotional valence, and activation spreading. These findings are discussed within the frameworks of embodied cognition and hub-and-spoke models.

Email: Emiliano Díez, emid@usal.es

7:45-9:15 PM (4142)

Conceptual Knowledge Biases New Episodic Memories, But Engaging in Attentional Selection at Encoding Can Strengthen Perceptual Biases.

RYAN E. O'DONNELL, *Drexel University*, ALEXA TOMPARY, *Drexel University* — New episodic memories are predominantly shaped by conceptual knowledge rather than perceptual features like color. This is surprising since processes like attentional selection, often considered the gateway to memory, are preferentially guided by perceptual features. We tested if perceptual features can bias memory when items are a) organized perceptually or b) encoded via attentional selection. In Study 1, individuals encoded image locations organized into conceptual (e.g., birds) or perceptual (e.g., blue) clusters. Some image locations were inconsistent with a perceptual cluster, a conceptual cluster, or both (critical items; e.g., blue bird). We tested how strongly inconsistent items were biased toward their clusters at retrieval and found near equal bias for perceptually or conceptually inconsistent items, but critical items were preferentially biased conceptually. In Study 2, encoding the same image-location mappings via a visual search task created comparatively stronger perceptual biases. Our results confirm that new memories are preferentially biased by conceptual knowledge, but this preference may be inflated by classic encoding protocols, as perceptual biases can strengthen when attentional selection occurs at encoding.

Email: Ryan O'Donnell, ryanodonnell7@gmail.com

7:45-9:15 PM (4143)

Adaptive Functions of Episodic Memory: True and False Memory Production Is Linked to Effective Creative Thinking. PRESTON P.

THAKRAL, *Smith College*, ALEEA L. DEVITT, *The University of Waikato*, MADELINE DUNLAY, B.S., *Boston College*, DANIEL L. SCHACTER, *Harvard University* — Constructive episodic retrieval processes play an adaptive role in supporting divergent creative thinking (i.e., creatively combining diverse bits of information). However, the constructive nature of

episodic memory that supports these adaptive functions also leads to memory error. We present a set of studies that directly link the cognitive processes that support memory error with divergent thinking. We employed an individual differences approach to test whether divergent thinking—as assessed in the Alternative Uses Task (AUT)—is linked with the generation of false memories in the Deese-Roediger-McDermott paradigm. We found that rates of false, but not true, memory were positively correlated with performance on the AUT. In a second set of studies, we tested whether there were experimental conditions under which true memory would draw on constructive episodic retrieval processes and therefore be linked to divergent thinking akin to false memory. When memory load was increased during retrieval, true memory was found to be positively correlated with divergent thinking. Taken together, this work identifies the circumstances when memory processes link to divergent thinking.

Email: Preston Thakral, pthakral@smith.edu

7:45-9:15 PM (4144)

Using EEG to Elucidate Early Differences During the Retrieval of Misinformation. JESSICA M. KARANIAN, *Fairfield University*, MCKAYLA BOYD, *Fairfield University*, SOPHIA DICONZA, *Fairfield University*, JILLIAN O'BRIEN, *Fairfield University*, KELLYN KUCZARSKI, *Fairfield University*, OLIVIA BONACCI, *Fairfield University*, CASEY NADZAM, *Fairfield University*, HOLLY RAHURAHU, *Fairfield University*, ERIN SHAH, *Fairfield University* — The misinformation effect describes a phenomenon in which memory reports are altered by post-event misinformation. We employed electroencephalography (EEG) to investigate the temporal dynamics of neural differences related to the misinformation effect. Participants watched a crime video, listened to an audio retelling of the video that contained both consistent, neutral, and misleading information, and then completed a memory test during EEG. Event-related potentials (ERPs) during retrieval of consistent, neutral, and misleading information were compared. At frontal electrodes, the FN400 wave was greater in amplitude during retrieval of misleading as compared to consistent information, which could reflect familiarity-based recognition processes. At parietal electrodes, the P3 wave was greater in amplitude and latency during retrieval of misleading as compared to consistent information, which may reflect increased

evaluation of the question and/or differences in decision-making processes. These preliminary results suggest that neural differences related to the misinformation effect emerge early during memory retrieval.

Email: Jessica Karanian, jessica.karanian@fairfield.edu

7:45-9:15 PM (4145)

The Impact of Pseudo-Profound Bullshit Titles on Perception and Memory of Human vs. AI-Generated Art. ALMUT HUPBACH, *Lehigh University*, ARIELLE JANGER, *Lehigh University* —

The current study examined the effects of pseudo-profound bullshit titles on the memorability of artist-created versus AI-generated visual abstract art. During the encoding phase, participants viewed both human-created and AI-generated art pieces, each paired with either mundane or pseudo-profound bullshit titles. For each piece, participants rated its perceived profundity and their liking of it. Approximately 24 hours later, participants completed a surprise old/new recognition test, which included both the previously shown art pieces and new, similar AI-generated and artist-created pieces. Replicating prior research, we found that pseudo-profound bullshit titles increased perceived profundity. However, these titles did not affect the memorability of the artwork. Instead, liking emerged as a strong predictor of recognition performance. Furthermore, artist-created art was better recognized than AI-generated work, extending previous findings that people prefer artists' creations over AI-generated ones, even though they often cannot differentiate between the two.

Email: Almut Hupbach, hupbach@lehigh.edu

7:45-9:15 PM (4146)

Unsupervised Category Learning in Visual Recognition Memory: Evidence from Order Effects. JOHN CLAPPER, *California State University, San Bernardino*, NAM HUYNH, *California State University, San Bernardino*, JOSE GUTIERREZ, *California State University, San Bernardino* — Most theories of recognition memory posit that stimuli are stored as independent traces in long-term memory (LTM), suggesting minimal order effects on subsequent memory performance. In this experiment, participants studied images of fictitious insects from two categories, each defined by several consistent and variable dimensions. One group of participants viewed the images in a blocked order, seeing multiple examples of Category

A before any examples of Category B, while another group viewed the images in a mixed order from the start. During a subsequent recognition test, foils violated the consistent feature patterns established during the study phase. Results showed that participants in the blocked condition exhibited significantly better discrimination between targets and foils than those in the mixed condition, who performed at chance levels. We argue that theories of recognition memory need to incorporate a mechanism for unsupervised category learning to account for these results.

Email: John Clapper, jclappe@csusb.edu

7:45-9:15 PM (4147)

Auditory Cue Familiarity-Detection During

Cued Recall Failure. JILL GIBSON, *Colorado State University*, ANNE M. CLEARY, *Colorado State University*, JOSE M. FRANCISCO-ANDRES, *Colorado State University* — This study investigates auditory recognition without cued recall, extending prior research from the visual to the auditory modality. Ninety-two undergraduates participated in a study where auditory cues resembling studied words were presented. Results showed higher familiarity ratings for cues resembling multiple studied words compared to those resembling only one or none. Additionally, commission errors were more likely when cues had higher feature overlap with studied words. Findings support global feature matching models, showing that auditory features contribute to familiarity signal computation. This study advances understanding of memory retrieval processes and suggests that familiarity detection guides memory search efforts. Future research could explore cross-modal effects and further examine the relationship between familiarity detection and cross-modal encoding to see how features combine in memory.

Email: Jill Gibson, jillygib@colostate.edu

7:45-9:15 PM (4148)

The Benefits of Drawing and Describing for

Visual Long-Term Memory. ANNA MCCARTER, *University of Massachusetts Amherst*, JEFFREY J. STARNS, *University of Massachusetts Amherst* — Prior research has shown that drawing at encoding is beneficial for learning verbal materials. Drawing is even more beneficial than writing a description of the content, potentially due to a dual-code advantage (verbal and visual representations). However, relatively little work

has been done on whether drawing is also beneficial for learning visual materials. For visual materials, drawing would enhance the existing visual representation whereas describing the image would provide dual-code representations (verbal and visual). In this experiment, participants learned object images through either drawing a copy of the image, writing a description of the image, or simply studying the image. Subsequently, they were given old/new recognition and source memory tests. We found that both drawing and describing produce a considerable advantage over studying, suggesting that both are useful strategies for improving visual memory. In addition, we found a slight benefit of describing over drawing. This suggests that a dual-code advantage may be contributing to the benefit of drawing for verbal materials and the benefit of describing for visual materials.

Email: Anna McCarter, acmcarter@umass.edu

7:45-9:15 PM (4149)

Interaction Effects of Environmental Regularity and Prediction Error on Episodic Memory.

KEVIN MOHAWK , *University of Nevada, Las Vegas*, COLLEEN M. PARKS, *University of Nevada, Las Vegas* — Prediction error (PE) has typically been found to facilitate memory. PE's effect on memory is thought to be dependent on the size of the error with stronger PEs resulting in better memory. PE strength is modulated by familiarity with an environment such that PEs will be larger in highly familiar environments. It is possible that other attributes of an environment such as certainty can also modulate the strength of PE. The present study examined how context certainty (i.e., the percentage of PEs in a given context) influences episodic memory by introducing a context in which PE occurred rarely (high certainty) or frequently (low certainty). Results indicate that within the high certainty condition items associated with PE are remembered better than no PE. However, within the low certainty condition there is no difference in memory between PE and no PE items.

Email: Kevin Mohawk, mohawk@unlv.nevada.edu

7:45-9:15 PM (4150)

An Examination of the Benefits of Production Following a Delay in Undergraduates and

Elementary School Children. STACY LIPOWSKI, *High Point University*, CATHERINE GALLAGHER, *High Point University*, GENNA MANGER, *High Point*

University — The benefits of production on memory have been well-established (MacLeod et al., 2010). Considering that the benefits of certain encoding strategies can increase over time (e.g., Kornell, Bjork, & Garcia, 2011), the goal of the current experiments was to examine the effects of a one-week delay on the production effect in undergraduates and elementary school children. In two separate experiments, undergraduates and elementary age children studied words or pictures counterbalanced across three encoding conditions, including silent, aloud, and written. Participants took recall and recognition tests after a 3-minute or 1-week delay. In undergraduates, there was a main effect of delay with recall, but no main effect for encoding condition; however, recall was at floor. For recognition, there were main effects of delay and encoding condition, replicating previous findings with adults. Data collection with children is ongoing, but it was hypothesized that benefits of production will increase over time.

Email: Stacy Lipowski, slipowsk@highpoint.edu

7:45-9:15 PM (4151)

Face with Benefits: The Counterintuitive Role of Variability When Learning a New Face.

REBEKAH L. CORPUZ, *University of Regina*, CHRIS ORIET, *University of Regina* — Research suggests that within-person variability (changes in hair, makeup, background) leads to better recognition than a still photo (no variability) when learning a new face. However, these studies rarely train participants in more than one condition, and typically do not assess following training, precluding insight into subjects' decision making processes. In the present study, 46 subjects trained with two unfamiliar targets (no variability and high variability) and completed a recognition sorting task containing photos of the target and similar-looking distractors. Subjects rated how confident they were that they would recognize the targets pre-learning, post-learning, and post-sort. Face recognition accuracy was significantly higher for the high variability condition. Interestingly, subjects indicated higher confidence when training in the no variability condition. These results suggest that high variability is beneficial when learning a new face, but this benefit is counterintuitive and individuals indicate less confidence in conditions which lead to the best recognition.

Email: Rebekah Corpuz, rebekahcorpuz@uregina.ca

7:45-9:15 PM (4152)

Facial Recognition of Differently Occluded Faces: A Comparison of the Processing of Faces Wearing Masks and Sunglasses.

LORENA REID, *University of Wisconsin Oshkosh*, JUSTYNNA OLSZEWSKA, *University of Wisconsin Oshkosh*, EMILY MERTEN, *University of Wisconsin Oshkosh* — This study aimed to examine the differences in people's ability to recognize masked faces and faces wearing sunglasses. In addition, we tested whether unnaturally occluded faces that lack corresponding features to those occluded by masks and sunglasses (had upper or lower facial features erased) would result in different recognition rates as compared to faces that are naturally occluded. Participants were presented with an occluded face (mask or sunglasses) or with a face that lacked certain features (eyebrows, eyes, nose, mouth) for five seconds, a distractor task, then another face (similarly occluded, without certain features, or completely unobscured) and participants had to indicate whether the face was previously seen or not. Our results showed a better ability to discriminate between studied and unstudied faces when they were occluded with masks rather than with sunglasses. A similar pattern was noticed for faces with erased features. Moreover, a more liberal style of responding was revealed for faces wearing sunglasses and those that lacked corresponding features than faces occluded with masks or those that had erased corresponding features.

Email: Lorena Reid, rena.reid57@gmail.com

7:45-9:15 PM (4153)

Making Detailed/Unfamiliar/Guess Judgments for Rejections Does Not Influence Patterns of Remember/Know/Guess Responses or Recognition Performance.

HELEN WILLIAMS, *Keele University* — Prior research has explored the potential influences of collecting metacognitive measures on memory performance. Building on this work, here we systematically evaluated whether asking participants to make Detailed/Unfamiliar/Guess (DUG) judgments for rejected items changed their recognition decision-making and/or their patterns of Remember/Know/Guess (RKG) responses for recognized items. By employing levels-of-processing and picture superiority as additional IVs we also examined whether changes to responding differed across varying levels of encoding quality. Across three experiments we found minimal influence of DUG

judgments; when participants were required to make these additional judgments for items they rejected this did not change their recognition performance or patterns of RKG responses. Although some previous metacognition research has shown that asking participants to engage in additional processing when completing a task can alter response patterns, requiring subjective experience judgments for rejections in addition to recognitions does not appear to.

Email: Helen Williams, h.l.williams@keele.ac.uk

7:45-9:15 PM (4154)

Testing the Production Effect for Pictures.

MATTHEW S. BRUBAKER, *Springfield College* — The production effect shows that people remember words better if they say them out loud as opposed to reading them silently during encoding. The current study tested whether the production effect extends to more visual stimuli—specifically pictures of everyday objects. Across two experiments, participants were shown pictures of everyday objects (e.g. plate, scissors, etc.) and then given a recognition test that included the pictures from the study phase as well as new pictures. During the study phase, participants were instructed to say the name of half of the objects out loud while silently looking at the other half of the objects (this order was randomized and counter-balanced). Preliminary results reveal a significant effect—such that pictures that were named out loud during encoding were both better remembered and had a faster reaction time at test. Conclusions and possible future directions will be discussed.

Email: Matthew Brubaker, mbrubaker@springfieldcollege.edu

7:45-9:15 PM (4155)

Comparisons of Continuous, Discrete, and Hybrid Models of Recognition Memory Using Extended-Multinomial Processing Tree Models.

ANAHÍ GUTKIN DE FREITAS, *Universidad Autónoma de Madrid*, JAMES JUOLA, *University of Kansas*, MANUEL SUERO, *Universidad Autónoma de Madrid* — Multinomial processing tree (MPT) models have proven to be useful in combining continuous and categorical variables in the evaluation of traditional models of recognition memory. In our prior work (Gutkin et al., 2024), we employed MPTs to assess the two-high-threshold (2HT) model against signal detection theory (SDT), analyzing accuracy, response times (RTs), and confidence levels (CLs). Despite simulations

indicating accuracy and model selection enhancements, real data analysis (Juola et al., 2019) revealed that not all subjects seem to follow the same model. This study introduces a hybrid model combining 2HT's discrete and SDT's continuous processes, based on the Atkinson-Juola (A-J) model (Atkinson & Juola, 1973, 1974; Juola et al., 1971). The extended-A-J model provided superior fits for most participants and accurately depicted RT and CL distributions. However, subject variability highlighted the existing models' limitations in fully capturing individual cognitive and strategic differences during memory searches, decision-making, and response selection. We propose a more comprehensive model to address these varied influences in recognition memory experiments.

Email: Anahi Gutkin de Freitas, anahi.gutkin@uam.es

7:45-9:15 PM (4156)

Subjective Time and Context Changes Improve Working Memory in Young and Older Adults.

JIM FAULKNER, *University of Michigan*, WEI-JIE ZHOU, *University of Michigan*, RICHARD LEWIS, *University of Michigan*, CINDY LUSTIG, *University of Michigan* — Theories of memory emphasize correct identification of what we have experienced, and tend to overlook the importance of correctly rejecting what we have not experienced. Beyond its importance in daily life, correct rejection may also provide unique insights into memory mechanisms. Jang et al. (2022) varied the retention interval (4 vs 16 seconds) in a Sternberg working memory task and found higher correct rejection of non-presented ("new") probes after the longer retention interval. This finding is not easily explained by conventional theories of forgetting during recognition memory, like interference or decay. Instead, it might be explained by theories integrating the role of temporal context in memory. In this pre-registered study, we test the context effect explanation using the same Sternberg working memory task, but fixing the retention interval (RI) at 12s, and manipulating RI context by varying the speed of change of a visual stimulus presented during the RI. As predicted, we found higher correct rejection rates in the high-change condition. These findings add to evidence supporting temporal context theories of memory and generate questions about how reliance on context may affect memory performance in the aging brain.

Email: Jim Faulkner, jimf@umich.edu

7:45-9:15 PM (4157)

The Language Supporting Recognition Memory Decisions of Older and Younger Adults.

XINRAN ZHANG, *Washington University in St. Louis*, DENISE HEAD, *Washington University in St. Louis*, IAN G. DOBBINS, *Washington University in St. Louis* — The natural language used to justify recognition memory decisions predicts accuracy, and we hypothesize that this is because it conveys recollective experiences. Because recollection declines in healthy aging, we predicted that justifications of older adults would be less diagnostic of recognition accuracy than younger adults. Older (N=18) and younger (N=41) adults completed a verbal recognition test requiring verbal justifications for a random sample of recognition claims. These justifications were decoded using a machine learner trained on BERT embeddings and leave-one-out receiver operating characteristics (ROCs) demonstrated that justification language was more predictive of accuracy in younger than older adults (AUCs of 0.76 vs. 0.68, $p=0.039$). Moreover, fits of the dual process signal detection model to the confidence-based ROCs of the same test yielded higher recollection estimates for younger than older adults. These findings suggest that recognition language classifiers are sensitive to markers of recollection in the language used to justify recognition decisions.

Email: Xinran Zhang, zhangstr@gmail.com

7:45-9:15 PM (4158)

The Lingering Past: Using Computational Modelling to Investigate Mechanisms of Sequential Dependencies in Recognition Decisions.

MICHELLE A. DOLLOIS, *University of Guelph*, RANDALL K. JAMIESON, *University of Manitoba*, CHRIS M. FIACCONI, *University of Guelph* — Conventional models of memory (e.g., signal detection theory) assume that each recognition decision made during a test is the result of an independent evaluation of mnemonic evidence. Despite this assumption it has been consistently observed that information carries over between trials at test resulting in sequential dependencies. Specifically, response information carries over such that responses tend to repeat, and content information carries over such that sequential items with similar features (e.g. orthography) are more likely to lead to an “old” judgment. Using computational methods we test potential mechanisms for

information carryover during retrieval. Namely, we contrast the transfer of test probe feature information against the incorporation of lingering familiarity signals in their effectiveness of capturing both response- and content-based sequential dependencies. Empirical data are used to deliberate on the plausibility of these mechanisms by testing their underlying assumptions.

Email: Michelle Dollois, mdollois@uoguelph.ca

7:45-9:15 PM (4159)

A Process-Dissociation Approach to Value-

Directed Recognition Memory in Younger and Older Adults. JASMIN BRUMMER, *University of Zurich*, ALEXANDRA M. FREUND, *University of Zurich*, PATRICIA REUTER-LORENZ, *University of Michigan, Ann Arbor*, SEBASTIAN S. HORN, *University of Zurich* — Episodic memory performance tends to decline across adulthood. However, the magnitude of age-related differences may be moderated by various factors, including motivational strength (e.g., valence and value), task characteristics (e.g., free recall vs. recognition), or whether value information is revealed at encoding or at test. In two experiments, we examined younger N=58 younger adults (21-30 years of age; 48.2% female) and N=63 older adults (60-77 years; 31.7% female), recognition performance in a process dissociation paradigm. Specifically, we tested the effects of value magnitude and valence (gain vs. loss) in exclusion and inclusion conditions in within-participant designs. In Experiment 1, value and valence information were presented only at test. In Experiment 2, value and valence information were presented at encoding. We used multinomial processing tree (MPT) modeling to estimate the contributions of familiarity, recollection, and guessing on recognition performance. Preliminary results suggest greater age differences in exclusion than inclusion conditions. Novel modeling findings regarding the effect of value and valence on recollection and familiarity are discussed.

Email: Jasmin Brummer, brummer@psychologie.uzh.ch

7:45-9:15 PM (4160)

A Meta-Analysis of Testing Effects with Free Recall.

ANNABEL D. GEREAU, *University of North Carolina at Chapel Hill*, NEIL W. MULLIGAN, *University of North Carolina at Chapel Hill* — Retrieval practice improves memory compared to strategies such as restudying—the testing effect. Recent research on the

benefits of testing reveals two types of testing effects: direct and forward. While most studies have concentrated on the direct testing effect (improved memory for tested material), the experimental designs used often fail to account for the influence of forward testing effects (improved memory for material learned after a practice test). In many studies of the testing effect, both direct and forward testing effects are at play. In fact, Mulligan et al. (2022) reported an absence of a direct effect of testing when using free recall as retrieval practice and rather found evidence of forward testing effects. Such findings warrant a new meta-analysis on testing effects with free recall that examines direct and forward effects of testing and the factors that moderate them. This meta-analysis does so by distinguishing between studies that use a design capable of isolating the direct effect of testing and those that are susceptible to both direct and forward testing effects. Results reveal important differences between these two categories of studies that have implications for optimizing learning environments.

Email: Annabel Gereau, agereau@unc.edu

7:45-9:15 PM (4161)

Does Retrieval of Irrelevant Material Boost New Learning? ZOHARA ASSADIPOUR, *Iowa State University*, DAHWI AHN, *University of Waterloo*, JASON C. K. CHAN, *Iowa State University* — Taking a test on previously learned material enhances subsequent new learning (test-potentiated new learning, TPNL). One account posits that this benefit stems from a context change induced by retrieval relative to encoding. Supporting this notion, some studies showed that vastly different types of retrieval can potentiate new learning. However, these studies have produced mixed results. We investigated the influence of retrieval type on TPNL using a high-powered design. In Experiment 1, 248 university students watched a 15-min STEM lecture. At every 5 minutes during the first 10 minutes of the lecture, participants either read review slides, recalled lecture contents (episodic), generated lecture-irrelevant exemplars from categories (semantic), or recalled lecture-irrelevant personal details (autobiographical). Following the lecture, participants answered questions over content from the last 5 minutes of the lecture. Episodic retrieval of the lecture improved subsequent learning compared to review, while semantic retrieval did not, and data from autobiographical retrieval was inconclusive. Data collection of Experiment 2 is

ongoing, examining replication using an online testing procedure.

Email: Zohara Assadipour, zohara@iastate.edu

7:45-9:15 PM (4162)

Exploring Need for Cognition and Structure Building as Individual Differences in the Testing Effect Paradigm. RACHEL N. SMITH-PEIRCE, *Washington University in St. Louis*, STEPHANIE N. JOHNSTONE, *The University of Texas at Austin*, ANDREW C. BUTLER, *Washington University in St. Louis* — A large body of research has shown the testing effect (i.e., the benefit of retrieval practice compared to re-studying) to be a robust phenomenon that generalizes across different populations of learners (Rowland, 2014). Yet, even though the testing effect is reliably obtained at the group level, not every learner benefits to the same extent or even at all. The present study explored how learners' individual differences in need for cognition and structure building influence the testing effect. We created two parallel versions of the testing effect paradigm that differed in the complexity of the to-be-learned materials (word pairs versus text passages) to test the hypothesis that these two individual difference constructs will influence the mnemonic benefits of testing for complex but not simple materials. Each participant completed both versions of the paradigm and the two individual difference tasks. Although a testing effect emerged in both paradigms, there was no correlation between the individual difference constructs and the testing effect. However, a strong, positive correlation emerged between performance on the first retrieval attempt and structure building.

Email: Rachel Smith-Peirce, peirce.r@wustl.edu

7:45-9:15 PM (4163)

Reevaluating Restudy vs. Testing: The Benefit of Semantic Engagement During Repeated Study. ALEJANDRO CARRANZA, *University of California, San Diego*, EMMA H. GELLER, *University of California, San Diego*, TIMOTHY C. RICKARD, *University of California, San Diego* — Retrieval practice (testing) has been shown to be more effective than restudy for promoting learning across various materials and settings. However, previous research hasn't adequately considered the degree of participant engagement during passive restudy. In three experiments, we compared the effectiveness of passive restudy,

semantically engaged restudy, and cued recall testing. We found that semantically engaged restudy significantly outperformed passive restudy. Despite this, engaged restudy did not yield the same level of final test accuracy as retrieval practice. These results suggest that the observed benefits of testing in the existing literature may partly be due to the use of inefficient restudy methods.

7:45-9:15 PM (4164)

Testing Boosts Knowledge Integration During Learning. SAMANTHA GAUVREAU, *Toronto Metropolitan University*, KARL SZPUNAR, *Toronto Metropolitan University* — Interpolated testing, which involves interspersing extended sequences of study with opportunities to retrieve information, is posited to promote learning via the integration of knowledge across the study sequence. In the present study, learners studied 3 lists of words in anticipation of two final cumulative recall tests. After each list, learners either recalled the list (tested condition), restudied the list (restudy condition), or completed an unrelated math distractor task (control condition). For the first cumulative recall test, testing and restudy resulted in higher recall than the control condition. However, testing was differentiated from both restudy and control by higher semantic organization.

Notably, whereas overall recall did not improve across the two cumulative recall tests, all participants showed organizational improvements during their second cumulative recall test indicating that exposure to testing may optimize learning by promoting meaningful connections between related concepts across separate segments of study.

Email: Samantha Gauvreau, samantha.gauvreau@torontomu.ca

7:45-9:15 PM (4165)

The Testing Effect, Transfer, Training Repetition, and the Dual-Memory Model. SIYUAN LIU, *University of California, San Diego*, TIMOTHY C. RICKARD, *University of California, San Diego* — We investigated open questions regarding the efficacy and transfer of cued recall testing in the context training phase item repetition (1x, 5x, and 8x repetition). Across two experiments involving word triplets, the efficacy of testing with feedback relative to restudy increased with greater repetition. In contrast to previous findings suggesting that repeated testing yields more flexible learning, final test proportion correct in a cue-target transfer condition was equivalent to that in the restudy condition at all repetition levels. In contrast, response

time decreased with repetition for tested targets but increased for transfer targets, thus negative transfer. Those results are consistent with the dual-memory framework for the testing effect, which posits two qualitatively distinct routes to retrieval: a route that supports flexible, all-target access at the cost of slower learning (through study memory) and a route that yields inflexible target access but with the benefit of faster learning (through test memory).

Email: Siyuan Liu, sil242@ucsd.edu

7:45-9:15 PM (4166)

Using Expertise with Fictional Domains to Test Whether Prior Knowledge Moderates the Testing Effect. JESSICA MACALUSO, *University of Pittsburgh*, SCOTT H. FRAUNDORF, *University of Pittsburgh* — Extensive research has established that testing of information, compared to restudying, results in better long-term retention. Given the educational relevance, there is interest in the conditions and learner differences that may moderate the usefulness of testing. One possible moderator is pre-existing knowledge, which often influences learning. It is possible that the testing effect is (a) stronger for experts because it guides new learning or (b) more important for novices because it helps novices catch up to experts. We explored if the testing effect was moderated by pre-existing knowledge about topics where some people knew a lot and others less so. We recruited participants who reported expertise in one of two fictional domains: either Harry Potter but NOT Marvel Superheroes, or vice versa. Participants read and studied novel texts about both domains and took a multiple-choice test one week later. Study strategy (testing versus restudying) was orthogonally manipulated. We found that participants had better retention when they had pre-existing expertise on a given topic, regardless of study strategy. These results suggest that the learning benefits of testing do not depend on having high levels of pre-existing knowledge.

Email: Jessica Macaluso, jam641@pitt.edu

7:45-9:15 PM (4167)

The Pretesting Effect Under Divided Attention. OLIVER KLEGL, *University of Regensburg*, JOHANNES BARTL, *University of Regensburg*, KARL-HEINZ T. BÄUML, *University of Regensburg* — Completing a pretest (e.g., frog – ?) before receiving feedback on the correct answer (e.g., frog – pond) can

improve long-term retention of the material compared to material that was initially only studied. The present study examined whether this pretesting effect requires attentional resources during the initial pretest phase or the subsequent feedback phase. While our results showed a typical pretesting effect in the absence of any distraction, the pretesting effect remained intact when distraction occurred during the pretest phase of the trial but was eliminated when distraction occurred during the feedback phase of the trial. The findings suggest that attentional processes can play a critical role for the pretesting effect, though primarily during the feedback phase of a learning trial. The implications of these findings for prominent accounts of the pretesting effect, such as elaboration and attentional accounts, are discussed.

Email: Oliver Kliegl, oliver.kliegl@ur.de

7:45-9:15 PM (4168)

Investigating the Impact of Cranial Electrotherapy Stimulation on Acute Cognitive Performance Under Normal and Anxiety-Induced Contexts. NATHAN WARD, *Tufts University*, THOMAS WOOTEN, *Tufts University*, KAYLA SANSEVERE, *Tufts University*, THOMAS MCWILLIAMS, *Tufts University*, PARISA ARASTU, *Tufts University*, WILLIAM ZHUANG, *Tufts University*, ERIKA HUSSEY, *Defense Innovation Unit, Department of Defense*, TAD T. BRUNYÉ, *Tufts University* — Cranial electrotherapy stimulation (CES) is a type of non-invasive brain stimulation (NIBS) that shows promise in influencing neural activity for potential cognitive enhancement. While other NIBS methods have been explored for acute cognitive improvement, CES remains under investigated. In a randomized controlled trial, we evaluated CES's effectiveness in enhancing cognitive performance under normal circumstances and during induced situational anxiety (threat of shock [ToS]). Participants were randomly assigned to either situational anxiety (ToS) or control conditions before completing cognitive tasks measuring processing speed and executive functions across active and sham CES sessions. We predicted active CES might boost executive functions under ToS; however, we found no significant effects of active CES nor did CES interact with ToS. These findings add to the growing literature that has struggled to find robust evidence for acute cognitive enhancement from NIBS despite adequate blinding to stimulation conditions.

Email: Nathan Ward, natejohnward@gmail.com

7:45-9:15 PM (4169)

Increased Proactive Cognitive Control in the Face of Unpredictable Threat. RACHEL E. BROUUGH, *University of Denver*, CHASE SPURBECK, *University of Denver*, KIMBERLY S. CHIEW , *University of Denver* — Effects of punishment motivation on cognitive control are complex and understudied, with threats of negative outcomes observed to facilitate both increases in reactive control as well as proactive control in past research. These surprising and contradictory results might relate to contextual elements of study design, such as predictability of punishment outcome and use of primary vs. secondary incentives. We investigated whether unpredictable, unavoidable punishments would facilitate increased proactive or reactive control in an AX-Continuous Performance Task using primary punishments (electric stimulation). Relative to a baseline condition, proactive control was increased, and reactive control was decreased, under the threat of unpredictable electric stimulation. Interestingly, individuals who reported finding the electric stimulation more threatening displayed greater reactive control. This pattern suggests that methodological differences in punishment intensity and frequency may account for divergent effects observed in the literature, as mildly threatening outcomes may facilitate increased proactive control, while more intense threats facilitate increased reactive control.

Email: Rachel Brough, rachel.brough@du.edu

7:45-9:15 PM (4170)

Neural Correlates of Cognitive Control in Adolescents with Adverse Childhood Experiences (ACEs): An EEG Study. SATWIKA RAHAPSARI , *University of Sheffield*, KUBRA ULUSOY, MYLES JONES, *University of Sheffield*, RICHARD ROWE, LIAT LEVITA, *University of Sussex* — Adverse childhood experiences (ACEs) influence adolescents' cognitive control, yet the neural mechanisms remain poorly understood due to limited physiological biomarkers. This study collected behavioral and event-related potential (ERP) data from 14-17-year-old adolescents, comparing those with ACEs ($n=23$, 51.2% male) to those without ($n=25$, 46.1% male) during a Zoo-Themed Go/No-Go task. EEG recordings focused on the N2 and P3 ERP components as cognitive control indices.

Adolescents with ACEs demonstrated lower accuracy ($F(1, 100)=7.55, p=.006$) and more negative N2 amplitude ($F(1, 100)=6.82, p=.010$) during no-go trials, compared to those without ACEs. However, no significant group difference was found in P3 amplitude. Additionally, adolescents with ACEs displayed a more negative N2 amplitude during Go trials than No-go trials ($F(1, 100)=5.75, p=.017$). These findings underscore ACEs' impact on cognitive control, highlighting specific neural activity patterns in affected adolescents.

Email: Satwika Rahapsari, srahapsari1@sheffield.ac.uk

7:45-9:15 PM (4171)

Updating Perceived Control: How Positive and Negative Feedback Shape Self-Efficacy and Response-Efficacy. YUN-YEN YANG, *Rutgers University*, MAURICIO DELGADO, *Rutgers University* — An individual's perception of control significantly influences everyday decisions and can be divided into self-efficacy (belief in executing a behavior) and response-efficacy (belief the behavior leads to a desired outcome). This study explored how these components of perceived control are updated by positive and negative outcomes. Fifty-one participants completed a learning task, receiving feedback on a trial-by-trial basis, and provided confidence ratings for self-efficacy and response-efficacy. Using a reinforcement learning model, we measured learning rates to examine how outcomes of different valence influenced perceived control. Results suggested that participants exhibited asymmetrical learning for self-efficacy and response-efficacy, learning more rapidly from positive than negative outcomes. Additionally, the interplay between outcome valence and information type significantly influenced this learning behavior. These findings enhance our understanding of the distinct computational pathways through which perceived control is learned and updated, highlighting the importance of differentiating self-efficacy and response-efficacy in decision-making processes.

Email: Yun-yen Yang, yy549@psychology.rutgers.edu

7:45-9:15 PM (4172)

Modes of Communication During a Joint-Rhythm Task Modulate Cognitive Control Resources. JUERGEN A. RIEDELSHEIMER, *Idaho State University*, LAWRENCE BEHMER, *Idaho State University* — COVID-19 lockdowns posed extraordinary challenges after most schools shifted to remote learning.

The cognitive challenges associated with online education are still poorly understood. To better understand the effects of asynchronous and synchronous modes of communication (MoC), we had participants play simple quarter note sequences on a drum pad face-to-face (synchronous live), on a Zoom call (synchronous video), or to a pre-recorded video (asynchronous video) with another drummer. We collected and analyzed EEG from the frontal electrodes in the theta band, a marker for increased cognitive control. Participants in the synchronous live group showed a significant increase in theta activity compared to the synchronous and asynchronous video groups. Our findings suggest that people exert more conscious control during face-to-face interactions than live or pre-recorded video conditions. One possible explanation for these findings is that people may be more inclined to "check out" under more impersonal social settings and that finding ways to keep students engaged during online instruction/interaction might improve educational outcomes.

Email: Juergen Riedelsheimer, juergenriedelshei@isu.edu

7:45-9:15 PM (4173)

The Differential Effect of Physical Effort within Perceptual and Visual Memory Domains: Insights from Psychometric Function Analysis. MOHAMMAD DASTGHEIB, *University of California, Riverside*, ILANA J. BENNETT, *University of California, Riverside*, AARON R. SEITZ, *Northeastern University* — The relationship between physical effort and cognitive performance has shown mixed effects. This study examined how physical effort affects perceptual and memory performance, which have previously been tested separately. Thirty-eight healthy young adults performed two perceptual discrimination (auditory and visual) and two visual memory (short-term and long-term) tasks, each with four levels of similarity between oddball and target stimuli. Physical arousal was induced using a hand grip device at either 5% or 40% of maximum voluntary contraction. Psychometric functions were estimated for each task and grip condition, and slope differences were analyzed. Results revealed that higher physical effort was associated with steeper slopes in visual, but not auditory, perception and short-term, but not long-term, memory tasks, indicating enhanced sensitivity to stimulus changes. These findings suggest that relationships between physical effort and cognitive performance are task- and sub-domain-specific,

potentially influenced by the locus coeruleus-norepinephrine system.

Email: Mohammad Dastgheib, mdast003@ucr.edu

7:45-9:15 PM (4174)

Effort by Osmosis: Addressing the Contagious Nature of Mental Effort Exertion in Joint Tasks.

ALESSANDRO MAZZA, KU Leuven, HANS STUYCK, KU Leuven, ELLEN VOORRIPS, KU Leuven, GETHIN HUGHES, University of Essex, KOBE DESENDER, KU Leuven, EVA VAN DEN BUSSCHE, KU Leuven — Nowadays, it's common to perform duties in the presence of others. However, how the cognitive effort exerted by others may affect our performance remains unclear. Desender et al. (2015) examined this with a modified joint Simon task by pairing two participants in front of a single screen halved by a separator cardboard. One participant performed the task with an equal proportion of congruent and incongruent trials, while their neighbor performed either an easy (mostly congruent) or a hard one (mostly incongruent). They showed that cognitive effort exerted by the latter participant affected the former, evincing that cognitive effort is contagious. We aimed to replicate their findings in two studies where study 2 contained a more effortful joint Simon task. Both our studies failed to replicate the study of Desender et al., although we observed that the participant receiving an easy or hard task adapted their cognitive effort exertion in the function of the task. We argue that one potential reason for this failure to replicate might be attributed to the cardboard separator as it limits the number of cues participants can use to infer the other one's effort exertion. As such, we could not corroborate that mental effort is contagious.

Email: Alessandro Mazza, alexander.batter@gmail.com

7:45-9:15 PM (4175)

Individual Differences in Sustained Post-Error Slowing.

ALANA MONTANEZ, The Johns Hopkins University School of Medicine, CLIFFORD E. HAUENSTEIN, The Johns Hopkins University School of Medicine, DEREK M. SMITH, The Johns Hopkins University School of Medicine, ALEXIS PHILLIPS, The Johns Hopkins University School of Medicine — The tendency to slow down after making an error is known as post-error slowing (PES). Although this phenomenon is typically studied on the trial made immediately after an error it has been shown to be sustained across multiple

trials. Findings from experimental research hint at PES being grounded on different mechanisms depending on the amount of time that has elapsed since making an error and that the mechanisms responsible for PES at shorter time scales are more likely to be domain/task general. In line with a domain/task general account of the PES, correlational research suggests that the magnitude of the PES is correlated between tasks. Unfortunately, cross-task correlations in sustained PES were not investigated. Through reanalysis of published data collected by two different research groups we replicated cross-task correlations in the PES even when mitigating previously unaccounted for measurement issues. Unlike the PES for trials immediately following an error, sustained PES effects were virtually uncorrelated between tasks. These findings might hint at task specific mechanisms driving sustained PES but sustained PES exhibited poor reliability which constrains cross-task correlations.

Email: Alana Montanez, amontan5@jhu.edu

7:45-9:15 PM (4176)

Learning of Cognitive Control during Task Switching in Recurrent Neural Networks.

SHENGJIE XU, Ghent University, TOM VERGUTS, Ghent University, SENNE BRAEM, Ghent University — Humans are efficient at adapting to different contextual demands by exerting varying levels of cognitive control. Yet, a computational account of how people learn context-specific cognitive control settings is unclear. In this modelling work, we address this issue by training a recurrent neural network on task sequences with various switching frequencies in a task switching setting. We observed our model combines a fast but transient form of activation-based adaptation and a slow but durable form of weight-based adaptation based on control demands. In a low-switch context, deeper task attractors are favored, which helps the model accumulate more task activation through task repetition and achieve better performance on repetition trials. However, the model adopts shallower task attractors in a high-switch context, facilitating the reduction of an old task activation and strengthening the activation of a new task during task switching, resulting in smaller switch costs. The model also learns to associate this strategy to co-occurring contextual features and uses these features to help regulate its own cognitive control. In sum, our model yields a novel framework to investigate and simulate theories of cognitive control regulation.



2024 ABSTRACTS

of the PSYCHONOMIC SOCIETY

Email: Shengjie Xu, shengjie.xu@ugent.be

7:45-9:15 PM (4177)

Person-Specific Dynamics Manifest in Single- and Dual-Tasking Practice Gains. RINSEO PARK, *Stanford University*, CHRISTOPH NAEFGEN, *University of Hagen*, ROBERT GASCHLER, *University of Hagen*, NILAM RAM, *Stanford University* — This paper examines how dual- and single-tasking practice gains are associated at individual level using multilevel models of change. Response time (RT) data from 58 participants who completed two forced-choice tasks in single- and dual-tasking blocks for 20 sessions were examined using hierarchical variance decomposition and (non-)linear process models. Within-person fluctuations over time accounted for ~12% of the total variance in RTs. On average, RTs improved by 10 milliseconds per session ($b_{\text{Session}} = -9.6$), and the rate of improvement was higher in dual-tasking compared to single-tasking ($b_{\text{Dualtask:Session}} = -67.7$). Importantly, there was consistency of interindividual differences in initial performance ($s_{\text{u0u1}} = .41$) and in rates of improvement ($s_{\text{u2u3}} = .74$). The high correlation of individual time trends suggest that participant characteristics driving single- and dual-tasking gains overlap substantially. Together, the full set of analyses illustrates how tracking of learning processes provides more detailed understanding of person-specific dynamics in cognitive processing.

Email: Rinseo Park, rinseo@stanford.edu

7:45-9:15 PM (4178)

The Effect of Visual Order on Inhibitory Control. YUYING WANG, *KU Leuven*, EVA VAN DEN BUSSCHE, *KU Leuven* — Subtle and often unnoticed context (dis)order may impact inhibitory control, essential for effective environmental interactions. In the first experiment, we compared inhibitory control performance in completely ordered versus disordered contexts using the flanker task with ordered or disordered backgrounds. Experiment 2 altered partial disorder levels (25%, 50%, 75%) to examine more fine-grained effects. As predicted, the response to incongruent trials was slower and less accurate than to congruent trials, with the congruency effect decreasing as the proportion of incongruent trials in a block increased (i.e., proportion congruency effect). Notably, Experiment 1 showed a larger congruency effect on error rates in disordered contexts compared to ordered ones. In

Experiment 2, error rates increased with higher disorder levels in blocks with a volatile proportion (50%) of incongruent trials but decreased in a block with a high proportion (75%) of incongruent trials. These findings indicate that increased context disorder impacts general task performance and inhibitory control, highlighting the importance of visual context in cognitive control.

Email: Yuying Wang, yuying.wang@student.kuleuven.be

7:45-9:15 PM (4179)

The Role of Task Difficulty and Achievement Motivation in Response Monitoring. YANNIK WILK, *University of Cologne*, ANDRÉ MATTES, *University of Cologne*, ELISA PORTH, *University of Cologne*, MAYA KÜCKELHAUS, *University of Cologne*, JUTTA STAHL, *University of Cologne* — Response monitoring ensures accurate execution of intended actions and facilitates improvement when deviations occur. To investigate the effect of task difficulty on response monitoring, we developed a speeded response selection task with two difficulty levels (2 vs. 8 response options). In an EEG study, participants (n=99) performed both difficulty levels in a randomized order and evaluated their response accuracy on each trial. We assessed differences in error processing (reflected by error/correct positivity, Pe/c), error detection (reflected by response signaling) and achievement motivation. Higher task difficulty was associated with a bias towards classifying all responses as correct and a lower differentiation between correct responses and errors at the behavioral and neural level (reflected by lower d' and smaller Pe/c differences). Similarly, individuals with a failure-oriented achievement motivation displayed smaller Pe/c difference compared to success-oriented individuals, who showed more refined error processing. In short, higher task difficulty may reduce the capacity for error evidence accumulation and affect performance evaluation, whereas achievement motivation affects these processes independent of task difficulty.

Email: Yannik Wilk, ywilk2@uni-koeln.de

7:45-9:15 PM (4180)

Effects of Interruption Frequency on the Interrupted and Uninterrupted Performance in a Serial Multi-Step Primary Task. TARA RADOVIC, *Martin-Luther University Halle-Wittenberg*, PATRICIA HIRSCH, *RWTH Aachen University*, IRING KOCH, *RWTH Aachen University*, TORSTEN SCHUBERT,

Martin Luther University Halle-Wittenberg — We investigated the effects of interruption frequency on interrupted and uninterrupted performance in a serial multi-step primary task. This primary task consisting of five steps, which had to be learned and executed consecutively in predefined order, was occasionally interrupted by a letter classification task. After the interruption, the primary task had to be resumed at the correct step. We measured response times and sequence errors (deviations from the prescribed order of steps) at the first step after an interruption (resumption performance) and in the corresponding steps of the uninterrupted task. Interruption frequency was varied between subjects 1) globally, as the percentage of interrupted tasks at all (25% or 75%), and 2) locally, as the number of interruptions per one task (one or three). The results revealed that high interruption frequency (either on the global or local level) improved resumption of the primary task, but slowed down the progress in the uninterrupted task compared to the low frequency. These results suggest that high interruption frequency induces strategic shifts in participants' control mode toward dealing with interruptions for the cost of worse performance in uninterrupted tasks.

Email: Tara Radovic, radosic.tara@gmail.com

7:45-9:15 PM (4181)

Flipping the Script: Action-Plan Modification in a Precueing Paradigm. TIM RAETTIG, *Julius-Maximilians-Universität Würzburg*, LYNN HUESTEGGE, *Julius-Maximilians-Universität Würzburg* — We tested the idea that local changes in action demands (e.g., due to an invalid cue or trial-by-trial) result in frugal modifications of existing action plans via action-plan-modification operations. We implemented an experimental procedure making use of a cue that indicates the action requirements for an upcoming signal with a certain degree of reliability. Crucially, incongruent cue-stimulus pairs either require action-plan modification or "resetting" the prepared action plan and reselecting a new response from scratch. We systematically varied the proportion of valid cues over four experiments. There were four response conditions: left button press, right button press, dual button presses, no action. Results support the concept of action-plan modification rather than reset-reselect: switching between a left and a right response was faster and less error-prone than any other type of switch, both between trials and between cue and signal. Thus, it

appears that given two responses that can be conceived of as polar opposites (within the same single-action category), there is an action-plan-modification operation ("invert") that transforms one into the other at a comparatively low cost.

Email: Tim Raettig, tim.raettig@gmail.com

Poster Session V

Saturday, November 23, 2024, 12:00-1:30 PM US EST

12:00-1:30 PM (5001)

Massive Exposure to Palatable Tastes Leads to Automatic Intake: an Assessment from Flavor Preference Learning. ANA GONZÁLEZ, *University of Granada*, ISABEL DE BRUGADA, *University of Granada* — Obesity has become a major public health concern. A key factor that can lead to overeating is the acquisition of food preferences. Liking for foods is learned through experience. This has been extensively studied by pairing palatable tastes (unconditioned stimuli; US) with neutral flavor cues (conditioned stimuli; CS), which in turn, results in a conditioned preference for the CS. Literature has shown how conditioned preferences are sensitive to US devaluation procedures, suggesting that these are flexible and are mediated by the US representation. In the present experiment we studied whether, as in Instrumental Learning, a massive exposure to a palatable taste can lead to much more rigid association that is insensitive to devaluation. To do so, we trained two groups with different conditioning regimes (short/extended), then applied a devaluation procedure and assessed preference. Our results showed that the minimally trained group expressed a devaluation effect, while the overtrained group did not. This result suggests that massive exposure to palatable foods may result in rigid and automatic behaviors that motivate unhealthy food choices and overeating. Funding from project PID2022-136219NB-I00

Email: Ana González, gonzaleza@ugr.es

12:00-1:30 PM (5002)

Receptive and Productive Symbol Use in Rhesus Macaques (*Macaca mulatta*). BROOKE N. JACKSON, *Georgia State University*, ANDRES SANCHEZ, *Georgia State University*, BARBARA A. CHURCH, *Georgia State University*, J. DAVID SMITH, *Georgia State University* — The ability to understand

relations is an important cognitive skill (e.g., Smith & Church, 2021). Relational tasks require abstraction beyond perceptual features and engage higher-order cognition. Research has shown that symbol-trained apes demonstrate clear relational abilities, while monkeys' abilities are limited (for review, see Smith et al., 2021). It is unclear what role symbolic representation plays in the differences in relational skills between human and non-human primates. The current experiments investigated whether macaques could learn visual symbols representing color and shape sameness relations. First, we tested whether macaques could learn to use symbols to declare the type of dimensional match (color or shape) and generalize to novel items. Then, we examined if macaques could choose the correct match based on symbolic instruction, demonstrating bidirectional symbol use. Preliminary results suggest macaques can use symbols to declare match types and generalize. However, bidirectional use is limited.

Email: Brooke Jackson, bjackson55@gsu.edu

12:00-1:30 PM (5003)

Can Pigeons Learn from Video-Recorded Demonstrators? FANGZHOU XU, *Chiba University*, TAKUMA NAGAO, *Chiba University*, TOMOKAZU USHITANI, *Chiba University*, ARII WATANABE, *Chiba University* — The ability to learn from others by observation is seen in some non-human animals, such as primates, yet the results from pigeons have been inconclusive. In this study, we investigated the observational learning ability of pigeons using a symbolic matching-to-sample task. We first trained the demonstrators while recording the scores of the early sessions for use as the control data. Once they achieved a plateau, the observer pigeon was placed in a cage located next to the demonstrator's operant box while the demonstrator engaged in the task. Immediately after the observation session, the observer was presented with the same task. There was no significant difference between the performance of controls and observers overall. We also repeated the experiment with a video-recorded demonstrator and found that the performances of the observers were inferior to those of live observers. The video observers pecked the screen occasionally during the observation and perhaps confused the stimuli in the video with the real test.

Email: Fangzhou Xu, xufangzhou2021@gmail.com

12:00-1:30 PM (5004)

Increase in Choice by Exclusion in Pigeons Using an Expanding Set. KAYLEY OZIMAC, *University of California, Los Angeles*, CYRUS KIRKMAN, *University of California, Los Angeles*, AARON BLAISDELL, *University of California, Los Angeles* — Fast mapping, a relational word learning strategy observed in human children, involves inference-by-exclusion of known word-object associations to associate a novel word with a novel object. While extensively studied in children, its emergence in nonhuman animals remains underexplored. Previous research (Aust et al., 2008) found no evidence of fast mapping in pigeons with eight training stimuli; however, Bodily et al. (2008) showed that larger training sets foster relational learning in pigeons. We investigated the role of increasing training set sizes on pigeons' acquisition of novel stimulus-stimulus associations via a choice-by-exclusion process, dubbed fast object association mapping (FOAM). Seven pigeons participated in a conditional, binary pair matching-to-sample (MTS) task, where training set size doubled (3, 6, 12, 24, etc.) after each set was mastered. Our findings indicate that with larger set sizes (>24), choice-by-exclusion behavior emerges when introducing novel sample-comparison pairs alongside familiar foils compared to novel foils following set expansion.

Email: Kayley Ozimac, kayleyozimac@ucla.edu

12:00-1:30 PM (5005)

Monkeys Do Not Consistently 'Save for Last' the Hardest Discriminations of Multi-Dimensional Stimuli. JOSEPH W. MCKEON, *Georgia State University*, DARA JONKOSKI, *Georgia State University*, MICHAEL J. BERAN, *Georgia State University* — Rhesus monkeys and brown tufted capuchins classified a single stimulus that had three perceptual features: a darkness level (light to dark grey), a size level (small to large), and a line orientation (vertical to horizontal). Monkeys had to make all three of the classifications (control trials) or only two classifications (potential offloaded difficulty trials). In Experiment 1 they received feedback (reward or timeout) after each classification. In Experiment 2, they had to correctly classify all required classifications to receive a reward. It was predicted that monkeys would save the hardest discriminations in each trial for later choices, and especially in Experiment 2. This might reflect a form of cognitive offloading. However, monkeys instead showed

preferences for responding to certain dimensions over others no matter the difficulty of the discrimination of that dimension on a given trial. These data indicate limits in how well monkeys can monitor difficulty and selectively “offload” more difficult discriminations when that is possible. However, future modifications of this type of task may promote better evidence of offloading, based on what was learned about monkey preferences for sequential responding in this study.

Email: Joseph McKeon, emckeon1@gsu.edu

12:00-1:30 PM (5006)

Running Distance Is Not Affected by Alternating Exercise Order. JORDAN H. NERZ, *Texas Christian University*, CATRINA GILLESPIE, *Texas Christian University*, KATIE CAGNEY, *Texas Christian University*, SARA R. BOND, *Texas Christian University*, ISABELLA FLORES, *Texas Christian University*, KENNETH LEISING, *Texas Christian University* — Habituation, which is a reduction in a response due to repeated stimulation, has been found to reduce running distance in rats within a session. Dishabituation, which involves the presentation of an unexpected stimulus, has been found to support recovery of running. The influence of other stimuli often involved in human exercise routines has not been evaluated. We examined whether varying exercise order within each session for 14 days (e.g., Day 1: running wheel → open field (OF); Day 2: OF → running wheel) would attenuate wheel running habituation in rats. Control animals experienced the same exercise order across days (e.g., Day 1: running wheel → OF; Day 2: running wheel → OF). Alternating exercise order had no effect on distance, however, more wheel running occurred when it was the second exercise of the day. It is likely that factors other than habituation (e.g., stress) exerted a greater influence on running.

Email: Jordan Nerz, ookie.nerz@tcu.edu

12:00-1:30 PM (5007)

Symbol Learning May Support Relational Cognition in Rhesus Macaques (*Macaca mulatta*). ANDRES SANCHEZ, *Georgia State University*, BARBARA A. CHURCH, *Georgia State University*, J. DAVID SMITH, *Georgia State University* — Research suggests that symbolic representation may facilitate learning abstract relations in humans and language/symbol trained apes (Gentner et al., 2021; Smith & Church, 2021). However, monkeys struggle

with relational tasks and demonstrate weak relational capacities (e.g., Smith et al., 2013). We investigated whether teaching monkeys symbols denoting same-color and same-shape relations facilitated performance in a relational matching-to-sample paradigm (RMTS) using these relational concepts. Two monkeys saw three different trial types. In productive trials, stimuli matched based on color or shape, and the monkey picked the symbol denoting the type of match. In receptive trials, monkeys saw a symbol and then picked the pair denoted by the symbol. In a third trial type, RMTS trials, the monkey saw a matching pair at the top (either color or shape) and then had to choose between two different pairs (one color match and one shape match). One monkey successfully performed RMTS trials with simple stimuli suggesting that symbols may help monkeys understand abstract relations.

Email: Andres Sanchez, asanchez19@student.gsu.edu

12:00-1:30 PM (5008)

Virtually Anything Can Happen: Investigating Short-Term Memory in Capuchin Monkeys Using Virtual Environments. ANDREEA MISCOV, *University of St Andrews*, EMMA MCEWEN, *University of St Andrews*, JUSTIN ALES, *University of St Andrews*, AMANDA SEED, *University of St Andrews* — Computerised technology is an increasingly popular tool for cognitive testing with non-human animals and has numerous benefits, such as tighter control over stimuli presentation and recording responses. Recently, virtual environment (VE) software has been successfully implemented in cognitive research with non-human primates. In VEs, novel stimuli can be presented in innovative ways allowing us to study phenomena in novel ways unrestricted by real-world space. We present evidence from capuchin monkeys (*Sapajus apella*) in a delayed-response task within a VE presented on a touchscreen. We compared capuchins' short-term memory performance between a VE task and an equivalent physical task. Our data shows an effect of delay on accuracy in the VE, as in the physical task. We show that VE are a feasible method for studying cognition with capuchin monkeys, offering an engaging way to study primate cognition in without the physical constraints that are often present when designing apparatuses.

Email: Andreea Miscov, amm52@st-andrews.ac.uk

12:00-1:30 PM (5009)

Applying Computational Modeling to Forced-Response Conflict Tasks in Adults with ADHD.

JAHLA OSBORNE, *University of Michigan*, JACOB SELLERS, *University of Michigan*, HAN ZHANG, *University of Michigan*, PRITI SHAH, *University of Michigan*, JOHN JONIDES, *University of Michigan* — Irrelevant visual stimuli, which one habitually tends to respond to, keeps one from focusing on the goal of a task. And adults with ADHD are particularly susceptible to this conflict between habit and goal. How does diagnostic status (Healthy Control vs. ADHD) impact responses to irrelevant, conflicting stimuli? Do adults with ADHD perform worse due to slower goal-directed processing or faster habitual processing? Research has shown that ADHD medications (e.g., Vyvanse, Strattera) appear to improve attention and productivity among individuals with ADHD in various settings. Is this improvement due to a speeding of goal-directed processing or a slowing of habitual processing in medicated ADHD patients? We aim to answer these questions using a novel “forced-response” paradigm in two conflict tasks (flanker and Simon), and we computationally model accuracy in these tasks. Participants (both neurotypical and ADHD) complete both tasks, with the ADHD participants doing so once medicated and once unmedicated. Preliminary results suggest that unmedicated ADHD individuals show sped up habitual processing compared to both healthy controls and medicated ADHD participants. Additionally, medication appears to speed up goal-directed processing.

Email: Jahla Osborne, jahlao@umich.edu

12:00-1:30 PM (5010)

Cognitive Control Ability and Reliability.

ALEXIS PHILLIPS, *The Johns Hopkins University School of Medicine*, CLIFFORD E. HAUENSTEIN, *The Johns Hopkins University School of Medicine*, ALANA MONTANEZ, *The Johns Hopkins University School of Medicine*, DEREK M. SMITH, *The Johns Hopkins University School of Medicine* — The study of individual differences in cognition depends on reliable metrics of cognitive processes. In recent years many canonical cognitive control effects (e.g., Stroop) have been shown to have poor to mediocre reliability, suggesting that they are ill-suited for individual differences research. Classic psychometric theory, for the most part, defines reliability as a feature of a paradigm as opposed to a characteristic of an individual. Nevertheless, it is plausible that poor attentional control could produce greater between session variability in the mitigation of distraction. We leveraged publicly available data from a large group of participants that performed two tasks, a flanker task and a task switching paradigm, over multiple sessions. The cross-session variance in effect magnitude was shown to be positively correlated with the cross-session average for both the congruency and switch effects. These findings imply that individuals lower on the spectrum of cognitive control ability (larger interference effects and switch costs) exhibit less reliable behavioral effects.

Email: Alexis Phillips, aphill91@jh.edu

12:00-1:30 PM (5011)

Control in Action: How Action-Based Contextual Cues Prime Cognitive Control.

CHRISTOPHER O. NUÑO, *Washington University in St. Louis*, JULIE M. BUGG, *Washington University in St. Louis* — People harness contextual cues such as the location, font, or color of Stroop stimuli to adjust control when such cues predict conflict likelihood (i.e., the likelihood of encountering an incongruent stimulus). In the present study, we used action-based contextual cues in search of evidence for adjustments in control driven by a contextual feature that is independent of the Stroop stimulus. Participants were presented with go/no-go cues that indicated whether they should press a special key upon seeing a black circle, and a Stroop stimulus followed 500 ms later. Critically, the action (go or no-go) was predictive of the likelihood that the Stroop stimulus would be conflicting. The Stroop effect varied as a function of the preceding action, suggesting that control was heightened for the action associated with a high

likelihood of conflict compared to the action associated with a low likelihood of conflict. The results indicated that adjustments in control can be driven by stimulus-independent, action-based contextual cues.

Email: Christopher Nuño, c.nuno@wustl.edu

12:00-1:30 PM (5012)

Coupling and Decoupling of Task-Related and Task-Unrelated Thoughts Using fNIRS.

HOJEONG SHIN, *Pohang University of Science and Technology (POSTECH)*, JIHYUN SUH, *Pohang University of Science and Technology (POSTECH)* — Mind-wandering is a cognitive phenomenon where attention involuntarily shifts from a primary task to internal thoughts. Although there is a growing number of studies on mind-wandering, many of them still face challenges in capturing it, primarily because detection relies on retrospective self-reports during probes. Neuroimaging studies suggest a possibility that neural signatures can be used to detect the mind-wandering. However, none of the prior work examined whether task-related and task-unrelated mind-wandering would show distinct neural signatures. In this study, using functional near-infrared spectroscopy (fNIRS), we investigated brain activities while experiencing task-related and task-unrelated thoughts. Participants were asked to perform a sustained attention to response task (SART) while cortical brain activities were measured in the pre-frontal region. Preliminary data analysis show that group-level comparisons of brain activities were not significantly different between the task-related and task-unrelated mind-wandering. In addition, we present the results of additional analyses examining machine-learning classifiers that may predict the occurrence of mind-wandering.

Email: Hojeong Shin, shjdaun@postech.ac.kr

12:00-1:30 PM (5013)

Crossmodal Interference During Selective Attention to Spatial Stimuli: Evidence for a Stimulus-Driven Mechanism Underlying the Modality-Congruence Visual Dominance Effect.

LINDA M. TOMKO, *Purdue University*, DARRYL W. SCHNEIDER, *Purdue University*, ROBERT W. PROCTOR, *Purdue University* — Many tasks require processing information from multiple sensory modalities. Crossmodal interactions are common and visual dominance often arises with incongruent sensory

information. Past work has shown that visual dominance tends to be strong in spatial tasks. Experiments in a crossmodal attention switching paradigm with physical-spatial stimuli (e.g., stimuli in left and right locations) have shown a robust visual dominance congruence pattern with conflicting visual-spatial information impairing responses to auditory-spatial stimuli, but conflicting auditory-spatial information having little impact on visual-spatial processing. Strikingly, this pattern does not occur with verbal-spatial stimuli (e.g., the words LEFT and RIGHT as stimuli). In four experiments, we explored these distinct stimulus-related patterns. Intermixing verbal and physical spatial stimulus sets did not meaningfully alter the distinct congruence patterns, and biasing attention to verbal-spatial processing amplified the modality-congruence interaction for physical-spatial stimuli. These findings suggest that an automatic stimulus-driven mechanism linked to the mode of spatial information underlies the visual dominance pattern.

Email: Linda Tomko, ltomko@purdue.edu

12:00-1:30 PM (5014)

Does Modality Matter? Investigating Cognitive Control in Children and Adults Within an Auditory and Visual AX-CPT.

LAUREN SCHIRO, *Louisiana State University*, EMILY ELLIOTT, *Louisiana State University*, CANDICE C. MOREY, *Cardiff University* — The AX-Continuous Performance Task (AX-CPT) is the most commonly used task for measuring proactive and reactive control as defined by the Dual Mechanisms of Cognitive Control Framework. We developed and validated a novel auditory version of the AX-CPT, in which animal sounds replaced visual cues and probes. We designed the task to elicit natural response tendencies with an experiment-wide 25% target rate, relative to other research using higher target percentages to elicit proactive responding. The current study propels our understanding of the auditory AX-CPT with a cross-modal validation within a child and adult population, using open-source software. The experiments feature a visual and auditory version of the AX-CPT. Child data collected to date (N=33, age range 5.5-7.11 years) did not show differences in accuracy between the auditory and visual task, but children responded slower in the auditory AX-CPT. Data collection with adults is in progress. Our findings will help to provide insight into the effects of modality on cognitive control task performance in children and adults. Future work will

vary the percentage of target trials to determine the flexibility of cognitive control in the context of different task demands.

Email: Lauren Schiro, lschir6@lsu.edu

12:00-1:30 PM (5015)

Does Trial Selection Improve the Reliability and Between-Task Correlations of Attentional-Control Measures? NIELS O. KEMPKENS,

UniDistance Suisse, JULIA M. HAAF, University of Potsdam, ANNA-LENA SCHUBERT, Johannes Gutenberg University Mainz, ALODIE REY-MERMET, Vinzenz Pallotti University — Attentional control—that is, our ability to maintain a goal and goal-relevant information in the face of distraction—has been reported to be difficult to measure. For example, previous research has highlighted attentional-control measures with low reliability and between-task correlations. A recent study has suggested that reliability and correlations can be improved by analyzing only the subset of trials in which the effect of distraction is expected to be highest. However, this approach presents challenges. First, many reliability metrics are sensitive to the number of trials, and the correction applied to solve this problem may have artificially increased the estimates. Second, selecting trials may have artificially reduced variance, resulting in higher estimates. We addressed these challenges in two ways. First, we used the signal-to-noise ratio, a reliability metric independent of the number of trials. Second, we compared different trial subsets. We applied our approach to a dataset including eight tasks. Preliminary results showed that selecting trials did not consistently result in higher reliability. These results suggest that selecting trials does not solve the substantial measurement problems known to the field.

Email: Niels Kempkens, niels.kempkens@fernuni.ch

12:00-1:30 PM (5016)

EEG/ERP Signatures of an Age-Related Shift from Proactive to Reactive Control in a Novel Color-Word Stroop Task. ANTONIO SOARES DE ALMEIDA, Washington University in St. Louis, TODD BRAVER, Washington University in St. Louis

— Much prior work has utilized the Stroop task to investigate mechanisms of cognitive control, with EEG/ERP approaches employed to identify neurophysiological signatures of control, as well as patterns of age-related

change. Here we extend this prior work, with a study design in which EEG data were collected while older and younger adults ($N=84$) performed task blocks randomly alternating between color naming and word reading tasks, and varying in list-wide proportion congruency (LWPC; mostly congruent [MC] or mostly incongruent [MI]), but including PC-matched diagnostic stimuli. This study design was utilized to test hypotheses from the dual mechanisms of control (DMC) framework, indexing proactive control through pre-stimulus anticipatory activity (BP, CNV) that is selectively enhanced during MI color naming blocks (relative to MC or word reading) and reactive control through post-stimulus conflict-related ERP components (N2, N450) that would be increased on incongruent diagnostic stimuli in MC color naming blocks. We present results that further test age-related hypotheses from the DMC framework, predicting that older adults will exhibit a shift from proactive to reactive control, reflected in these ERP indices.

Email: Antonio Soares De Almeida, antonios@wustl.edu

12:00-1:30 PM (5017)

Effect of Goals on Attention Lapses and Meta-Awareness of Mind-Wandering. DEANNA L.

STRAYER, *University of Oregon, NASH UNSWORTH, University of Oregon* — Attention lapses reflect shifts of focus away (internally or externally) from the current task and can result in failing to complete intended actions. Some lapses occur unnoticed, but sometimes we can catch ourselves straying (i.e., meta-awareness). Past research found specific goals that become harder-over-time (HOT) increase attentional effort (measured via pupil) and reduce lapses measured behaviorally (reaction time distribution) and subjectively (thought-probes). The current study aimed to replicate those results and examine whether the HOT goal impacted meta-awareness of attention lapses. Subjects ($N=80$) completed a 4-choice reaction time task. A control condition was given the vague goal: “respond as quickly as possible while keeping your accuracy above 95%.” The HOT condition had goals that became harder (450ms, 400ms, and 350ms). Subjects indicated with a key press whenever they noticed task-unrelated thoughts. Results from previously used measures showed the HOT group had fewer lapses and exerted more attentional effort. However, there was no difference in meta-awareness of lapses between groups. Future research should explore factors affecting meta-awareness and its measurement in relation to attention lapses.

Email: Deanna Strayer, deannastrayer23@gmail.com

12:00-1:30 PM (5018)

Effects of Acute Aerobic Exercise on Executive Functioning in Young Adults: Insights from Inhibitory Control and Mood.

MICHAEL CERVANTES, *University of Illinois Chicago*, JENNIFER WILEY, *University of Illinois Chicago* — Engaging in exercise has been claimed to improve executive functioning, although findings vary across studies. While different types of executive functions (inhibiting, updating, shifting) are measured by different tasks (Diamond, 2006; Miyake & Friedman, 2012), a review of prior work with young adult samples suggested that acute aerobic exercise may be more likely to impact performance on inhibitory control measures (Colcombe & Kramer, 2003; Ishihara et al., 2021; Pontifex et al., 2019) than updating. The present study tested whether the positive effects of exercise would be found on either or both inhibitory control and updating tasks. Young adults were randomly assigned to either an exercise (15 min of aerobic exercise on a stationary bike at 50%-59% maximum heart rate) or no-exercise control condition, and measures of executive functioning and mood were collected twice, before and after exercise or no-exercise control. Results showed no effects of acute exercise on either inhibitory control or updating measures, however there was a positive effect on mood. This suggests that an acute bout of aerobic exercise might not affect measures of executive functioning directly in young adults.

Email: Michael Cervantes, mcerva28@uic.edu

12:00-1:30 PM (5019)

Beyond the Foreign Language Effect: Exploring the Influence of L2 Proficiency on Rationality.

CLAUDIO MULATTI, *University of Trento*, BARBARA TRECCANI, *University of Trento*, SILVIA PURPURI, *University of Trento*, NICOLA VASTA, *University of Windsor*, REMO JOB, *University of Trento* — This preliminary study explored the impact of reading statements in a second language (L2) compared to the first language (L1) on Core Knowledge Confusions (CKC), superstition, and conspiracy beliefs. Previous research on the foreign language effect (FLE) has indicated that, for example, using a foreign language elicits less intense emotional reactions and promotes rational decision-making, reduces superstition, and alters tolerance of ambiguity. Our findings demonstrate that the use of an L2 affects CKC, but do not support the

anticipated FLE. Moreover, we found that L2 proficiency impacts participants' responses to CKC items and their superstition and conspiracy beliefs, regardless of the language used. The observed effects suggest that lower L2 proficiency can hinder understanding and judgment, particularly for ambiguous items, and challenge the core assumptions of the FLE.

Email: Claudio Mulatti, claudio.mulatti@unitn.it

12:00-1:30 PM (5020)

Executive Control Modulates Cross-Linguistic

Influence in L3 Processing.

RAZAN SILAWI, *University of Haifa*, ANAT PRIOR, *University of Haifa*, TAMAR DEGANI, *University of Haifa* — Trilinguals are tasked with managing their dynamically active languages, and the influence of executive control (EC) on this process remains understudied. Here we examine whether EC abilities contribute to third language (L3) processing and do EC abilities modulate cross-linguistic influence (CLI). Participants were Arabic-Hebrew-English undergraduates, 26 diagnosed with ADHD and 92 without ADHD, who performed an elicited imitation task, in which they produced sentences in L3 that syntactically overlap with either the first language (L1), the second language (L2) or both (L1-L2). They also completed four EC tasks. Analyses of individual differences and group comparison suggest that shifting and working memory abilities contributed to overall better performance in L3 processing. In terms of CLI, stronger working memory was associated with increased interference from the L1-L2 condition. These findings highlight the role of EC in L3 processing and partially in CLI management.

Email: Razan Silawi, razan.silawi@gmail.com

12:00-1:30 PM (5021)

Relating Bilingual Language Use and Experience to Alterations in Intrinsic Brain Connectivity and Cognition.

JASMINE G. LEE, *University of Ottawa*, SHANNA KOUSAIE, *University of Ottawa* — Cognitively stimulating tasks (e.g., multiple language use) may influence cognition and the brain. Results across studies vary, partly due to group comparisons of bilinguals and monolinguals, which overlook individual differences within bilinguals (e.g., proficiency). The current study aims to identify specific aspects of the bilingual experience (e.g., proficiency) that may be the basis for the interaction between bilingualism, cognition,

and brain function. Currently, n=17 adult English-French bilinguals (data collection is ongoing) have completed a resting-state fMRI scan. Measures of executive function and language experience collected outside of the scanner have been used to predict the strength of functional connectivity in relevant resting-state networks.

Preliminary results show a positive association between second language use and the strength of connectivity between brain regions known to support language and cognition (i.e., left inferior frontal, supramarginal and angular gyri), supporting the hypothesized association between language experience and neurocognitive function. These findings increase our understanding of the neural mechanisms that underlie the impact of language experience on cognition and the brain.

Email: Jasmine Lee, jlee552@uottawa.ca

12:00-1:30 PM (5022)

Cultural Influences on Cognitive Flexibility and Stability in Task Switching Among Thai-English Bilingual Preschoolers.

LIA PAZUELO, CUNY Graduate Center, THORFUN GEHEBE, CUNY Graduate Center, STEPHANI FEINSTEIN, CUNY Graduate Center, KLARA MARTON, CUNY Graduate Center — Task switching involves balancing cognitive-flexibility and stability by updating and shielding goals from interference (Dreisbach & Fröber, 2019). We examined these cognitive functions in 23 bilingual Thai-English-speaking preschoolers aged 4-6. Participants completed task-switching involving color/shape identification in single- and mixed-blocks under dense- and light-switching frequency conditions. In the dense-switching condition that typically leads to more automatic switches—benefiting cognitive flexibility—we found larger switch costs than in the light-switching condition when sorting by color, suggesting that children did not reach automaticity and were susceptible to interference. Thai is a numeral classifier language (Gandour et al., 1984); therefore, our participants have strong shape representations, which might have contributed to the larger switch cost in the color-sorting condition. Both frequency conditions showed significant mixing costs, indicating difficulty maintaining cognitive stability in the face of distractions (e.g., Declerck, 2020). We will discuss how task-condition variations and cultural factors influence cognitive flexibility and stability in young children.

Email: Lia Pazuelo, lpazuelo@gradcenter.cuny.edu

12:00-1:30 PM (5023)

Investigating Attention Deficit Hyperactivity Disorder and Bilingual Attentional Control: A Meta-Analysis. KAIAH N. SOTEBEER, *Iowa State University*, ASLI YURTSEVER, *Iowa State University*, JOHN G. GRUNDY, *Iowa State University* — Attention deficit disorder (ADHD) is a common neurodevelopmental disorder primarily characterized by symptoms of attentional deficits. Research on patterns of bilingual performance supports that speaking a second language may provide potential benefits to attentional control in both children and adults. However, studies in this area have yielded mixed results. A recent subset of the literature has sought to investigate executive functioning performance in bilingual individuals with ADHD to further inform bilingualism's role in executive functioning (Köder et al., 2022). A relevant question that remains unclear is to what extent bilingualism status plays an interactive role in attentional control for those with ADHD. The present study is the first to meta-analytically review the effect of bilingualism and ADHD status on attentional control performance across 10+ studies. Based on our preliminary search, we hypothesize that individual bilingual experiences will moderate the potential benefits of attentional control with ADHD status.

Email: Kaiah Sotebeer, ksote@iastate.edu

12:00-1:30 PM (5024)

Monolingual and Bilingual Differences in Reinforcement Learning. YINAN XU, *University of Houston*, MY V. H. NGUYEN, *University of Houston*, EVELYN D. RODARTE, *University of Houston*, ARTURO HERNANDEZ, *University of Houston* — This study explored how bilingualism influences reinforcement learning (RL). While RL theory emphasizes adjusting value estimates based on rewards, bilingualism's impact has been overlooked. Some studies show that bilingualism trains specific brain circuits involved in flexible rule selection and application, while some do not find differences in cognitive performance between monolinguals and bilinguals at all. This study compared RL performance between monolingual and bilingual groups. Results show that monolinguals were faster and more accurate in larger set sizes, while bilinguals showed consistent accuracy regardless of set size. Within bilinguals, English proficiency positively correlated with testing accuracy, while Spanish proficiency showed no significant impact. Bilinguals' performance varied with their self-reported English proficiency, but not for Spanish. These findings highlight the role of English proficiency in RL performance among bilinguals, underscoring the importance of considering language experience and cognitive functions in such studies.

Email: Yinan Xu, yinanx97@gmail.com

12:00-1:30 PM (5025)

Reevaluating Bilingualism and Executive Function: Insights from a Longitudinal Study. CHUN-YING TU, *Hunter College & CUNY Graduate Center* — The absence of bilingual advantages for cognitive processing in young adults might be due to the fact that they are at peak processing capacity. As a result, benefits of bilingualism are obscured. A second reason young adults may not show a benefit is that their language processing has become automatic. We test both possibilities. For the first, we administer flanker, n-back, and switching tasks at two time periods, one year apart. If young adults are at peak ability, they should not show improvement from Time 1 to Time 2. For the second, we examine two groups of Chinese-English multilinguals: one group learning a third language, Spanish ($N=26$, $M_{age}=18.63$), and another group not learning any new language ($N=28$, $M_{age}=18.53$). If learning to handle multiple languages confers a benefit, the two groups should differ. The results indicated no significant

improvements in executive functioning tasks between Time 1 and Time 2. Additionally, the findings supported the notion that language learning does not enhance performance in specific cognitive tasks. These results suggest a need to reevaluate the theoretical basis and limitations of the bilingual advantage.

Email: Chun-Ying Tu, chunyingtu2@gmail.com

12:00-1:30 PM (5026)

Switching Back and Staying Switched: The Downstream Effects of Code-Switching on Eye Movements Beyond the Initial Switch. DAISY R. CERVERA, *University of California, Santa Cruz*, LIV J. HOVERSTEN, *University of California, Santa Cruz* — Previous research on code-switching in bilinguals has primarily focused on the cognitive costs associated with comprehending switches at the initial switch site. The current study aimed to investigate downstream consequences of a code switch by including a second critical region later in the sentence. 64 Spanish-English bilinguals read short stories containing naturalistic code switches while their eye movements were tracked. The first critical region either stayed in the same language (NS) or introduced a mid-sentence code-switch (CS). The second critical region crossed Region 1 Switch (NS vs. CS) by Region 2 Switch (NS vs. CS) to create 4 conditions: never switch, new switch, stay switch, and switchback. As expected, a code switch in Region 1 led to longer reading times compared to a non-switch. In Region 2, reading times were shorter when staying in the new language than switching back to the starting base language of the sentence. Furthermore, switching back was just as costly as a new switch, while staying switched was no more costly than never switching. These effects build on prior evidence of switch costs in reading to demonstrate processing differences based on different code-switching patterns after the initial effects.

Email: Daisy Cervera, dcervera@ucsc.edu

12:00-1:30 PM (5027)

The Bilingual Cocktail Party Effect: Investigating Bilinguals' Selective Attention in Speech-in-Speech Environments. ASLI YURTSEVER, *Iowa State University*, JASON C. K. CHAN, *Iowa State University*, JOHN G. GRUNDY, *Iowa State University* — Individuals face a constant stream of noise and speech distractors that compete for attention and cognitive resources during everyday tasks.

This challenge is compounded for bilinguals who navigate multiple linguistic systems. Individuals' first language may be prioritized by attention, making it more difficult to inhibit distractors, referred to as the bilingual cocktail party effect. We investigated the selective attention processes of 90 English-Spanish bilinguals under auditory speech distractors in two languages. We created a dichotic listening task in which participants listened to an audiobook while simultaneously being exposed to distracting movie audio and then responded to memory and comprehension questions about the target task. We hypothesize that familiarity with the distractor language (i.e., first or second language) and the match between target and distractor languages will predict auditory interference and long-term memory performance. Additionally, we expect that executive functions and bilingualism will moderate these outcomes, such that higher executive function skills will predict less interference overall, whereas greater second language experience will predict greater interference from the second language.

Email: Asli Yurtsever, asliyu@iastate.edu

12:00-1:30 PM (5028)

Working Memory Capacity in Bilinguals: Degree of Bilingualism and Age of Acquisition.

ISABELLA FIORAVANTE, *Pontificia Universidad Católica de Chile*, VLADIMIR LÓPEZ, *Pontificia Universidad Católica de Chile*, JOSÉ LOZANO-LOZANO, *Universidad Autónoma de Chile* — This study investigates the cognitive and neural mechanisms underlying bilingualism, focusing on executive control and working memory capacity (WMC). The goal is to understand how WMC varies in relation to different degrees of bilingualism and the age of acquisition (AoA) of the second language (L2), in order to clarify how bilingualism impacts cognitive processing and behavioral performance. The study addressed three gaps from previous research: 1) standardization of methodologies, 2) inclusion of individual differences as a moderating variable, and 3) use of electrophysiological techniques, particularly ERP analysis, to complement behavioral data. Conducted with 50 young adult Spanish-English bilinguals in Chile, participants completed an ad-hoc translated and adapted version of the LSBQ questionnaire and underwent cognitive tests and EEG recording during N-back and Flankers experimental tasks. We hypothesize that more proficient bilinguals, especially simultaneous-early bilinguals, will exhibit

differences in ERP modulations and behavioral performance in high-difficulty tasks conditions compared to less proficient and late bilinguals. Preliminary results will be presented.

Email: Isabella Fioravante, ifioravante@uc.cl

12:00-1:30 PM (5029)

How Do Second Language Learners Regulate Each Language?

MACKARENA KARTSEVSKI, *Pontificia Universidad Católica de Valparaíso*, STEPHANIE DÍAZ, *Pontificia Universidad Católica de Valparaíso* — Learning a second language (L2) requires not only the ability to learn the features of the L2 but also its relation to the more dominant first language (L1). Recent studies suggest that the process of regulating the two languages varies as a function of the factors related to the speakers and also the environment. In this study, we examined language regulation in an understudied group of L2 learners being trained in English in Chile in a simulated immersion context. The objective of the study was to determine how language regulation is related to domain-general cognitive control and L2 proficiency. Preliminary results revealed that despite living in a strongly L1-dominant Spanish environment, learners recruited regulation mechanisms similarly to learners immersed in L2. These data highlight the role of context in recruiting cognitive resources, suggesting that bilingualism creates adaptations that are shared among bilinguals around the world but tailored to the immediate context.

Email: Mackarena Kartsevski, mackarena.kartsevski@pucv.cl

12:00-1:30 PM (5030)

Bilingual Effects on Cognitive Control: Are We Looking in the Right Place?

ADAM JOHN PRIVITERA, *Centre for Research and Development in Learning, Nanyang Technological University* — Almost everything known about the influence of bilingualism on cognitive control is based on evidence that assumes task performance is static. The present study investigated whether language experience was associated with alternative time-sensitive measures of performance trajectory. Mandarin-English bilinguals ($n=57$) reported on demographics and language history and completed a Simon task. Performance was modeled as a continuous function of time using Bayesian nonlinear mixed-effects regression. We observed significant correlations between separable dimensions of language experience and

performance trajectory measures. Interestingly, no significant correlations were observed between measures of English experience and final task performance, an index reflecting the conventional measure of overall performance. Results suggest that the nearly universal reliance on overall task performance measures may be partially responsible for the mixed results of previous investigations. Findings from the present study have both theoretical and methodological implications, necessitating reevaluation of how bilingual effects on cognitive control manifest as well as which analysis methods best support the identification of these effects.

Email: Adam Privitera, aprvite@connect.hku.hk

12:00-1:30 PM (5031)

Neurocognitive Adaptations to Degree of Bilingual Experience Manifest Differently Depending on Measure: Evidence from Task-Switching.

VINCENT DELUCA, *UiT The Arctic University of Norway*, ROKSANA MARKIEWICZ, *University of Birmingham*, FELIX CARTER, *University of Bristol*, ALI MAZAHERI, *University of Birmingham*, KATRIEN SEGAERT, *University of Birmingham*, ANDREA KROTT, *University of Birmingham* — A growing body of research suggests that bilingual experience modulates domain-general neurocognitive outcomes. The Unified Bilingual Experience Trajectories (UBET) framework (DeLuca et al., 2020) specifies that intensity of bilingual experience corresponds to neurocognitive adaptations toward increased efficiency in handling cognitive control demands. Another framework (Bialystok & Craik, 2022) proposes adaptations in attentional control to bilingual experience and outlines how these adaptations manifest differently by measure. This study aimed to address predictions of each proposal. 207 young adults with varying degrees of bilingual experience completed a color-shape (CS) and number-letter (NL) switch task while EEG was recorded, and several language background measures. Results from structural equation modeling showed that intensity of bilingual language use and frequency of language switching correlated to reductions in evoked activity for the NL task and reductions in oscillatory activity for the CS task. The reductions in neural activity as a function of increased bilingual experience supports UBETs predictions. The difference in neural activity patterns per task supports predictions of the attention-adaptation proposal.

Email: Vincent DeLuca, vincent.f.deluca@uit.no

12:00-1:30 PM (5032)

Does Aging Affect Auditory and Visual Object Memory Similarly?

LAURA L.S. WERNER, *Texas State University*, MARGARET A. McMULLIN,

University of Nevada, Las Vegas, MELISSA GREGG,

University of Wisconsin-Parkside, JOEL S. SNYDER,

University of Nevada, Las Vegas, COLLEEN M.

PARKS, *University of Nevada, Las Vegas* — Memory for visual objects (e.g., an image of a duck) has been shown to be much better than memory for auditory objects (e.g., the sound of a duck quacking) in young adults. Our research has shown that visual memory depends on attention during study more so than auditory memory. If attention is more important for visual than auditory memory, then age-related declines in attention may result in a greater decrease in visual than auditory memory. In a cross-sectional design, participants aged 18–80 studied both auditory and visual objects, and their memory was tested with a standard recognition test. Preliminary results indicate, as expected, that memory was better for visual than auditory objects in all age groups. However, in contrast to the prediction that age-related declines in memory would be more evident for visual than auditory objects, visual memory remained stable and auditory memory declined with age. These results suggest some aspect of auditory processing important for recognition memory declines with age, whereas visual memory mechanisms remain intact.

Email: Laura Werner, lauralucillesarah@gmail.com

12:00-1:30 PM (5033)

Does Curiosity Boost Memory for Older Adults?

ANDRÉE-ANN CYR, *York University*, FOTINI

VLAHOS, *York University*, JYOTI VARMA — Curiosity is a ubiquitous drive involved in nearly all aspects of human learning. Past studies among younger adults have found enhanced memory for information that was learned in a state of higher relative lower curiosity.

However, the effects of normal aging on curiosity during learning have been studied more scarcely. In two well powered experiments, we investigated age-related differences in the relationship between episodic memory and epistemic curiosity. Healthy younger and older participants viewed trivia questions (e.g., Which country first gave women the right to vote?): In study 1, participants self-reported how curious they were to learn the answer using a rating scale whereas in study 2, curiosity was operationalized as how long participants were willing to wait before viewing the answer. The

answer was then presented (e.g., New Zealand) and participants were asked to rate their satisfaction with the answer. Seven days later, participants completed a cued recall test later for all the trivia questions they viewed during the study phase. Results are discussed within a reward-motivated framework which suggests that information can act as a reward to guide learning among younger and older adults.

Email: Andrée-Ann Cyr, cyrandre@yorku.ca

12:00-1:30 PM (5034)

Investigating the Cognitive and Perceptual

Effects of Aging using Functional Near-Infrared

Spectroscopy. SHELBY KAYGA, CUNY Graduate

Center, E. SUSAN DUNCAN, CUNY Graduate Center

— Past research on the effects of healthy aging on cerebral function has led to proposal of the Default-Executive Coupling Hypothesis of Aging (DECHA). This hypothesis states that, as we age, the internally directed Default Mode Network (DMN), which is associated with storing prior knowledge, and the externally directed Executive Control Network (ECN), which is involved in integrating perceptual and cognitive processes, become increasingly coupled during goal-directed behavior due to declining perceptual skills and increased reliance on prior knowledge. While evidence supporting DECHA has been found in a variety of cognitive domains, there is a lack of research investigating this hypothesis in semantic memory. To test DECHA in semantic memory, healthy younger and older adults will participate in two tasks that assess semantic knowledge and perceptual skills. Functional Near-Infrared Spectroscopy (fNIRS), a neuroimaging technique, will be used to measure the involvement of a region of the DMN and a region of the ECN during these tasks. The results of this study will contribute to our understanding of how the brain changes due to healthy aging and thus ultimately aid in comprehending atypical cortical changes in clinical populations.

Email: Shelby Kayga, skayga@gradcenter.cuny.edu

12:00-1:30 PM (5035)

Older Adult Cognition and Wellbeing Are Differentially Related to Walking, Other Exercise, and Employment Status. GEOFFREY

MADDUX, Rhodes College, MAYA IHLING, Rhodes College, KATHERINE K. WHITE, Rhodes College,

ASYA BRAY, Rhodes College, FRANCES HIMSL-

FENZ, *Rhodes College, CLAIRE PRICE, Rhodes College, MAE ANDERSON, Rhodes College* — Exercise and cognitive engagement promote cognition and wellbeing in later adulthood. The current study examined the relationship between different forms of exercise, cognition, and wellbeing as a function of retirement status (i.e., cognitive engagement). 336 older adults completed an online survey which asked them to rate their cognition (e.g., episodic and semantic memory, attention) compared to five years ago and their wellbeing (e.g., happiness, burdensomeness). Participants also reported their forms of exercise, which were dichotomously coded for the presence or absence of “walking” and “other exercise.” Results revealed that regardless of exercise form, cognition differed across retirement status such that employed respondents reported higher cognition. In contrast, wellbeing differed as a function of retirement status and exercise form: Walkers reported higher wellbeing than non-walkers regardless of employment status. Non-walkers who engage in other forms of exercise reported higher wellbeing than those who do not exercise but only if they are employed. Discussion will focus on factors affecting older adults' choice of physical activities and how those factors may modulate cognitive and wellbeing outcomes.

Email: Geoffrey Maddux, maddoxg@rhodes.edu

12:00-1:30 PM (5036)

Syntax Complexity Impacts the Rate of Semantic

Illusions for Older Adults. SARA ANNE GORING,

Tufts University Center for Applied Brain and Cognitive Sciences — Semantic illusions occur when one fails to

recognize incoming information contradicts prior knowledge. Previous research indicates the frequency of semantic illusions is influenced by syntax structure that facilitates either overlooking or noticing the incorrect information. Few studies have examined the interaction of language structure and cognitive ability on the rate of semantic illusions within the context of aging. The current study evaluated the effects of age (young, older) and syntax complexity (simple, complex) on the outcome of a semantic illusion task. The sample of 114 young adults ($M=24.98$, $SD=4.06$) and 89 older adults ($M=65.63$; $SD=4.93$), were also measured on various cognitive abilities (e.g., crystallized intelligence, reading comprehension). Older adults had fewer semantic illusions than young adults, but only for sentences with complex syntax. Combined with older adults' increased prior knowledge, the results reflect an intricate

relationship between language structure and cognitive ability.

Email: Sara Goring, sara.goring@tufts.edu

12:00-1:30 PM (5037)

Updating and Inhibition Training: Transfer Effects in Middle and Older Adulthood. MARINA MARTINCEVIC, *University of Zagreb*, LUKA JURAS, *University of Zagreb*, ANDREA VRANIC, *University of Zagreb*, IVANA HROMATKO, *University of Zagreb* — Executive functions (EF) of updating and inhibition hold an important role in explaining cognitive aging deficits. Despite numerous studies investigating EF training efficacy, the findings are still ambiguous; while some studies find generalized improvements, others suggest skill specific enhancement. Thus, a set of heterogeneous EF and working memory (WM) tasks was used in this study which investigated the transfer effects of updating and inhibition training in aging participants. Adult participants (N=200; age range 49-87), randomly assigned to either updating (n-back task), inhibition (picture-word task), or an active control group (communication training), took part in the pretest/posttest/follow-up (at 6 months) study involving a 20-sessions training. All participants were tested on several WM task and EF tasks (those structurally similar (n-back, picture-word task), and structurally different (memory updating, Stroop task) from the trained task). Results indicated improvements only in the structurally similar trained tasks, suggesting specific skill enhancement rather than generalized improvement.

Email: Marina Martincevic, mmartincevic@ffzg.unizg.hr

12:00-1:30 PM (5038)

Usage of High or Low-Level Encoding Strategies and their Association with Associative Memory in Older and Younger Adults. YUSUF GHOURI, *Toronto Metropolitan University*, LIXIA YANG, *Toronto Metropolitan University* — According to the associative deficit hypothesis, older adults experience more difficulties in remembering associations relative to items compared to younger adults. Previous research found that using high-level strategies (i.e., visual imagery) can result in better associative memory. Our study examines age differences in the use of encoding strategies and their effects on associative memory. Eighty older and younger adults will complete an associative memory task. Encoding strategy use will be assessed with a



questionnaire that asks how often participants used each of six different strategies (3 lower- and 3 higher-level) for remembering face-occupation pairs from 0-100%. We will analyze age differences in the strategy use rating, and then conduct correlations between this rating and associative memory separately for high- and low-level categories within younger and older adults. We hypothesized older adults would report greater use of low- but less use of high-level strategies relative to younger adults, and that more use of high-level strategy would be related to better associative memory, an effect stronger in older than younger adults. The results will contribute to the research on encoding strategy use and associative memory.

Email: Yusuf Ghouri, yusuf.ghauri@torontomu.ca

12:00-1:30 PM (5039)

Using Board Games to Reduce Cognitive Decline in Older Adults. KIMBERLY WEAR JONES, *High Point University*, SAMANTHA A. RIVEROS, *High Point University*, GRACIE LEFEVER, *High Point University*, AVA DEMONTE, *High Point University*, IOANA SCALCO, *High Point University*, LISA MOTOSICKE, *High Point University*, GIA CICERO, *High Point University*, RILEY MCGEE, *High Point University* — Computerized training programs are effective in improving cognitive processes, but are not desirable choices for many older adults (e.g., Basak et al. 2008). Board games are a possible alternative, but research has been limited (Li Zuka et al., 2018; Overman & Robbins, 2013). The current pre-test/post-test study assessed working memory and executive function using the Montreal Cognitive Assessment (MoCA), Trail Making A and B, and Raven's Progressive Matrices. During the intervening 6 weeks, participants engaged in common board games that targeted working memory and executive function. Participation occurred bi-weekly with each session lasting 1.5 hours. Participants self-assigned to groups with some playing games the majority of the 6 weeks (10-12 days) and a second group playing for 1-3 weeks (2-5 days). Results show improved scores across all measures for the longer intervention. Board games have the potential to be a cost-effective, enjoyable method for older adults to reduce cognitive decline.

Email: Kimberly Wear Jones, kwjones@highpoint.edu

12:00-1:30 PM (5040)

Episodic Long-Term Memory Changes in Older

Female FMRI Premutation Carriers. KRISTEN

MCGATLIN, *Kansas State University*, KATHRYN
UNRUH, *Life Span Institute and Kansas Center for
Autism Research and Training*, ABIGAIL J.

DRIGGERS, *Life Span Institute and Kansas Center for
Autism Research and Training*, CASSANDRA

STEVENS, *University of Kansas & Life Span Institute
and Kansas Center for Autism Research and Training*,

SOPHIA PETERSON, *Life Span Institute and Kansas
Center for Autism Research and Training*, ANDREA
LEE, *University of Kansas Medical Center*, MATTHEW
MOSCONI, *University of Kansas & Life Span Institute
and Kansas Center for Autism Research and Training*,
HEATHER BAILEY, *Kansas State University* —

Individuals over the age of 50 who carry a premutation (55-200 CGG repeats) of the fragile X gene, FMR1, are at increased risk of developing fragile X-associated tremor/ataxia syndrome (FXTAS), a neurodegenerative condition characterized by intention tremor, gait ataxia, cognitive dysfunction, and psychiatric and behavioral disorders. FXTAS affects males and females differently; however, most research has focused on males as they have the highest penetrance (with approximately 40% of male and 16% of female FMR1 carriers developing FXTAS) and more severe symptoms. Our current study evaluated cognitive and brain changes in a sample of female FMR1 carriers and age-matched controls. Long-term episodic memory (LTM) was measured during fMRI using a verbal paired associates task. We also measured working memory and visuospatial LTM outside the MRI. Preliminary data (carriers n=8; controls n=6) shows group differences in episodic LTM (Cohen's d=0.83). Further, differences in LTM among symptomatic and asymptomatic FMR1 carriers will be assessed as well as their relationships with standardized assessments of memory ability (CVLT-III) and expert ratings of clinical neuromotor function.

Email: Kristen McGatlin, kmcgatlin@ksu.edu

12:00-1:30 PM (5041)

Reading Decline in Healthy Aging Unveiled by Complex Interaction of Basic Mechanisms.

SARA PEGORARO, *University of Milano-Bicocca*, ALESSIO
FACCHIN, *University of Milano-Bicocca*, FRANCESCA
LUCHESA, *University of Milano-Bicocca*, ELENA
ROLANDI, *Golgi-Cenci Foundation*, ANTONIO
GUAITA, *Golgi-Cenci Foundation*, LISA S. ARDUINO,

Libera Università degli Studi Maria Ss. Assunta di Roma (LUMSA), ROBERTA DAINI, *University of Milano-Bicocca* — Advancing age leads to a natural decline in many cognitive functions. Reading, which relies on linguistic, visual and attentional processes, is notably affected by aging. However, the role of visuospatial attention and crowding in age-related changes in reading remain unclear. Our study explored the presence of an actual decline in reading and the role of crowding and visuospatial attention in such age-related decline. 67 healthy older adults were assessed for cognitive functioning, reading skills, crowding, and attention. Results showed a decline in reading abilities ($\beta=0.32$, $p<0.05$), but not in visual acuity, crowding, or visuospatial attention. The Symbol Digit Modalities Test, which measures attention, working memory, and processing speed, worsened with age ($\beta=-0.27$, $p<0.05$), interestingly mediating the relationship between aging and reading. Thus, the decline in reading appears to be a consequence of the complex interaction of these cognitive mechanisms.

Email: Sara Pegoraro, s.pegoraro@campus.unimib.it

12:00-1:30 PM (5042)

How Does Disclosing the Number of Simultaneous Lineups Affect the Processes Underlying Eyewitness Responses?

NICOLA MARIE MENNE, *Heinrich Heine University Düsseldorf*, RAOUL BELL, *Heinrich Heine University Düsseldorf*, KRISTINA WINTER, *Heinrich Heine University Düsseldorf*, AXEL BUCHNER, *Heinrich Heine University Düsseldorf* — In crimes involving multiple culprits, it may be necessary to perform multiple simultaneous lineups. Should the number of lineups be disclosed to the eyewitnesses? Using a model-based analysis, the effects of disclosing the number of simultaneous lineups on the processes underlying eyewitness responses were investigated. Participants watched a mock-crime video featuring four culprits. They were then instructed to expect four lineups (disclosed condition) or 20 lineups (backloading condition) or received no information about the number of lineups (undisclosed condition) before being presented with four lineups. The type of instructions had no effect on culprit-presence detection. In contrast, guessing-based selection was decreased, to an equal degree, in the undisclosed and backloading conditions, compared to the disclosed condition. In cases involving multiple culprits, the number of simultaneous lineups should thus be



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undisclosed in order to reduce unwanted guessing-based selections without having to lie to the eyewitnesses about the number of to-be-expected lineups.

Email: Nicola Menne, nicola.marie.menne@hhu.de

12:00-1:30 PM (5043)

Machine Learning Approaches for the Discovery of Latent Structures. KONSTANTINA

SOKRATOUS, *University of Florida*, PETER D. KVAM, *The Ohio State University* — In social sciences, the transition from verbal theories to computational models presents a significant challenge, primarily due to the difficulty in quantifying complex human behaviors into discrete parameters. As the highly complex and nonlinear relationships between brain and behavior often involve a vast quantity and variety of factors, researchers turn to principal component analysis (PCA) and exploratory factor analysis (EFA) for handling high dimensional spaces. However, these linear approaches fall short in capturing the intricate relationships that characterize human behavior. This talk introduces a novel application of variational auto-encoders (VAEs) combined with clustering techniques to provide an alternative way to discover and construct latent dimensions for behavioral problems. Unlike PCA and EFA, VAEs have the unique advantage of modeling nonlinear relationships, thereby providing a deeper, more accurate interpretation of data. Thus, our aim is to provide a tool that can distill critical dimensions for specific behavioral problems and illustrate the benefits of our approach with an application on experimental data from a pricing task.

Email: Konstantina Sokratous, cniinasoc@gmail.com

12:00-1:30 PM (5044)

Motivational Biases, Hedonic Choices in Daily Life, and Mental Health: Integrating Experience Sampling and Computational Modelling.

BERTALAN POLNER, *Donders Institute for Brain, Cognition, and Behaviour, Radboud University*, LEVENTE RÓNAI, *Eötvös Loránd University*, RENÉE KOOLSCHIJN, *Donders Institute for Brain, Cognition, and Behaviour, Radboud University*, HANNEKE DEN OUDEN, *Donders Institute for Brain, Cognition, and Behaviour, Radboud University* — The motivational value of stimuli can bias behaviour in a hard-wired "Pavlovian" way, regardless of action-outcome contingencies: reward prospect invigorates, while

punishment prospect inhibits. Previously, such biases have been associated with symptoms of depression. Here, we speculate that they may do so by influencing whether people engage in mood brightening activities when feeling down (i.e., mood homeostasis). Critically, this phenomenon was absent in people with past depression in a previous study, and taking action to improve your mood might be critical to staying resilient. We will conduct a cross-sectional study (planned N=500 completing questionnaires and a behavioural task) and a subset of the sample (planned N=150) will participate in an experience sampling study assessing mood homeostasis. Motivational biases will be assessed at baseline with a go/no-go task, where participants learn to obtain rewards and avoid punishments. Performance will be analysed with reinforcement learning models with biased learning and action selection. The results will establish the ecological validity of task-based measures of motivational biases and may inform a mechanistic understanding of depression.

Email: Bertalan Polner, polner.b@gmail.com

12:00-1:30 PM (5045)

Preview and Performance: Opening the Black Box Yields a Surprise. ARINEH MORADIAN, *University of California, Riverside*, SOPHIA VI ANGLETON, *University of California, Riverside*, SIMRAN BHATIA, *University of California, Riverside*, DAVID A. ROSENBAUM, *University of California, Riverside* — Performance benefits from preview, but the underlying mechanisms are poorly understood. We developed a method to study the dynamics of preview. We asked university students to make judgments about sequences of stimuli. The stimuli could either be previewed or not. Participants took longer to judge the first stimulus when the sequence could be previewed, but the elevation of first-stimulus processing time did not depend on the number of previewed stimuli. Meanwhile, the benefit of preview persisted throughout the sequence. Starting the sequences may have involved initiation of a cascade procedure for dealing with the subsequent stimuli.

Email: Arineh Moradian, arineh.moradian@email.uci.edu

12:00-1:30 PM (5046)

Punishment, Fast and Slow: Effects of Deliberation on Moral Punishment. ANA I. PHILIPPSEN, *Heinrich Heine University Düsseldorf*,

LAURA MIETH, *Heinrich Heine University Düsseldorf*, AXEL BUCHNER, *Heinrich Heine University Düsseldorf*, RAOUL BELL, *Heinrich Heine University Düsseldorf* — Moral punishment of defection is important for sustaining large-scale cooperation but it is unclear whether moral punishment occurs intuitively or requires deliberation. We tested these alternatives in three experiments using a one-shot Prisoner's Dilemma game with a costly punishment option. Different types of punishment were distinguished with the help of multinomial modeling. Participants' inclination to morally punish unilateral defection was decreased with time pressure (Experiment 1) but increased when given the time to deliberate their decisions (Experiment 2), suggesting that moral punishment occurs deliberately rather than intuitively. However, Experiment 3 showed that the effect of deliberation depended on the specific content that was deliberated: When participants deliberated their self-interests rather than fairness, moral punishment was decreased whereas antisocial punishment was increased. The results strengthen a process-based account of punishment. This account offers a promising avenue for incorporating seemingly inconsistent findings by considering context-specific modulations of the cognitive processes underlying punishment.

Email: Ana Philippse, Ana.Philippse@hhu.de

12:00-1:30 PM (5047)

A Taxonomy of State-Specific Psychological Mechanisms Underlying Decisions Under Risk and Uncertainty. AARON B. LOB, *University of Zurich*, OLIVIA FISCHER, *University of Zurich*, RENATO FREY, *University of Zurich* — Which are the psychological mechanisms shaping people's decisions under risk and uncertainty? While many theories in the behavioral sciences address this question, attempts to integrate their assumptions are sparse. Verbal theories may explain real-life decisions with high face validity but lack precise predictions. Conversely, formal theories offer clear mathematical predictions but often focus on presumably artificial lab tasks. We aim to tackle this apparent disconnect by summarizing the current state of knowledge. To this end, we reviewed verbal and formal theories from the behavioral sciences and collected state-specific psychological mechanisms proposed to be involved in decisions under risk and uncertainty. These span different aspects of psychological functioning, that is, the subjective perception of choice attributes (e.g., an

option's utility), time factors (e.g., immediacy), goals and motivation (e.g., needs), cognitive control and resources (e.g., attention), social influence (e.g., norms), experience and knowledge and affect (e.g., emotions). As such, this taxonomy sets a basis for further integration, helping researchers to identify similarities and discrepancies between different theories of decision making.

Email: Aaron Lob, lob.aaronb@gmail.com

12:00-1:30 PM (5048)

(Mis)informed through Social Media: The Effects of Repetition on Truth. JAE KWON, *University of California, San Diego*, LISA FAZIO, *Vanderbilt University* — Repetition increases the perceived truth of statements. This illusory truth effect may be due to a subjective sense of memory and familiarity (perceived repetition) or the psychological effect of the objective number of repetitions (actual repetition). With the proliferation of social media platforms that often serve as news sources, it is imperative to study how information presented in more of naturalistic settings (Instagram) affect people's belief, rather than relying on studies in laboratory settings. Participants (N=182 US Connect users) rated the truth of new and repeated trivia statements. During a 2-week exposure phase, participants followed an Instagram feed that posted 3 trivia posts per day. Each of the repeated statements was posted 7 times. Repetition increased belief in this naturalistic setting. Additionally, perceived repetition was a stronger predictor of belief than actual repetition suggesting that people rely on their subjective perceptions of familiarity when judging the veracity of information. Our study highlights how repetition impacts people's perception of truth in real-world contexts.

Email: Jae Kwon, kwonjae1008@gmail.com

12:00-1:30 PM (5049)

Adaptivity in Human Search Processes. MADELINE HLUZENSKI, *Clarkson University*, ISABELLA MAKDOULI, *Clarkson University*, KATERINA MEDVED, *Clarkson University*, GRACIE DELABRUERE, *University of New England*, STEVEN PEDERSEN, *Clarkson University*, BANG-GEUL HAN, *College of Staten Island, CUNY*, H. CLARK BARRETT, *University of California, Los Angeles*, PETER M. TODD, *Indiana University*, ANNIE E. WERTZ, *University of California, Santa Barbara*, ANDREAS WILKE, *Clarkson University*, PATRICE DELICES,

Clarkson University, VIVIENNE WAY, Clarkson University, NINA PLUVIOSE, St. Francis College — Humans and other organisms must search effectively for the resources they need. We developed an iPad-based decision-making task that assesses to what extent young children and adults can differentiate among objective alternation probabilities of various kinds, specifically when they are non-random and do indeed contain statistical regularities. The distributions that were used included clumpy ones (where a hit is more likely to predict another hit nearby or vice versa) and dispersed ones (where a hit is more likely to predict a miss nearby or vice versa). Children/adults were presented with three different animals who foraged for binary resource outcomes along a path. Task animals were paired with distinct objective alternation probabilities reflecting clumpy, random, and dispersed distributions. Participants choice data allowed us to compute their subjective alternation probabilities (i.e., their statistical perceptions of these sequences) and investigate if, and to what extent, objective alternation probabilities match these subjective experiences.

Email: Madeline Hludzenski, hludzemer@clarkson.edu

12:00-1:30 PM (5050)

Attention Allocation During Speed-Accuracy

Trade-Off in Decision Making. JIASHUN WANG, *Ludwig-Maximilians-Universität München, CHRIS DONKIN, Ludwig-Maximilians-Universität München —* The speed-accuracy trade-off (SAT) is a phenomenon where taking more time during decision making usually results in more accurate performance. Within the evidence accumulation framework, this is often explained by the threshold parameter: individuals gather more evidence and reach a higher threshold before making accurate decisions. In other work, we have shown that the Ornstein-Uhlenbeck Model (OUM) better captures the effect of speed-accuracy instructions through its self-excitation parameter rather than the threshold parameter. Self-excitation might indicate attention allocation; under speed emphasis, individuals may focus on initially promising evidence (a form of confirmation bias), while under accuracy emphasis, they may seek out and attend to contradictory evidence. To investigate attention allocation in SAT, a behavioral study was conducted where participants chose which stimulus to display under both accuracy and speed stress. The study found that participants inspected stimuli they were less likely to choose more frequently under

accuracy emphasis. Additionally, the duration of stimulus inspection influenced the probability of it being chosen, supporting the idea that self-excitation corresponds to attention allocation.

Email: Jiashun Wang, jiashun.wang.student@gmail.com

12:00-1:30 PM (5051)

Bayesian Persuasion: Evaluating a Receiver's Decision-Making Strategy Under Persuasion Contexts.

EMILY N. LINE, *University of Illinois Urbana-Champaign, MEICHAI CHEN, University of Illinois Urbana-Champaign, MELIH BASTOPCU, University of Illinois Urbana-Champaign, RAJ KIRITI VELICHETI, University of Illinois Urbana-Champaign, MICHEL REGENWETTER, University of Illinois Urbana-Champaign —* We introduce an experimental design to investigate the assumptions underlying the theory dubbed Bayesian Persuasion (Kamenica & Gentzkow, 2011). The theory uses the context of a sender who is trying to persuade a receiver to make a decision that may or may not be in the receiver's best interest. The receiver and sender know the base rates of an event. The sender gets to choose a set of conditional probabilities for the hit and false alarm rates when assessing whether the event has occurred. The theory specifies a set of probabilities that the sender could choose which would successfully persuade a rational receiver. We explore the assumption that a receiver is rational, proposing a number of potential rational and non-rational decision strategies under contexts in which the sender is not present, the sender is present but the receiver does not know their utility, and the sender is present and the receiver knows their utility.

Email: Emily Line, neuline2@illinois.edu

12:00-1:30 PM (5052)

Effect of Task Demands When Processing Words Dealing With Speed: A Yes/No Lexical-Decision Task vs. Go/No-Go Task Comparison.

STEVE BUENO, *Université Sorbonne Paris Nord, ALIX SEIGNEURIC, Université Sorbonne Paris Nord, CHERYL A. FRENCK-MESTRE, Centre National de la Recherche Scientifique (CNRS) Laboratoire Parole et Langage, HUGUES DELMAS, Université Sorbonne Paris Nord, HAKIMA MEGHERBI, Université Sorbonne Paris Nord —* Reading involves a mental simulation of the actions outlined in sentences and words (Pulvermüller et al., 2005; Moody & Gennari, 2010)

indicating that language is grounded in action (Barsalou, 2010; Zwaan, 2014). The present study investigates the effect of semantic features of words related to speed. Specifically, we measured lexical decision times for nonmotion test words (e.g., necklace) that were preceded by a set of context-words dealing with fast- (e.g., rocket), slow- (e.g., snail), or non-motion (e.g., umbrella) words as control. Preliminary results using a yes/no Lexical Decision Task (LDT) have shown that time to respond to non-motion test words was reduced by the slow set but not accelerated by the fast set. Nevertheless, it has been shown that the go/no-go procedure elicits less noisy RTs and might require fewer cognitive resources than the yes/no LDT (Perea et al., 2015; Lee et al., 2019). This may be particularly crucial in an experiment that deals with semantic features of speed. The main goal of the experiments presented here was to test whether the effects were influenced by varying task requirements or were replicated using a go/no-go procedure.

Email: Steve Bueno, bueno@univ-paris13.fr

12:00-1:30 PM (5053)

Visualizing Success: The Role of Embodied Learning Tools in Teaching Statistics. FELIPE A. CRUZ, *University of California, Riverside*, LUKE RABELHOFER, *University of California, Riverside*, KINNARI ATIT, *University of California, Riverside*, CATHERINE M. LUSSIER, *University of California, Riverside*, ANNIE S. DITTA, *University of California, Riverside* — Utilizing embodied learning tools during teaching can enhance students' comprehension of complex concepts; however, the efficacy of these tools has been under-explored in the context of online statistics courses. We sought to understand how embodied learning tools might affect students' experience of learning statistics. Participants watched a lecture in one of three conditions (gestures, drawing, control), took a test, and completed surveys about their learning experience during the lecture (e.g., anxiety). We found a marginally significant difference in students' learning experience such that when instructors used embodied learning tools, students reported a better learning experience compared to when no tools were used. Statistics anxiety was not significantly different across the conditions; however, we found a significant negative correlation between statistics anxiety and learning experience across conditions such that higher anxiety was related to a worse learning experience. These findings provide insight into using gestures and drawing

to reduce statistics anxiety, enhance spatial thinking, and improve learning outcomes.

Email: Felipe Cruz, fcruz020@ucr.edu

12:00-1:30 PM (5054)

COVID Conversations: Contextual Influences on Interpersonal Coordination. KAYA ROBIN, *Colby College*, ISHANI WAKHLU, *Colby College*, ALEXANDRA PAXTON, *University of Connecticut*, VERONICA ROMERO, *Colby College* — Since the COVID-19 pandemic, mask-wearing and videoconferencing have become a familiar part of everyday life that influence human interaction. The current study investigates the effects of conversation type, communication medium, and mask-wearing on interpersonal motor coordination. Participants were randomly assigned to communicate either face-to-face or via videoconferencing while either wearing a face mask or not. The pairs had three conversations in the laboratory: one affiliative conversation, one argumentative conversation, and one cooperative conversation. Their body movement was captured through video recordings. The interaction between masking, communication medium, and conversation type affected the level and stability of interpersonal coordination. Higher interpersonal coordination was found in affiliative conversations than in argumentative conversations across masking and communication medium conditions. Interestingly, videoconferencing showed higher interpersonal coordination than face-to-face interactions, regardless of the type of conversation. This study provides insight into how conversation contexts influence body language and communication in a post-COVID world.

Email: Kaya Robin, kgrobi25@colby.edu

12:00-1:30 PM (5055)

Goals vs. Transitions: Do Desired States or Desired Changes Underlie Motor Representations? MORITZ SCHAAF, *Trier University*, SOLVEIG TONN, *Trier University*, ROLAND PFISTER, *Trier University*, WILFRIED KUNDE, *Julius-Maximilians-Universität Würzburg* — Actions are represented in terms of their ensuing effects. This fundamental axiom of the ideomotor framework has repeatedly been demonstrated empirically, thus providing compelling evidence that effect anticipations are vital for planning and executing goal-directed movements. Yet,

the question of how effect anticipations shape action control has received less attention. While contemporary accounts of ideomotor action control often emphasize the importance of goals (i.e., anticipated end states), historical formulations have also suggested the importance of desired changes (i.e., anticipated transitions). As previous findings can be explained by both accounts alike, we conducted a series of experiments to examine whether actions are represented in terms of end states or transition. Our results consistently support the notion of transitional instead of goal-based representations, thereby providing an important step towards a further specification of the ideomotor framework.

Email: Moritz Schaaf, moritz.schaaf@uni-trier.de

12:00-1:30 PM (5056)

Warm in the Top-Left and Cold in the Bottom-Right: Influence of Sensorimotor Experiences on Spatial Temperature Mappings. MINHA SONG, *Ewha Womans University*, SUNG-HO KIM, *Ewha Womans University* — People use spatial dimensions (e.g., top-bottom, left-right) to reason about non-spatial concepts such as time, number, and emotional valence. This study investigated whether similar spatial conceptualizations can emerge for the domain of temperature. Participants were asked to categorize 20 Korean temperature-related words as "warm" or "cold" by pressing two keys arranged vertically (Experiment 1) and horizontally (Experiments 2a-2b). Results from Experiment 1 indicated a congruency effect in the vertical axis, favoring a warm-top/cold-bottom mapping. This finding aligns with the notion of a general magnitude system (Walsh, 2003) and common spatial-temperature associations in daily life (e.g., low/high heat). However, Experiments 2a-2b revealed findings suggesting a warm-left/cold-right mapping, contradicting the expected left-to-right alignment of increasing heat magnitude based on general magnitude system theories. We propose that this result is best explained by daily interactions with water taps (left-hot, right-cold water). These findings suggest that temperature can be represented spatially in both vertical and horizontal dimensions and that repeated sensorimotor experiences significantly shape these spatial mappings.

Email: Minha Song, 1779046@ewhain.net

12:00-1:30 PM (5057)

Gestures Promote Efficient Communication from the Speaker to the Listener. HYOJI HA, *University of Iowa*, SUSAN W. COOK, *University of Iowa* — Speakers' gestures provide listeners with information that may not be in speech, including visuospatial information. Speakers produce more gestures with visual information compared to verbal or when describing an image from memory rather than observation. Thus, gestures may reflect speakers' mental imagery. Here, we asked whether gestures help communicate complex images. Speakers viewed 48 images and described each image to a listener. Listeners then chose the picture that was described from a set of four pictures. Dyads performed the task in two conditions: instructed not to gesture or no instructions, where speakers naturally gestured. We also measured participants' self-reports of gesture perception and gesture production, and we collected the spontaneous use of imagery score to measure aphantasia. We analyzed how quickly and accurately listeners chose pictures. Listeners responded significantly faster with gesture permitted (3.9 s vs. 6.8 s). There was no difference in accuracy. Thus, gestures may help listeners quickly access information, perhaps by supporting listeners in forming mental images. It is also possible that observing gestures enhances listeners' perception of their own understanding, speeding processing.

Email: Hyoji Ha, hyoji-ha@uiowa.edu

12:00-1:30 PM (5058)

Improvements of Embodied Planning and the Minimal Self Across Childhood. MARKUS RAAB, *German Sport University Cologne*, LISA MUSCULUS, *German Sport University Cologne* — Two studies tested embodied planning in climbing. Study 1 tested children 6-14 years and adults ($N=117$, $M_{age}=176.86$ months, $SD=7.94$) by two blocks of embodied-planning tasks. Block 1: Climbing tasks taxing cognitive, motor, and motor-cognitive planning. Block 2: Reach manipulation targeting the minimal self. Results revealed that minimal-self accuracy increased at 9-11 years of age and embodied-planning efficiency increased between at 6-8 years. In study 2, an eight-week randomized-controlled training intervention in a pre-post design (6-8 year-olds: $n=47$; 9-12-year-olds: $n=66$; 18-40-year-olds: $n=65$) was implemented by three intervention groups (MO, motor-oriented: $n=43$; MC, motor-cognitive oriented: $n=48$; CO, cognitive-oriented: $n=43$) or the waiting control group ($n=43$). Planning in climbing was assessed by



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movement kinematics. Analyses revealed that MC and MO training in comparison to the CO and control group led to more effective embodied planning at the post-test, especially for 9-12-year-olds. These results show the impact of the motor system on embodied-planning and that particularly children benefit from taxing the motor system. Potential underlying embodiment mechanisms are discussed.

Email: Markus Raab, raab@dshs-koeln.de

12:00-1:30 PM (5059)

Judging Truth: Evaluating the Robustness of the Illusory Truth Effect. ERIC RUTHRUFF, *The University of New Mexico*, KAMILLE HACKETT, *The University of New Mexico* — Repetitive false claims intended to deceive surround us in daily life, ranging from misleading advertisements to dubious stories shared on social media. While it has been argued that repetition of false information can increase belief in the accuracy of that information, known as the Illusory Truth Effect, there is reason to doubt the robustness of this phenomenon. The extreme claim that this occurs even when an individual knows that the information is false (so warnings eventually become recommendations) has rarely been tested with unambiguously false information. To assess these claims, we examined the impact of explicitly informing participants of the truth value of various statements (exposed three times each). We also measured source memory to see whether poor source memory is the root cause of the Illusory Truth Effect.

Email: Eric Ruthruff, ruthruff@unm.edu

12:00-1:30 PM (5060)

The Effects of Disfluency on Eyewitness Credibility. CHRISTOPHER A. SANCHEZ, *Oregon State University*, RAGHUNATH NISHA, *Oregon State University* — Perceptual fluency refers to the subjective judgment of how easily presented material is processed based on perceptual characteristics. More disfluent presentations usually translate into more negative judgments about content; less fluent videos of instructors and job candidates lead to lower ratings of competence for these individuals. Similarly, it has been suggested that more poor visual quality court proceedings lead to more negative impressions of accused individuals, producing more serious sentencing. The current study explores perceptual fluency as a potential mechanism for differences in perceptions of credibility of witness

testimony, and explores whether the quality of presentation influences perceptions related to witness testimony and future legal action. Results indicate that perceptual fluency can have impacts on perceived witness credibility and that this likely interacts with witness race, although factual memory for testimony appears unaffected.

Email: Christopher Sanchez, christopher.sanchez@oregonstate.edu

12:00-1:30 PM (5061)

Thurstone Scaling by Regression Modeling of Paired Comparison Data. YOONHEE JANG, *University of Montana* — Thurstone (1927) advanced a law of comparative judgment for quantifying subjective magnitudes, such as attitudes toward the seriousness of offenses. Despite its substantial contribution, Thurstone scaling is now rarely used in psychology in part because it does not allow statistical inferences. In addition, the scale values can be biased for the extreme stimuli (e.g., comparative judgment proportions are near 1) due to normalization of Thurstone scaling. In fields outside psychology, statistical methods have been developed as a solution to the former issue via a generalized linear model (GLM). To investigate whether the GLM approach can serve as a remedy for the latter issue, we (re)analyzed previous data, including Thurstone's, and new data of a study similar to Thurstone's. The regression model of the GLM approach not only produced the outcome comparable to that of Thurstone scaling but also tested the effects of additional factors. Importantly, the regression outcomes were not, or less, influenced by the extreme stimuli whereas Thurstone scaling produced the values exaggerated from z-scores of the extreme stimuli. When extreme stimuli exist, it is recommended to use the GLM approach, rather than the original Thurstone method.

Email: Yoonhee Jang, yoonhee.jang@umontana.edu

12:00-1:30 PM (5062)

The Role of Digital Social Information in Social Sampling. MARLENE HECHT, *Max Planck Institute for Human Development*, THORSTEN PACHUR, *Technische Universität Munich*, CHRISTIN SCHULZE, *Max Planck Institute for Human Development* — Many important social statistics, such as the distribution of health risks, can be inferred by social sampling—recalling samples from one's personal social network. As social interactions increasingly occur online, there is

growing concern that social media distorts people's view of the social world. Using computational modeling, we quantified the relative influence that online social contacts have on people's judgments of social statistics. Participants judged the popularity of holiday destinations (Experiment 1) or the prevalence of health issues (Experiment 2), recalled relevant instances from their social networks, and indicated whether they usually have offline or online contact with each person. Around one third of participants in both experiments sampled contacts contingent on their usual contact mode (online vs. offline). Moreover, in both experiments, participants weighted information from online contacts less strongly than information from other social subgroups. Finally, participants accurately perceived online social information as more biased than offline social information. Thus, although social media often showcase biased information, people discount information from online contacts when judging social statistics.

Email: Marlene Hecht, mhecht@mpib-berlin.mpg.de

12:00-1:30 PM (5063)

Corrections Reduce Belief in Mistaken Information Even When Mistaken Information Is Implied in a News Story.

PATRICK RICH, *Stonehill College*, CLAUDIA GONZALEZ, *Stonehill College*, EVAN AMELCHENKO, *Stonehill College*, KAYA DEANGELIS, *Stonehill College*, BREANNA LAROCHE, *Massachusetts College of Pharmacy and Health Sciences* — A large body of research indicates that discredited misinformation continues to influence readers' beliefs. Furthermore, Rich and Zaragoza (2016) reported evidence showing that misinformation implied in a news story was especially resistant to correction compared to misinformation that was explicitly stated. However, recent studies raise questions regarding about whether implying misinformation impacts the effect of a subsequent correction (Tay et al., 2021; Wenjuan et al., 2024). The studies reported here used multiple news stories and were powered to replicate the finding that, following a correction, participants believe implied misinformation more than explicit misinformation. However, in these studies implied misinformation did not significantly differ from explicit misinformation, suggesting that implying misinformation has, at most, a weak effect (partial eta squared<0.02). This effect was weak (partial eta squared≤0.03) even in sub-analyses of the specific story used by Rich and Zaragoza (2016). In addition to correcting the record about the effects of

implied misinformation, these studies highlight the potential impact of story-specific characteristics in studies of misinformation, which are relatively unstudied in prior research.

Email: Patrick Rich, prich@stonehill.edu

12:00-1:30 PM (5064)

Differing Levels of Satisfaction When Receiving Sequential Financial Gains vs. Stable Values.

MASAYO NODA, *Kinjo Gakuin University*, HIROKI C. TANABE, *Nagoya University*, AYUMI YOSHIOKA, *Ritsumeikan University*, MASATO KIMURA, *Konica Minolta, Inc.* — People need to adapt to situations in which they experience sequential benefits in order to take advantage of them. This study examined judgements of value when people obtained sequential financial benefits. Participants were asked to participate in a game of purchasing stocks on a computer. A sequence of stock prices either increased or remained stable over 5 days. Participants were asked to evaluate their satisfaction when seeing the stock prices after the second day (5-day 2) and fifth day (5-day 5). A sequential trend (increasing / low-fluctuating) × Days (5-day 2 / 5-day 5) ANOVA was performed. In the low-fluctuating condition, participants were less satisfied in the 5-day 5, compared to the 5-day 2. On the other hand, participants were more satisfied in the 5-day 5, compared to the 5-day 2. These results show that people are gradually more satisfied when they steadily obtain financial benefits, while people are gradually more dissatisfied when the sequential benefits or losses remain relatively stable. Future study needs to clarify the cognitive processes people go through to make judgments when the benefits or losses remain relatively stable.

Email: Masayo Noda, masanodama@gmail.com

12:00-1:30 PM (5065)

Judging Others' Memory.

IMAN FEGHJI, *Arizona State University West Valley Campus*, HUNTER B. STURGILL, *University of California, Riverside*, DAVID A. ROSENBAUM, *University of California, Riverside* — In a manner akin to how individuals continually assess their own memory, they also evaluate the memory of others. While metacognition research has extensively explored self-assessment (e.g., Hartelt and Martens, 2024), evaluating others' memory has received less attention. Presumably, individuals with higher memory accuracy would excel in judging others' memory. To test this, we designed an experiment where dyads alternated

between the roles of “actor” and “judge.” The actors briefly studied nonsense syllables and then determined whether they matched or differed from new syllables. The judges observed the stimuli and evaluated the actors’ responses as either “correct” or “incorrect.” Surprisingly, our results revealed no significant correlation between memory accuracy and memory judgment accuracy. The lack of correlation was attributed to a bias in favor of confirming the actors’ responses. This research could be the starting point for better understanding how individuals evaluate each other’s memory.

Email: Iman Feghhi, ifeghhi@asu.edu

12:00-1:30 PM (5066)

Mitigating the Illusory Truth Effect through a Novel Educational Intervention. EMILY R.

COHEN-SHIKORA, *Washington University in St. Louis*, ZONGHUA SHI, *Washington University in St. Louis*, JENNIFER SHEARON, *Washington University in St. Louis* — The illusory truth effect (ITE) is a cognitive bias wherein participants rate repeated statements as more truthful relative to new statements (Henderson et al., 2021). Although this effect may be less adaptive in our current media climate, few studies have examined how to mitigate or reduce it. In the current studies we examined whether a novel intervention, consisting of a warning that some statements may be false and an engaging educational video on the ITE, may reduce or eliminate the ITE. We found evidence for a robust ITE in the control group but an elimination of the ITE in the intervention group, offering insight on the potential of warning and education to eliminate the ITE that may be applicable to real-life settings.

Email: Emily Cohen-Shikora, emily.cohenshikora@gmail.com

12:00-1:30 PM (5067)

Replicating Camera Perspective Bias in the Japanese Justice System. TOMOYUKI TANDA, Fukuyama University, MAKIKO NAKA, RIKEN, Institute of Physical and Chemical Research, JUN-ICHIRO KAWAHARA, Hokkaido University — The camera perspective in recorded video interrogations has been shown to influence judgments of confession voluntariness, a phenomenon known as camera perspective bias (CPB; Lassiter & Irvine, 1986). When comparing perspectives where the suspect is visible (suspect-focused), the detective is visible (detective-focused), and both are visible (equal-focused), the

perceived voluntariness of a confession was highest under the suspect-focused condition and lowest under the detective-focused condition. However, research conducted under the Japanese recording style, using a dual-presentation format, yielded inconsistent results (Nakata et al., 2018), possibly due to insufficient statistical power. To address this issue, our study investigated the occurrence of CPB under the Japanese recording style with sufficient power. Although we aimed to replicate CPB under the Japanese recording style in two experiments, we did not find any evidence supporting the presence of CPB, suggesting that CPB may not be robust, at least under the Japanese recording style. The present study may offer a potential solution to eliminate CPB and serve as a substitute for the single presentation format.

Email: Tomoyuki Tanda, t37tanda@gmail.com

12:00-1:30 PM (5068)

The Roles of Content Warnings and False Information Frequency on Accuracy Judgments for Social Media Posts. KACIE MENNIE, Louisiana Tech University, MARGARET LOTT, Louisiana Tech University, TREVOR MILLS, Louisiana Tech University, HANNAH HENDRY, Louisiana Tech University — This study (N=317) examined whether the effectiveness of content warnings to allow discrimination of true from false information might depend not only on the type of content warning (none, fact-checker, or bot-created), but also on the amount of misinformation present on the newsfeed (40, 50, or 60%) in which the warnings are encountered. There was no evidence of such an interaction. However, the main effects of each variable impacted participants’ ability to accurately distinguish true from false information. Participants were better at discriminating amongst information when fact-checker warnings were present, as opposed to bot-created warnings. Moreover, and somewhat unexpectedly, participants that were exposed to feeds with the least amount of misinformation were worse at discriminating between true and false information, relative to participants exposed to feeds containing 50% misinformation. Implications and future directions will be discussed.

Email: Kacie Mennie, kmennie@latech.edu



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12:00-1:30 PM (5069)

Effects of Similarity on Spacing Judgements in Short Lists.

MUHAMMAD B. KHAN, *University of Alberta*, YANG S. LIU, *University of Alberta*, JEREMY CAPLAN, *University of Alberta* — Hintzman and colleagues' classic experiment found that participants were better at judging the spacing between two items that were similar (or the same) than different. This motivated recursive reminding theory, which presumes an item can remind us of a similar previous item, leading to encoding of an order-rich association between the two items. However, participants could not actually do the basic task at the long list lengths (~100 words). We wondered if similar findings might nonetheless be found when 1) reminding is not feasible (fast presentation rates) and 2) accuracy is well above chance (short list lengths). Although re-analysis of published data found continuous-valued similarity impaired relative-recency judgements of consonant lists (4 or 8 letters, 750 ms/item) a new experiment found no effect on spacing judgements (7-letter lists). Two more experiments found an advantage for judgements of spacing of exact repetitions of the same item, but only for the small spacings. In sum, when reminding is unlikely and participants can excel at the task, exact repetition improves judgements of spacing only at the shortest lags.

Email: Muhammad Khan, mbkhan@ualberta.ca

12:00-1:30 PM (5070)

Mapping the Time Course of Context Effects

During Subjective Probabilities: Insights Form Eye-Movement Data.

JUN FANG, *Indiana University Bloomington*, TIMOTHY PLESKAC, *Indiana University Bloomington* — Subjective probabilities (SP) play a key role in making informed decisions. This study explores whether one's SP regarding a particular event is influenced by other events. We investigated this by analyzing context effects on SP during predictions about the winner of a toy car race. Specifically, we examined how context emerges from pairwise comparisons of alternative attributes over time. We propose that reducing the decision time would reduce the magnitude of context effects. We tested this hypothesis under four levels of time pressure. The results confirmed our prediction, showing that context effects increase as time pressure decreases. Additionally, we gathered eye-movement data to analyze how alternatives are compared against each other. This study reveals how the support recruited for

hypotheses depends on the alternatives in the domain of SP, and the time course of all of these effects at the individual level and for a given item.

Email: Jun Fang, junfang219@gmail.com

12:00-1:30 PM (5071)

Testing Perceptual Disfluency as a Strategy to Diminish Illusory Truth Effects.

ERIN J. DOWLING, *University of Manitoba*, JASON P. LEBOE-MCGOWAN, *University of Manitoba*, LAUNA LEBOE-MCGOWAN, *University of Manitoba* — People exhibit a persistent bias to believe information that is not true, and to later act on these beliefs in decisions of high consequence. One enduring obstacle to preventing belief in misinformation is the fluency with which previously encountered information is processed (Oppenheimer, 2008). We replicated earlier work conducted on illusory truth effects (i.e., Gilbert et al., 1993) and present two experiments which test a novel DiSfLuEnCy manipulation of false details in a mock criminal trial scenario. Sentencing and character assessment evidence support the hypothesis that, despite instructions to disregard, people perform poorly when asked to ignore information explicitly identified as false. Though warnings significantly tempered adherence to false crime report details, those who encoded these details DiSfLuEnTiY were 9% more likely to misremember this information as true, and assigned harsher penalties to suspects as a result. Multiple regression analysis reveals that scoring high in right-wing authoritarianism (RWA) significantly predicted the length of sentence assigned to suspects and the proportion of false details remembered as true, particularly when details exacerbated (vs. extenuated) the suspect's crime.

Email: Erin Dowling, umdowlie@myumanitoba.ca

12:00-1:30 PM (5072)

An Overlooked Contributor to the Dunning-Kruger Effect? Errors in Judging the Performance of Others.

MICHAEL BENSON, *The University of New Mexico*, ERIC RUTHRUFF, *The University of New Mexico* — Every election cycle, the Dunning-Kruger Effect pops into everyday discussions. Kruger and Dunning (1999) demonstrated that individuals with low task skill dramatically overestimate their performance relative to their more skilled peers. This overestimation was attributed to a lack of metacognitive skills in those poor performers—the

“dual-burden” account. However, we have found that even when poor performers accurately assess their own performance (score), they still show overconfidence in their placement (percentile). Is this due to difficulty recognizing competence in others, as proposed by Kruger and Dunning? Errors in estimation of the competence of others have been largely overlooked as a contributor to overconfidence and rarely assessed directly. Our study quantified the recognition of the competence of others by asking participants to estimate the distribution of scores for their peers on the same task. We then determined whether poor performers were worse at detecting other’s skills, whether this contributes to the Dunning-Kruger Effect and, more specifically, whether poor performers falsely assumed others performed as poorly as they did.

Email: Michael Benson, bensonmj@unm.edu

12:00-1:30 PM (5073)

Beginners Rely on Initial Impressions of Ease When Judging Ability in a New Domain.

JACKSON CATE, *The University of Waikato*, MARYANNE GARRY, *The University of Waikato*, MEVAGH SANSON, *The University of Waikato*, KAYLA JORDAN, *The University of Waikato* — Beginners quickly become more confident in their ability to perform a skill after just a brief exposure to that skill—whether diagnosing fictitious zombie diseases or piloting an emergency plane landing (Jordan et al., 2022; Sanchez & Dunning, 2018). We also know people judge their performance on a test by overweighting their initial impressions of its ease or difficulty (Weinstein & Roediger, 2012). Perhaps, then, the confidence beginners possess about performing a new skill is driven, in part, by their initial impressions of its ease or difficulty? To address this possibility, across two experiments we tested 862 beginners on the meaning of some kanji. In one version, the kanji appeared from easiest to hardest to translate; in the other, hardest to easiest. Then, everyone rated their test performance and ability to read kanji in future scenarios. Across both experiments, beginners tested in the easy-to-hard order reported they had performed better on the test and would perform better at translating kanji in future scenarios—such as reading a Japanese recipe. These results suggest beginners draw on initial impressions about the ease or difficulty of a new skill to assess their current and future performance in that domain.

Email: Jackson Cate, jacate19@gmail.com

12:00-1:30 PM (5074)

Trait Self-Control Predicts Moral Decision Making Through Lower Automatic Temptation.

HEATHER MARANGES, *Florida State University*, DAVID S. MARCH, *Florida State University*, ANDREW VONASCH, *University of Canterbury* — Self-control predicts moral behavior. Recent work outside the moral domain suggests that self-control facilitates goal-pursuit by internalization of goal-relevant values, feelings and thoughts; automatization of goal-pursuit; and reducing temptations, rather than by mere inhibition. We suggest and find support for the hypothesis that self-control facilitates moral decision making through internalization and automatization, and, subsequently, lower temptation to violate proscriptions. Study 1 finds that people higher (vs. lower) in trait self-control report more internalized moral feelings and reasons and less immoral temptation. Study 2 employs dozens of moral decisions and demonstrates that people higher (vs. lower) in self-control make more moral decisions, and this is partly accounted for by stronger moral habits and viewing immoral decisions as impossible. Study 3 employs a dynamic, behavioral measure of conflict—mouse-tracking—and a novel metric that estimates the time of initiating correct (moral) categorization (decision)—TICC. Higher self-control individuals made moral decisions more automatically (earlier TICC) and were less tempted to make the immoral decision (lower area under the curve [AUC], maximum deviation [MD]).

Email: Heather Maranges, hmaranges@gmail.com

12:00-1:30 PM (5075)

Disconnection Syndrome in Split-Brain Patients: Splenium's Unexpected Role in Integrating

Interhemispheric Information Beyond Just Visual. SELIN BEKIR, *University of California, Santa Barbara*, LENA HOPF, *Bielefeld University, Epilepsy Centre Bethel*, TYLER SANTANDER, *University of California, Santa Barbara*, THERESA PAUL, *University of Cologne*, LUNA LI, *University of California, Santa Barbara*, HENRI ETEL SKINNER, *University of California, Santa Barbara*, ANNA RADA, *Bielefeld University, Epilepsy Centre Bethel*, FRIEDRICH WOERMANN, *Bielefeld University, Epilepsy Centre Bethel*, CHRISTIAN BIEN, *Bielefeld University, Epilepsy Centre Bethel*, OLAF SPORNS, *Indiana University*, BARRY GIESBRECHT, *University of*

California, Santa Barbara, MICHAEL S. GAZZANIGA, University of California, Santa Barbara, LUKAS J. VOLZ, University of Cologne, MICHAEL B. MILLER, University of California, Santa Barbara — Decades of split-brain research highlight corpus callosum's (CC) critical role in cognitive unity, as surgically severing it disrupts this unity. Lateralized testing with these patients shows that, when disconnected, each hemisphere can independently perceive, process, and respond to stimuli with a complete lack of awareness of the other. Our study shows that, despite the CC's widely accepted topographic organization, a few intact posterior callosal fibers can integrate behavior across various lateralized sensorimotor tasks, extending well beyond their traditionally recognized role in visual integration. We tested six adult callosotomy patients (4 complete, 2 partial) using an array of lateralized tasks covering various cognitive domains (visual, somesthetic, motor, visuospatial, and language) along the anteroposterior axis. One of the partials had only ~1 cm of splenium left intact. We predicted that this patient would show specific disruptions on some tasks but not others based on the extent of the callosotomy. Surprisingly, his performance was comparable to that of controls, even for tasks needing interhemispheric integration of more anterior functions. This highlights the need for a more nuanced and nonlinear conception of the CC.

Email: Selin Bekir, sbekir@ucsb.edu

12:00-1:30 PM (5076)

Climate Check: Is the Agentic Future Negative? The Role of Group Agency on the Temporal Variability of Collective Mental Time Travel When Thinking about Climate Change. OLIVIA G. CADWELL, *The New School for Social Research*, WILLIAM HIRST, *The New School for Social Research* — People think not just about personal futures, but collective futures. Most of the work on collective future thinking has studied the future of the nation. This work has established that (1) unlike personal future thinking, people tend to remember their nations future in negative terms, and (2) this negativity bias can be diminished if the nation is viewed as having group agency over its future. The present paper departs from the present focus on national collective future thinking and explores collective future thinking about the climate. Unlike what it found for national future thinking, group agency does not diminish the negativity bias people hold, but actually

enhances it, and the negativity bias varies temporally, with the short-term future more negative than the long-term future. While political differences emerge in perceived group agency and worry about climate change, the temporal variability of the future negativity bias remains stable. The present results and the discrepancies in the literature are discussed in terms of the content-specificity of future thinking.

Email: Olivia Cadwell, cadwo881@newschool.edu

12:00-1:30 PM (5077)

Revisiting the Generation Effect: Replicating Slamecka and Graf's (1978) Free Recall Study.

MICHAELA RITCHIE, *University of New Brunswick Saint John*, JONATHAN WILBIKS, *University of New Brunswick Saint John* — To address the replication crisis in the social sciences, this study aimed to replicate Experiment 4 from Slamecka and Graf's (1978) research on the generation effect—a phenomenon whereby self-generated verbal information is better remembered than information that was merely read. The current study followed pre-registered hypotheses and analyses, using similar materials to the original study. Across five learning trials in a within-subjects design, participants read and generated incomplete word pairs under three encoding rules (synonym, opposite, rhyme) and completed a timed free recall test after each trial. Results showed better performance for generated versus read words, replicating the original findings. Consistent with the original study, no significant interaction of rule and task type was found. Learning occurred across trials regardless of encoding method. This study confirms that self-generation enhances free recall and that there may not be an additive effect of repeated exposure to stimuli (i.e., the testing effect) and the generation effect. The current study provides detailed statistical reporting absent in the original study.

Email: Michaela Ritchie, michaela.ritchie@unb.ca

12:00-1:30 PM (5078)

Area Deprivation Index But Not Frontotemporal Brain Volume Mediates Association Between Race and Executive Function and Processing Speed. SOPHIA ROBLES, *Binghamton University, SUNY*, IAN M. MCDONOUGH, *Binghamton University, SUNY*, KELSEY HORN, *Binghamton University, SUNY* — Due to racial health disparities, Black Americans are at a greater risk for developing Alzheimer's disease in

comparison to non-Hispanic White Americans. One potential cause of these disparities may be accounted for by the social and economic factors that impact the progression of brain neurodegeneration. To investigate the race-related declines in cognition and brain structure, individual sequential mediation analyses were conducted. It was found that race-related declines in cognition were most accounted for by the Area-Deprivation Index (ADI) with processing speed acting as the most significant cognitive variable. However, the tested brain structures were found to function independently from ADI since none of the brain variables were proven to be significant. Therefore, other measures will need to be explored to determine how ADI is affecting Alzheimer's disease through the brain.

Email: Sophia Robles, srobles2@binghamton.edu

12:00-1:30 PM (5079)

Expectations' Influence on Visually Induced Motion Sickness. GARRETT BEEBE, *The Pennsylvania State University*, TRISTA BUSKIRK, *The Pennsylvania State University* — We investigated the influence of expectations on visually induced motion sickness (VIMS) in virtual reality (VR). Twenty-nine participants were exposed to two 10-minute conditions in a VR environment: self-controlled movement and researcher-controlled movement. VIMS symptoms and a mood and anxiety scale were assessed. It was hypothesized that (1) those who do not have agency over their movement are more likely to experience the onset of VIMS and that (2) that mood and anxiety would influence VIMS onset. Results showed that sickness scores were significantly higher in the unpredictable (moved) condition than in the predictable (self-moved) condition, confirming our first hypothesis. Participants who entered with higher mood/anxiety scores were significantly more likely to report higher sickness scores in the unpredictable (moved) condition, confirming our second hypothesis. Additionally, when participants entered with a higher positive-mood, they reported lower sickness scores. Our findings support recent emphasis in motion sickness literature on the relevance of expectation-oriented factors to the onset of sickness.

Email: Garrett Beebe, xaetius@gmail.com

12:00-1:30 PM (5080)

Self-Perceived Mathematical Ability and Stereotype. DAPHNE HAREL, *St John's University*,

ALLISON J. JAEGER, *Mississippi State University*, DANA CHESNEY, *St. John's University* — There is a persistent stereotype that men are better than women at math. This stereotype may influence an individual's self-perceptions of their mathematical ability. As part of an ongoing study of self-perceived mathematical ability and stereotype, we had 150 female and 47 male undergraduate students complete the Subjective Numeracy Scale, an eight-item measure assessing an individual's self-perceived numerical ability. We hypothesize that men would score higher on this measure than women, indicating greater self-perceived numerical ability. Results showed that, as predicted, men had higher ($M=4.31$, $SD=0.98$) SNS scores than women ($M=4.00$, $SD=1.00$) on average ($t(195)=1.84$, one-tailed $p=.034$, Cohen's $D=0.30$). These results support the hypothesis that stereotypes can influence self-perception. More work is needed to uncover how these stereotypes may influence performance.

Email: Daphne Harel, Daphne.Harel20@mv.stjohns.edu

12:00-1:30 PM (5081)

Task-Unrelated Thoughts and their Non-Linear Dynamics. VISHAL KUVAR, *University of Minnesota*, LAURA ALLEN, *University of Minnesota*, AARON WONG, *University of Minnesota*, CAITLIN MILLS, *University of Minnesota* — The link between task-unrelated thoughts (TUT) and eye gaze has been studied using linear fixation-based statistical features. Although significant, the correlation direction between these gaze-indices and TUT is task-specific. To address this issue, we present a study investigating TUT through a non-linear perspective. With gaze data captured while participants watched a video, we extracted non-linear gaze features using recurrence quantification analysis (RQA). This method preserves temporality of eye movements and allows us to understand how gaze unfolds over time, unlike linear features which typically aggregate them. We found a significant correlation between TUT and RQA indices of recurrence rate, determinism, laminarity, and entropy. The direction of these correlations is in line with findings from another study examining TUT and RQA where participants were involved in a scene encoding task. This suggests that non-linear RQA indices might be less task-specific, opening doors for potentially task-general TUT detectors in the future.

Email: Vishal Kuvar, vishalkuvar97@gmail.com

12:00-1:30 PM (5082)

Undergraduate Perceptions of Learning-Related Experiences During COVID-19. EMILIE E.

CARON, *University of Waterloo*, ALLISON C. DRODY, *University of Waterloo*, JONATHAN S. A. CARRIERE, *Bishop's University*, DANIEL SMILEK, *University of Waterloo* — The current study explored how students believed their learning-related experiences (i.e., attention, affect, and time perception) changed throughout the pandemic. This study documented students' (Nanalyzed=191) relative judgments of change between their current experiences (measured April 2022) and their remembered experiences from three different timepoints: (1) before the pandemic restrictions (pre-restrictions), (2) immediately after implementing the restrictions (early restrictions), and (3) immediately after lifting the restrictions (post-restrictions). We also assessed students' predicted changes in future experiences. Overall, students perceived reductions in their attention, affect, and time perception compared to their remembered pre- and early restriction learning-related experiences. They also perceived their attention and affect to decrease even as the restrictions began to lift, though there were slight attenuations to these reductions. Regarding their future, students were optimistic that their learning-related experiences would improve in the coming months. These findings can inform approaches targeting the improvement of attention, affect and productivity in learning and performance-based environments.

Email: Emilie Caron, eecaron@uwaterloo.ca

12:00-1:30 PM (5083)

Words Conveying Brightness and Darkness Are Not Estimated Differently in Time. GRAYSON

MULLEN, *The University of British Columbia*, AMINA ABDELBARY, *The University of British Columbia*, ALAN KINGSTONE, *The University of British Columbia* — Just as actual light causes your pupils to constrict, so can a cartoon image of a sun, or even the word "sun" (i.e., semantic brightness). The present study tests whether semantic brightness mirrors another quality of actual brightness: its lengthening effect on time perception. Durations of brighter images tend to be overestimated relative to those of dimmer ones. To test for a similar effect of semantic brightness, we showed participants a series of words like "shadow," "bonfire," and "radiant." Word durations were randomized and participants judged each as being closer to either a short

or long reference duration. We hypothesized that words conveying brightness would be judged as long in duration more frequently than words conveying darkness, but found no significant effect of semantic brightness on temporal bisection judgements. This suggests that the time-lengthening "stimulus intensity" that actual brightness evokes is not conveyed by semantic brightness, despite their shared effects on pupil constriction.

Email: Grayson Mullen, gmullen@psych.ubc.ca

12:00-1:30 PM (5084)

Exploring Psychometric and Linguistic Correlates of Evidence-Based and Intuition-Based Truth Perceptions. CHRISTOPH M. ABELS, *University of Potsdam*, SEGUN T. AROYEHUN, *University of Konstanz*, JANA LASSE, *University of Graz*, DAVID GARCIA, *University of Konstanz*, STEPHAN LEWANDOWSKY, *University of Bristol* — People have different understandings of truth: some see truth as objectively established through facts and data (evidence-based), while others view truth as something that needs to be grasped through gut feeling and perceptions of authenticity (intuition-based). With the increasing prevalence of post-truth environments, differentiating and exploring the implications of these varying understandings is becoming increasingly important. Using the novel Evidence Intuition Scale (EIS), we can now reliably measure a person's perspective on truth. The EIS also shows meaningful associations with different political and cognitive measures. In this paper, we employ psychometric and computational linguistic methods (e.g., dictionary-based approaches) to investigate the relationship between written text (e.g., free text entries in surveys, social media data) and the EIS. We find a significant association between linguistic and psychometric markers of conspiracy beliefs in written text, with preliminary evidence for a similar association in social media data.

Email: Christoph Abels, christoph.maximilian.abels@uni-potsdam.de

12:00-1:30 PM (5085)

Modeling Holistic and Analytic Face Perception: Insights from the Composite Face and Part-to-Whole Paradigms Using Modular Serial-Parallel Network (MSPN). MARIO FIFIC, *Grand Valley State University*, DANIEL R. LITTLE, *The University of Melbourne*, CHENG-TA YANG, *National Cheng Kung*



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University — While it is often believed that faces are often perceived holistically, individual face parts can be analyzed separately. The Modular Serial-Parallel Network (MSPN) addresses this by integrating holistic and analytic encoding within a unified computational theory-driven framework. MSPN synthesizes memory representations, signal detection theory, rule-based decision-making, sequential sampling, and mental architectures to model face perception. We used MSPN to test theories in the composite face and part-to-whole paradigms. In the composite face paradigm, MSPN revealed holistic encoding in aligned conditions and analytic encoding in misaligned conditions, explaining the Congruency \times Alignment interaction. In the part-to-whole paradigm, both holistic and analytic encoding accurately captured facial feature recognition. MSPN serves as a robust tool for modeling and falsifying theories, providing precise insights into the nature of face processing across different tasks.

Email: Mario Fific, fifcm@gvsu.edu

12:00-1:30 PM (5086)

Rethinking the Response Bias Effect of Inoculation: A Signal Detection Theory Analysis.

ALMOG SIMCHON, *Ben-Gurion University of the Negev*, TOMER ZIPORI, *Ben-Gurion University of the Negev*, STEPHAN LEWANDOWSKY, *University of Bristol*, SANDER VAN DER LINDEN, *University of Cambridge*, JON ROOZENBEEK, *University of Cambridge* — Recent works suggest that gamified inoculation—a method to counteract misinformation— influences only response biases, not the discriminability of false information. However, our re-analysis of twelve papers (k studies=29) using signal detection theory (SDT) reveals a different picture for both gamified and video-based interventions. Our results show that inoculation consistently improves participants' ability to discern truth from falsehood (d'), indicating an increase in sensitivity. Meanwhile, the effect on decision criterion (c) was inconsistent, with some studies showing a positive or negative effects of the threshold for accepting information and others not. These findings suggest that inoculation can effectively enhance informational sensitivity, challenging the claim that it only modifies response bias, and supporting its use in misinformation resilience strategies.

Email: Almog Simchon, almogs@post.bgu.ac.il

12:00-1:30 PM (5087)

Adaptive Processing in Word Production: More Evidence from Picture-Word Interference

Studies. JOERG D. D. JESCHENIAK, *Universität Leipzig*, STEFAN WOEHNER, *Universität Leipzig* — Adaptive lexical processing is a prominent concept in theories of speech production. Current models include a mechanism that operates after each naming episode and makes words that are semantically related to a selected target word less accessible for future retrieval.

Jescheniak et al. (2023) found that semantic interference in the picture-word interference (PWI) task (which is assumed to reflect the activation of competitor words to a target word) was reduced across repeated naming of a picture, even when novel distractor words were used, in line with the notion of adaptive lexical processing. Here, we present three new PWI experiments, all of which replicate this finding and show that the reduction of semantic interference contrasts with the non-reduction of phonological facilitation when semantic and phonological distractor conditions are counterbalanced, is also found when distractors are presented visually rather than auditorily, is replicated with different materials, and likely occurs in a continuous manner. This provides further support for the notion of adaptive lexical processing and demonstrate that the PWI task is an appropriate tool for investigating it.

Email: Joerg D. Jescheniak, jdi@uni-leipzig.de

12:00-1:30 PM (5088)

An Examination of the Resiliency of Lexical-Sublexical Interaction During Spelling via Delayed Priming.

DONALD L. KNAPP, II, *Kent State University*, JOCELYN R. FOLK, *Kent State University* — The dual-process model of spelling comprises lexical and sublexical processes to spell familiar and unfamiliar words, respectively. The sublexical process uses sound-spell correspondences to map sounds to letters (Folk & Rapp, 2004). Spellers typically use correspondences that occur more frequently when spelling unfamiliar words. By presenting a familiar word using a rare correspondence prior to nonword spelling, the use of the rare correspondence can be primed (Patterson & Folk, 2014). This temporary re-weighting of the lower frequency sound-spelling correspondence persists with intervening items between presentation of the prime and target, though the effect is attenuated. This study investigated the effect of a controlled delay between the

prime word and the nonword target and the nature of the diminished priming effects. Participants listened to a list of words and nonwords and provided spellings only for the nonwords. Word lists had two or three intervening items between the prime and target, but the total time between them remained constant, allowing for an investigation into the duration of sublexical priming effects. Implications for the interaction of lexical-sublexical processes of spelling are discussed.

Email: Donald Knapp, dknapp11@kent.edu

12:00-1:30 PM (5089)

Cognitive Reserve in Individuals with Semantic Variant Primary Progressive Aphasia (svPPA).

LAUREN A. GREBE, *St. John's University*, BRITTANY MORIN, *University of California, San Francisco*, JANHAVI PILLAI, *University of California, San Francisco*, DAVID PAUL GALANG BAQUIRIN, *University of California, San Francisco*, BUDDHIKA RATNASIRI, *Drexel University*, RIAN BOGLEY, *University of California, San Francisco*, ZOE EZZES, *University of California, San Francisco*, LISA WAUTERS, *University of California, San Francisco*, MARIA LUISA MANDELLI, *University of California, San Francisco*, ZACHARY MILLER, *University of California, San Francisco*, MARIA LUISA GORNO TEMPINI, *University of California, San Francisco*, ELIZABETH GALLETTA, *NYU Grossman School of Medicine*, MIRA GORAL, *The City University of New York (CUNY)*, JET M.J. VONK, *University of California, San Francisco* — The few studies that investigated how cognitive reserve (CR) affects disease progression in the semantic variant of primary progressive aphasia (svPPA) yielded inconsistent results. We investigated if CR proxies (education, occupation) relate to longitudinal changes in temporal lobe cortical thickness, disease severity (MMSE-CDR composite), and lexical-retrieval function (phonemic and category fluency, 15-Item BNT) in 89 participants with svPPA. Baseline levels were analyzed using multivariable linear regressions including interactions, and changes over time with general linear mixed-effects models. The interaction showed that at baseline, higher education and occupational complexity in combination with a thicker temporal lobe cortex related to better phonemic fluency performance. However, differences in education and occupation were not associated with differences in cortical thickness or disease severity at baseline or longitudinally. These findings suggest that while CR may relate to lexical-

retrieval function in svPPA, CR does not seem to affect overall disease progression or structural brain changes over time.

Email: Lauren Grebe, grebel@stjohns.edu

12:00-1:30 PM (5090)

Competition in Proper and Object Name

Retrieval: A Replication and Extension.

JULIE BANNON, *University of California, San Diego*, VICTOR FERREIRA, *University of California, San Diego*, TAMAR H. GOLLAN, *University of California, San Diego* — Successful word retrieval is a crucial part of language production. This process is typically executed with ease, but retrieval failures can occur. Proper names are particularly prone to retrieval failures compared to object names. In a recent study, Bannon et al. (2024) found that retrieval failures on proper names increased over successive attempts to name pictures of celebrities, whereas immediate exposure to a related proper name led only to more temporary failures (i.e., tip-of-the-tongue [TOT] states). In the current study, we replicated Bannon et al., and compared to retrieval of object names. Participants performed a semantic classification of a proper or object name, prior to naming a picture. Results showed both proper and object names elicited fewer successful retrievals with increasing number of pictures named, but only proper names exhibited the brief priming effect resulting in more TOTs following a related prime name. These data extend the findings of Bannon et al., showing that accumulating competition affects both proper and object names, and confirms that proper names are particularly vulnerable to retrieval failure after immediate exposure to a related name.

Email: Julie Bannon, julieannbannon@gmail.com

12:00-1:30 PM (5091)

Inducing a Relational Mindset with Analogies Facilitates Spontaneous Metaphor Production.

TIM GEORGE, *University of Maryland*, ANDRIANA L. CHRISTOFALOS, *University at Albany, SUNY*, FELIX PAMBUCCIAN, *Minnesota State University, Mankato* — While a large body of work has explored the mechanisms underlying metaphor comprehension, less research has focused on metaphor production. Previous research suggests that reasoning about analogies can induce a relational mindset which causes a greater focus on abstract commonalities. This study aimed to test how

inducing a relational mindset may increase the tendency to describe topics metaphorically (rather than literally). Participants first solved a series of either cross-domain analogies (goose:flock :: soldier:?) to induce a high relational mindset, or within-domain analogies (goose:flock :: wolf:?) (control condition). Next, they received a series of topic descriptions containing either one feature (some jobs are confining) or three features (some jobs are confining, repetitive, and unpleasant), and were asked to provide a summary phrase of the topic. Coding of responses indicated that spontaneous use of metaphoric summaries was higher in the relational mindset condition, and when topics contained more features. The relational mindset induction may have shifted attention toward abstract comparisons, facilitating creative use of language.

Email: Tim George, tgeorge3@umd.edu

12:00-1:30 PM (5092)

Declaration of Feature Independence: Masked Onset Priming Effects Are Independent of Form Preparation but Support the Priority of Place Over Voice. MO CHEN, *Lehigh University*, PADRAIG O'SEAGHDHA, *Lehigh University*, CHANNING E. HAMBRIC, *Bowdoin College* — Neglect of phonetic processes in language production models is challenged by increasing evidence of feature-type effects in various encoding tasks. We examined feature encoding by combining form preparation of word onsets (e.g., three /p/ onset words vs three different onsets) with similar vs dissimilar masked onset priming. Similar onsets differed in voice or place from target onsets (e.g., b or t for /p/ onset). Forward masked primes were presented for 50 ms before printed uppercase target words. Naming was facilitated when primes differed in voice but if anything were impaired when they differed in place from target onsets. Surprisingly, priming was unaffected by form preparation suggesting that higher level attention to phonemes may not engage phonetic features. In contrast, the priming findings suggest that place has priority over voice in phonetic encoding, and that accounts of phoneme similarity effects must include phonetic-level details.

Email: Mo Chen, moc219@lehigh.edu

12:00-1:30 PM (5093)

Does Dynamic Writing Sequence Facilitate Written Word Production in Chinese L2? YI DAI,

University of Maryland, MIN WANG, *University of Maryland*, XIANLIN ZHANG, *University of Maryland*, FENG XIAO, *Pomona College* — Unlike English written words, Chinese characters, square-shaped and visually complex, are written following certain stroke orders (e.g., left before right and horizontal before vertical). Previous research showed that skilled native Chinese readers attend to the internal writing sequence in their character writing. Limited research, however, is devoted to understand whether and how dynamic sequence affects writing among Chinese as second language (L2) learners. The current study investigated accuracy of character writing under conditions with and without writing sequence display among 39 Chinese L2 beginning learners in two US colleges. They were exposed to 128 characters, varying in spatial structure (left-right and top-bottom) and familiarity. Preliminary results showed a trend that L2 learners processed characters holistically, especially those unfamiliar characters. Dynamic stroke sequence seemed to interfere with their writing. Characters with top-bottom structures were more accurately written than those with left-right structures.

Email: Yi Dai, ydai1@umd.edu

12:00-1:30 PM (5094)

Adaptive Learning After Semantic Interference: Does Interference Promote Enhanced Relearning? CHANNING E. HAMBRIC, *Bowdoin College*, PADRAIG O'SEAGHDHA, *Lehigh University* — Semantic interference has been ascribed to long-term adaptive learning mechanisms that promote access to selected representations and hinder access to coactivated competitors. Interestingly, some accounts posit that the punishment doled out to competitors may actually enhance later relearning relative to never-punished controls (Storm, 2008; Hulbert & Norman, 2015). We investigated the dynamics of adaptive (re)learning through a modified and elaborated retrieval practice and relearning design. Category-stem cued retrieval was employed in initial learning and relearning phases, and continuous picture naming was employed in a final assessment phase. In each phase, there was cumulative semantic interference in retrieval/naming latencies. The final assessment phase showed persistent semantic interference in baseline conditions (a RIF effect), but naming time was equivalent in relearned related and control conditions. These results provide a detailed window into the temporal dynamics of learning and



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relearning in conceptual-lexical retrieval. They suggest that relearning in this domain restores accessibility to previous levels but does not enhance it.

Email: Channing Hambric, c.hambric@bowdoin.edu

12:00-1:30 PM (5095)

Examining How Word Position Impacts Observation of Cascading Activation Using

Tongue Twisters. JOELLE FAHOUM, *Hendrix College*, SIMON FISCHER-BAUM, *Rice University*, SARAH IRONS, *Hendrix College* — Studies of spoken language production have found phonetic distortion evidence for cascading activation from phonological planning to articulatory implementation (e.g. Alderete et al., 2021, Goldrick & Blumstein, 2006). This evidence, however, is only observed in speech errors in onset word positions, elicited almost exclusively through tongue twister paradigms. By contrast, cascading activation research that considers correctly produced items in word middle positions fail to find evidence for cascading activation (Irona & Fischer-Baum, 2020). The present study uses a tongue twister paradigm to examine how word position, specifically consonants in onset positions versus vowels in word middle positions, might explain differences in observed evidence for cascading activation. Further, this experimental design allows us to explore how competition at different word positions in tongue twister paradigms might impact the overall pattern of errors produced.

Email: Joelle Fahoum, victoriajoelle1@gmail.com

12:00-1:30 PM (5096)

Producing Spoken Words: Evidence from

Neurodegenerative Disorders. S.C. ANGELA XU, *Johns Hopkins University*, DONNA C. TIPPETT, *Johns Hopkins University*, BRENDA RAPP, *Johns Hopkins University*, KYRANA TSAPKINI, *Johns Hopkins University* — Theories of word production posit multiple levels of representation and processing, such as semantic, phonological, motor planning, and motor execution processes. Primary Progressive Aphasia (PPA) is a neurodegenerative disease that affects speech and language, typically resulting in word production difficulties. A variety of error patterns are observed, providing unique opportunities to investigate the representations and processes of word production and their neural substrates. In this study, a large group of individuals with PPA performed spoken word production

tasks (e.g., picture naming) and grey matter integrity (atrophy) was assessed using T1-weighted MRI. We identified different patterns of errors associated with specific brain regions. For instance, semantic and sound-based processing were distinguished, with the former associated with regions such as the bilateral superior and middle temporal poles, and the latter with regions such as bilateral pre-central and post-central gyri. The neural findings may further our understanding of the representations/processes of spoken word production.

Email: S.C. Angela Xu, angela.xu@jhu.edu

12:00-1:30 PM (5097)

Stability and Variability in Speakers' Prosodic Profiles Across Speaking Styles. QINGZHI RUBY ZENG, *University of Rochester*, YUDUO CAI, *University of Rochester*, ELISE A. PIAZZA, *University of Rochester* — Speech prosody (e.g., pitch, rhythm, timbre) contains rich information about a speaker's identity. In everyday communication, prosody is influenced by numerous factors (e.g., audience), but few datasets are available that track speaker-specific prosodic patterns across diverse speaking styles. To address this need, we built a naturalistic speech corpus in which each speaker's voice is sampled within two speaking styles (monologue and dialogue) across multiple days. From each recording, we extracted a 15-dimensional vector that comprehensively quantifies several prosodic features: pitch, rhythm, loudness, timbre, and voice quality. We then analyzed this vector's consistency across time points and styles. As expected, preliminary analyses showed that these vectors represented a stable, unique prosodic profile for each speaker (i.e., vectors from the same speaker were more correlated across days than those from different speakers). Moreover, vectors were more correlated across monologue than dialogue recordings, suggesting that speakers exhibited a more consistent profile when speaking alone. Ongoing data processing and analyses aim to further explore the factors that explain speaker-specific prosodic patterns in naturalistic speech.

Email: Qingzhi Ruby Zeng, gzeng6@ur.rochester.edu

12:00-1:30 PM (5098)

The Effect of Perceived Urgency on Cognitive and Linguistic Patterns in Email Responses. ELISE BELCHER, *University of Arizona*, JIAXUAN TENG, *University of Arizona*, EVE A. ISHAM, *University of Arizona* — Prior research suggests that individuals' cognitive processes and language adapt to perceived urgency (Matthews & Meck, 2016; Mattes & Ulrich, 1998; Franconeri & Simons; Correa et al.). This study aims to understand these processes when replying to work-related emails of varying urgency levels. Data was collected from undergraduates. Each participant replied to fictional-scenario emails about a work scenario and rated the perceived urgency of the email on a 4-point scale ("Very trivial" to "Very urgent"). Responses were analyzed with a natural language analyzer (LIWC-22; Boyd et al., 2022). High-urgency responses had higher word count, fewer big words (big words=7+ letters), and

more motion words (e.g., go, come) and future-focused words (e.g., will, going) than low-urgency emails. Low-urgency emails had more past-focused words (e.g., was, had) and a more positive tone. Findings suggest urgent requests prompt simpler, action-oriented language, possibly reflecting immediate action focus. Urgency may lead to more emotionally negative words and decreased language complexity. This study begins to understand the interaction between language use and cognitive processes in response to varying levels of urgency in email communication.

Email: Elise Belcher, elisebelcher@arizona.edu

12:00-1:30 PM (5099)

The Role of Pragmatics and Predictability in the Production of Non-Sentential Replies.

CATHERINE M. BROUSSE, *Florida State University*, MICHAEL P. KASCHAK, *Florida State University* — We examine the role of pragmatics and predictability in the production of full sentence versus non-sentential replies. In Experiment 1, participants who were asked to respond to questions informally produced more non-sentential replies than those who were asked to respond formally. In Experiment 2, we established two measures of predictability for responses to our questions (unique counts of responses and proportion of dominant responses) that were used to predict the rate of non-sentential replies for each item in Experiment 1. Items that elicited more unique responses in Experiment 2 were more likely to be answered with a full sentence in Experiment 1 than items that elicited fewer unique responses. The proportion of dominant responses did not predict rates of full sentence and non-sentential replies. Our data suggest that the pragmatics of the situation dominate the choices that speakers make while the predictability of the response has comparatively less influence.

Email: Catherine Brousse, brousse@psy.fsu.edu

12:00-1:30 PM (5100)

Automated Measurement of Centralization in Sign Language. AMELIA BECKER, *Boston University*, MELISSA BAESE-BERK, *The University of Chicago*, ZED SEHYR, *Chapman University*, NAOMI CASELLI, *Boston University* — In spoken language articulation, we see traces of lexical processing whereby vowels in easily retrieved words tend to be centralized. In sign languages, position of the hands in space may be

analogous to vowel space, but it is unknown how differences in modality and phonological organization affect phonetic variation. We used pose estimation to examine American Sign Language signing space variation based on frequency, phonological neighborhood density, and duration. For a set of 36,680 sign tokens (2,706 types) from 44 Deaf signers, we calculated wrist distance from the center of the signing space. Results showed more central locations for more frequent ($\beta=-0.02$, $p=0.004$) and shorter signs ($\beta=0.16$, $p<0.001$) but no effect of phonological neighborhood density. These findings show that, like vowel space, signing space centralizes as a function of frequency and duration. Lack of phonological neighborhood density effects may point to modality differences in lexical processing. This work underscores the need to explore these patterns in order to build psycholinguistic theories that account for all human language.

Email: Amelia Becker, aabecker@bu.edu

12:00-1:30 PM (5101)

Chinese Character Network Structure Affects Processing of Single Chinese Characters.

CYNTHIA S. Q. SIEW, *National University of Singapore* — Mandarin Chinese has a logographic writing system consisting of characters (e.g., 朋 and 朋) that are monosyllabic morphemes often combined to form words (i.e., 朋朋, “friend”). The vast majority of Chinese words consists of two monosyllabic characters. This research describes the construction and properties of the Chinese character network and demonstrates how its network structure has implications for the lexical processing of Chinese characters through an analysis of Chinese megastudy data. Capitalizing on a database of over 25,000 double-character Chinese words, a network representation was created to represent how single characters are combined to form double-character Chinese words. Network measures such as degree and closeness centrality were retrieved from the network representation and included as predictors in a regression model to predict visual lexical decision performance of single Chinese characters. Network measures contributed additional variance beyond traditional variables such as number of strokes and character frequency.

Email: Cynthia Siew, cynthia@nus.edu.sg

12:00-1:30 PM (5102)

Inferring Pink and Blue Collars: Children’s Eye Movements When Reading Gender Stereotyped Occupations.

REBECCA L. JOHNSON, *Skidmore College*, MERRICK FAHRENWALD, *Skidmore College*, NICOLE DOLYNUK, *Skidmore College*, ASHLEY LUPIEN, *Skidmore College*, EMILY CLEVELAND, *Skidmore College*, SARA KLOMPUS, *Skidmore College*, SYLVIA LAVIN, *Skidmore College* — Adult readers form inferences while they read, including those corresponding to the stereotypical gender associated with particular occupations. For example, when reading “The surgeon reminded herself to check on the patient,” adults experience a mismatch effect on the unexpected pronoun. We explored whether or not children, ages 8-12, draw gendered inferences about occupations during sentence reading. Children read sentences in which the pronoun either matched the gender associated with the occupation (surgeon-himself, nurse-herself) or did not match (surgeon-herself, nurse-himself). The eye-movement record indicated that developing readers do show a mismatch effect, with longer reading times on the pronoun and post-pronoun region following stereotypically incongruent than congruent pronouns. These findings extend previous occupation gender-typing work in children to demonstrate gendered inference generation during sentence reading.

Email: Rebecca Johnson, rjohnso1@skidmore.edu

12:00-1:30 PM (5103)

Music and Narrative Memory.

MAXWELL KAYSER, *University of Nevada, Las Vegas*, DAVID COPELAND, *University of Nevada, Las Vegas* — Two experiments investigated the effects of background music on memory and narrative transportation during reading. Participants read narratives either in silence or with background music (calm or intense) and completed a narrative transportation measure. Participants were then tested, either in silence or with music, on memory for explicit details and inferences from the narrative. Memory performance was better for inferences compared to explicit details. In Experiment 1, memory was slightly better when narratives were accompanied by calm music during reading. Breaking it down further, participants who enjoyed the music and participants who felt the music matched the narratives showed a benefit of music. In Experiment 2, participants who felt the intense music did not match the narratives performed better with a

silent memory task. Overall, this study showed that the ability of music to benefit memory for a narrative seems to be dependent upon both the music and the individual reader. Future research could explore a wider variety of music, participant-selected music, a longer retention interval, and music intended to match the narrative.

Email: Maxwell Kayser, kayser@unlv.nevada.edu

12:00-1:30 PM (5104)

Statistical Learning Ability and Print Exposure Predict Eye Movements During Sentence Comprehension.

DEBRA JARED, *The University of Western Ontario, AMANDA FARMAHA, The University of Western Ontario* — In recent years there has been intense interest in statistical learning and its relationship to language processing ability. Here we asked participants to read sentences while their eye movements were tracked and investigated whether individual differences in their statistical learning ability and print exposure predicted eye fixation durations and accuracy on comprehension questions. Participants were 50 native English-speaking adults. The stimuli were 63 complex English sentences, such as garden path sentences. The region of interest for the eye fixation measures was the area where the complexity of the sentence became evident. We used GAM models to analyze the data because of their ability to model non-linear relationships between the predictors and dependent variables. There were main effects of statistical learning ability and print exposure, as well as an interaction between the two on both first pass and total reading times. In addition, participants with better statistical learning ability and greater print exposure had higher scores on the comprehension questions.

Email: Debra Jared, djared@uwo.ca

12:00-1:30 PM (5105)

The Case of 'El Mesa': Spanish Readers Skip Articles Even When There Is a Gender

Agreement Violation. MARINA SERRANO-CAROT, *Universidad Nebrija, BERNHARD ANGELE, Universidad Nebrija* — Previous research suggests that readers are likely to skip articles such as "the" in English, even when they are incompatible with the preceding sentence context. This suggests prioritization of parafoveal information over contextual cues by the oculomotor system. However, what happens if both the article and the incompatible context are both in the

parafovea? In the present experiment, we used the gaze-contingent boundary paradigm to manipulate the preview of Spanish article-noun phrases such that they either maintained gender agreement (correct preview; e.g., "la mesa") or introduced a parafoveal gender agreement violation (incorrect preview; e.g., "el* mesa"). Our findings indicate that skipping of the article was not influenced by agreement between the article preview and the subsequent parafoveal word, suggesting that readers do not consider article-noun agreement when making skipping decisions. However, we did find spillover effects of the incorrect preview on fixation times on the noun and subsequent words. This suggests parafoveal preprocessing ahead of skipping is very limited, with higher-level syntactic relationships only being considered later in the reading process.

Email: Marina Serrano-Carot, mserranc@nebrija.es

12:00-1:30 PM (5106)

White Matter Pathways in the Right Hemisphere Mediate the Effect of Socioeconomic Status on Reading Comprehension in Children with Family History of Reading Difficulties.

XIANGLIN ZHANG, *University of Maryland, MIN WANG, University of Maryland, HUA SHU, State Key Laboratory of Cognitive Neuroscience and Learning at Beijing Normal University, ZHICHAO XIA, Brain Imaging Research Center, University of Connecticut* — Previous studies have shown that socioeconomic status (SES) influences reading development in children with a family risk for dyslexia. Yet, the cognitive and neurocognitive mechanisms remain unclear. This study sought to understand the mechanisms among 79 Mandarin-speaking children (aged 8.7-12.0 years) and their parents. We assessed parents' history of reading difficulties, SES, home print resources, children's diffusion MRI, reading-related cognitive skills, and reading outcomes. Children were grouped according to their current reading status and family history of dyslexia: typical readers with (FHD+TD) or without a family history (FHD-TD), and children with dyslexia with a family history (FHD+RD). Chain mediation analyses showed that only in the FHD+TD group, SES was linked to the number of children's books, which in turn affected the axial diffusivity of children's right superior longitudinal fasciculus. The neural metrics further affected children's reading comprehension via their morphological awareness. No significant mediation effects were found in the FHD+RD or FHD-TD groups.

These findings suggested home print resources as a potential protective factor and revealed the underlying cognitive and neurocognitive mechanisms.

Email: Xianglin Zhang, xzhang55@umd.edu

12:00-1:30 PM (5107)

Exploring Atypical Predictors of Reading Skill in Inversion Sensitive English Readers. ELIZABETH HIRSHORN, SUNY New Paltz, ETHAN EISENBERG, SUNY New Paltz, MARYHOPE COFFIELD, SUNY New Paltz, ADAM MODEEN, SUNY New Paltz — Recent research has documented individual differences in the reading profile of native English readers by a using behavioral marker of holistic visual word processing: inversion sensitivity. A more holistic reading profile has reported to be associated with a weaker correlation between phonological decoding and both word identification and reading comprehension. Interestingly, that pattern is strikingly similar to a Chinese reading profile, but not a typical skilled English reading profile. The current study further tests how inversion sensitive readers may use other underlying cognitive processes that have been shown to be involved to a greater extent in Chinese reading such as visual memory and morphological awareness. First, we replicated past findings of inversion sensitivity modulating the relationship between phonological decoding and both word and sentence-level processing. Second, there are different patterns as to how visual memory and morphological awareness are related to word identification vs. reading comprehension depending on the level of inversion sensitivity. These results help refine our understanding of inversion sensitive readers and a potential alternative route to successful reading in English.

Email: Elizabeth Hirshorn, hirshore@newpaltz.edu

12:00-1:30 PM (5108)

Order Effects in Eye Tracking Studies: Faster But Not Biased. MICHAEL A. ESKENAZI, Stetson University, ELODIE FOSTER, Stetson University — Cognitive experiments typically require participants to maintain a consistent level of attention through the durations of the study. However, longer studies with many trials can produce boredom or cognitive fatigue, which may cause different effects across the duration of an experiment (Meier et al., 2023). The influence of boredom or cognitive fatigue was investigated in a long

eye tracking study that involved reading 2,742 words across 55 passages with 202 participants. Across the 55 trials, participants' gaze duration and total time significantly decreased. However, trial order did not interact with word frequency or word predictability, which suggests that cognitive processing remained consistent even though participants read more quickly as the study progressed. The decrease in reading times occurred primarily across the first 20 trials and then stabilized. Thus, researchers might consider excluding initial trials depending on the purpose of the study, but the lack of interactive effects suggest that researchers should have little concern of boredom or cognitive fatigue on eye movement behavior in reading studies.

Email: Michael Eskenazi, meskenazi@stetson.edu

12:00-1:30 PM (5109)

Phonological Effects During Visual Word Recognition in the Two Cerebral Hemispheres: Evidence from Hebrew-English Bilinguals. ORNA PELEG, Tel Aviv University, MOR MORAN-MIZRAHI, Tel Aviv University, DAFNA BERGERBEST, The Academic College of Tel Aviv-Yaffo — To test the ability of the two cerebral hemispheres to activate phonological codes during visual word recognition, Hebrew-English bilinguals performed a lexical decision task on Hebrew targets briefly preceded by Hebrew words written phonetically with English letters. The primes were either phonologically identical to the targets, or unrelated to the targets. In Experiment 1, the targets were presented in the central visual field to both hemispheres. In Experiment 2, the targets were presented either in the right visual field to the left hemisphere (LH) or in the left visual field to the right hemisphere (RH). In both experiments, targets were easier to recognize in the phonologically related condition than in the unrelated condition. Interestingly, no difference was found between the two hemispheres. Thus, despite the superiority of the LH in phonological processing, the current evidence suggests that both hemispheres are able to access phonological codes during visual word recognition.

Email: Orna Peleg, pelegor@tauex.tau.ac.il

12:00-1:30 PM (5110)

Predictability Effects in Chinese: Evidence from Eye Movements During Corpus Reading. JIN TIAN, Macquarie University, LILI YU, Macquarie University, ROSLYN WONG, Macquarie University,

AARON VELDRE, *University of Technology Sydney*, ERIK D. REICHLE, *Macquarie University* — It is well established that the predictability of a word influences the probability and duration of eye fixations when reading alphabetic scripts like English. However, less research has investigated these effects in non-alphabetic scripts like Chinese, where text is written as strings of characters with no spacing cues to demarcate word boundaries. The present research analyzed the eye-movement data of 60 participants who read a corpus of Chinese sentences for which the cloze probability of each character and word were estimated by separate samples of participants. Linear mixed-effects models assessed the relative contributions of character- and word-based probabilities, as well as the impact of partial syntactic and semantic information, on fixation measures across the time course of lexical and post-lexical processing. The results provide insights into the functional units that influence predictability effects in Chinese reading. The implications for theories of prediction in language comprehension and models of eye-movement control across different writing systems are discussed.

Email: Jin Tian, jin.tian@hdr.mq.edu.au

12:00-1:30 PM (5111)

Predicting Stimulus Category from Peripheral Motor Indexes: Evidence from Binary Decision Tasks. SIMONE SULPIZIO, *University of Milano-Bicocca*, SAMAN KAMARI SONGHORABADI, *University of Trento*, MICHELE SCALTRITTI, *University of Trento* — Classic models of (binary) decision making assume a serial transition from decision to action. Challenging this assumption, recent empirical evidence has highlighted a propagation of decisional processes into motor ones. In this study, we used a supervised learning approach to seek converging evidence of the overlap between decision processes and motor-response execution. We used data from lexical and object decision tasks. We built classification models to predict stimulus category (word vs nonword, object vs nonobject) via chronometric measures—premotor time (PMT, the time elapsing from stimulus onset until the onset of the EMG burst) and motor time (MT, the time between the onset of the EMG burst and the button-press)—and accuracy measures: correct responses and partial responses (PR, the covert activation of a hand, before the other one delivers the final response). Word category was correctly predicted even using MT and PR

only. Moreover, the model trained on lexical decision data effectively predicted object decision. Our results suggest that purely motor indexes (MT, PR) are sufficient to discriminate between different types of existing and non-existing stimuli in binary decision tasks.

Email: Simone Sulpizio, simone.sulpizio@unimib.it

12:00-1:30 PM (5112)

The Effects of Linguistic Experience on Word Predictability in Reading: An Eye-Movement Study. SPYRIDOULA CHEIMARIOU, Xavier University of Louisiana — Word predictability is a reliable factor influencing eye movements during reading. However, little is known on whether and how linguistic experience mediates the way readers respond to facilitation versus prediction error during sentence processing. Here, we examined the role of linguistic skill in mediating readers' susceptibility to predictability manipulations. Forty-four English monolinguals ($M: 21$; $SD=0.9$) read sentences varying in predictability of the upcoming word (Predictable-Unpredictable-Neutral) while their eye movements were monitored. Linguistic skill was tested by means of vocabulary and print exposure tests. Eye-movement analyses (gaze duration, regression-path duration, and total time) showed no evidence of mediation of linguistic skill in facilitation nor prediction error. However, participants with better vocabulary or greater print exposure showed faster reading times independently of predictability. Our findings are discussed within the predictive processing framework, considering factors that influence it and the differences arising from various experimental methods.

Email: Spyridoula Cheimariou, scheimar@xula.edu

12:00-1:30 PM (5113)

Lexically Guided Perceptual Learning Is Not a Task-Based Artifact. RACHEL M. THEODORE, *University of Connecticut*, SHAWN N. CUMMINGS, *University of Connecticut*, ALEXA UDELL, *University of Connecticut* — Listeners use lexical information to disambiguate speech input, posited to promote changes in the mapping between speech acoustics and speech sound categories. On the surface, evidence of such perceptual learning is robust. However, with rare exception, learning has been assessed using a two-alternative, forced-choice categorization (2AFC) task. Recent challenges to the canonical interpretation of the 2AFC task suggest that performance attributed to

perceptual learning could instead reflect listeners' inability to indicate uncertainty or intermediacy. Here, listeners ($n=80$) were first exposed to ambiguous spectral energy in lexical contexts that differentially biased listeners to interpret the ambiguity as either /s/ or /ʃ/. Then, listeners heard tokens from an ashi–asi continuum and marked where each token fell along a range between continuum endpoints using a visual analogue scale (VAS). Despite the VAS affording intermediate responses, a reliable difference in VAS responses emerged between biasing groups, in line with listeners' lexically-biased exposure, providing strong evidence that lexically guided perceptual learning reflects a re-mapping between speech and meaning and is not an artifact of the 2AFC task.

Email: Rachel Theodore, rachel.theodore@uconn.edu

12:00-1:30 PM (5114)

Neurophysiological Indices of Speech Processing in Interactive vs. Passive Listeners. CALLI SMITH, *University of Rochester*, EDMUND LALOR,

University of Rochester, ELISE A. PIAZZA, *University of Rochester* — Interpersonal communication is central to human life. Recent studies have aimed to investigate the neural mechanisms of naturalistic communication using a variety of paradigms, but no study to date has isolated the fine-grained neural processes that uniquely characterize active, engaged dialogue (vs. passive listening). To address this gap, we recorded audio and EEG from pairs of “Interactors” during a series of conversations and subsequently recorded EEG from individual “Observers” who listened to audio recorded from a prior pair of Interactors. We used forward encoding models to examine participant responses to acoustic features of the conversations (Crosse et al., 2016). In preliminary data, Interactors rated conversations as more successful (higher naturalness, enjoyment, connection) and tracked the speech envelope more closely than Observers, although word frequency tracking did not differ. Further analyses will compare additional aspects of language processing, including tracking of semantic features, across listening contexts.

Email: Calli Smith, csm157@ur.rochester.edu

12:00-1:30 PM (5115)

Perceiving Gender Diverse Voices. LINE LLOY, *New York University*, MOLLY BABEL, *The University of British Columbia* — Gender is a salient social identity feature that listeners automatically and implicitly

attribute to voices. Such attributions have social impacts for gender diverse (transgender and non-binary; GD) individuals whose voices may be perceived in ways that don't align with their identities. While recent work has begun to understand how GD individuals' voices are gendered in perception, listeners are often limited to applying binary labels to voices. Additionally, it is not understood how experience with GD voices may affect listeners' perceptions of talker gender. The current study uses speech from the GenDiV Corpus, a diverse corpus of cisgender ($n=15$) and GD ($n=28$) talkers and explores (1) how men ($n=144$), women ($n=143$), and non-binary ($n=145$) listeners categorize voices as man, woman, or non-binary and (2) how listener familiarity with GD voices affects their attributions. Interim results show that while listener attributions are more likely to match talker identity for cisgender talkers, listener experience and gender identity affects how listeners make attributions. For example, transgender women were often categorized as men by binary listeners, but were exclusively categorized as women or non-binary by non-binary listeners.

Email: Line Lloy, line.lloy@nyu.edu

12:00-1:30 PM (5116)

Relationship Between Intelligibility, Accentedness and Perceived Listening Effort for Foreign-Accented English. KATHLEEN F. NAGLE, *Seton Hall University*, MAYA DOBRYGOWSKI, *Seton Hall University*, JESSICA ESQUIVEL, *Seton Hall University*, VERONICA M. RZACA, *Seton Hall University* — This study examines the effects of intelligibility and accentedness on perceived listening effort (PLE) and is a follow-up to our 2022 presentation.

Audio recordings from non-native speakers of English are presented online to four groups of 10 listeners each, in a fully crossed design of two sets of 68 unique and 8 repeated stimuli presented in one of two sequences. Speakers were at least 90% intelligible, with a range of accentedness. After rating PLE on a 100mm visual analog scale, participants transcribe what they heard. Measures of inter- and intra-rater reliability and agreement will be calculated. Multiple linear regression will examine the relative contributions of speech intelligibility and accentedness to perceived listening effort. We expected to find that 1) less intelligible and more accented speech will receive higher PLE ratings but 2) ratings of PLE will vary for NNSE recordings that are 100% intelligible.



2024 ABSTRACTS

of the PSYCHONOMIC SOCIETY

Email: Kathleen Nagle, kfnagle@gmail.com

12:00-1:30 PM (5117)

The Accented Brain: An EEG Study on Talker Variability. LAUREN HONG, *University of Toronto*, CHAO HAN, *University of Toronto*, PHILIP J. MONAHAN, *University of Toronto* — Listeners readily draw inferences about talker-specific characteristics (e.g., age, gender, dialect) when listening to speech. We present the results of a mismatch negativity (MMN) EEG study that investigates the brain's ability to group different talkers by accent. Participants were auditorily presented with “stopped” produced by different talkers, either in Standard Canadian English (SE) or Mandarin Chinese accented English (CE). In each block, one accent served as the frequent standard and the other as the infrequent deviant. Research questions (RQ): 1) are accents detected in early stages of phonetic processing, 2) is the MMN modulated by accent familiarity, and 3) can accent be generalized across different talkers. A late MMN suggests a positive response to RQ2 and RQ3, but not to RQ1, as detecting accented speech changes occurs approximately 400 ms post-stimulus onset. Finally, we correlated MMN magnitudes with individual participant exposure ratings; results trend toward indicating that increased exposure with CE leads to larger MMN magnitudes. Overall, the brain appears to use low-level acoustic cues to generalize talkers by accent but detecting accent changes results in effects observed in later brain responses.

Email: Lauren Hong, lauren.hong8@gmail.com

12:00-1:30 PM (5118)

Audiovisual Speech by L1 (Native) and LX (Nonnative) English Speakers. VIOLET A. BROWN, *Carleton College*, SALMA ALI, *Carleton College*, ALYSSA ALVAREZ, *Carleton College*, LAURIE AVILA, *Carleton College*, EMMA KUTCHER, *Carleton College*, TIFFANY NYAMAO, *Carleton College*, AMADOU TOURÉ, *Carleton College*, JULIA STRAND, *Carleton College* — One of the most robust findings in the speech literature is that listeners can understand speech more successfully when they can see the talker in addition to hearing their voice. However, there is considerable debate about whether seeing a talker’s face increases or decreases the cognitive and attentional requirements for successfully processing speech (listening effort) relative to hearing alone. The current study assessed listening effort and speech

intelligibility at a range of SNRs. In addition, it sampled both L1 (native) and LX (nonnative) speakers of English to assess whether and how language background affects these findings. Effects of SNR and modality (audio-only vs. audiovisual) were present for both L1 and LX participants for both speech intelligibility and listening effort, though the magnitude of some effects differed across groups.

Email: Violet Brown, violetbrown@carleton.edu

12:00-1:30 PM (5119)

The Neurocognitive Correlates of Talker-Specific Adaptation to Spanish-Accented Speech. HOLLY A. ZAHARCHUK, *The Pennsylvania State University*, JANET G. VAN HELL, *The Pennsylvania State University* — We investigated the relative contributions of acoustic-phonetic and lexico-semantic levels of processing to talker-specific perceptual adaptation. While behavioral paradigms consistently exhibit rapid improvements in performance with exposure to L2-accented talkers, the effects of perceptual adaptation on neural signatures are less clear. To clarify previous findings and bring them in line with the behavioral literature, we conducted an EEG experiment exposing listeners to a Spanish-accented talker’s VOT-voiceless stop mappings. Listeners gained experience with ambiguous onsets in the context of multisyllabic real words like “passage.” We probed the status of the adaptation process with monosyllabic real words like “park” that have voiced stop onset competitors like “bark.” We investigated changes in processing the ambiguous monosyllabic words as a function of systematic exposure to the unambiguous multisyllabic words in a primed cross-modal go/no-go lexical decision task. We observed differences in VOT encoding on the N1 and in phonetic categorization on the P2, which emerged as differences in priming on the N400 disappeared. Our results suggest that changes in acoustic-phonetic representations drive adaptation.

Email: Holly Zaharchuk, haz15@psu.edu

12:00-1:30 PM (5120)

Age of Acquisition Effects in Audiovisual Speech Perception in Noise. SITA CARRATURO, *University of Iowa*, KRISTIN J. VAN ENGEN, *Washington University in St. Louis* — Bilingual listeners usually perform worse than monolinguals on speech-in-noise tasks, such that those who began acquiring the target

language later perform worse than those who began acquiring it earlier. However, less is known about the extent to which bilinguals benefit from seeing the talker's face and mouth for speech perception in noise. The inverse effectiveness hypothesis would predict that because bilinguals are more negatively affected in a single modality, they may benefit more than monolinguals from a second modality. If this is the case, then bilinguals who acquired the language latest would benefit the most. On the other hand, the ability to leverage visual cues may be limited by the years of exposure to that language. In this study, we measure speech recognition accuracy in noise in both audiovisual (AV) and audio-only (AO) modalities among monolingual listeners and simultaneous, early, and late bilingual listeners. Preliminary analyses reveal a main effect of modality (AV > AO); a main effect of listener group (bilinguals < monolinguals), and an interaction that reveals that late and early bilinguals' speech recognition improves more in the AV relative to the AO condition than it does for the monolingual listeners.

Email: Sita Carraturo, sitacarraturo@gmail.com

12:00-1:30 PM (5121)

Auditory-Visual Benefits for Learning a Second Language in Older and Younger Adults. HAO CHEN, *Washington University in St. Louis*, MITCHELL SOMMERS, *Washington University in St. Louis* — Although there has been considerable research demonstrating the benefits of both seeing and hearing a talker (auditory-visual; AV) compared to listening only (auditory-only; A-only), there has been relatively little research examining AV benefits for learning a second language (L2). The current study investigated how three different modalities—audio-only, audio+picture, and audio+lipreading—might affect older and younger adults' ability to learn the pronunciation and meaning of Mandarin words. Forty-eight younger adults and 36 older adults who reported as native English speakers were recruited for this study. All participants learned 24 Mandarin words in three conditions presented by six talkers; after that, they completed a pronunciation test and a meaning test. The results showed that there were no significant differences between A-only and AV conditions for older adults. Although younger adults performed significantly better overall, as with the older adults, there was no notable advantage observed between the different conditions. The marginally better performance of older adults in the audio-only condition

may imply that additional visual information could require more cognitive resources for older adults to process.

Email: Hao Chen, haonorac@gmail.com

12:00-1:30 PM (5122)

Bilingual Adults Are Sensitive to Natural Acoustic-Phonetic Cues to Code-Switching in Unfamiliar Languages. ERIKA EXTON, *University of Maryland*, ROCHELLE S. NEWMAN, *University of Maryland* — In bilingual speech production, acoustic-phonetic properties of one language may transfer to the other close to a code-switch; for example, English stop consonants may be more Spanish-like near a switch. Acoustically natural code-switching may be easier for bilingual listeners to comprehend than code-switching without these acoustic changes. However, it is unclear whether this benefit is driven by lexical and phonological knowledge of the languages or a general perceptual sensitivity to the acoustic-phonetic changes in code-switching. In this study, listeners with minimal knowledge of French and Mandarin listened to a bilingual speaker tell stories while code-switching and identified the language being spoken. Passages were created by splicing together segments of each language from unilingually-recorded stories or from stories recorded with natural code-switching. Spanish-English bilingual adults (particularly those who heard code-switching often), but not English monolinguals, identified a language switch more quickly when those natural acoustic cues to French-Mandarin code-switching were present. Such cues were particularly helpful when they occurred prior to an upcoming language switch, rather than following the switch.

Email: Erika Exton, exton@terpmail.umd.edu

12:00-1:30 PM (5123)

Integration of Face Cues and Acoustic Cues During Native- and Nonnative-Accented Speech Processing. DAISY LEI, *The Pennsylvania State University*, JANET G. VAN HELL, *The Pennsylvania State University* — The cue integration model (Martin, 2016) posits that psycholinguistic cues, whether visual or auditory, are reweighted based on the reliability of the cue and integrated during speech processing. This study examined the integration of face cue predictability and native- and nonnative-accented English speech by manipulating the face cue predictability of a speaker's

accent: Two speakers produced one accent (American or Chinese), two speakers produced two accents (American and Chinese). First, listeners ($N=29$) were familiarized with each speaker's number and type of accent(s). Then, they completed an auditory go/no-go animal decision task where the no-go items were critical words and nonwords. Listeners saw a face cue (speaker image) briefly before speech onset and concurrently with the speech. Pre-speech ERP results revealed that listeners processed face cues with regards to the predictability of speech accent. Post-speech ERP analyses revealed N400 lexicality effects for native-accented speech, and face cue predictability effects for nonnative-accented speech. Listeners integrated face cues and auditory cues during nonnative-accented speech processing, but not during native-accented speech.

Email: Daisy Lei, dul261@psu.edu

12:00-1:30 PM (5124)

EEG Correlates of Vocabulary Comprehension in Adult Learners and Fluent Speakers of Turkish. MAX J. LOBEL, *University of Florida*, JULIA MOSES, *CUNY Graduate Center*, ARSHIA K. LODHI, *CUNY Graduate Center*, MAYA ROSE, *Thynk Inc*, VALERIIA MODINA, *CUNY Graduate Center*, SABINA SHARIFOVA, *CUNY Graduate Center*, VALERIE SHAFER, *CUNY Graduate Center*, PATRICIA J. BROOKS, *College of Staten Island, CUNY* — Research on neural correlates of vocabulary comprehension in learners of agglutinative languages is sparse. This study extended and expanded on findings from studies of Indo-European languages. We examined EEG correlates of noun (semantic) error detection in a picture-word verification task in adult learners ($N=36$) and fluent speakers ($N=18$) of Turkish. Prior to EEG, learners completed two computer-assisted language learning sessions where they heard 36 Turkish nouns in spoken dialogues. In the EEG session, nouns appeared in syntactic contexts (inflected for dative or ablative case) or in citation (nominative) forms. Learners were accurate in detecting semantic errors ($M=95.0\%$ for nominative forms, $M=90.9\%$ for dative/ablative forms). Both learners and fluent speakers showed an increased negativity to semantic errors (N400) with an extended time course; however, the N400 was smaller in magnitude in learners than fluent speakers. We also examined visual onset data as an indicator of processing load. This analysis showed a larger N170 for processing the more complex scenes paired with the dative/ablative

forms. Further analyses will examine ERPs in response to case and number errors as indicators of grammatical sensitivity.

Email: Max Lobel, maxlobel@ufl.edu

12:00-1:30 PM (5125)

Effects of Accent Familiarity and Rhythmic Abilities on Cognitive Load in L2 Listening: An Individual Difference Approach. BRIAN W. L.

WONG, *Basque Center on Cognition, Brain & Language (BCBL)*, EFTHYMIA C. KAPNOULA, *Basque Center on Cognition, Brain & Language (BCBL)* & Ikerbasque, ARTHUR G. SAMUEL, *Basque Center on Cognition, Brain & Language (BCBL)*; *Ikerbasque; Stony Brook University*, DREW MCLAUGHLIN, *Basque Center on Cognition, Brain & Language (BCBL)* — Building on prior work that has examined accent perception by first language (L1) listeners, we investigate the roles of accent familiarity and rhythmic abilities in accent perception by non-native (L2) listeners. We use pupillometry (measurement of pupil dilation over time) to assess the cognitive load experienced by Spanish (L1)-English (L2) bilinguals when they listen to speech in American-accented English, Spanish-accented English, and Mandarin-accented English. Individual differences are also examined, focusing on the roles of accent familiarity, perceptual and productive rhythmic abilities, and productive rhythmic pattern (i.e., the degree of stress-timing in participants' English sentence production) in L2 speech perception. Preliminary data show that listeners exhibited the largest cognitive load when they listened to American-accented English. Unlike syllable-timed Spanish and Mandarin, English is a stress-timed language. Therefore, differences between L1 and L2 rhythmic patterns may be an important factor affecting cognitive load in L2 speech perception.

Email: Brian W. L. Wong, b.wong@bcbl.eu

12:00-1:30 PM (5126)

Individual Differences in Learning and Generalizing a Complex Motor Skill. C. SHAWN GREEN, *University of Wisconsin-Madison*, LAUREN E. ANTHONY, *University of Wisconsin-Madison*, EZGI MELISA YUKSEL, *University of Wisconsin-Madison*, EMMA G. CUNNINGHAM, *University of Wisconsin-Madison*, LEVI A. KASTEN, *University of Wisconsin-Madison* — While there is a sizeable literature examining

individual-level predictors of the capacity to learn, there is comparably less data focused on individual-differences in the ability to generalize learning. Here we examined such differences in the context of a difficult-to-learn visuo-motor skill: piloting a mini-copter. In Experiment 1, participants first underwent an individual-differences battery (e.g., basic cognitive and motor skills; lifestyle/habits survey). They then underwent four sessions of learning to fly a mini-copter on a set course. Finally, they underwent a generalization session, where they had to fly the same copter in multiple new ways (e.g., new direction, new course). Experiment 2 largely mirrored Experiment 1, with the exception of additional generalization tasks being introduced (e.g., changing viewpoint, hardware, VR). Several base cognitive/motor functions were seen to be related to aspects of learning and/or generalization (e.g., speed of processing, fluid intelligence, motor dexterity) as were certain lifestyle habits (e.g., history of video game play). This correlational work provides a foundation for future work attempting to causally enhance individuals' ability to generalize perceptuo-motor learning.

Email: C. Shawn Green, cshawn.green@wisc.edu

12:00-1:30 PM (5127)

Manipulating Task Difficulty for Placebo Effect

Studies in Cognitive Training. FREYA JOESSEL, *University of Wisconsin–Madison*, SUSANNE M. JAEGGI, *Northeastern University*, AARON R. SEITZ, *Northeastern University*, C. SHAWN GREEN, *University of Wisconsin–Madison* — There is significant interest in whether participant expectations about the impact of cognitive training affects the magnitude of that impact. While correlational designs can be informative in addressing this question, a potentially stronger design is to experimentally manipulate participant expectations. One such paradigm is a slight modification of a standard pre-test → training → post-test design where a “mid-test”, whose sole purpose is to provide “evidence” to the participants that they are/are not improving on the cognitive outcome measures, is inserted halfway through the training. This is done by creating versions of the pre-/post-test tasks that feel easier/harder (e.g., a mid-test task that “feels” easier would provide evidence to the participant that they have improved). However, creating tasks that “feel” easier/harder without it being obvious to participants what was changed is not trivial. Here, we present eight cognitive tasks spanning several domains of cognition where we inconspicuously manipulated task

difficulty (i.e., participants are aware that the tasks are easier/harder but can't appropriately attribute that to task changes), opening a number of opportunities for surreptitiously manipulating task difficulty.

Email: Freya Joessel, joessel@wisc.edu

12:00-1:30 PM (5128)

Rethinking Relations: Limitations of Pre-

Training in Relational Rule Learning. JULIA J. CONTI, *Carnegie Mellon University*, KENNETH R. KOEDINGER, *Carnegie Mellon University*, PAULO F. CARVALHO, *Carnegie Mellon University* — Relational reasoning—crucial for analogy, language, and mathematics—involves complex rule acquisition whose mechanisms remain largely unknown. Building on existing research, we hypothesized that mastering component rules enhances learning of more complex integrated relational rules. We created an analog of a math task for judging whether one integer is greater than another, where shapes (triangle, square) represent integers (3, 4), colors (green, red) represent sign (+/-), and spatial arrangement (above) depicts the comparison (greater than). We randomly assigned participants (n=200) into four groups, manipulating pre-training to mastery on one sub-rule (e.g., 4>3?, -4>-3?, or -3>4?) prior to training on the full task with all sub-rules. A fourth group did the full task twice. Mastery in pre-training was a significant predictor of overall success in the full task. Interleaved practice of the sub-rules without pre-training appeared most effective, yet low overall mastery after extensive trials suggests significant interference between sub-rules. This research reveals challenges in relational rule learning and suggests hypotheses for the key contributions to those challenges, including memory of prior examples and interference.

Email: Julia Conti, jjconti@andrew.cmu.edu

12:00-1:30 PM (5129)

Does Studying Latin Produce Cognitive Transfer Effects? A Cross-Sectional and Longitudinal Approach.

CATHY HAUSPIE, *Ghent University*, WOUTER DUYCK, *Ghent University*, STIJN SCHELFHOUT, *Ghent University*, ALEXANDRA VEREECK, *Ghent University*, MARK JANSE, *Ghent University*, ARNAUD SZMALEC, *Université Catholique de Louvain* — Despite ongoing discussions regarding the relevance of Latin in modern education, this language still holds a prominent role in European

secondary school curricula. While studying Latin is commonly believed to yield cognitive and linguistic benefits, it remains unclear whether the benefits associated with Latin studies are due to students' superior pre-existing abilities or to cognitive transfer effects elicited by studying the language. As such, we gathered data from N=1,731 Flemish secondary school students across three grades. We explored whether a Latin advantage exists, and if so, for which subjects, when this advantage arises and how it evolves throughout secondary education. We found that first-year Latin students exhibit higher intelligence scores and superior native language competencies and meta-linguistic awareness compared to non-Latin peers. This performance difference was larger in the second year, but smaller in the last year of secondary education, thereby challenging the notion of cognitive transfer effects attributed to Latin studies. Preliminary longitudinal work will be presented as well, which is crucial to causally explore the existence of transfer effects that may arise as a result of Latin education.

Email: Cathy Hauspie, cathy.hauspie@ugent.be

12:00-1:30 PM (5130)

Believing the Unbelievable: Exploring the Relationship Between Extremist Beliefs and Epistemically Unwarranted Beliefs. RACHEL M. HEITER, *Georgia State University*, HEATHER M. KLEIDER-OFFUTT, *Georgia State University* — Popular media has suggested a strong connection between endorsement of extremist beliefs and other epistemically unwarranted beliefs (EUBs; e.g., misinformation, conspiracy theories) without much empirical evidence. This study investigates whether there is a relationship between people who endorse extremist beliefs and the tendency to believe in EUBs. Participants read novel vignettes in which they evaluated their aggressive responses toward actors who violated personal values of victims. Responses were evaluated using a correlation matrix analysis to determine the relationship between the endorsement of aggressive responding, substantiated measures of EUBs (e.g., the Misinformation Susceptibility Test [Maertens et al., 2023]) and extremist beliefs (e.g., Activism and Radicalism Intention Scales [Moskalenko & McCauley, 2009]). Preliminary results of a sample of 161 individuals suggest that endorsement of extremist beliefs may not be related to the endorsement of EUBs, indicating that, despite sharing a basis in non-reality,

these categories may represent two separate belief structures.

Email: Rachel Heiter, rheiter1@student.gsu.edu

12:00-1:30 PM (5131)

Examining Ancestral Properties in the Survival Processing Advantage Using DRM Lists. I-AN SU, *Cornell University*, MICHAEL P. TOGLIA, *Cornell University*, C. J. BRAINERD, *Cornell University* — Some research has shown that survival processing and survival-related materials enhance both true and false recollection, possibly due to their adaptive significance and other proximate mechanisms. This study addresses, in a fully crossed design, ongoing debates regarding whether the advantage conferred by survival processing and materials arises from their immediate survival value or their ancestral properties. We manipulated various types of survival processing, including scenarios such as "grassland-predator" reminiscent of ancestral conditions and modern scenarios like "city-attacker," along with a pleasantness condition. Material types were also varied, such as DRM word lists involving basic needs words containing ancestral properties, DRM word lists involving basic needs containing modern properties, and non-survival-related DRM word lists. Does the memory advantage primarily stem from immediate survival relevance regardless of context or ancestral connections to Stone Age environments? Conclusions regarding this debate and interpretations of our findings in terms of the fuzzy trace theory are discussed.

Email: I-An Su, milkyamy@gmail.com

12:00-1:30 PM (5132)

Explicit Recollection of Remindings Reduces False Memory. KATHERINE R. CHUREY, *University of Guelph*, CHRIS M. FIACCONI, *University of Guelph* — Individuals oftentimes encounter experiences that are similar to those they have experienced before. These similarities can lead to spontaneous remembering, where the current experience serves as a reminder of previous similar experiences. Remindings, when accompanied by explicit recollection of previous experiences, have been demonstrated to boost later memory for the current experience. However, the consequences of reminding for false memory remain unclear. We hypothesized that remindings may protect against instances of false memory driven by similarities between studied experiences when those remindings are later recollected

at test. Indeed, we found that remindings accompanied by subsequent exhaustive recollection of related study items reduced instances of false memory in a Deese-Roediger-McDermott (DRM)-like paradigm, particularly when compared to reminding alone. Importantly, this research advances our understanding of the potential mnemonic consequences of reminding and may assist in developing new ways to reduce false memory.

Email: Katherine Churey, kchurey@uoguelph.ca

12:00-1:30 PM (5133)

Exploration into the Neural Underpinnings of Semantic and Perceptual False Memory Formation in Younger Adults.

LUKE DUBEC, The Pennsylvania State University, REBECCA L. WAGNER, The Pennsylvania State University, JOHN T. WEST, The Pennsylvania State University, NANCY A. DENNIS, The Pennsylvania State University — The aim of the current research was to clarify common and distinct neural factors contributing to false memories across memory domains. To investigate this question, 24 younger adults underwent fMRI while completing semantic and perceptual memory tasks designed to induce false memories for related lures at retrieval. Specifically, retrieval stimuli were divided into items from the encoding phase (targets) and new items that were perceptually similar or semantically related to targets (lures). Building from our previous work showing domain general cognitive processes influence false memory production (West et al., under review) and consistent with past false memory research, false memory activity, irrespective of memoranda, was found to be mediated by common neural activity in medial prefrontal cortex and inferior parietal cortex. Domain-specific activation was also observed in several other cortical areas. This work is a necessary step toward a more textured understanding of how false memories are produced and how they can be avoided.

Email: Luke Dubec, lukedubec5@gmail.com

12:00-1:30 PM (5134)

Influence of Source Credibility on Memory Distortion: A Study of the May 27, 1960, and July 15, 2016, Coups in Turkey.

DEVRİM GÜNEY GÖNENLİ, TED University, SEZİN ÖNER, Kadir Has University, TUGBA UZER, TED University, SAMİ GULGOZ, Koç University, DİLİN GÖNÜL, Kadir Has University — Media sources significantly shape our

understanding of public events, with people often believing false narratives. Most research on evaluating information accuracy has focused on the biasing effects of motivated processing, such as the tendency to prefer and positively evaluate information that aligns with one's beliefs. We investigated how recollection of two events (May 27, 1960, coup and July 15, 2016, coup attempt) changes based on news source reliability and correction credibility. Initially, 228 participants aged 18-65 completed a knowledge test on these events. They then read texts containing misleading information, attributed to a respected history professor, documentary or TV series or without source information. Participants retook the knowledge test afterward. Findings reveal misinformation's misleading impact, regardless of source. This effect is particularly notable for the distant past event, the May 27, 1960, coup, and among younger adults.

Email: Devrim Güney Gonenli, dguney.gonenli@edu.edu.tr

12:00-1:30 PM (5135)

Reality Monitoring for Perceived and Imagined Information in Bilinguals.

ALEKSANDRA DOLGOARSHINNAIA, Centre for Cognition and Decision Making, HSE University, BEATRIZ MARTÍN-LUENGO, Centre for Cognition and Decision Making, HSE University — Reality monitoring (RM) is a particular type of memory monitoring required to distinguish between internally and externally generated memories. Previous studies indicate differences in bilingual memory monitoring depending on the language of information, yet these differences are not fully understood. We tested 112 Russian-English bilinguals using a 2 language (Russian, English) x 2 modality (perceived, imagined) within-subject paradigm. We did not find significant differences in memory performance related to the language in which information was encoded. However, overall recognition for perceived items was better than for imagined items. Further investigating modality monitoring, we found that participants made externalization mistakes: when a stimulus was in the imagined condition, they would erroneously attribute it to the perceived condition rather than say it was new; and when a stimulus was in the perceived condition, they would rather say it was new than attribute it to the imagined condition. This study expands the findings of previous research showing language-dependent differences in self-other RM and

provides new insights into information processing in bilingual populations.

Email: Aleksandra Dolgoarshinnaya, dolgoarshinnayaav@gmail.com

12:00-1:30 PM (5136)

Source Memory, Wishful Thinking, and Emotion.

CHACE LAFFIN, *University of Manitoba*, JASON P. LEBOE-MCGOWAN, *University of Manitoba* —

Wishful thinking has been shown to impact an individual's ability to accurately source monitor (Gordon, Franklin, & Beck, 2005). The aim of this study was to replicate the wishful thinking bias seen in Gordon et al.'s. (2005) study and add to the literature by seeing if one's mood impacts this wishful thinking bias. By using updated stimuli (Experiment 1), this study successfully replicated the wishful thinking bias on source memory (Experiment 2). Research has also shown that the valence of stimuli as well as the mood of an individual can impact their susceptibility to memory distortions. Mood induction in Experiment 4 was shown to be effective by establishing the effects of the induction procedure in Experiment 3. Experiment 4 successfully replicated the findings of a wishful thinking bias on source monitoring accuracy, shown by Gordon et al. (2005) and that we also replicated in Experiment 2, however there was no impact of an individual's mood state on the accuracy of source monitoring or the wishful thinking bias. I discuss these results in reference to existing empirical findings and theoretical accounts of the contribution of mood and other affective factors to performance on source memory tasks.

Email: Chace Laffin, laffinc3@myumanitoba.ca

12:00-1:30 PM (5137)

The Effect of Encoding Strategies on False Memories.

MICHAEL J. DOW, *Illinois State University*, DAWN M. MCBRIDE, *Illinois State University* — The current study was designed as a replication and extension of Coane et al.'s (2020) feature boost effect, using the DRM paradigm to create simple false memories for words related to studied lists. Coane et al. (2020) found that taxonomically-related lists increase false memories when compared to associative lists without taxonomic relation. We examined the effect of encoding instruction (item-specific vs. relational encoding) on the feature boost effect. Huff and Bodner (2013) found that with non-taxonomic lists, item-specific encoding reduced false memories, whereas relational encoding led to more false memories. All 118

participants viewed both taxonomic and non-taxonomic related lists under one of the three encoding conditions and then were given an old-new long-term recognition test. The results showed a replication of the feature boost effect. Participants had significantly more false memories related to taxonomic than non-taxonomic lists. However, there was no evidence of an effect of encoding condition. Thus, the feature boost is a robust effect across studies, but was not affected by encoding instruction.

Email: Michael Dow, mjdow@ilstu.edu

12:00-1:30 PM (5138)

The Effects of Correction Type and Source

CREDIBILITY ON THE BELIEF IN FAKE NEWS.

AARON C. GOLDMAN, *University of North Carolina at Greensboro*, PAIGE L. KEMP, *University of North Carolina at Greensboro*, ANDREW ENGELHARDT, *Stony Brook University*, ROBERT W. WILEY, *University of North Carolina at Greensboro*, CHRISTOPHER N. WAHLHEIM, *University of North Carolina at Greensboro* — Restating misinformation before correcting it reduces false beliefs more than correcting it with only true information. Correction effectiveness may also depend on the trustworthiness of news sources. The present experiment examined the roles of correction type and source credibility on beliefs in fake news headlines. Conservatives and liberals read both true and false social media headlines attributed to media outlets affiliated with different political leanings (e.g., Fox News, CNN). False headlines were later corrected by a source affiliated with the opposite political leaning. We expected that corrections would reduce false beliefs more when a politically congruent source refuted misinformation from a politically incongruent source. Restating false information before presenting true information reduced false beliefs more than only presenting true information regardless of political congruence. Partisans initially believed false information more from congruent than incongruent sources, but the magnitudes of false beliefs after corrections were comparable regardless of the source. These results suggest that mnemonic and social variables may independently affect how information is perceived when evaluating headline veracity.

Email: Aaron Goldman, acgoldman@uncg.edu

12:00-1:30 PM (5139)

The Fragility of Reality Monitoring under Extraneous Factors.

SAURABH RANJAN,

University of Florida, BRIAN ODEGAARD, *University of Florida* — When we recall information stored in memories, how do we know whether that information was previously perceived or imagined? The cognitive ability to discriminate past perceptions from imagination is called “reality monitoring.” In our experiment, participants either saw or imagined the second word of a word pair during an encoding phase; later in the test phase, they had to judge whether the second word was previously perceived, imagined, or new, and rate confidence in their judgment. We manipulated two between-subjects factors during encoding: task demands (incentivizing speed or accuracy) and the requirement to type (and see) the word they imagined (yes or no) to evaluate how these factors influence task accuracy and metacognitive ability. Results showed that for imagined experiences, when speeded judgments were required, typing/seeing the imagined word during the encoding phase significantly reduced task performance and metacognitive ability (measured as the Goodman and Kruskal's Gamma coefficient between accuracy and confidence). Together, these findings show how externalizing what we imagine influences our memories, and reveal the fragility of reality monitoring under time pressure during source recognition.

Email: Saurabh Ranjan, its.saurabh.ranjan@gmail.com

12:00-1:30 PM (5140)

The Order of (Mis)Information Affects Event Memory. NICOLE ANTES, *Leibniz-Institut für Wissensmedien*, MARKUS HUFF, *University of Tübingen*, GABRIEL A. RADVANSKY, *University of Notre Dame* — It is difficult to differentiate between what is true and what is not in today’s world of fake news and alternative facts. Misinformation can spread rapidly, often unintentionally, leading people to believe something that is inaccurate. Our research investigated how two competing causal sources of information encountered at different times during an event description affect memory of that event. Our first study ($N=67$) found a post-event misinformation effect (correct first; incorrect second) with written texts (rather than videos and questions). Our second study ($N=51$) found a continued influence effect with a reversed order of accurate and misleading causes (incorrect first; correct second). Thus, we found both misinformation effects. Our third study ($N=54$) showed that by presenting incorrect and correct causes in direct relation, the influence of misinformation was reduced. Our research

stresses the importance of understanding the interplay between order effects and memory updating, providing valuable insights into the dynamics of misleading information on memory.

Email: Nicole Antes, n.antes@iwm-tuebingen.de

12:00-1:30 PM (5141)

The Role of Emotional State and Emotional Content in Forming False Memory and Beliefs for Fake News. AFRODITI A. ASIMAKOPOULOU, *University College Dublin*, CIARA GREENE, *University College Dublin* — Memories are often vulnerable to distortion and decay. Bower’s Network Theory of Affect suggests that people’s emotional state influences their memory, perception, judgment, and thinking in predictable ways. This research investigated the influence of emotional state on memories and beliefs for emotionally-laden fake news content. Emotional images and music were used to induce participants ($n=811$) into positive or negative mood states with high or low arousal. Participants were then shown true and false news headlines with either positive, negative, or neutral content, and asked whether they remembered the headline and how believable they found it. Participants reported more false memories for neutral than negative or positive news headlines, and more false beliefs for negative than positive or neutral news headlines. Participants also reported more false memories for fake news when in a positive emotional state. This research sheds light on how memory reconstruction may be influenced by emotional processes.

Email: Afroditi A. Asimakopoulou, alexandra.asimakopoulou@ucdconnect.ie

12:00-1:30 PM (5142)

Integration of False Information in the Organization of Individual and Collective Memory: Putting Together the Puzzle Pieces of True and False Memory. GARRETT D. GREELEY, *Stony Brook University*, SUPARNA RAJARAM, *Stony Brook University* — Memory is error prone, susceptible to social influence, yet organized. We conducted three experiments to examine how these characteristics interact, which has important theoretical implications for how false memories become embedded and integrated with true memories. Across experiments, participants studied word lists known to produce high levels of false recall (DRM stimuli) before completing two individual

recall phases separated by a re-exposure phase (including true and false material; Experiment 1A, 1B, and 2) or a collaborative recall phase (organic social exposure to true and false material; Experiment 2). Expectedly, explicit exposure to false information increased false memory for that information downstream. Critically, novel analyses suggest that false memories emerged in a rich semantic context; falsely recalled words were preceded and followed by semantic associates, with these erroneous memories gaining prominence in a subsequent recall, becoming more likely to serve as retrieval cues for related true memories. These results suggest that false memories can quickly become enmeshed with true memories, gaining power by providing important scaffolds for the dynamic reconstructive processes that unfold during retrieval.

Email: Garrett Greeley, garrett.greeley@gmail.com

12:00-1:30 PM (5143)

Perceptual Comparisons Are Necessary and Sufficient for the Persistence of Memory Biases

Across Time. JOSEPH M. SAITO, *University of California, San Diego*, SUSANNE FERBER, *University of Toronto*, MORGAN D. BARENSE, *University of Toronto*, KEISUKE FUKUDA, *University of Toronto Mississauga* — Basic and applied research suggest that comparing visual memories to new visual inputs can produce permanent biases in observers' recollections. Here, we tested whether performing a single comparison is necessary and sufficient for lasting biases to emerge. We asked observers to encode colored object silhouettes into their memory in anticipation of testing immediately after encoding and 24 hours later. At each test, after recalling a target silhouette to mind, we presented a uniquely colored probe version of the target that observers either ignored or compared to memory to judge its similarity. Then observers either reported the target color from a continuous wheel or searched for an uncolored letter instead. Critically, all targets tested right after encoding were tested again after the 24-hour delay in a report condition without the probe. We found that report biases following comparisons, but not passive viewing, were able to persist across time, even when the target was not reported initially. Using modeling, we show that these persistent biases can be explained by the integration of the probe and report into one's memory of the target. Thus, perceptual comparisons may provide a unified account of visual memory distortion.

Email: Joseph Saito, jmsaito25@gmail.com

12:00-1:30 PM (5144)

True and False Recognition in MINERVA2: Integrating Fuzzy-Trace Theory and Computational Memory Modeling. M. CHANG, *Trinity University*, BRENDAN JOHNS, *McGill University*, C. J. BRAINERD, *Cornell University* — In the current study, we employed a modified MINERVA2 model to simulate a broad range of Deese-Roediger-McDermott (DRM) false memory effects. Specifically, we incorporated two of fuzzy-trace theory's core assumptions into MINERVA2. First is the verbatim-gist distinction: We integrated both gist representation (distributed semantic vectors) and verbatim representation (holographic word-form vectors) into MINERVA2. Second is the hierarchy of gist: We added a model assumption that an item's storage quality depends on its similarity to the preceding item, which accommodated the effect of global gist beyond that of local gist. Our model successfully accounted for both benchmark false recognition results and some counterintuitive findings (e.g., effects of list blocking, generation, study repetition, etc.), alongside phenomenological judgment data (e.g., remember/know judgments). Our work illustrated the advantages of scalable cognitive modeling and strengthened the connections between computational models and substantive theories of false memory.

Email: M. Chang, minyuchangmc@gmail.com

12:00-1:30 PM (5145)

The Impact of Acute Exercise on Implicit and Explicit Memory. WILLIAM MATTHEW COLLINS, *Nova Southeastern University*, LEANNE BOUCHER, *Nova Southeastern University*, AMANDA HORVAHT NAKIB, *Nova Southeastern University*, CAMILLE MATUSKY, *Nova Southeastern University*, ISAAC HAI, *Nova Southeastern University*, KAYLEE HAMBLEN, *Nova Southeastern University*, ANNABELLA CANO, *Nova Southeastern University*, GABRIELA MARTINEZ, *Nova Southeastern University* — Research has consistently demonstrated that exercise positively impacts cognition, including memory. However, less is known about how acute bouts of exercise specifically impact implicit memory. The current study compares the effects of exercise on short and long-term explicit and implicit memory. Participants first read a story containing 30 target words. Then, participants either ran for 30 minutes while watching a documentary, ran while

listening to a documentary, or sat while watching a documentary. Following this, to measure short-term implicit memory, participants completed a lexical decision task (LDT) which included the 30 target words. To measure short-term explicit memory, they completed tests for the story and the documentary. To assess long-term implicit and explicit memory, two days later participants returned and completed another LDT and memory tests for the story and the documentary. Results indicate that exercise did not benefit either implicit or explicit memory.

Email: William Collins, wc292@nova.edu

12:00-1:30 PM (5146)

Eye Movements in Implicit Learning of Simple and Complex Grammars. IRINA LAVROVA, *Texas Tech University*, MIRANDA SCOLARI, *Texas Tech University*, ANTO JUDE MOHAN, *Texas Tech University* — Implicit learning provides insights into how individuals make inferences and acquire structural knowledge without conscious awareness. This study used an artificial grammar learning (AGL) paradigm to investigate eye movement patterns that indicate the formation of implicit knowledge of artificial grammar after a brief exposure to the examples of such grammar. Sixty participants were presented with positive examples of words created using artificial grammars of different complexity. During a surprise grammaticality judgement task participants showed increased eye-movements to a violating target letter as indicated by dwell time and number of fixations. Grammar complexity did not significantly influence eye-movements patterns, despite previous studies showing it negatively impacts performance on behavioral AGL tasks (Van Den Bos & Poletiek, 2008). The findings support the structural view of AGL, which suggests that exposure to grammatical sequences enables the detection of patterns governing elements in complex letter sequences, a process similar to the implicit acquisition of syntax in natural language (Dominey et al., 2003).

Email: Irina Lavrova, irina.lavrova@ttu.edu

12:00-1:30 PM (5147)

Insights from Encoding: Memory-Based Viewing Effects With and Without Awareness. DANA SLABBEKOORN, *University of Wisconsin–Milwaukee*, DEBORAH E. HANNULA, *University of Wisconsin–Milwaukee* — Previous work suggests that eye

movements are sensitive to changes in encoded scenes (e.g., object deletions) that go undetected in explicit reports. However, the proposed sensitivity of eye movement behavior to memory for scene changes without awareness is contentious, and effects have not always been replicated. One factor that may be contributing to differences in reported outcomes has to do with whether critical scene regions were attended during encoding. It is possible that to-be-modified scene details were not attended and/or encoded for some of the scenes categorized as “unaware” for changes at test. To explore this possibility, we will use viewing time metrics from the encoding phase (i.e., critical object viewing) in analyses that examine memory-based viewing effects during test. Preliminary results show a significant positive correlation between viewing time directed to a critical object during encoding and the amount of viewing time spent looking at the same, “now-empty,” region, at test, with and without awareness of the change. Results are expected to provide additional insights into questions about the representation of information in memory that is inaccessible to awareness.

Email: Dana Slabbekoorn, slabbek2@uwm.edu

12:00-1:30 PM (5148)

'That's Just Like, Your Opinion, Man': The Illusory Truth Effect on Opinions. JOSH WOODS, *Grand View University*, PAUL RIESTHUIS, *KU Leuven* — People tend to perceive repeated information, regardless of its veracity, as more truthful than new information, also known as the illusory truth effect (ITE). Across three experiments, participants were presented with a list of true information, misinformation, general opinion, and/or social political opinion statements. Participants were either instructed to indicate whether the presented statement was a fact or opinion based on its syntax structure (Experiments 1 & 2) or assign each statement to a topic category (Experiment 3). Subsequently, participants rated the truthfulness of various new and repeated statements. Results showed that repeated information, regardless of the type of information, received higher subjective truth ratings when participants simply encoded them by assigning each statement to a topic. However, when general and social political opinions were encoded as an opinion, we found no evidence of such effect. Moreover, we found a reversed illusory truth effect for general opinion statements when only considering information that was encoded as an opinion. These findings suggest that how

information is encoded plays a crucial role in evaluating truth.

Email: Josh Woods, jwoods@grandview.edu

12:00-1:30 PM (5149)

Auditioning the Singing Superiority Effect: A Meta-Analytic Review of the Production Effect for Singing. JEDIDIAH WHITRIDGE, *Memorial University of Newfoundland*, MARK J. HUFF, *The University of Southern Mississippi*, JASON OZUBKO, *SUNY Geneseo*, PAUL BÜRKNER, *Technische Universität Dortmund*, CHELSEA LAHEY, *Memorial University of Newfoundland*, JONATHAN FAWCETT, *Memorial University of Newfoundland* — The production effect (PE) refers to the finding that words read aloud are better remembered than words read silently. This finding is typically attributed to the presence of additional sensorimotor features, appended to the memory trace by the act of reading aloud, which render produced items distinctive in memory. Supporting this perspective, the PE tends to be especially large for singing, possibly due to the inclusion of further sensorimotor features (e.g., tone). However, this singing superiority effect (SSE) has not always replicated, with some studies showing similar benefits for reading aloud and singing. Across a series of meta-analytic models, we demonstrate an aggregate SSE ($MD=0.13$) that is much smaller than previous estimates have suggested (e.g., $MD=0.44$) and provide evidence that the effect emerges only when items are tested in the same colour in which they were studied. This outcome is inconsistent with common distinctiveness-based theoretical accounts of the PE.

Email: Jedidiah Whitridge, jww828@mun.ca

12:00-1:30 PM (5150)

Boost or Bust? Role of JOLs in Word Pair Recognition. ANTHONY CRUZ, *The University of Western Ontario*, JOHN PAUL MINDA, *The University of Western Ontario*, ANN NJERU, *The University of Western Ontario* — Making judgments of learning (JOLs) during study can improve later test performance. For example, JOLs improve cued recall for related (not unrelated) word pairs. This was first shown by Soderstrom et al. (2015) and has since been replicated many times, but it is unclear how JOLs affect word pair recognition. We expect that when word pairs are confusable, JOLs will enhance the likelihood of false memory endorsement. Participants in this experiment

studied word pairs with or without making concurrent JOLs, then took a cued recall test and a recognition test (counterbalanced order). In the recognition test, many cue words were paired with novel, related target words (e.g., LINEN-SHEETS vs. LINEN-BED). We believe JOLs will enhance feelings of familiarity for these cue words as well as unpresented associates, leading to high rates of false recognition. These results serve as the foundation for future work on JOL reactivity.

Email: Anthony Cruz, acruz27@uwo.ca

12:00-1:30 PM (5151)

Correct Me if I'm False: Does Corrective 'False' Feedback Improve Memory for Falsity? DARIA FORD, *University of Mannheim*, LENA NADAREVIC, *Hochschule Fresenius University of Applied Sciences* — In the research on memory for truth and falsity, an observed asymmetry often emerges: the truth of information is remembered better than falsity (Ford & Nieznański, 2023; Nadarevic & Erdfelder, 2019). One possible reason for this is that true information, as opposed to false, can be easily incorporated into our knowledge and utilized. This raises a question: how can "false" feedback be made more informative and therefore more memorable? To answer this question, we tested whether providing corrected information to false statements helps with memorizing it. We divided participants into two groups: control (participants who received feedback: "true" and "false"), and experimental (participants who received feedback: "true" and "false" with correction). In the experimental group participants remembered "false" feedback better than "true." A comparison between the two groups showed that memory for "false" feedback was improved when corrections were given. The results clearly demonstrate that corrective feedback boosts memory for the falsity of information.

Email: Daria Ford, daria.ford@uni-mannheim.de

12:00-1:30 PM (5152)

Directed Forgetting of Schema Consistent and Inconsistent Visual Information. YI-PEI LO, *University of Illinois Urbana-Champaign*, DILLON A. QUIÑONES, *University of South Dakota*, DIANE M. BECK, *University of Illinois Urbana-Champaign*, LILI SAHAKYAN, *University of Illinois Urbana-Champaign* — Intentional forgetting of unwanted information is a crucial cognitive function that is often studied with a

directed forgetting (DF) procedure, whereby cuing some study materials with a Forget (F) instruction impairs participants' memory compared to cuing with a Remember (R) instruction, a phenomenon termed as the DF effect. Prior research has shown that our general knowledge of the world (schemas) shapes how we perceive, understand, and store the information we encounter (Brewer & Treyens, 1981; Fei-Fei et al., 2007; Greene et al., 2015), but little is known about how schemas impact the ability of intentional forgetting. The present research explores how schemas affect the magnitude of intentional forgetting using the item-method DF paradigm. In Experiment 1, participants were shown schema-consistent and schema-inconsistent images followed by R and F cues and memory was examined with a recognition test. In Experiment 2, all images were familiarized in a preview phase prior to receiving F/R cues. Results showed that in both experiments, schemas, as well as their modification/update through the preview, interact with the DF effect.

Email: Yi-Pei Lo, yipeilo2@illinois.edu

12:00-1:30 PM (5153)

Distinct Hippocampal Connections Predict Recognition and Categorization Performance.

KYLA BRANNIGAN, *University of Oregon*, LEA FRANK, *University of Oregon*, DASA ZEITHAMOVA, *University of Oregon* — The hippocampus is a key contributor to our ability to remember both specific experiences and extract common information from these experiences to generate new knowledge. Hippocampus is thought to support each of these processes through interactions with distinct cortical regions, but specificity and generalization are typically studied using distinct tasks and stimuli. Here we investigate whether separate hippocampal connections track individual differences in memory specificity and memory generalization based on the same experiences. Participants underwent two fMRI scans while passively viewing face stimuli. Between the scans they learned to sort faces into categories. After scanning, they were tested both on their recognition of the training faces as well as their ability to generalize the previously learned categories onto new faces. We found that background hippocampal connectivity during passive face viewing was related to recognition and categorization success. Hippocampal connectivity with V1 predicted recognition ability while connectivity with right lateral occipital cortex predicted categorization

ability. Overall, this suggests that the hippocampus relies on distinct connections to support both memory processes.

Email: Kyla Brannigan, kylabran@gmail.com

12:00-1:30 PM (5154)

Do Losses Loom Larger Than Gains During Value Directed Encoding? GIZEM FILIZ,

Washington University in St. Louis, HENRY XIAO, *Washington University in St. Louis*, IAN G. DOBBINS, *Washington University in St. Louis* — People tend to remember high-value information better than low-value information (value directed encoding, VDE). VDE is rarely studied in the context of potential losses, particularly for recognition memory. This is a notable gap because behavioral economics suggests that subjects are highly motivated to avoid losses and that losses may capture more attention. Here, we compared the encoding of potential gain, loss, and neutral items across three recognition experiments that varied encoding time. VDE effects were absent when participants were given only 1 second to encode words (Experiment 1). When given unlimited encoding time, gain words were later recognized more often than loss words, which in turn were recognized more often than neutral words. Subjects also spent a longer time encoding gain versus loss words (Experiment 2). When encoding was restricted to 3 seconds, gain and loss words were similarly later recognized at rates higher than neutral words (Experiment 3). These results suggest that potential future losses do not loom larger than gains during encoding (despite having the same absolute magnitude), although loss items are better encoded better than neutral items if subjects are given more than 1 second to encode.

Email: Gizem Filiz, gizemfiliz@gmail.com

12:00-1:30 PM (5155)

Does Context Variability Across Item Repetitions Interact with Encoding-Retrieval Match In Younger and Older Adults? ERICA S. SHAFER,

Virginia Tech, RACHEL A. DIANA, *Virginia Tech* — We investigated whether context variability across encoding repetitions interacts with the match between the encoding and retrieval contexts during recognition via episodic long-term memory. Item recognition for younger adults improved when a word was studied under variable cognitive processing as compared to consistent cognitive processing. Item recognition also improved when the

retrieval context was matched to at least one prior encoding context. These factors interacted such that variability had benefits beyond encoding-retrieval match. That is, at least one exposure to the test context during study (achieving a minimum encoding-retrieval match) that was then supplemented with additional variability in context was more beneficial than repeated practice of the test context during study. There was no benefit of repeatedly matching retrieval cues (if the encoding cues included at least one instance of a match to the retrieval cues) when compared to a mix of variability and encoding-retrieval match. These results, combined with other recent findings, indicate that encoding variability is a beneficial strategy for recognition memory in younger adults. A follow-up study investigated whether these patterns change for older adults.

Email: Erica Shafer, esshafer@vt.edu

12:00-1:30 PM (5156)

I Feel Like I've Seen You Before: How Familiarizing Different Facial Parts in Different Contexts Impacts Recollective Experience with the Whole Face. BROOKE N. CARLAW, *Colorado State University*, ANNE M. CLEARY, *Colorado State University* — A common example of familiarity without recollection is the “butcher-on-the-bus” phenomenon, whereby a face is recognized outside its usual context without recalling specifics (Brown, 2020; MacLeod, 2020; Mandler, 1991). Face familiarity detection can still occur when a person’s identity is occluded by a surgical mask or sunglasses (Carlaw et al., 2022). Consistent with our previous research, we found that partially occluding faces during study and later embedding the familiarized facial features within otherwise novel whole faces during testing increased the perceived familiarity of the novel faces. This suggests that whole faces are processed as sets of component parts for familiarity-detection. In the current study, we examined the extent to which familiarized parts of faces shown in novel contexts are associated with true versus false context recollection regarding where the face was seen previously. False recollective reports were common, but even more common with subjective than with objective measures of context recollection.

Email: Brooke Carlaw, Brooke.Carlaw@colostate.edu

12:00-1:30 PM (5157)

Investigating Semantic Representations in the Item-Method Paradigm: Factors at Encoding and Retrieval. ANJALI PANDEY, *Dalhousie University*, TRACY TAYLOR, *Dalhousie University* — To determine whether the directed forgetting effect (better memory for to-be-remembered (TBR) items than to-be-forgotten (TBF) items) extends to the semantic properties of these items, we followed the study phase of an item-method directed forgetting paradigm with a recognition test that intermixed previously studied words with synonyms of other study words and novel words with no explicit semantic relation to any study word. Factors influencing the encoding and retrieval of word meaning were varied in separate experiments. Despite evidence from prior research to suggest that semantic processing is reduced for TBF words compared to TBR words following the memory instruction, analyses of responses to synonyms indicating participants recognized the meaning of the related study word revealed no compelling evidence that the semantic properties of TBF words are less likely to be remembered than those of TBR words. This was true whether retrieval of word meaning was encouraged at test (E1), participants were afforded more time to enact the memory instruction via a post-instruction encoding interval (E2) or forgetting of word meaning was facilitated by diverting attention to the phonological representation of the study item (E3).

Email: Anjali Pandey, anjali.pandey@dal.ca

12:00-1:30 PM (5158)

Investigating the Role of Individual Differences in Recognition Memory. NATHAN GILLESPIE, *University at Albany, SUNY*, GREGORY E. COX, *University at Albany, SUNY* — Although there is considerable variability in memory performance, the role of individual differences in encoding and retrieval remains unclear. Our work begins to bridge this gap. Across three experiments, people engaged in an old/new recognition task where two sounds were played, followed by a probe. They then completed a measure of hearing ability along with personality assessments evaluating several traits, including the Big Five, motivation, and contingent self-worth. Motivation and hearing ability were the strongest predictors of memory sensitivity (i.e., d'), and observed variable mediation analysis found a significant indirect effect of hearing ability on d' through motivation. We consider these

results alongside archival data from recognition tasks for words and objects. Our findings suggest that people's confidence in their perceptual abilities in a given domain (e.g., hearing) motivates greater attention during tasks that assess relevant skills (e.g., auditory recognition), leading to improved performance.

Email: Nathan Gillespie, Nathangillespie97@gmail.com

12:00-1:30 PM (5159)

Old ≠ Not New and Guilty ≠ Not Innocent: How Probe Framing Affects Recognition Performance.

DANIEL M. BIALER, *Cornell University*, C. J. BRAINERD, *Cornell University* — In a typical recognition experiment, participants are presented with test items and asked to determine whether the items are old. Logically, asking participants to instead determine whether the items are new should produce complementary results. However, studies have previously found that old? probes and new? probes produce different memory effects for words. Memory accuracy is typically highest when the probe and item type mismatch. In the current research, we aimed to replicate these findings with some variations that might be relevant for eyewitness identification. First, we examined whether these findings could be replicated using facial picture and video stimuli. Second, we examined whether these findings could be replicated when using different terminology for the framing manipulation (i.e., instead of using old? and new? probes using guilty? and innocent? probes). In Experiment 1 and Experiment 2, we found a difference between old? and new? probes using facial photographs and crime videos/showups respectively. In Experiment 3, we found a difference between guilty? and innocent? probes using facial photographs; however, we did not find an effect in Experiment 4 with crime videos/showups.

Email: Daniel Bialer, dmb479@cornell.edu

12:00-1:30 PM (5160)

Belief-Based Inferences in Logical Reasoning.

ZULEIKA GASIMOVA, *University of Saskatchewan*, VALERIE THOMPSON, *University of Saskatchewan* — What makes us think that some logic problems are more difficult than others? It is well-documented that people infer task difficulty and evaluate their progress during problem-solving based on experience-based cues such as the subjective feeling of ease or fluency. However, little is known about the contribution of belief-based cues to metacognitive judgements in reasoning tasks. Over the

series of experiments, we identified the cues (e.g., familiarity, believability, font size) that people believe affect the difficulty of logic problems. We then examined how these (misleading) cues affect people's monitoring judgements, such as judgements of difficulty (JoDs) and confidence, and subsequent control behaviours, such as time spent on problem-solving and giving up rate. We also examined how well the metacognitive judgements based on beliefs predict actual performance. It's important to understand how belief-based inferences influence metacognitive judgements, as inaccurate beliefs about task difficulty may impair performance on logical reasoning tasks.

Email: Zuleika Gasimova, zuleika.gasimova@usask.ca

12:00-1:30 PM (5161)

Evidence of a Metacognitive Illusion in

Prospective Judgments of Distraction by Task-Irrelevant Speech. GESA FEE KOMAR, *Heinrich Heine University Düsseldorf*, AXEL BUCHNER, *Heinrich Heine University Düsseldorf*, LAURA MIETH, *Heinrich Heine University Düsseldorf*, RUBEN VAN DE VIJVER, *Heinrich Heine University Düsseldorf*, RAOUL BELL, *Heinrich Heine University Düsseldorf* — Two experiments served to examine how people arrive at stimulus-specific prospective judgments of distraction by task-irrelevant speech. According to the direct-access account, people have direct metacognitive access to the cognitive effects of speech that determine auditory distraction. According to the processing-fluency account, people rely on the processing-fluency heuristic to judge the distracting effects of speech. To test these competing accounts against each other, we manipulated the processing fluency of speech by playing distracting speech forward or backward and by playing distracting speech in the participants' native or a foreign language. Even though the type of speech did not affect the objective distraction in a serial-recall task, participants misjudged more fluently processed speech (forward speech and native speech) as less distracting than less fluently processed speech (backward speech and foreign speech). These findings reveal a metacognitive illusion in stimulus-specific prospective judgments of distraction by task-irrelevant speech and support the processing-fluency account while being incompatible with the direct-access account.

Email: Gesa Fee Komar, gesa.komar@hhu.de

12:00-1:30 PM (5162)

A Metacognitive Approach to Mindfulness

Training. ZACHARY WUNDER, *University of South Florida*, PAUL ATCHLEY, *University of South Florida*, RUTH ANN ATCHLEY, *University of South Florida* — Practicing mindfulness involves focusing attention on the present moment and accepting present moment experiences. Mindfulness practices have been linked to a wide range of significant cognitive enhancements in long-term meditators compared to non-meditators. However, mixed evidence supporting existing forms of brief mindfulness training in improving cognitive functions calls for more targeted interventions. Several prominent theoretical models emphasize the importance of metacognitive processes driving mindfulness cultivation. Hence, we developed a brief mindfulness training targeting these adaptive metacognitive capacities. We aimed to assess the effects of this brief, metacognitively focused mindfulness training (MMT) on cognitive functions compared to a group receiving standard mindfulness-based stress reduction (MBSR). Specifically, we compare outcomes of each training type on cognitive tasks requiring attentional control as well as meta-awareness of mind-wandering and lapses in sustained attention. Our findings contribute to current understanding of the cognitive processes underlying mindfulness training and cultivation.

Email: Zachary Wunder, zwunder@usf.edu

12:00-1:30 PM (5163)

Effect of Font Size on Decisions in Cognitive Offloading When Saving Words from a List.

HALEY MCCOY, *Colorado State University*, ALAN D. CASTEL, *University of California, Los Angeles*, MATTHEW G. RHODES, *Colorado State University* — Cognitive offloading is the act of externally normalizing an internal cognitive process. Little research has examined the mechanisms that underlie decisions regarding offloading. Offloading decisions may reflect a metacognitive process. Accordingly, offloading may be susceptible to metacognitive illusions. For instance, Rhodes and Castel (2008) reported that participants incorrectly predicted they would better remember words in a large compared with small font. In the current experiment, we investigated whether this metacognitive illusion would influence decisions on whether to offload (save) information during learning. In an initial study, participants viewed words one at a time in either a big or a small font size. After each word, participants indicated

(via a yes/no response) whether they would like to save that word to a word bank, under the restriction of saving up to half of the words per each list. Results indicated that participants chose to save more big than small words. Thus, participants may use a different basis, aside from perceptions of memorability, to inform offloading decisions (e.g., perceptions of importance). Future work will seek to further understand mechanisms involved in decisions to offload.

Email: Haley McCoy, haley.mccoy@colostate.edu

12:00-1:30 PM (5164)

Effects of Valence and List Composition on Memory Predictions, Performance, and Beliefs.

MOLLY B. MACMILLAN, *Memorial University of Newfoundland*, LANDON CHURCHILL, *Memorial University of Newfoundland*, KATHLEEN L. HOURIHAN, *Memorial University of Newfoundland* — It is generally well known that emotion can benefit memory; however, much less is known about how emotion influences metamemory. The present study examined how list composition and emotion influences individuals' metmnemonic judgments and performance in a free recall task. Participants studied lists of words that varied in emotional valence and made immediate judgments of learning (JOLs) after each word. Valence was manipulated in a mixed-list design in Experiment 1A, a pure-list design in Experiment 1B, and in a mixed-vs-pure list design in Experiment 3; arousal was held constant. We expected that the effect of emotion on metamemory would depend on participants' beliefs about how emotion influences memory, and that these beliefs would be more salient in a mixed-list than pure-list design. Consistent with this, emotional words were given higher JOLs than neutral words in Experiment 1A and Experiment 3, but not in Experiment 1B. Post-test questionnaires (Experiments 1A & 1B) and data collected from a naïve participant sample (Experiment 2) indicated that participants believed that emotional words are more memorable than non-emotional words. These results suggest that list structure influenced the degree to which JOLs were responsive to emotional content.

Email: Molly MacMillan, nbmacmillan@mun.ca

12:00-1:30 PM (5165)

I Don't Remember, But I Am Curious! Understanding the Relationship Between Curiosity and Retrieval Failure Phenomenology.

SHARDA UMANATH, *Claremont McKenna College*, MINGHUA ZHANG, *Claremont McKenna College*, ALEXIS A. LEE, *Claremont McKenna College*, JENNIFER H. COANE, *Colby College* — The Region of Proximal Learning (RPL) theory of curiosity hypothesizes that curiosity is highest for almost known information. Here we examined how curiosity differs across phenomenological states of retrieval failures. In two experiments, participants completed 100 short-answer general knowledge questions and selected a phenomenological category to represent their experience when unable to answer. In Experiment 1, they selected either “I don’t remember” (DR) or “I don’t know” (DK). In Experiment 2, they selected among four categories of retrieval failures, from “It’s on the tip of my tongue” (closest to retrieval) to “I have never known or seen this information” (furthest from retrieval). Critically, participants also rated their curiosity level for each question. In Experiment 1, participants’ curiosity was higher for DR than DK items. In Experiment 2, curiosity was higher for categories closer to retrieval and systematically decreased as proximity to retrieval decreased. Both studies’ findings support the RPL theory. In contrast to prior work focusing on confidence, this study is the first to establish the relationship between curiosity and phenomenological categories describing a range of retrieval failure experiences.

Email: Sharda Umanath, sharda.umana@clmc.edu

12:00-1:30 PM (5166)

Metacognition in the Face of Distraction.

SANDRA NOWAK, *Adam Mickiewicz University*, KATARZYNA ZAWADZKA , *Adam Mickiewicz University*, MACIEJ HANCZAKOWSKI, *Adam Mickiewicz University* — Auditory distraction is known to negatively impact memory performance. To mitigate its negative effects, accurate metacognitive monitoring is necessary. Recent research shows that in a serial recall task people are able to accurately assess the negative impact of different kinds of auditory distraction on memory, correctly ranking them from the most to the least disruptive. But are those assessments general—people perceive different kinds of auditory distraction as more or less disruptive—or are they task specific, correctly reflecting that distraction affects memory performance differently depending on test type? To investigate this, we replaced the serial recall task with a missing item task that produces a different pattern of distraction-related impairment, and collected prospective

and retrospective metacognitive judgments throughout the task. Our results replicate previous findings showing differences in distraction effects across tasks, and underscore the importance of assessing metacognitive monitoring as a function of the task it applies to.

Email: Sandra Nowak, sannow2@amu.edu.pl

12:00-1:30 PM (5167)

Metacognitive Consequences of Reading and Editing on the Illusion of Explanatory Depth.

JOYCE S. PARK, *Duke University*, ELIZABETH MARSH, *Duke University* — Traditionally, a small number of people controlled knowledge creation and dissemination, with publishers primarily distributing edited content to large audiences. In contrast, modern platforms like Wikipedia and GitHub allow anyone to directly edit and author content that can reach large audiences—with potential consequences for the contributors’ beliefs about what they know. To examine this phenomenon in the lab, we created bare-bones explanations drawn from pilot subjects’ descriptions of natural and mechanical processes (e.g., the occurrence of leap years) which have previously been found to lead to an overestimation of explanatory ability (Rozenblit & Keil, 2002). In a separate study, participants in the experimental conditions were assigned to read or edit these explanations, and we measured how doing so affected their estimates of explanatory ability. Reading and editing eliminated the standard illusion of explanatory depth which was observed in a control condition. Control subjects reduced their estimates of understanding after attempting to explain the phenomena whereas subjects in the experimental conditions did not.

Email: Joyce Park, jsp73@duke.edu

12:00-1:30 PM (5168)

Repetition Does Not Boost Perceived Creativity.

KATHERINE M. ALLEN, *University of California, San Diego*, NADIA M. BRASHIER, *University of California, San Diego* — When information feels easy to understand, it seems more truthful, familiar, and likable. In a pre-registered experiment, we tested whether fluency, or subjective ease of processing, also inflates perceived creativity. One way to make content fluent involves repetition, so we first exposed participants to uncommon uses for everyday objects (e.g., roll out dough with a wine bottle). Immediately after, they judged the creativity of these ideas (repeated) as well as ones they did not see at exposure (new). Unlike many



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other kinds of judgments, participants perceived repeated ideas as less creative than new ones. Our findings suggest that people can disregard fluency in a domain like creativity, where novelty should be valued.

Email: Katherine Allen, k7allen@ucsd.edu

12:00-1:30 PM (5169)

The Feeling of Rightness and Consumer Choice.

IAN NEWMAN, *University of Saskatchewan*, VALERIE THOMPSON, *University of Saskatchewan* — We validated Ackerman and Thompson's (2017)

MetaReasoning theory by studying the Feeling of Rightness (FOR) in a consumer choice context. Using the two-response paradigm (Thompson et al., 2011), participants selected between two products (e.g., two bars of chocolate), either one's preferred brand or a competitor. Some products were labelled as sustainable and some advertised a feature (e.g., 30% less sugar). Participants selected the product they were more interested in purchasing, then rated their FOR.

Subsequently, they had the option of keeping their choice in a hypothetical shopping basket. We found that FOR is lower on trials where sustainability and brand preference conflicted and where sustainability and product feature conflicted. Strong FORs also translated into higher probability of one keeping their chosen product in their shopping basket. These data suggest that the availability of sustainable or feature-laden product options may give consumers a reason to reconsider their normal purchasing decisions.

Email: Ian Newman, ian.newman@usask.ca

12:00-1:30 PM (5170)

The Influence of JOL Design on Metamemory Accuracy.

LENA HILDENBRAND, *University of Illinois Chicago*, JENNIFER WILEY, *University of Illinois Chicago* — Metacognitive monitoring captures the accuracy of one's judgments of learning (JOLs) in relation to actual performance on a later test. Relative monitoring accuracy reflects how well learners can discriminate their learning across items or materials. While work on metamemory monitoring has demonstrated conditions under which near perfect levels of monitoring accuracy can be observed (Nelson & Dunlosky, 1991; Rhodes & Tauber, 2011), the accuracy of JOLs tends to vary across learning materials and task demands. The present study tested the influence of different experimental design factors related to judgment level and JOL presentation on baseline relative accuracy

levels. In a simple paired-associates learning task, with materials and number of items held constant across conditions, accuracy was higher for judgments made at the item versus list level. Additionally, presenting only the cue, rather than the complete cue-target pairing at the time of judgment, also enhances accuracy. These findings suggest subtle variations in JOL presentation can impact the cueing of different judgment processes, highlighting the importance of considering experimental design factors in metacognitive research.

Email: Lena Hildenbrand, lhilde3@uic.edu

12:00-1:30 PM (5171)

The Interplay of Confidence and Accuracy in the Face of External Cues.

PAULINA PIETRAK, *Adam Mickiewicz University*, MACIEJ HANCZAKOWSKI, *Adam Mickiewicz University*, KATARZYNA ZAWADZKA , *Adam Mickiewicz University* —

Although confidence in memory decisions often tracks accuracy of those decisions, one exception is when external cues for the memory decision are provided in a recognition or a source memory task. Validity of those cues always changes accuracy, but affects confidence only when 'new' decisions are made in recognition tests, leaving confidence in "old" and source decisions unaffected. One reason for this pattern may be that people incorporate external cues into confidence judgments only when they think their test response will not be based on memory information. If so, then making "new" decisions in a recognition test depend on memory rather than its lack should make confidence in those decisions immune to the influence of external cues, while making source decisions depend on the lack of memory should reveal the effect of external cues on confidence. We assessed those proposals, finding evidence for the first but not the second proposition.

Email: Paulina Pietrak, paulina.pietrak@gmail.com

12:00-1:30 PM (5172)

The Unique Contributions of Metacognitive Monitoring and the Emotional Cost of Studying on Exam Confidence and Performance.

ALEXIS RICHMOND, *Vanderbilt University*, CRISTINA ZEPEDA, *Vanderbilt University* — When studying for an exam, a productive strategy students can use is monitoring their understanding. This strategy allows them to keep track of what they know but can also draw their attention to the challenges and uncertainties of their

learning process. These uncertainties can present themselves as an emotional cost of studying (e.g., studying is emotionally draining). Although prior work has examined how monitoring and emotional costs impact students' experiences, it is unclear how these constructs work together to influence these experiences. In this study, we examined college students' cost perceptions and study strategies for three consecutive exams. Students also rated their confidence judgments after each exam question and exam scores were collected. Multilevel models revealed that monitoring and emotional cost were positively related but differentially contributed to students' exam experiences. Emotional cost was negatively related to confidence judgments and not related to exam performance whereas monitoring was not related to confidence judgments but was positively related to exam performance. These results suggest that monitoring and emotional cost uniquely influence students' studying experiences.

Email: Alexis Richmond, alexisrichmond10@gmail.com

12:00-1:30 PM (5173)

To-Be-Prevented Events Enter Action

Representations. SOLVEIG TONN , *Trier University, MORITZ SCHAAF, Trier University, WILFRIED KUNDE, Julius-Maximilians-Universität Würzburg, ROLAND PFISTER, Trier University* — The human action repertoire houses two complementary action types: event-producing, operant actions and event-precluding, prevention actions. Goal-centered action control theories have traditionally emphasized operant actions and neglected prevention actions. However, integrating prevention actions into these theories is crucial as they fundamentally differ in the structure of their goals: While operant actions result in the presence of observable events, prevention actions result in the absence of observable events. Given this lack of overt sensory stimulation, it is intriguing to investigate how mechanistic theories can incorporate cognitive representations of prevented events. Here, we report insights from multiple experimental paradigms employing eye-tracking, mouse-tracking, keypress responses, and perceptual judges. Our results indicate that during action selection and execution, prevented events are represented similar to produced events. Yet, the representation of prevented events dissolves during pre-event monitoring and thus, is absent in post-event evaluations. This timing is highly adaptive as it is ideal to reinforce behavior and thus, our results provide an

explanation of how prevention behavior may be maintained.

Email: Solveig Tonn, tonn@uni-trier.de

12:00-1:30 PM (5174)

Visuomotor Adaptation in Healthy Older Adults with Different Controllers. CHIHARU YAMADA, *Waseda University, YOSHIHIRO ITAGUCHI, Keio University, CLAUDIA RODRÍGUEZ-ARANDA, UiT The Arctic University of Norway* — Although visuomotor adaptation paradigm is often used to study sensorimotor learning, the effects of the controller used in experiments are still poorly understood. Therefore, we investigated how the difference between two controllers (a trackball and a regular computer mouse) affects the learning process. Healthy older adults performed a tracking task with visuomotor rotation twice, with one week between sessions. In the experimental task, they followed a target moving across the screen using either a trackball or a standard mouse. Performance error was assessed by the distance between the target and the mouse cursor, from which we calculated four indices of motor learning: training effect, saving, unlearning, and aftereffects. Although both groups adapted similarly and successfully to the rotation, the trackball group showed significantly larger aftereffects and smaller unlearning than the standard mouse group, suggesting that everyday activities performed outside the experimental sessions may interfere with the retention of motor memory and the formation of new internal models, even in older adults who do not use computers on a daily basis.

Email: Chiharu Yamada, chiharu.i.yamada@gmail.com

12:00-1:30 PM (5175)

Assessing the Influence of Cognitive Dual-Task Demands on Postural Control: An Event-Related Approach Using Continuous Force-Plate Data. ANTON KOGER, *RWTH Aachen University, LEIF JOHANNSEN, RWTH Aachen University, ANDREA KIESEL, University of Freiburg, IRING KOCH, RWTH Aachen University, RAPHAEL HARTMANN, University of Freiburg, HERMANN MÜLLER, University of Gießen, ELISA STRAUB, University of Freiburg, DENISE N. STEPHAN, RWTH Aachen University* — Cognitive-motor interference research investigates how postural control demands affect cognitive task performance and vice versa. Recently, postural control parameters were measured continuously



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using a force plate during quiet standing and analyzed with an event-related approach. Here, we applied this method during a cognitive dual task which consisted of a visual short-term memory task with a deferred verbal response and an auditory-manual reaction time (RT) task. We manipulated the stimulus onset asynchrony (SOA: short vs. long) between the visual and auditory stimulus per trial. We further manipulated if participants had to report or ignore the visual task (task load: single vs. dual task) in blocks. To assess the postural correlates of single cognitive processes, we analyzed postural control as sway variability in time bins of 100 ms over the course of each trial. RTs in the auditory-manual task were increased with shorter SOA, indicating a bottleneck-like effect. This effect was particularly pronounced for the unpredictable task load condition, possibly due to the maintenance of two task sets. The event-related method proved effective, as sway variability decreased over the course of a trial and was higher in report trials.

Email: Anton Koger, anton.koger@psych.rwth-aachen.de

12:00-1:30 PM (5176)

Novel Staircase Difficulty Adjustment in Visually Simulated Inverted Pendulum Balancing Task.

HANNAH PARK, *Brandeis University*, PAUL DIZIO, *Brandeis University* — We aim to understand balancing skill in participants using a joystick to keep a visually simulated inverted pendulum (VIP) upright. VIP tilts do not load the joystick, evoking no reflexive arm action, enforcing a reliance on higher-level processes. VIP skill acquisition was quantified with a novel staircase difficulty adjustment method, instead of a constant difficulty method. Participants learned to balance the VIP while the pendular toppling rate (difficulty) changed contingent on performance. Each session had 10 60-second trials. Maintaining balance for 2.5 seconds increased difficulty, and falling decreased it. Difficulty increased in steps equal to the initial difficulty plus the priori step size divided by the number of successful 2.5-second balancing periods. Difficulty decreased by the priori step size divided by the number of successful 2.5-sec periods. The novel staircase method better captures VIP performance and motor (joystick) learning by equating initial and ongoing performance, accounting for individual attention and fatigue. Comparison with the original constant difficulty calibration method will allow assessment of which approach leads to faster saturation of learning.

Email: Hannah Park, hepark@brandeis.edu

12:00-1:30 PM (5177)

Explaining the Sense of Agency: A Critical Test of the Classical Comparator Model and an Ideomotor Perspective.

MARCEL R. SCHREINER, *Julius-Maximilians-Universität Würzburg*, BENCE NESZMÉLYI, *Julius-Maximilians-Universität Würzburg*, KATHARINA A. SCHWARZ, *Trier University*, WILFRIED KUNDE, *Julius-Maximilians-Universität Würzburg* — The sense of agency (SoA) refers to an agent's impression of controlling environmental outcomes through their actions.

Traditionally, the classical comparator model explains SoA by comparing the predicted perceptual consequences of the action derived from an efference copy of the motor command with the perceptual feedback received after action execution. We challenge this assumption and propose a more parsimonious ideomotor model. According to this model, SoA arises from matching perceptual feedback to the agent's perceptual goal. In two experiments, participants aimed at target areas on a screen and received manipulated visual feedback, resulting in four different conditions: A motor activity could either be appropriate or inappropriate for achieving the goal and in both cases, actions could result in either intended or unintended visual feedback. The two models make different predictions regarding the magnitude of the SoA as a function of the appropriateness of the motor activity and the intendedness of obtained visual feedback. The resulting SoA judgments closely aligned with the ideomotor model's predictions, which thus provides a better explanation for the emergence of the SoA.

Email: Marcel Schreiner, marcel.schreiner@uni-wuerzburg.de

12:00-1:30 PM (5178)

Kinematic Coordination Reveals Motor Learning Strategies under Varied Feedback.

TRI NGUYEN, *Brown University*, JOO-HYUN SONG, *Brown University* — The learning process of many real-world motor skills (e.g. biking) involves learning complex movement patterns for different body parts then integrating them in a coordinated manner. An effective learning strategy is to isolate the effect each motor parameter has on task outcome (exploration) before combining them (exploitation), like a pianist learning each hand independently before playing with both hands. To examine the transition from exploration to exploitation in kinematic coordination, we asked



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participants to train on a novel ball throwing task. Participants threw a virtual ball to precisely hit a target by moving a manipulandum arm. We introduced variable visual feedback delay in one condition to increase uncertainty about the effect of each motor parameter on accuracy, thereby manipulating the effectiveness of exploratory strategy. In conjunction with conventional measures of performance, we utilized recurrence quantification and wavelet coherence analyses to capture people's tendency to explore and exploit coordination between motor parameters during learning. Our findings indicate that variable feedback delay interfered with effective exploration, leading to delayed transition to exploitation and slower learning.

Email: Tri Nguyen, tringuyen.w@gmail.com

12:00-1:30 PM (5179)

A New Test of the Hierarchical Extension of Hick/Hyman Law. J. TOBY MORDKOFF, *University of Iowa* — The original version of Hick/Hyman Law only predicts mean response time for entire blocks. The hierarchical extension of Hick/Hyman Law predicts mean response time for each trial type, as well. In the previous test of this model, while the probabilities of the different trial types differed from each other, they did not depend on previous events. The current work retested the model using a design under which the overall frequencies of the trial types were always the same, but the conditional probability of each trial type depended on the stimulus shown on the previous trial. The results from this new test again obeyed the predictions of the hierarchical extension of Hick/Hyman Law, but with shallower slopes. The difference in slopes can be explained in terms of incomplete encoding of intertrial conditional probabilities, as compared with unconditional probabilities.

Email: J. Toby Mordkoff, jonathan-mordkoff@uiowa.edu

12:00-1:30 PM (5180)

Reduced Sleep Significantly Impairs Cognitive Function in Knowledge Workers. RICHARD DE LA GARZA, *The University of Texas Medical Branch*, JASON BATT, *OwnLife Analytics Ltd, UK* — In this study, we hypothesized that disruptions to sleep would be associated with impaired cognitive function in adults (18-60 years; n=157) from various knowledge-worker industries. Individuals provided self-report data via the OwnLife app four times daily at 4-hour intervals for 14

days. Relative scores of mental clarity (MC), focus (MF), stability (MS), and energy (ME) were captured on a 20-point visual analogue scale; Sleep Quality (SQ) was captured on a 5-point scale. Smartwatches captured Total Sleep (TS), Deep Sleep (DS), and REM Sleep (RS) hours. Results show that TS of <6.25 hours is associated with increased Relative Risk (RR) of low cognitive function across all four measures. MF was most affected, and participants who slept <6.25 hours had a RR of low MF of 2.29 ($P=0.007$). The results also indicate that (1) the RR of low MF increase steadily as TS hours decrease from 7.5 to 6.25, (2) low DS, RS hours, and SQ are all associated with increased RR of low MF. Implications are that actively managing SQ, TS, DS, and RS are important considerations in helping optimise cognitive function at work. Further investigation is required to understand how hybrid working impacted other aspects of our ability to create well-structured routines.

Email: Richard De La Garza, richdelagarza@gmail.com

12:00-1:30 PM (5181)

A New Test for Homogeneity in Meta-Analysis. JUAN BOTELLA, *Universidad Autónoma de Madrid*, MANUEL SUERO, *Universidad Autónoma de Madrid*, JUAN I. DURAN, *Universidad Autónoma de Madrid* — The homogeneity of the parametric effect sizes is traditionally tested through use of the Q-statistic. It is usually complemented by the I² statistic and an estimate of the specific variance (τ^2). The Q statistic is based on a meta-analytic model of random effects that involves questionable assumptions and approximations when applied to the standardized mean difference (g). Suero et al. (under review) have proposed an alternative formulation of the classical statistical meta-analytical model that does not involve these assumptions and that has allowed unbiased estimators of both $\mu\delta$ and τ^2 . In addition, we have derived a new homogeneity test, an alternative to Q, to be applied to effect size indices in which the sampling variance depends on the parameter itself, such as g . Our simulation studies show that the properties of the new statistic make it preferable to Q over a range of conditions typically found in psychology.

Email: Juan Botella, juan.botella@uam.es

12:00-1:30 PM (5182)

An EZ Bayesian Hierarchical Drift-Diffusion Model for Response Time and Accuracy. ADRIANA F. CHÁVEZ DE LA PEÑA , *University of*

California, Irvine, JOACHIM VANDEKERCKHOVE, University of California, Irvine — The EZ-drift diffusion model (EZDDM) makes parameter estimation for the drift diffusion model (DDM) computationally inexpensive by providing a set of equations that relate the drift rate, boundary separation, and nondecision time parameters to three summary statistics of choice RT data. We present a Bayesian implementation of the EZDDM using binomial and normal distributions to model the sampling distributions of these summary statistics. This allows for versatile extensions such as hierarchical models, cognitive latent variable models, and metaregression structures. The resulting EZ Bayesian hierarchical drift diffusion model (EZHDDM) is a hyper-efficient proxy model to the hierarchical DDM that can be easily implemented in any probabilistic programming language. We demonstrate the efficacy of our proxy model through simulation studies and showcase its efficiency in applied examples using the graphical Bayesian analysis package JASP.

Email: Adriana Chávez De la Peña, achavezd@uci.edu

12:00-1:30 PM (5183)

Reformulating Analysis of Variance (ANOVA) Using Order-Constrained Inference. MEICHAI CHEN, *University of Illinois Urbana-Champaign*, EMILY N. LINE, *University of Illinois Urbana-Champaign*, MARC JEKEL, *Universität zu Köln*, MICHEL REGENWETTER, *University of Illinois Urbana-Champaign* — Many studies in psychology involve categorical response or predictor variables. A frequently employed method used to analyze such data is analysis of variance (ANOVA). However, in a typical ANOVA setting, researchers often perform multiple followup tests after finding significant main and interaction effects. These followup tests may inflate Type I error and can suggest mixed evidence. ANOVA models also impose extraneous assumptions such as normally distributed error terms and a linear relationship between the predictor and response variables. Order-constrained modeling allows researchers to avoid these extraneous assumptions and motivates the formulation of mathematical hypotheses that more precisely capture the theory under study. We illustrate order-constrained inference using study four from Schroeder et al. (2019). We reformulated hypotheses they examined in their ANOVA as more precise mathematical order constraints and tested these constraints jointly as one model. A

Bayesian analysis yields strong support without reliance on auxiliary assumptions.

Email: Meichai Chen, meichai2@illinois.edu

12:00-1:30 PM (5184)

A Reliability Generalization Study on the Learning Style Inventory Based on Mixture Models Meta-Analysis. DESIRÉE M. BLÁZQUEZ-RINCÓN, *Universidad a Distancia de Madrid*, MANUEL SUERO, *Universidad Autónoma de Madrid*, JUAN I. DURAN, *Universidad Autónoma de Madrid*, JUAN BOTELLA, *Universidad Autónoma de Madrid* — The Kolb's Learning Style Inventory (LSI) is a tool widely used in experimental psychology to measure learning styles based on Kolb's Experiential Learning Model. The LSI uses ipsative items to classify subjects into assimilators, convergers, accommodators, or divergers, according to their position on two continuums (the individual's capacity for the abstract versus the concrete, and for action versus reflection). Although the number of items varies according to the LSI version, for each item participants must rank-order by preference four words that correspond to Kolb's four learning styles. One of the main limitations of this tool has been the low reliability in all its subscales, as reported in the reliability generalization meta-analysis by the Henson & Hwang. Suero et al. have shown that the traditional random-effects model has some weaknesses that at the end yield underestimations of the model parameters, especially when the variance of the effect size estimator depends on the parameter to be estimated. The present study reanalyzes the data from the Henson & Hwang study using a reformulation of the random-effects model as a mixture model to obtain unbiased estimates for overall reliability and heterogeneity.

Email: Desirée Blázquez-Rincón, desireemaria.blazquez@udima.es

12:00-1:30 PM (5185)

Assessing Parameter Estimation of g Under a Mixture Model in Meta-Analysis. MANUEL SUERO, *Universidad Autónoma de Madrid*, JUAN BOTELLA, *Universidad Autónoma de Madrid*, JUAN I. DURAN, *Universidad Autónoma de Madrid*, DESIRÉE M. BLÁZQUEZ-RINCÓN, *Universidad a Distancia de Madrid* — In the classic meta-analytic model, the variance of the marginal distribution is replaced by the sum of the variance of the parametric effects plus the sampling variance conditioned on the estimated value of

the study. This is incorrect when the sampling variance depends on the parameter value itself, as is the case with the standardized mean difference (g). Suero et al. (under review) have reformulated the random effects model as a mixture model (MM) and have arrived at a formula for the variance of the marginal distribution of g at the study level. Furthermore, they have proposed formulas to estimate the two parameters of interest to the meta-analyst: $\mu\delta$ and τ^2 . In this simulation study, the performance of both estimators is evaluated, and is compared with the performance of the two estimation methods more often employed under the classic model: DerSimonian-Laird (DL) and restricted maximum likelihood (REML). The main result is that the two estimators developed under the MM are unbiased, while the DL and REML estimators underestimate both parameters. Also considering efficiency and coverage, the conclusion is that the estimators derived under the MM framework are an improvement over the classical model.

Email: Manuel Suero, manuel.suero@uam.es

12:00-1:30 PM (5186)

Samply: A Web and Mobile Tool for Smartphone-Based Research. YURY SHEVCHENKO, *University of Konstanz*, ULF-DIETRICH REIPS, *University of Konstanz* — Conducting smartphone-based research can be challenging. To assist researchers in setting up and managing their studies without the need to program a mobile app, we created the Samply software. Samply features a web platform for researchers to design studies, schedule notifications, and track participant responses, along with the Samply Research mobile app, available on Google Play and the App Store. The app supports both interval- and signal-based notifications and allows for participant randomization. Notification content is fully customizable and can include links to studies hosted on platforms, e.g., Qualtrics, lab.js, etc. Additionally, Samply supports event-triggered notifications based on participant location or custom events defined by researchers. Samply is suitable for various applications, including longitudinal studies, clinical trials, and human-computer interaction research. The project is open-source and accessible at <https://samply.js.org>. At the conference, we will introduce new features in Samply, such as the ability to modify already scheduled notifications and the integration of the Samply API with external software.

Email: Yury Shevchenko, shevchenko_yury@mail.ru

12:00-1:30 PM (5187)

Using Natural Language Processing to Predict Job Satisfaction and Turnover Intention. M. SIJAN, *Montclair State University*, MICHAEL T. BIXTER, *Montclair State University* — This study investigated the effectiveness of natural language processed (NLP) text responses, specifically text embeddings, for measuring job satisfaction and predicting turnover intention. Using a sample of currently employed participants ($n=439$), we found that NLP-processed open-ended text responses significantly predict self-reported job satisfaction, demonstrating a strong positive correlation ($r=0.64$) and convergent validity. Additionally, text embeddings can differentiate between sub-dimensions of job satisfaction. While text embeddings did not add incremental validity over the Job Satisfaction Scale, they effectively predicted turnover intention ($F_1=0.58$). Exploratory analyses identified the most effective transformer models, output layers, and training algorithms for job satisfaction research. We also conducted several other exploratory analyses for a more comprehensive understanding of the job satisfaction construct. Overall, our study highlights the robustness of NLP methods in capturing complex psychological constructs like job satisfaction, paving the way for further optimization of NLP applications in organizational research.

Email: M. Sijan, sijana1@montclair.edu

12:00-1:30 PM (5188)

From Verbal Reports to Model Validation: Theoretical Framework and Application.

TEHILLA OSTROVSKY, *University of Munich*, CHRIS DONKIN, *Ludwig-Maximilians-Universität München*, BEN R. NEWELL, *UNSW Sydney*, PAUL UNGERMANN, *Technische Universität Munich* — In this work, we introduce a novel theoretical framework that merges verbal reports with computational cognitive models. This approach leverages the context-sensitive capabilities of large language models (LLMs) to analyze participants' verbal descriptions of their approaches to performing a task. Hence, this framework proposes to integrate cognitive modeling and verbal reports as a type of process tracing. To facilitate such an analysis, we developed a JavaScript-based plugin within JsPsych that enables real-time speech recognition, where spoken reports are automatically converted into text and subsequently analyzed using LLMs. This significantly reduces the typical burden of analysing verbal data. We

will outline the theoretical framework and the plugin's key functionalities. These include voice-to-text transcription, vectorization, and analytical techniques as keyword extraction, clustering, and labeling.

Additionally, we share insights from a pilot study conducted to evaluate the software's efficacy, providing an overview of its potential to enhance cognitive modeling research.

Email: Tehilla Ostrovsky, tehilla.mo@gmail.com

12:00-1:30 PM (5189)

Bayesian Sample-Size Planning for Experiments with the Iowa Gambling Task. LANDRY SMITH, *Tarleton State University*, THOMAS J.

FAULKENBERRY, *Tarleton State University* —

Researchers need to balance many factors when planning experiments, including the potential informativeness and efficiency of their data. To accomplish this, one can use a prospective design analysis during the planning phase. In a Bayesian framework, a Bayes Factor Design Analysis (BFDA; Schönbrodt & Wagenmakers, 2018) uses Monte Carlo simulation to draw random samples from a population reflecting an expected effect size and compute the expected evidence via a distribution of Bayes factors obtained from these samples. In the present study, we applied BFDA to prospectively analyze the expected strength of evidence in studies involving group differences in Iowa Gambling Task (IGT) performance. Based on characteristics from past studies, we constructed a prior distribution on effect sizes that was centered at $\delta=0.4$ (moderate) and ran a fixed-N BFDA with 30 observations per group. Our results indicated only a 0.19 probability of observing moderate evidence ($BF > 6$), whereas there was a 0.79 probability of observing inconclusive evidence ($BF < 6$). These results indicate that past studies claiming group difference in IGT performance may be severely underpowered, and consequently may be uninformative and inefficient.

Email: Landry Smith, landrysmith0802@gmail.com

12:00-1:30 PM (5190)

Comparing Crowdsourcing Platforms for Behavioral Research: An Examination of MTurk, Prolific, and Testable Minds Participants.

JONATHAN W. AUBE, *University of Massachusetts Lowell*, RENEE HUNSMERGER, *University of Massachusetts Lowell*, MIKO M. WILFORD, *Iowa State University*, LISA GERACI, *University of Massachusetts Lowell*

Lowell — In recent years, researchers have transitioned to using online crowdsourcing platforms to recruit participants due to their relative ease and affordability. However, data quality concerns have emerged given rapid advances in AI and other online tools, with some studies indicating that online participants may differ significantly from traditional samples and may be of poorer quality. This study evaluated and compared data from the crowdsourcing platforms MTurk, Prolific, and Testable Minds to determine their efficacy for psychological research. We found that data from MTurk participants differed significantly in terms of demographics and personality measures compared to the other two platforms. For example, MTurk participants were older, far more anxious, and less agreeable. There were also differences in cognitive performance across platforms. Specifically, Testable Minds and Prolific participants performed better on flanker and Stroop tasks relative to MTurk participants regardless of compensation rate. Yet, MTurk participants expressed equal pay satisfaction even when they were paid significantly less. Results have implications for how researchers should conduct online studies.

Email: Jonathan Aube, jonathan_aube@student.uml.edu

12:00-1:30 PM (5191)

Evaluating Cognitive Health Through Multi-Dimensional Cognitive Batteries: A Comparison of Approaches. QUENTIN COPPOLA, *Northeastern University*, AARON R. SEITZ, *Northeastern University*, SUSANNE M. JAEGGI, *Northeastern University*, MARC YANGÜEZ, *Northeastern University* — Multi-dimensional cognitive health batteries can yield valuable insights into executive functioning, working memory, and broader related outcomes such as quality of life, physical and mental health. Data from a large-scale, multi-dimensional cognitive health battery (Brain Game Center, Riverside, CA) were collected to characterize functioning and track interventions aimed at improving cognitive health. We compared latent variable approaches using structural equation modeling to characterize the structure and psychometric properties of a battery collected on approximately 200 subjects from ages 50 to 84. Subjects completed measures online including 12 tasks spanning executive functioning, working memory, and language as well as 7 self-report surveys that examine wellbeing, physical and mental health. We also discuss similar analysis approaches for other datasets. The goal of this work is to develop a



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methodological framework to evaluate the sensitivity and transportability between high-dimensional cognitive health batteries to aid in operationalizing the constructs measured and compare areas of overlap and idiosyncrasies between different assessment strategies.

Email: Quentin Coppola, coppola.q@northeastern.edu

12:00-1:30 PM (5192)

Meta-Analysis with g Underestimates the Mean and the Variance of the Parametric Effects.

MARIO CALABRIA-SEN, *Universidad Autónoma de Madrid*, JUAN BOTELLA, *Universidad Autónoma de Madrid*, DESIRÉE M. BLÁZQUEZ-RINCÓN, *Universidad a Distancia de Madrid* — Several simulation studies have shown that the classical meta-analytical model of random effects tends to underestimate the mean and the variance of the parametric effects when it is applied to the standardized mean difference for independent groups (g). In contrast, Suero et al. (under review) have shown that an alternative formulation, in terms of a mixture model (MM), allows unbiased estimators of both parameters. In the present study we have reanalyzed the meta-analyses published in *Psychonomic Bulletin & Review* in the past 10 years that have used g as its effect size index. We have re-estimated the mean and the variance of the parametric effects with two traditional methods (REML and DL), and with the proposed MM. The parameters estimated under the MM are larger than with the other two methods. Our results, together with those from previous simulation studies, suggest that the mean effect size and the specific variance of the effects, assessed by g , are generally underestimated by the traditional methods.

Email: Mario Calabria-Sen, mario.calabria@uam.es

Poster Session VI

Saturday, November 23, 2024, 6:00-7:30 PM US EST

6:00-7:30 PM (6001)

Distraction by Changing Irrelevant Sound: What Role for Attentional Resources? FRANCOIS

VACHON, *Université Laval*, CLARA MORAIS-

CORMIER, *Université Laval*, MELINA

LAROCHELLE, *Université Laval*, LAURIE

THIBAUDEAU, *Université Laval*, JOHN E. MARSH,

University of Central Lancashire — This study delved into an attentional explanation for how changing-state sound disrupts short-term memory. Commonly found in visual serial recall, the changing-state effect (CSE) is absent in the missing-item task. According to the attentional account of auditory distraction, changing sounds demand high processing, diverting attentional resources from the focal task. This account attributes the missing-item task's resistance to CSE to its lower reliance on resources compared to order-based memory tasks. To test this hypothesis, pupillometry was used as an index of cognitive processing, whereby larger pupils reflect higher demands. Contrasting the missing-item task to the order-based probe task, Experiment 1 found CSE only in the probe task, despite larger pupils in the missing-item task. In Experiment 2, increasing processing demands in the missing-item task enlarged pupils but failed to reveal CSE. Overall, pupil size was larger in the presence of sound but remained similar for changing-state and steady-state sound. These findings refute the notion that changing-state sound causes distraction by recruiting resources at the expense of ongoing mental activity. An interpretation in terms of interference-by-process should be favored.

Email: Francois Vachon, francois.vachon@psy.ulaval.ca

6:00-7:30 PM (6002)

Competing Frames of Reference Using Vibrotactile Stimuli for the Simon Effect.

ASHLEY D. WARREN, *Rice University*, STEPHEN BROOME, *Purdue University*, JING CHEN, *Rice University*, ROBERT W. PROCTOR, *Purdue University* — The implementation of vibrotactile stimuli has grown in necessity where visual and auditory modalities are overloaded. However, how attention is automatically oriented using vibrotactile stimuli has been minimally investigated. The mapping between a response and a vibrotactile stimulus can be explained by three reference-frame accounts: internal, external, or remapping; this



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study examined which frame automatically orients attention for vibrotactile stimuli. Experiment 1 (N=40) showed that a relevant stimulus dimension—frequency of vibration—did not hold an external representation of magnitude. We designed a vibrotactile Simon task in Experiment 2 (N=80), with frequency being the task-relevant stimulus dimension and location being the task-irrelevant. Comparing the crossed- versus uncrossed-hands conditions, results showed an external reference-frame being dominant. Overall, this study indicates that the processing of vibrotactile information is not reliant on an internal reference-frame, but instead, the external frame or task context influences selection of a motor response.

Email: Ashley Warren, ashley10d@gmail.com

6:00-7:30 PM (6003)

The Perihand Bias for Attention is Specific to Peripersonal Space Across Depth.

NOAH BRITT
 , McMaster University, HONG-JIN SUN, McMaster University — It has been shown that attention can be prioritized toward stimuli near observers' hands (e.g., if observers raise one of their hands close to the side of the computer display). Our study furthered these findings by examining whether the perihand bias is specific to stimuli appearing exclusively in peripersonal space, or if those findings extend to beyond arm's reach into extrapersonal (far) spaces. We presented stimuli on a computer monitor but the stimuli appeared in a simulated 3D space including a near-depth plane (a laptop screen, intended to be in the range of peripersonal space) and a far-depth plane (a projection screen, intended to be in an extrapersonal space). Using a modified spatial cueing paradigm in virtual 3D space, we presented cues and targets in near and far depth while manipulating the position of the response hand of the participant—either being positioned close to the side of the monitor or away from the monitor. The results showed that only when stimuli appeared in near space, perihand bias was found. This demonstrates that the perihand bias is selective to stimuli appearing exclusively in actionable space.

Email: Noah Britt, brittn@mcmaster.ca

6:00-7:30 PM (6004)

From Human to Machine: Adapting Human Ocular Data for Autonomous Vehicle Algorithms.

JOSE L. TAPIA, Universidad Nebrija, ARANZA LIRA-DELCORE, Universidad Nebrija, FRANCISCO

BADEA, Universidad Nebrija, JON ANDONI DUNABEITIA, Universidad Nebrija — Autonomous driving seeks to transform transportation, but the integration of sensor technologies has yet to fully capture the complexity of human perception. This study explores this discrepancy by comparing human eye movements to the telemetry data of autonomous vehicles to enhance system functionality and safety. Based on a theoretical framework that emphasizes the adaptability and contextual relevance of human attention, we propose an approach to reduce data redundancy in autonomous systems by focusing on critical information akin to a human driver's process. Participants engaged in a real-world urban driving test, driving an electric vehicle equipped with eye-tracking glasses to record ocular movements. The collected data facilitated a detailed analysis of visual fixation and attention patterns, correlating them with vehicle telemetry to identify specific driving behaviors such as stimulus response times and action execution. By merging cognitive psychology with automotive engineering, this study aimed to establish patterns that autonomous systems can emulate to enhance decision-making and efficiency, advocating for a more intuitive and adaptive integration of human perceptual models into autonomous vehicle technology.

Email: Jose Tapia, jtapia@nebrija.es

6:00-7:30 PM (6005)

The Foveal Load Hypothesis and the Notion of Exploration vs. Exploitation in Word Reading: A Pupillometry Study.

LAOURA ZIAKA, Oslo University Hospital, DZAN ZELIHIC, University of Oslo, BOB MCMURRAY, University of Iowa, KEITH BAXELBAUM, University of Iowa, KRISTIN SIMONSEN, University of Oslo, ATHANASSIOS PROTOPAPAS, University of Oslo — Low- and high-frequency (LF vs HF) words differ in processing load, leading to pupil size constriction for—more demanding—LF vs. dilation for—less demanding—HF words. The foveal load hypothesis links the difficulty of foveated material to the breadth of attentional focus: broad focus—and associated pupil dilation—amounts to “exploration,” whereas narrow focus—and pupil constriction—indicates “exploitation”. In a novel approach to investigating foveal load, we examined pupil size in a backward-masking flanker design within a visual world paradigm. HF or LF target words were centrally presented for 75 ms before being masked, in

two conditions: no flankers vs word flankers. The pupil should constrict due to interference from the flankers, relative to the no flankers condition. However, if pupil constricts for LF targets due to load, with a concomitant narrowing of attentional focus, this could reduce susceptibility to interference from flankers, canceling out condition-related constriction; and the reverse for HF targets, diminishing or eliminating pupil size differences between LF and HF words. Data from 61 Norwegian adults showed a flanking effect but no frequency effect, consistent with exploration and exploitation in word reading.

Email: Laoura Ziaka, laoura.ziaka@gmail.com

6:00-7:30 PM (6006)

Broadened Positive and Emotion Congruent Attentional Biases and Emotion Regulation.

MICHAEL MCTIGHE, *Rochester Institute of Technology*, TINA M. SUTTON, *Rochester Institute of Technology*, STEPHANIE GODLESKI, *Rochester Institute of Technology*, JOSEPH S. BASCHNAGEL, *Rochester Institute of Technology* — Attention is a vast area of research in the cognitive sciences that is complicated by many other variables. Evidence suggests that attention is biased toward emotional stimuli.

Theories suggest that positive emotions can improve cognition, and that certain emotional states create emotion congruent biases. Systems associated with emotion regulation overlap with processes related to attention. This study sought to further explore how positive emotions, emotion congruency, and emotion regulation influence attention. Participants were randomly assigned to an emotion induction procedure which was followed by an attention task. Self-report and psychophysiological data were collected. There was no evidence showing that positive emotions or emotion congruence influenced attention. Evidence was found demonstrating that clinical symptomology was related to biased attention. Emotion regulation neither mediated or moderated attentional biases. Limitations with stimuli presentation time and emotion induction procedures may explain failures to replicate previous research. Future investigation should explore how training in emotion regulation strategies can be used to improve areas of cognition that can be associated with psychopathology.

Email: Michael McTighe, mm6216@rit.edu

6:00-7:30 PM (6007)

Executive Functions and Mind Wandering: A Vital Union or Separate Realms?

MANA FAZEL, *University of Amsterdam*, ESMÉE VERWIJK, *University of Amsterdam & Amsterdam University Medical Centers*, FILIP VAN OPSTAL, *University of Amsterdam* — The necessity of executive functions in facilitating mind wandering has been a topic of debate. Executive functions, while demonstrating both interconnectedness (unity) and distinctiveness (diversity), remain enigmatic in terms of their recruitment for mind wandering. This study specifically examined three core executive functions: inhibition, updating, and shifting, each assessed through separate tasks. Additionally, participants' mental states, whether focused (on-task) or wandering (off-task), were determined through randomly administered self-report thought probes. Trials that called upon executive functions, were found to display a significant decrease in performance during off-task states, for both inhibition, shifting and updating. In contrast, no such performance decline was observed in trials that did not involve executive functions. These findings suggest that mind wandering recruits executive functions in a uniform fashion, thereby supporting the executive functions model of mind wandering.

Email: Mana Fazel, s.m.fazel@uva.nl

6:00-7:30 PM (6008)

Meta-Analyses of the Complex Mechanisms Underlying the Congruency Sequence Effect.

YUNJI LEE, *Georgia Institute of Technology*, PAUL VERHAEGHEN, *Georgia Institute of Technology*, ELIOT HAZELTINE, *University of Iowa*, ERIC SCHUMACHER, *Georgia Institute of Technology* — The congruency sequence effect (CSE) refers to a smaller congruency effect after incongruent trials compared to congruent trials in a conflict task. We conducted meta-analyses of all relevant CSE studies published in the past 31 years (from 1992 to 2023). Our results demonstrated that CSE is robust and significant when bottom-up confounds are controlled for. CSEs were significant within a task and between tasks that support both local and global control, but the effect was larger within a task. Given that the prime-probe task is easy to adapt confound-minimized paradigm, we suggest the prime-probe task as an effective tool for addressing future questions on CSE. Additionally, CSE decreased as the number of stimulus-response (S-R) mappings increased. Finally, CSE and congruency effect had no relationship.

Overall, these meta-analyses study converges evidence from previous studies and highlights the complex factors influencing CSE.

Email: Yunji Lee, ylee737@gatech.edu

6:00-7:30 PM (6009)

On the Task-Specificity of Adaptive Control: A Meta Analysis.

DAXUN ZHU, *Ghent University*, HANNAH KAISER, *Eberhard Karl Universität Tübingen*, KARIN BAUSENHART, *Eberhard Karl Universität Tübingen*, DAVID DIGNATH, *Eberhard Karl Universität Tübingen*, CAROLIN DUDSCHIG, *Eberhard Karl Universität Tübingen*, WIM NOTEBAERT, *Ghent University*, DONNA BRYCE, *University of Augsburg*, SENNE BRAEM, *Ghent University* — Humans are capable of making adaptive adjustments in control settings in response to conflicting situations, often measured using the congruency sequence effect (CSE). There has been a long-standing debate as to whether CSEs reflect a domain-general or domain-specific process—as often tested by studying CSEs across tasks. One model predicts a U-shaped relation where only highly similar or highly dissimilar tasks would show CSEs across tasks, because only those tasks can be activated in parallel. To investigate this issue more systematically, we conducted a preregistered meta-analysis of all relevant cross-task CSE studies (from 1992 to 2023, 146 experiments, 193 effect sizes). Our first results suggest that the CSE can transfer across tasks, and task dissimilarity seems to have a negative linear effect on the size of cross-task CSEs (i.e., not U-shaped). Interestingly, however, while most measures of task dissimilarity show this negative impact (e.g., stimulus domain, conflict type, relevant or irrelevant stimulus dimension, sensory mode, response mode), dissimilar stimulus or response identity may actually help increase, rather than reduce cross-task CSEs.

Email: Daxun Zhu, daxun.zhu@ugent.be

6:00-7:30 PM (6010)

Reaction Time Distribution Analysis of the Distractor Primed Stroop Task.

SAMANTHA E. CURTIS, *Macquarie University*, SACHIKO KINOSHITA, *Macquarie University*, BIANCA DE WIT, *Macquarie University* — The Stroop effect is considered to reflect a failure of selective attention. Specifically, it is the inability to ignore the word information while responding to the color information that leads to slower

responses to incongruent color words (e.g., the word GREEN in red ink) compared to noninformative neutral symbols (e.g., XXXX in red ink)—known as an interference effect. But what would happen if you first saw the distracting word (e.g., the word GREEN in white ink) followed by the above incongruent Stroop stimulus (i.e., the word GREEN in red ink)? The present study, using a manual Stroop task, found that identity priming the distractor word eliminated the interference effect across the whole reaction time distribution and brought on a sizeable facilitation effect (faster responses to congruent trials (e.g., RED in red ink) relative to the noninformative neutral symbols). We argue that priming the distractor word breaks the integration of color and word, thus allowing attention to disengage from the irrelevant word information and facilitate color naming.

Email: Samantha Curtis, samantha.curtis1@hdr.mq.edu.au

6:00-7:30 PM (6011)

Real-Time Triggering Reveals Changes in Subjective Reports of Ongoing Thought Patterns.

HALLA ABDUL-RAHMAN, *Queen's University*, SHAELA JALAVA, *Queen's University*, MEGAN T. DEBETENCOURT, *The University of Chicago*, JONATHAN SMALLWOOD, *Queen's University*, JEFFREY D. WAMMES, *Queen's University* — Behavioral variability and errors are often associated with self-reported off-task states, but the nature of the associated thoughts is poorly understood. Here, we used behavioral correlates to identify probable attention lapses in real-time and to characterize the primary dimensions of ongoing thought occurring during these periods. Participants completed a rhythmic task, where they made responses in synchrony with scene image onsets. We used extreme values in response time variance (RTV; i.e., high or low attentional states), to trigger multidimensional experience sampling thought probes, where participants were asked to rate their thoughts along several dimensions of interest (e.g., absorption, valence). When a probe was triggered by high RTV (a low attentional state), participants reported task-unrelated thoughts that were more negative, intrusive, distracting, and absorbing. There was also a greater incidence of “positive reminiscence,” characterized by deliberate, immersive reflections on prior memories. By monitoring behavior in real-time, we effectively captured and characterized changes in attention states as they occurred, highlighting the potential for adaptive task designs based on real-time cognitive states.



2024 ABSTRACTS

of the PSYCHONOMIC SOCIETY

Email: Halla Abdul-Rahman, 13har1@queensu.ca

6:00-7:30 PM (6012)

Resolving Interference Using a Novel Forced-

Response Method. SU WANG, *University of Michigan, Ann Arbor*, JACOB SELLERS, *University of Michigan*, HAN ZHANG, *University of Michigan*, TARAZ LEE , *University of Michigan*, JOHN JONIDES, *University of Michigan* — Human behaviors are simultaneously automatic and controlled. When habit conflicts with the goal, interference control was needed to inhibit the improper prepotent automatic behavior. Historically, popular conflict tasks to model interference control include Simon task and flanker task. Mean reaction time (RT) and accuracy rate for congruent and incongruent trials were used as dependent variables. However, issues have been increasingly pointed out using this free-RT paradigm. For instance, subjects may sacrifice their speed to get higher accuracy rate or vice versa, and RT difference-scores are confounded with overall RTs. Thus, we applied a “forced-response” approach to two conflict tasks (flanker and arrow Simon tasks) by fixing response initiation and varying the time available for response preparation. The goal was to document whether the forced-response paradigm yielded performance similar to that seen with a free-response paradigm in these conflict tasks. We implemented a hierarchical model to unravel the underlying processes of habitual and goal-directed responses from the forced-response approach. I will present the proportion congruency effect on the response preparations quantified through modeling in both conflict tasks.

Email: Su Wang, suwangcn@umich.edu

6:00-7:30 PM (6013)

Security Choice Task: Balancing Effort and Concern in Password Selection.

NICHOLAS MAJOR, *Lehigh University*, DAVID BRAUN, *Drexel University*, CATHERINE ARRINGTON, *Lehigh University* — We developed a simple model task to capture decision processes in password selection. In this security choice task, participants choose desired password characteristics (i.e., 5 to 9 characters in length), memorize a password generated based on their choice, complete ~1 minute of an n-back task on which they earn points, and finally must recall the password to access their accumulated points from a “cyberbank.” The cyberbank may be hacked with a probability that is inversely related to the length of the password.

Participants completed 40 blocks. Overall, participants favored simpler passwords suggesting an avoidance of effort. Importantly, participants’ choice patterns were responsive to past outcomes. They significantly increased the length of their password if the cyberbank was hacked on the previous block, indicating concern for security threats. They significantly decreased the length of their password if they forgot the password to their cyberbank on the previous block, suggesting sensitivity to the effort associated with remembering the password. These results validate the use of this new task in studying factors that influence password selection, such as effort, concern, and likelihood of attack.

Email: Nicholas Major, njm224@lehigh.edu

6:00-7:30 PM (6014)

Small Congruency Effects Sum Additively Even When They Index the Same Type of Conflict: Implications for Assessing Domain-Specific and Domain-General Cognitive Control Without Confounds.

MATTHEW DUNAWAY, *University of Michigan*, DANIEL H. WEISSMAN, *University of Michigan* — An ongoing controversy concerns whether cognitive control processes adapt to conflict in a domain-general or domain-specific manner. Researchers infer that two distractors (e.g., Stroop and Simon) influence distinct domains of conflict processing when they produce additive congruency effects in hybrid Stroop-like tasks. To our knowledge, however, no prior study has determined—while controlling for a confound known as the reactivation aversion effect—whether such additivity is more likely when (a) each distractor triggers a different type of conflict (e.g., stimulus-stimulus conflict vs stimulus-response conflict) or (b) both congruency effects are small. To fill this gap, we conducted four experiments involving “confound-minimized”, hybrid prime-probe tasks (N=224). We observed additive prime and probe congruency effects when the prime congruency effect was small and interactive prime and probe congruency effects when the prime congruency effect was large, regardless of whether the two distractors engendered the same or different types of conflict. These findings suggest that additive congruency effects are more likely when congruency effects are small than when each distractor triggers a different type of conflict.

Email: Matthew Dunaway, mdunawa@umich.edu

6:00-7:30 PM (6015)

The Congruency Sequence Effect Reflects Dynamic Adjustments of Control Over Goal-Directed Processing But Not Prepotent Processing in a Forced-Response Simon Task.

JACOB SELLERS, *University of Michigan*, TYLER ADKINS, *University of Michigan*, DANIEL H. WEISSMAN, *University of Michigan*, HAN ZHANG, *University of Michigan*, JOHN JONIDES, *University of Michigan*, TARAZ LEE , *University of Michigan* — Cognitive control allows us to flexibly adapt to goals in our environment. One index of adaptive control is the congruency sequence effect (CSE). The CSE is the finding that, in conflict resolution tasks, previous trial conflict leads to reduced congruency effects. This is thought to reflect higher degrees of control. However, it has been a challenge to isolate adjustments of control over prepotent and goal-directed processing in the same task to distinguish between response modulation and conflict monitoring views of the CSE, respectively. Using a novel “forced-response method” that uncovers the time course of processing in conflict tasks and a corresponding modeling approach conceptualizing processing through the lens of response preparation, we investigated the CSE in five versions of a Simon task that control for varying degrees of feature integration confounds. When confounds are minimized, we found that adaptive control is driven by facilitation of goal-directed processing with no effect on the preparation or expression of prepotent responses. This suggests that the CSE reflects control adjustments of goal-directed processing in a forced-response Simon task, providing support for the conflict monitoring view of the CSE.

Email: Jacob Sellers, jacobsel@umich.edu

6:00-7:30 PM (6016)

The Impact of Breath Duration on Sustained Attention and Physiological State in a

Meditation-Like Cognitive Task. ALEWA ANAYA, *California State University, San Bernardino*, MELISSA LOPEZ DIAZ, *California State University, San Bernardino*, VISHWA BHATT, *California State University, San Bernardino*, JOONG HO KIM, *California State University, San Bernardino*, HIDEYA KOSHINO, *California State University, San Bernardino*, JOHN CLAPPER, *California State University, San Bernardino* — Mindfulness meditation is associated with various known benefits, but the underlying mechanisms

remain obscure, at least in part due to limitations in research methods that prevent close observation of participants' somatic and attentional states during meditation. This study investigates how breath duration influences sustained attention and somatic state using Levinson et al.'s (2014) breath counting task (BCT) with concurrent recording of heart rate variability (HRV). Breath duration was manipulated across three levels (4, 7, or 10 seconds), guided by a rising and falling tone. The results indicated that longer breaths predicted higher HRV coherence, yet did not disrupt attention, as counting errors per 9-breath cycle remained consistent across conditions. These findings suggest a potential synergy between the state of relaxed alertness associated with high HRV coherence and sustained attention during mindfulness meditation.

Email: Alewa Anaya, 007433082@coyote.csusb.edu

6:00-7:30 PM (6017)

A Database of Threatening and Non-Threatening Objects, Visually Alike and Rated for Similarity.

MICHAEL C. HOUT, *New Mexico State University*, BOTOND KISS, *University of Pecs*, JULIA BASLER, *University of Pecs*, OTILIA CSONKA, *University of Pecs*, BAHTIYAR YILDIZ, *University of Pecs*, MARKO HERNANDEZ, *New Mexico State University*, BRYAN WHITE, *New Mexico State University*, EBEN DAGGETT, *New Mexico State University*, ANDRAS N. ZSIDO, *University of Pecs* — Researchers often require validated and well-rounded sets of image stimuli. For those interested in understanding visual attentional biases toward threats, a dataset containing a variety of such objects is urgently needed. Our goal was to create an image database of animate and inanimate objects, including those that people find threatening and those that are visually similar to them but are not threats. Participants (N=77) in an online survey were asked to name threatening objects and offer a visually similar counterpart. We used the survey results to create a list of 32 objects, including 8 from each crossing of threatening vs. not and animate vs. inanimate. We obtained 20 exemplars of each category (640 unique images in total, copyright-free and openly shared). A new sample of Hungarian participants (N=110) judged the similarity of these images using the spatial arrangement method. Data were modelled using multidimensional scaling and used to create a “map” of animate and inanimate objects that spatially conveys the perceived similarity relationships. We expect that this image set will be widely used in

future visual attention studies; ongoing efforts involve collecting a complementary sample from American participants.

Email: Michael Hout, mhout@nmsu.edu

6:00-7:30 PM (6018)

Guess What? Only Correct Choices Forge Immediate Stimulus-Response Bindings in Guessing Scenarios. ANNA FOERSTER, *Trier University*, VIOLA MOCKE, *Julius-Maximilians-Universität Würzburg*, BIRTE MOELLER, *Trier University*, ROLAND PFISTER, *Trier University* — A central mechanism of action control is binding between actions and the stimuli provoking them. Perceiving the same stimuli again retrieves any bound responses, facilitating their execution. Does such binding and retrieval only emerge when stimulus-response rules are known before taking action or also when agents are forced to guess and receive feedback about the success after responding? In two experiments, we tested the hypothesis that knowing rules before responding would boost stimulus-response binding relative to guessing situations. Second, we assessed whether the content of the feedback matters for binding in that agents might use feedback to build correct stimulus-response bindings even for wrong guesses. We used a sequential prime-probe design to induce stimulus-response binding for prime responses that were either rule-based or guesses and to measure retrieval of these bindings in response times and errors in the probe. Results indicate that binding and retrieval emerges for successful but not for wrong guesses. Binding effects for correct guesses were consistently small in effect size, suggesting that pre-established stimulus-response bindings from instructed rules might indeed boost binding when taking action.

Email: Anna Foerster, foerster@uni-trier.de

6:00-7:30 PM (6019)

Recidivism Risk Estimated from Data Visualizations Can Influence Jurors' Decisions. GABRIEL I. COOK, *Claremont McKenna College*, JANE MATEJKA, *Scripps College*, TRENT LINDSEY, *Claremont McKenna College*, DANIEL A. KRAUSS, *Claremont McKenna College* — Feature-based attention is often used to process data visualizations. We investigated whether the position location of points in a scatterplot is influenced by encoding point size as a third dimension in data visualizations (e.g., bubble charts).

When estimating the average position of points along a plot axis, larger points can bias estimations of average in the direction of those larger points. We studied whether this weighted-average illusion occurs in a real-world scenario involving mock jurors' estimates of recidivism risk. Of special interest was the degree to which features influence jurors' commitment decisions. We examine whether an expert's testimony, which included an actuarial mean-point estimate of risk, may anchor these commitment decisions.

Email: Gabriel Cook, gcook@CMC.edu

6:00-7:30 PM (6020)

The Effects of Alertness and Orienting Exogenous Spatial Attention on Visual Speed Perception. GÖZDE ŞENTÜRK, *Koç University* — The effects of alertness and orienting exogenous spatial attention on visual speed perception were investigated. In each trial, a random dot kinematogram (RDK) with dots moving at a constant speed (reference RDK) and another one with varying speeds across trials (test RDK) appeared at the opposite sides after a visual cue (none, double on both sides, single central, left or right side). Participants reported which of the two RDKs seemed to be consisting of faster dots. The objective speeds of the RDKs influenced the perceived speed. Additionally, RDKs that appeared at the side of the single cue were reported to be faster than the RDKs that appeared at the opposite side when both were at similar speeds. This cueing effect suggests orienting attention may increase the perceived speed of the attended stimuli. The absence of difference between no cue and double cue conditions indicated alertness may not influence the perceived speed.

Email: Gözde Şentürk, gosenturk@ku.edu.tr

6:00-7:30 PM (6021)

Visual Focal Attention in Processing Hierarchical Faces and Letters. SILVIA PRIMATIVO, *Libera Università degli Studi Maria Ss. Assunta di Roma (LUMSA)*, LISA S. ARDUINO, *Libera Università degli Studi Maria Ss. Assunta di Roma (LUMSA)* — The preference for global or local processing is influenced by the nature of the stimuli. We hypothesized that this preference is due to differences in the modulation of visual focal attention. This study investigated adult healthy participants using hierarchical congruent/incongruent faces and letters, along with focal

attention metrics. The results indicate that letters are processed faster locally than globally, with no congruency effect observed. Similarly, global face processing showed no congruency effect, but local face processing times were longer in the case of incongruity. A positive statistical correlation was found between focal attention and the advantage in processing local letters, but not faces. We conclude that the near-automatic processing of letters allows for the adaptation of the focal attention window according to task requirements. Conversely, during face processing, global processing hinders the modulation of the focal attention window to local elements.

Email: Silvia Primativo, s.primativo@lumsa.it

6:00-7:30 PM (6022)

Perceptual Grouping Modulates Attentional Object-Based Effects. ECE YUCER, *University of Toronto*, SARAH SHOMSTEIN, *The George Washington University*, JAY PRATT, *University of Toronto* — Previous research using the well-known two-rectangle paradigm has demonstrated object-based effects (OBE) with attention; when one part of an object is cued, attention is allocated to the other parts of that object. The present study investigates whether perceptual grouping modulates object-based effects. To do so, we designed two stimuli that complete each other when facing each other on one side, demonstrating perceptual grouping, and do not complete each other on the other side. Participants performed a cued detection task, where in 60% of trials, the target (a black circle) appeared at the cued location; in 20% of trials, the target appeared at an equidistant, uncued side of the cued object; and in the remaining 20%, the target appeared at an equidistant, cued side of the uncued object. Examining the non-grouped objects, we found a typical OBE with shorter RTs to the invalidly-cued location on the cued object than the invalidly-cued location on the uncued object. Importantly, looking into the grouped objects, no such OBE was found. These findings indicated that perceptual grouping does modulate object-based attention.

Email: Ece Yucer, ece.yucer@mail.utoronto.ca

6:00-7:30 PM (6023)

Examining the Role of Attention in Mitigating Learning Traps Through Losses: Insights from a Recognition Task. JOSEPH A. MARTIS, *Colorado State University*, CAROL SEGER, *Colorado State*

University — Learning traps hinder individuals' recognition of alternative task performance options. Traps develop when attention focuses on specific visual cues relevant for outcomes while neglecting other possibilities. Li, Gureckis, and Hayes (2021), suggested that attentional differences during approach-avoid tasks under frequent loss compared to gain conditions might mitigate learning traps. However, attention was not directly measured. Our study bridged this gap by adding a recognition task. On each trial, participants decided whether to approach or avoid stimuli, then identified them as new or old. Using transfer stimuli, we assessed attention distribution and rule generalization. Preliminary findings indicate a trend towards better recognition ability in the frequent loss condition compared to the gain condition. This study contributes to understanding how attentional mechanisms may influence the development and persistence of learning traps, shedding light on potential strategies for mitigating these cognitive biases.

Email: Joseph Martis, jojamartis@gmail.com

6:00-7:30 PM (6024)

Guiding Features in Augmented Reality: A Visual Search Paradigm. ETHAN CASTANON, *Visual Information Sciences and Neuroscience (VISN) Lab*, CASPER STUBBERUD, *Visual Information Sciences and Neuroscience (VISN) Lab*, ANN HILLARY BUENAFAE, *California State University, Northridge*, PALOMA SANTOS, *Visual Information Sciences and Neuroscience (VISN) Lab*, STEFANIE A. DREW, *California State University, Northridge* — With the growing advancements of augmented reality (AR) and virtual reality (VR) technology, these systems are increasingly becoming integrated into many facets of our lives, making it crucial to examine more closely phenomena associated with the usage of this technology. This study investigates the potential of AR systems to facilitate visual search for a target by providing guiding feature cues overlaid onto the real world. The research aims to address the gaps in understanding the contributions of holographic cue type on search speed. Based on previous literature, we hypothesized that response time will be faster when using augmented reality guiding features (arrow and motion spline) compared to no cue (control), with the motion spline condition showing the largest improvement. Participants completed a visual search task in the real world with the guiding cue, and answered survey questions afterward.

We found that the feature condition significantly affected response time, with post-hoc analysis revealing that individuals in the motion spline condition had significantly faster response times than the arrow condition, though no other significant relationships were observed. Further implications are discussed.

Email: Ethan Castanon, ethanjcastanon@gmail.com

6:00-7:30 PM (6025)

Object-Based Attention Is Flexible to Both Low- and High-Level Changes in Real-World Objects.

KELLY MCEVOY, *The George Washington University*, DICK DUBBELDE, *Georgetown University*, SARAH SHOMSTEIN, *The George Washington University* — Attentional selection operates on object-based representations with both low-level boundaries and high-level properties contributing to attentional guidance. However, the relative contributions of these two types of attention to object-based selection remains unclear. Here, we assess the influence of consistent object borders and semantic information on attentional selection. We used an adapted two-rectangle task where the attended object changed according to one of four conditions: same border but different category, different border but same category, an "outlier" object with neither in common, or no change at all. We hypothesized that objects with the same border or category would influence the perception of objecthood to varying extents, while "outlier" objects will disrupt object representations yielding an overall smaller object-based effect (OBE). Robust OBEs were observed when either border or category was maintained but not when both properties were disturbed, noting a limit to the flexibility of object-based attentional guidance. Overall, our results suggest that object-based attention persists despite altering object properties in real-world objects, which can generalize to more naturalistic environments.

Email: Kelly McEvoy, kemcevoy@gwu.edu

6:00-7:30 PM (6026)

The Attentional Sharpening Effect in Older Adults.

TRISHA MENON, *University of Toronto*, AVALON NISENBAUM, *University of Toronto*, RYAN S. WILLIAMS, *University of Toronto*, SUSANNE FERBER, *University of Toronto* — Difficult target-nontarget discriminations become more efficient over time, a process known as attentional sharpening. The cognitive mechanisms of this effect are unclear. One

account is that the attentional weightings of stimulus-specific feature values are adjusted over time. Alternatively, individuals may recruit more proactive control when difficult discriminations are expected. In a recent study with young adults, we found attentional sharpening to be driven by an experience-dependent process which allows observers to narrowly tune the gain of a target feature value while suppressing the gain of nontarget feature values (Williams et al., 2023). With age, the decline of the prefrontal cortex predicts reductions in proactive control (Hasher & Zacks, 1988). Conversely, posterior regions, subserving sensory functions, remain relatively intact (Brewer & Barton, 2012). As such, the current experiment sought to investigate attentional sharpening in older adults. If attentional sharpening is truly due to an experience-dependent process based on perception (Williams et al., 2023), rather than proactive control, attentional sharpening should remain relatively intact. Our preliminary results confirm this hypothesis.

Email: Trisha Menon, trisha.menon@mail.utoronto.ca

6:00-7:30 PM (6027)

The Interaction of Attention and Feature

Similarity with Cross-Modal Features. YU LI, *University of Missouri*, DOMINIC GUITARD, *Cardiff University*, NELSON COWAN, *University of Missouri* — The differences between modalities of sensory perception have been a focus of working memory studies and have spurred many models, which predict different performances under various attention and stimulus similarity conditions. Much of the models was developed based on studies using typical visual and auditory stimuli. However, the literature on this topic is limited with cross-modal features. In this study, we aim to investigate the relationship between features and attention when the stimuli pertains both visual and auditory modalities. The study uses a dual-set paradigm that requires the participants to attend to one or both sets of stimuli for recognition tasks. We used color and pitch as typical visual and acoustic features, and unlike previous studies, in which there is little apparent overlap of features between modalities, we used a common feature type, duration, in both auditory and visual modalities. The pilot results support models in which there is a strong role of a shared central resource such as attention. Furthermore, the data show an asymmetry that the visual duration judgement is more attention

demanding while feature similarity of the two sets had a more profound effect when probing auditory duration.

Email: Yu Li, vlrc@missouri.edu

6:00-7:30 PM (6028)

Is the Lack of Lexical Competition Effects Observed with Different-Script Bilinguals Due to Their Low Lexical Precision in L2? Hristina Petrović, Tohoku University, MASAHIRO YOSHIHARA, Tohoku University, TAKUMI UCHIHARA, Tohoku University, STEPHEN J.

LUPKER, *The University of Western Ontario*, MARIKO NAKAYAMA, *Tohoku University* — Previous studies with different-script bilinguals have demonstrated that masked neighbor word primes facilitate target processing in their L2 (Nakayama & Lupker, 2018). This result implies that lexical competition processes are minimal in their L2 orthographic lexicon, unlike those observed with L1 readers (Davis & Lupker, 2006). The present study tested the hypothesis that this lack of lexical competition is due to different-script bilinguals having low lexical precision in L2. Japanese-English bilinguals made lexical decisions to English targets primed by neighbors or unrelated words with an English spelling test being used to measure the bilinguals' levels of lexical precision (Andrews & Hersch, 2010). The results replicated the facilitation effect typically observed in this population. Further, higher spelling accuracy was significantly associated with faster latencies, indicating that the spelling task successfully assessed lexical precision (Perfetti, 2007). Critically, however, higher spelling accuracy was not related to the sizes of the priming effects. Our results suggest that the lack of lexical competition shown by different-script bilinguals is likely not due to them having low lexical precision in L2.

Email: Hristina Petrović, petrovikj.hristina.s4@dc.tohoku.ac.jp

6:00-7:30 PM (6029)

Variability in Bilingualism: Understanding Sentence Interpretation in Spanish-English Bilinguals. EVELYN D. RODARTE, *University of Houston*, YINAN XU, *University of Houston*, MY V. H. NGUYEN, *University of Houston*, ARTURO HERNANDEZ, *University of Houston* — The present study investigates real-time costs of sentence interpretation in adult Spanish-English bilinguals by applying predictions of the competition model (CM). Studies reported different patterns of dominance of

sentence interpretation in bilinguals within the CM; studies on Spanish-English bilinguals found that bilinguals use an amalgam (strategies from L1 and L2) when choosing an agent in a sentence. In this study, bilingual participants listened to 54 sentences across 9 conditions varying in word order and verb agreement. They were required to select an agent from sentences in both Spanish and English conditions. Language proficiency will also be examined to determine whether it predicts dominance patterns. Socioeconomic status will be examined further to elucidate the relationship between SES and language proficiency. Exploring the relationships between language processing, socioeconomic status (SES), and second language sentence interpretation among bilingual learners provides crucial insights for psycholinguistic research and bilingual education.

Email: Evelyn Rodarte, edrodart@cougarnet.uh.edu

6:00-7:30 PM (6030)

Behavioral Correlates of Semantic and Syntactic Elements in Multilingual Young Adults. GIGI LUK, *McGill University*, LAUREN SCHELLENBERG, JUSTIN FENG, SOHYUN CHO — To establish the utility of microstructures in narrative production, we explored the associations between microstructures in narrative production and standardized language

assessments in 61 multilingual young adults. Narrative production in a picture-elicited task was recorded, transcribed, and coded in Systematic Analysis of Language Transcripts (SALT). Participants also completed a battery of standardized tests. Canonical scores of semantic and syntactic microstructures were extracted and correlated with experimental and standardized language and cognitive measures. Semantic microstructures were positively correlated with macrostructures from the same task. Furthermore, semantic canonical scores, but not syntactic canonical scores, were correlated positively with memory for digits and letters, and recall performance in the Oral Passage Understanding Scale (OPUS). Finally, both semantic and syntactic canonical scores were correlated with passage comprehension and picture vocabulary subtests in the Woodcock-Johnson IV Battery, and the OPUS total scores and semantic subscale scores. Results demonstrated the utility of microstructures in narrative production in multilingual young adults as an ecologically relevant measure.

Email: Gigi Luk, Gigi.luk@mcgill.ca

6:00-7:30 PM (6031)

Bilingual Language Processing of Evidentiality in a Turkish-English Translation Task: The Effect of Interpreter Training. SUMEYRA TOSUN, *Medgar Evers College CUNY*, LUNA FILIPOVIC, *University of California, Davis* — Evidentiality is a linguistic feature that indicates the source of knowledge about a described event, with the key contrast between firsthand (i.e., personally witnessed) vs. non-firsthand (e.g., hearsay or inference) information. Turkish draws this distinction grammatically while English does not. Our study probed for the effects of this typological difference on bilingual production for two different populations (L2 location/informal L2 instruction vs. L1 location/formal L2 instruction). A total of 58 participants (24 late bilinguals based in the USA and 34 translators based in Turkey) translated firsthand and non-firsthand sentences in both directions and rated speaker certainty for each translated sentence. Results showed that translation accuracy and perception of speaker certainty were influenced by L2 learning experience, source of information, and translation direction. Overall, first-hand information was translated more accurately than non-firsthand by both groups and considered more. The translators were more accurate than the late bilinguals but only in the English-to-Turkish direction. We conclude that both populations reaped similar benefits for L2 but not for L1 performance.

Email: Sumeyra Tosun, stosun@mec.cuny.edu

6:00-7:30 PM (6032)

Collaborating Across Cultures in a Shared Language: Examining Speech Accommodation in Cooperative Gameplay. SUSAN C. BOBB, *Gordon College*, JOSHUA FAIRCLOTH, *Gordon College*, AUDREY EAVES, *East Carolina University*, JOSEPH LEE, *East Carolina University*, KATHRIN ROTHERMICH, *East Carolina University* — Research shows people adapt their speech based on the listener's comprehension level. Second-language (L2) speech accommodation involves changes in speed, articulation, word frequency, and contextual diversity. Because digital communication often reduces access to conversational cues like facial expressions, this study examined L2 accommodation in auditory-only contexts. More proficient (L1) English speakers (N=19) played a game once with an L1 speaker and once with a less-proficient L2 English speaker over Zoom with only audio feedback.

We hypothesized greater speech adjustments toward L2 speakers than L1 speakers and increased accommodation in situations without visual feedback compared to past research where sessions occurred in-person. The interactions were analyzed for word frequency, word length, and lexical diversity. All players significantly improved game performance with experience ($p < .05$). In contrast to past in-person results, findings from audio-only interactions showed no significant differences in the lexical properties of words used towards L1 or L2 speakers ($p > .1$). Ongoing analyses will further interpret these results for technologically mediated conversations.

Email: Susan Bobb, susan.bobb@gordon.edu

6:00-7:30 PM (6033)

How Does Language Experience Affect Hemispheric Interaction in L2 Visual Word Recognition? JISOO SONG, *Korea University*, SANGYUB KIM, *Chonnam National University*, WONJAE LEE, *Korea University*, KICHUN NAM, *Korea University* — In the present study, we aimed to investigate whether bilinguals' hemispheric interaction during second language (L2) lexical processing differs depending on their language experience, particularly in terms of age of acquisition and number of years spent in the L2-speaking country. We collected background information on language experience from 80 right-handed Korean-English sequential bilinguals and performed a lateralized lexical decision task. We then used linear mixed effect models to analyze if the right visual field advantage (RVFA) and the bilateral redundancy gain (BRG) differed according to the indicators regarding L2 acquisition. The results indicated that the earlier the L2 acquisition, the greater the RVFA on high-frequency word recognition. For the BRG, late L2 acquisition was linked to significantly lower response accuracy for bilaterally presented pseudowords, and more years spent in a L2-speaking country were associated with higher response accuracy for bilaterally presented low-frequency words. These findings suggest that hemispheric interactions during L2 visual word recognition may differ depending on individual bilinguals' language experience.

Email: Jisoo Song, jisoos@korea.ac.kr

6:00-7:30 PM (6034)

Speaking in a Second Language: Your Accent Might Depend on How Well You Know the Writing System of that Language.

AUDREY BURKI, *University of Potsdam*, EFREMOVA ARINA, *University of Potsdam*, ELSA SPINELLI, *Grenoble University*, PAULINE WELBY, *CNRS & Aix-Marseille University* — Knowing the spelling of words in a second language can influence their pronunciation. This study investigates whether orthography impacts the pronunciation of words whose spellings have never been encountered. French participants first learned to associate pictures of novel objects with their spoken names, all containing the vowel /a/ and pronounced by an American English speaker. During testing, participants were shown written forms of the learned items, spelled either with "a" (zasp) or "o" (zosp), and new items (zisp), and had to decide whether a given item was a learned or new item (old/new task). Afterwards, they named each picture and wrote each word down. The proportion of YES responses in the old/new task were higher for written forms consistent with the participants' spelling. Response times were also faster for these items. Formant values for the target vowels in the naming task were higher for vowels spelled with "a" than for vowels spelled with "o", indicating that the spelling provided by the participants impacted their pronunciation. These findings suggest that orthographic representations are generated in the absence of explicit orthographic input and subsequently influence pronunciation.

Email: Audrey Burki, audrey.buerki@gmail.com

6:00-7:30 PM (6035)

Speech Accommodation in Clinical Contexts:

Lexical and Acoustic Analysis of Mixed-Reality Interactions.

ROSE P. BAKER, *East Carolina University*, DAI'SHA DOWSON, *East Carolina University*, MAKYAH MCNEILL, *East Carolina University*, ELISHA EANES, *East Carolina University*, HANNAH RAGSDALE, *East Carolina University*, AUDREY EAVES, *East Carolina University*, JOSEPH LEE, *East Carolina University*, SUSAN C. BOBB, *Gordon College*, KATHRIN ROTHERMICH, *East Carolina University* — First-language (L1) speakers often adapt their speech to accommodate second-language (L2) speakers. This study explored whether these adjustments depend on the L2 speaker's language proficiency. We hypothesized that L1 speakers would use

slowed speech, higher pitch, and less complex words with low-proficiency L2 speakers, compared to high-proficiency speakers. To test this hypothesis in a clinical context, we invited L1 physician assistant students (N=41) to perform a clinical intake with two L2 avatars in a mixed-reality platform (Murison). One avatar spoke English with high proficiency and the other with low proficiency. Interactions were recorded and analyzed for lexical and acoustic features. Results show that L1 speakers used significantly more frequent, semantically diverse, contextually diverse words, slowed their speech rate, and used higher overall pitch with the low-proficiency avatar than the high-proficiency avatar. Taken together, our study demonstrates that healthcare students sensitively modify their speech to accommodate L2 speakers.

Email: Rose Baker, bakerr22@students.ecu.edu

6:00-7:30 PM (6036)

Syntactic and Emotional Interplay in Bilingualism: The Modulating Role of Emotional Experience in L2.

BEATRIZ BERMÚDEZ-MARGARETTO, *University of Salamanca*, DAVID BELTRÁN, *Universidad Nacional de Educación a Distancia*, ANGEL FERNANDEZ, *Universidad de Salamanca*, MARÍA J. SÁNCHEZ, *Universidad de Salamanca* — Previous research has demonstrated the influence of emotions during linguistic processing, indicating the interactivity of both processes in the brain. However, little is known regarding such interplay in a second language (L2). This study addressed this question by examining the reading effects of syntactic violations while processing L2 emotional and neutral statements. Forty-six Spanish-English bilinguals with various levels of L2 proficiency and emotional resonance (i.e., capability for emotional experience in L2) were presented with a self-paced sentence reading task. Sentences contained positive, neutral and negative verbs, half of them presented in agreement and half in disagreement with the preceding pronoun. Analysis of verb reading times using linear mixed-effects models revealed a significant interaction between syntactic violation, verb valence and emotional resonance, suggesting that stronger emotional L2 experience results in a higher saliency of negative verbs, reducing the impact of syntactic violations.

Email: Beatriz Bermúdez-Margaretto, bermudezmargaretto@gmail.com

6:00-7:30 PM (6037)

What Is the Best Way to Measure Bilingualism?

ANNE NEVEU, *University of California, San Diego*, DALIA GARCIA, *San Diego State University & University of California, San Diego*, BRITNEY S. ESCOBEDO, *University of California, San Diego*, PAULINA ENRIQUEZ VAZQUEZ, *University of California, San Diego*, MIGUEL MEJIA, *University of California, San Diego*, LIV J. HOVERSTEN, *University of California, Santa Cruz*, TAMAR H. GOLLAN, *University of California, San Diego* — Self-reports of proficiency are notoriously inaccurate yet are the default measure in research on bilingualism and to determine language dominance in clinical settings. The gold standard measure is the Oral Proficiency Interview (OPI), which can take three times as long to administer than brief commonly used objective measures (e.g., picture naming, fluency, and lexical decision tasks). We examined to what extent brief objective, subjective, and combined measures predicted the gold standard for measuring language dominance, balance, Spanish and English proficiency in 80 Spanish-English bilinguals, using forward regression. Objective measures explained 50%-70% variance in OPI scores while subjective measures explained only 23%-43%. Combining multiple objective measures explained more variance, but the MINT Sprint 2.0 explained the most variance overall and is fastest and easiest to score. Failure to include objective measures in the study of bilingualism is hard to justify and should not be considered acceptable research practice.

Email: Anne Neveu, aneveu@health.ucsd.edu

6:00-7:30 PM (6038)

A Positive Mood Promotes Gender Stereotype Activation During Semantic Integration.

MARCIN NARANOWICZ, *Adam Mickiewicz University*, KATARZYNA JANKOWIAK, *Adam Mickiewicz University* — Mood permeates cognitive mechanisms, including semantic processing (Forgas, 2017). Prior sociological research suggests that a positive compared to negative mood promotes assimilative thinking and reliance on pre-existing knowledge, leading to heightened activation of gender stereotypes (Wang et al., 2015). However, the effect of mood on stereotype-based language processing from a psycholinguistic perspective is underexplored. This event-related potential study examined how mood influences gender stereotype activation in sentence processing. Thirty-six female

participants were induced into positive and negative moods with emotionally charged film clips. They performed a gender stereotype congruency task to stereotypically congruent and incongruent sentences. The results showed smaller N400 amplitudes in a positive mood, regardless of stereotype congruency, suggesting facilitated lexico-semantic processing. The late positive complex responses were larger for stereotypically incongruent than congruent sentences only in a positive mood, indicating increased stereotype activation during meaning integration. Altogether, this study offers insights into how mood modulates stereotype-laden language processing.

Email: Marcin Naranowicz, marcin.naranowicz@amu.edu.pl

6:00-7:30 PM (6039)

Cognitive Training Improves Cognition in MCI.

ALLEN M. OSMAN, *Lumos Labs*, PAUL I. JAFFE, *Stanford University*, NICOLE F. NG, *Lumos Labs*, KEVIN P. MADORE, *Lumos Labs*, KELSEY R. KERLAN, *Lumos Labs*, ROBERT J. SCHAFER, *Lumos Labs* — Mild cognitive impairment (MCI) is associated with reduced function in multiple cognitive domains and is a risk factor for the subsequent development of dementia. The reported study examined whether cognitive training (CT) can help to ameliorate or compensate for these reductions. Here we analyzed de-identified data from users of Lumosity, a commercial CT program, who also took a neuropsychological test battery (NCPT) twice and completed a survey of health conditions. Included were users who reported having been diagnosed with MCI (n=348), as well as healthy controls (HC, n=348) matched (case-control) for age, gender, amount of CT, and time between an NCPT before (baseline) and after CT. Baseline NCPT scores were significantly poorer for the MCI than HC group, supporting the validity of the self-reported diagnoses. Both groups improved significantly from the first to second NCPT, notably by comparable amounts. Such improvements could in principle be due either to CT between the two NCPTs or to direct practice on the NCPT from repeated testing. However, the presence of a significant CT dose-response effect, which was again comparable in both groups, indicates that improvement on the NCPT was at least partially due to CT.

Email: Allen Osman, allen.osman@gmail.com

6:00-7:30 PM (6040)

Mindful Breathing Yields Limited Benefits for Young and Older Adults' Speech Production.

LORI E. JAMES, *University of Colorado, Colorado Springs*, OCTAVIO BUSTOS PENALOZA, *University of Colorado, Colorado Springs*, DELANEY CIBOROWSKI, *University of Colorado, Colorado Springs* — Brief mindful breathing may facilitate some cognitive processes in young adults, but neither young nor older adults reliably demonstrate improved word retrieval following mindful breathing. In this study, 81 participants (39 young and 42 older adults) engaged in 10 min of guided mindful breathing and 91 other participants (46 young and 45 older adults) listened to 10 min of a story in a control condition. Participants then described 3 pictures with mildly negative emotional content. We assessed several measures of speech production: speech rate, speech fillers, repairs/false starts, and repetitions. Neither speech rate nor filler production was affected by the manipulation. However, repairs/false starts and repetitions were lower in the mindful breathing than the control condition, and the effects of condition did not interact with age group. These results indicate that some aspects of fluent speech production can benefit from a brief mindful breathing exercise, with similar effects for young and older speakers. Reasons underlying the benefit of mindful breathing on these specific speech production indices are discussed.

Email: Lori James, ljames@uccs.edu

6:00-7:30 PM (6041)

Overcoming Fixation During Creative Idea Generation Through Cognitive Flexibility Priming: Evidence from a Lifespan Sample.

DENISE EALY, *University of Wisconsin*, ALLISON THROM, *Middle Tennessee State University*, SHAUN BURGESS, *Middle Tennessee State University*, ANNA ROBISON, *Middle Tennessee State University*, MAIRIAM IBRAHIM, *Middle Tennessee State University*, MALLORY COCHRANE, *Middle Tennessee State University*, ELIZABETH KEY, *Middle Tennessee State University*, JAMES HOUSTON, *Middle Tennessee State University* — Cognitive flexibility refers to the ability to switch between tasks, concepts, or strategies. Cognitive flexibility may increase accessibility to creative ideas by facilitating a release from fixation. While the association between aging and creativity is not

fully understood, evidence suggests that engagement in creative activities during later life leads to more positive outcomes. The current study aimed to prime cognitive flexibility to increase creative idea generation in younger and older adults. Participants in the flexibility priming condition generated more objects relative to participants in a control condition. This effect was age invariant, suggesting similar benefit of flexibility priming across age groups.

Email: Denise Ealy, dealy@medicine.wisc.edu

6:00-7:30 PM (6042)

Social Engagement Moderates Age-Related

Changes in Emotion Recognition. IRENE P. KAN, *Villanova University*, CODY S. TRIPPLETT, *Villanova University*, ANNA B. DRUMMEY, *Villanova University*, ELIZABETH J. PANTESCO, *Villanova University* — Age-related changes in emotion recognition are well-documented, with older adults generally worse at recognizing facial emotions than younger adults. Interestingly, there are nuanced differences across the six basic emotions: Age-related declines are commonly observed for anger, fear, and sadness, less consistently found for surprise and happiness, and not typically observed for disgust. Since emotion recognition is a fundamentally social act, we hypothesize that emotion recognition may be influenced by extent of social engagement. Using data from the Cambridge Centre for Ageing and Neuroscience, we investigated the associations among age, frequency of social engagement with friends and family, and emotion recognition in a sample of 647 adults (M age=54.7, age range=18-89, 52.4% Female). After adjusting for sex, race, and education, we found age-related declines in recognizing anger, fear, sadness, surprise, and happiness, but not disgust. Furthermore, the association between age and recognition of anger and fear is moderated by social engagement, where age-related decline in emotion recognition is more impactful at lower levels of social engagement than at higher levels of social engagement.

Email: Irene Kan, irene.kan@villanova.edu

6:00-7:30 PM (6043)

Modified Signal Detection Models of Context

Memory and Feature Memory Account for Age and Gender. ASHLEY STEINKRAUSS, *Boston College*, HALEY A. FRITCH, *Broad Institute, Massachusetts Institute of Technology & Harvard*

University, SCOTT D. SLOTNICK, Boston College — Memory is a complex cognitive process influenced by task/stimulus conditions, age, and gender. We conducted receiver operating characteristic (ROC) analysis to distinguish between continuous and threshold models of memory. Younger participants (163 females, 80 males) and older participants (158 females, 62 males) completed memory tasks involving color context recall or color feature recall. Four memory models were fit to the ROCs: the unequal variance (UEV) model, the UEV model with forgetting (UEVFG), the UEV model with source misattribution (UEVSM), and the two-high threshold model (2HT). For younger adults, the UEVFG model provided the best fit and, in contrast, for older adults, the UEVSM model provided the best fit. There were also potential differences between gender and task conditions, particularly for older adults. These findings illuminate the complexity of memory phenomena and underscore the need for modified memory models to capture age-specific and gender-specific nuances.

Email: Ashley Steinkrauss, steinkas@bc.edu

6:00-7:30 PM (6044)

Navigating the Aging Mind: Selective Declines in Cognitive Control. SARAH DE PUE, KU Leuven, CÉLINE GILLEBERT, KU Leuven, EVA DIERCKX, Vrije Universiteit Brussel & Alexianen Zorggroep Tienen, EVA VAN DEN BUSSCHE, KU Leuven — In this rapidly aging society, one of the biggest challenges is the increasing cognitive decline with age. Although general cognitive control declines with age, different functions decline at a different onset, pace and trajectory. To better understand the cognitive control decline in aging, we recruited 75 young adults and three older adult cohorts: 60-69 years old ($n=80$), 70-79 years old ($n=82$) and 80 years or older ($n=69$). Participants completed a test battery measuring updating, inhibition, shifting and proactive control. Results showed that older adults still preferred a proactive control strategy. Inhibition surprisingly did not differ with age, whereas updating linearly declined across the age groups. Finally, for shifting, switch costs were larger in older compared to young adults. It is clear that cognitive decline is highly heterogeneous. Some cognitive control functions showed expected age-related decline, but other functions did not seem to be impacted by aging. In addition, covariates such as gender and social network were studied. We are currently retesting these older adults to obtain a more fine-grained view on when cognitive decline is occurring

and, ultimately, what we can do to prevent further cognitive decline.

Email: Sarah De Pue, sarah.depue@kuleuven.be

6:00-7:30 PM (6045)

Working Memory Training for Older Adults: Gamification and Individual Differences.

MORGAN GOMEZ, Northeastern University, ANJA PAHOR, University of Maribor, AUDREY CARRILLO, Northeastern University, AARON R. SEITZ, Northeastern University, SUSANNE M. JAEGGI, Northeastern University, SARAH CHANG — Evidence suggests working memory (WM) training can be beneficial for older adults. The integration of game-like features has shown potential to boost motivation and engagement, fostering improved learning outcomes. Yet, incorporating game design elements may increase cognitive load and cause distraction. The gamification of training tasks may show positive effects for some while potentially hindering performance for others. Our study investigates the individual differences and impact of gamification of WM training tasks on older adults, including those at risk for Alzheimer's disease and related dementias. We recruited 143 older adults across Southern California (80% Female, 83% White, $M=69$ yrs, $SD=7.5$). Through two randomized crossover trials, we compare gamified and non-gamified versions of N-back and Span tasks. We assess two models: 1) Participants struggling to inhibit distractions may benefit more from non-gamified training, while those with higher tolerance may benefit from gamification. 2) Intervention outcomes may be better predicted by general cognitive ability. Our research offers insight into the effectiveness of gamification of WM training, considering individual differences for future tailored interventions.

Email: Morgan Gomez, gomez.mo@northeastern.edu

6:00-7:30 PM (6046)

Ageless Memory: The Animacy Effect in Older Adults in Retrospective and Prospective Memory Tasks. SARA B. FÉLIX, William James Center for Research & University of Aveiro, JAMES S. NAIRNE, Purdue University, JOSEFA N. S. PANDEIRADA, William James Center for Research & University of Aveiro — From an evolutionary perspective, remembering better animates/living beings (vs. inanimates/nonliving things) would be adaptive due to their fitness-relevance (e.g., they could be predators,

prey). Such an advantage (the animacy effect) is established in retrospective and prospective memory (PM) in young adults (retrieving information from the past/remembering future intentions, respectively). However, its evidence in older adults is scarce. In Study 1 (N=42 older and 41 young participants) we replicated the animacy effect in free recall in young adults (cf. Nairne et al., 2013), and found it in older adults. Study 2 revealed that animate (vs. inanimate) targets improved PM in older adults (N=71; cf. Félix et al.'s data from 79 young adults, 2024). Both studies revealed no age-related interactions, showing the persistence of the animacy effect in later life. Said results matter to the discussion on the functional-evolutionary and proximate mechanisms of the effect and hold practical implications namely in enhancing older adults' daily memory functioning/independence (e.g., medication intake). Sample sizes were calculated a priori (Faul et al., 2007). Both studies were conducted online and pre-registered.

Email: Sara Félix, sara.felix@ua.pt

6:00-7:30 PM (6047)

Age Differences in the Use and Benefit of Partial Offloading for Recall of Valuable Information.

LOIS K. BURNETT, *Baylor University*, LAUREN L. RICHMOND, *Stony Brook University* — Partial cognitive offloading involves placing some to-be-remembered information into an external store and encoding other to-be-remembered information to internal memory. This strategy is expected to best support performance if more difficult information is stored externally and easier information stored internally but whether people are strategic about what they offload is not well-understood. We investigated whether the use and benefit of partial offloading changed for young and older adults following direct instruction (Experiment 1) or extended practice (Experiment 2) for information that varied in objective value. Across experiments, experience using partial offloading encouraged participants to preferentially offload higher value information. Further, experience increased the overall performance benefit afforded by offloading.

Interestingly, the benefit of partial offloading for recall of non-offloaded information was greater for young adults and was critically dependent upon having experience with partial offloading. Results suggest that acquiring experience with partial offloading benefits performance by helping people learn what to offload during encoding and how to use offloaded information during test.

Email: Lois Burnett, Katie_Burnett@baylor.edu

6:00-7:30 PM (6048)

Compensation or Magnification: (Pre-Training) Fluid Reasoning as Predictor of Training Performance in Aging Adults.

LUKA JURAS, *University of Zagreb*, MARINA MARTINCEVIC, *University of Zagreb*, IVANA HROMATKO, *University of Zagreb*, ANDREA VRANIC, *University of Zagreb* — Working memory (WM), essential in reasoning and maintaining focus on relevant goals, plays a central role in cognitive training research. Current studies aim to identify predictors of responsiveness to WM training with the final aim of personalizing these interventions. This study investigated the role of pretest fluid reasoning on training performance in middle-aged and older adults. A total of 42 middle-aged (aged 49-65) and 30 older adults (aged 65 and above) participated in 20-session adaptive n-back training. The results of two multilevel model analyses, which evaluated both linear and nonlinear changes in training performance, indicated that the pretest level of fluid reasoning significantly predicted training outcomes. The magnification hypothesis was supported in both age cohorts: participants with higher fluid reasoning performed better and had a higher rate of performance change. These findings suggest that individual differences contribute to variations in training effects and indicate that WM training is more beneficial for high-functioning aging adults.

Email: Luka Juras, ljuras@ffzg.hr

6:00-7:30 PM (6049)

Blame Games: Victim Profiles and the

Attribution of Gun Violence. BETH B. STEVENS, *Ewha Womans University*, HEATHER M. KLEIDER-OFFUTT, *Georgia State University*, KAT ALBRECHT, *Georgia State University*, IVAN FLORES MARTINEZ, *University of North Carolina at Charlotte* — Given the recent surge in mass shootings, politicians, community members, and researchers alike have attempted to discern responsibility for gun violence incidents. Recent studies have proposed frameworks for assigning responsibility, suggesting that blame may be differentially attributed to the shooter or environmental factors based on the shooter's race or profile (Markey et al., 2020). While existing research has extensively examined the impact of various shooter profiles on blame allocation, less attention has been given to the influence of victim-related factors and shooting location on responsibility

assignment. Thus, the current study aimed to establish whether participants differentially assign blame to political entities, community safety measures, or the shooter, based on factors of victim race, community socioeconomic status, and shooting location. Preliminary results suggest that victim race and shooting location may predict blame attribution. Future regression analyses will explore how participant political affiliation interacts with these variables to shape perceptions of responsibility.

Email: Beth Stevens, bstevens15@student.gsu.edu

6:00-7:30 PM (6050)

Brunswik's Fundamental Principle: Modeling Vicarious Functioning with Superstatistics.

FLORIAN SCHOLTEN, *Eberhard Karl Universität Tübingen*, LUKAS SCHUMACHER, *University of Basel*, PAUL KELBER, *Eberhard Karl Universität Tübingen* — In his theory of probabilistic functionalism, Egon Brunswik posited that vicarious functioning (VC) is the most fundamental principle of behavior (Brunswik, 1957). VC illustrates the adaptive cognitive process that deals with two properties of the probabilistic cues used by judges to infer distal criteria in our environment: a) the substitutability of available cues and b) the uncertainty of which cues to base judgments on. Although VC is considered to be the underlying mechanistic principle of virtually all cue probability learning paradigms, it is almost entirely neglected by researchers who focus on learning processes in probabilistic environments. We argue that variations in reaction times in multiple-cue probability learning paradigms represent VC. VC is modeled by using superstatistics (Schumacher et al., 2023), which augments a stationary diffusion model with a high-level transition model to allow parameters to change over the course of time. We reanalyzed the reaction time data from two cue probability learning experiments (Scholten & Bröder, 2023; total N=258). The parameters of the diffusion model reflect the dynamics of VC and the substitutability of cues to depict the criterion.

Email: Florian Scholten, florian.scholten@uni-tuebingen.de

6:00-7:30 PM (6051)

Choice Overload in the Digital Age: A Cognitive Neuroscience Approach. JACOB STANLEY, *University of South Carolina*, DOUGLAS WEDELL, *University of South Carolina* — Recent technological

advancements have allowed people to access a larger range of consumer options than ever before. Although early economic theories of choice argue that having more options is always better, contemporary research has revealed that having too many options can lead to negative impacts on decision outcomes and subjective experiences. The conflict between the positive and negative aspects of greater choice is commonly referred to as the “paradox of choice,” wherein having more options can be undesirable. Using fMRI, we investigate the neural mechanisms involved during decision-making on choice sets of varying size and complexity using a multialternative, multiattribute approach. By manipulating assortment size and the presence or absence of dominated attraction decoys, this study provides insight into the brain processing of alternatives with numeric attributes that represent modern, real-world decision scenarios.

Email: Jacob Stanley, jms24@email.sc.edu

6:00-7:30 PM (6052)

Complexity in Multistage Decision Making.

TRUNG LE, *University of Illinois Urbana-Champaign*, JARED HOTALING, *University of Illinois Urbana-Champaign* — This project examines changes in individuals' strategies for multistage decision tasks with varying levels of complexity. Decision-makers were presented with decision problems where they chose between a two-stage gamble, and an alternative option that varied in complexity. Individuals who chose the two-stage gamble continued to a second decision stage, where they chose between two gambles. The alternative option was either a sure reward (low complexity), a gamble (medium complexity), or another two-stage gamble (high complexity). We use backward induction to derive the optimal decision strategy on each trial and find that the proportion of participants who made optimal decisions decreased as the level of complexity increased. We use decision field theory-planning (DFT-P) to investigate how changes in information processing and decision strategies can explain the observed results.

Email: Trung Le, trungl2@illinois.edu

6:00-7:30 PM (6053)

Does Difficulty of Encoding Selectively Influence the Non-Decision Time Parameter of Ratcliff's Diffusion Model? KATJA POLLAK, *University of Freiburg*, VERONIKA LERCHE, *University of Kiel*,

ANDREA KIESEL, *University of Freiburg* — Modeling reaction time data using Ratcliff's diffusion model comes with the main advantage of separating different processes involved in decision making. Each parameter of the diffusion model is assumed to translate into one (or more) process(es). If this assumption holds true, all parameters should yield high convergent as well as discriminant validities, i.e., selective manipulations of specific processes involved in decision making should selectively influence the related, but not any other parameter. We present two experiments that tested the convergent validity of the non-decision time t_0 . Specifically, we manipulated the difficulty of encoding by varying the contrast of stimuli in a lexical decision task. As hypothesized, we found large effects on t_0 in both experiments, but surprisingly also medium to large effects on the drift rate v as well as on the starting point z . Our results speak in favor of a high convergent validity of t_0 but also might doubt the discriminant validities of v and z , at least under the assumption that our manipulation affected encoding selectively.

Email: Katja Pollak, katja.pollak@psychologie.uni-freiburg.de

6:00-7:30 PM (6054)

FlexDDM: A Flexible Simulation-Based Python Package for Fitting and Validating Diffusion Models. JOY FAN, *Case Western Reserve University*, ALESSANDRA PUCCIO, *Case Western Reserve University*, HEATH A. DEMAREE, *Case Western Reserve University*, KYLE LAFOLLETTE, *Case Western Reserve University* — Diffusion decision models (DDMs) are mathematical models used to explain cognitive processes in decision-making tasks, capturing decision dynamics and response times. Researchers typically fit DDMs to choice and reaction time distributions using available software packages or applications. However, these tools often have limitations: they either lack customizability or require extensive programming knowledge to extend the models, and most rely on likelihood-based routines, which restrict models without closed-form solutions. To address these limitations, we developed FlexDDM, a Python package that uses a simulation-based approach. FlexDDM allows for the easy formulation, validation, and testing of new diffusion models with minimal coding. It includes templates of four leading diffusion models and user-friendly instructions for creating new models in base Python. The package also promotes best practices in model development with automated validation tools for

model recovery, parameter recovery, and posterior predictive checks. FlexDDM enhances the accessibility of DDMs, enabling researchers to efficiently develop and test new diffusion models, thereby contributing to new theoretical insights to decision dynamics.

Email: Joy Fan, jyf6@case.edu

6:00-7:30 PM (6055)

How Does AI Moderation Influence Individuals' Information Search and Accuracy During Decision-Making? EOIN CREMEN, *University of Bath*, JANINA A. HOFFMANN, *University of Bath*, KONSTANTINOS KATSIKOPOULOS, *University of Southampton* — Individuals often search for additional information to make accurate decisions. AI is increasingly valuable as a source of information and advice. Our interest is in AI advice that moderates individuals' information search. We considered three AI moderators: Devil's Advocate (DA) encouraged participants to consider counterfactual information; Facilitator (FAC) encouraged consideration of most preferred information; and Moderator (MOD) encouraged consideration of least preferred information. Undergraduates played an information search game that required selecting tests, receiving AI advice, and making a decision. Accuracy and test selection strategy were analysed, with and without AI advice. We found that participants adapted search strategies following advice. FAC advice reduced search diversity and duration, while DA and MOD increased both measures. Accuracy was unchanged with any advice. Our study is the first to show that individuals adapt their information search strategy in response to AI advice. Future studies will extend this paradigm to decision-making teams.

Email: Eoin Cremen, ec531@bath.ac.uk

6:00-7:30 PM (6056)

Interventions for Belief Regression After the Correction of Misinformation. MITCH DOBBS, *Northeastern University*, BRIONY SWIRE-THOMPSON, *Northeastern University* — After misinformation is corrected, belief change is rarely sustained over time; this is called belief regression. Prior research found that belief regression is primarily motivated by memory failure. The current study aims to investigate the extent to which repeating corrections mitigates belief regression for individuals who are prone to believing the misinformation. Participants (N=663)

rated the veracity of 28 myths and facts about cancer and were randomly assigned to receive a single correction, a single correction plus recall (recall occurring after a 2-week delay), a repeated correction (after a 2-week delay), or test-retest control. Next, participants were given an immediate and one-month delayed post-test where they re-rated their belief, rated their memory for items' presented veracity, and completed the Complementary and Alternative Belief Inventory (CAMBI). We found that asking participants to recall the items' veracity reduced belief regression, and repeating the corrective information eliminated it. Critically, these findings replicated with participants who endorsed complementary and alternative medicine.

Email: Mitch Dobbs, dobbs.m@northeastern.edu

6:00-7:30 PM (6057)

Learning in Uncertain Environments: A Reinforcement Learning Drift Diffusion Model for Probabilistic Decision-Making. NICOLA A. SCHNEIDER, *Heidelberg University*, ANDREAS VOSS, *Heidelberg University* — Behavioral adaptation in probabilistic environments requires learning through trial and error. While reinforcement learning (RL) models can describe the temporal development of preferences through error-driven learning, they neglect mechanistic descriptions of single-trial decision-making. On the other hand, sequential sampling models such as the drift-diffusion model (DDM) allow for mapping state preferences on single response times. We developed a joint RLDDM with a Bayesian hierarchical implementation in Stan and BayesFlow and present results from an instrumental probabilistic learning task. First, a simulation study revealed good recovery across a wide range of parameter values and only little correlation between recovered parameters. Second, we tested N=60 participants and found they responded faster and more accurately with learning. The RLDDM captures this effect by modeling the drift rate through differences in Q-values and decreasing thresholds over the course of learning. Additionally, participants in the loss domain showed higher non-decision times and threshold separations than in the win domain. Lastly, we modeled intertrial variabilities in RLDDM parameters for the first time, thereby increasing model fit.

Email: Nicola Schneider, nicola.alexander.schneider@gmail.com

6:00-7:30 PM (6058)

Modeling Eye Movements During Forced-Choice Recognition.

RUNHAN YANG, *University of Illinois Urbana-Champaign*, JONATHON WHITLOCK,

University of Illinois Urbana-Champaign, AARON S.

BENJAMIN, *University of Illinois Urbana-Champaign*

— Individuals explore options with their eyes before selection, in recognition decisions and beyond. We analyzed eye movement behavior in a three-alternative forced-choice face recognition task, and characterized the results in terms of eight empirical benchmarks. We then evaluated the ability of a suite of models to recover those benchmark behaviors. At the heart of all the competing models is a random walk for each examined face, with one boundary leading to a potential endorsement of that face and the other leading towards examination of another face. The winning model had three novel characteristics: starting bias becomes more liberal over successive fixations, an early response deferral mechanism allows possible transitions to other faces even when an endorsement boundary is reached, especially on early fixations, and a late response advancement mechanism allows selection of a previously viewed face when a transitioning boundary was reached, especially on later fixations. All three of these new mechanisms lead to more liberal rules for responding on later fixations. This model provides a starting point for understanding how individuals strategically deploy visual attention over complex displays in service of memory decisions.

Email: Runhan Yang, runhany2@illinois.edu

6:00-7:30 PM (6059)

Beyond Truthiness: The Role of Processing Ease in Shaping Perceptions of Consensus.

KIRAN K. DOGRA, *Western Washington University*, MADELINE JALBERT, *University of Washington*, ERYN

NEWMAN, *Australian National University*, NORBERT SCHWARZ, *University of Southern California* — Prior research suggests that information that is easier (vs. more difficult) to process is judged to have broader consensus, where more people agree with the information. However, this fluency-consensus link has primarily been

investigated in studies where participants are presented with information repeated from social sources, making the impact of fluency difficult to isolate. We tested whether presenting information with a nonprobative photo—a manipulation which facilitates processing ease in the moment—increases two different perceptions of

consensus: how many Americans would believe (Experiments 1-2) or already know (Experiments 3-4) that information. Participants judged a series of trivia claims (half true, half false; Experiments 1-2; all true, Experiments 3-4), half of which appeared with photos. Photos increased judgments of many others would believe information but did not affect judgments of how well known that information already is. These findings suggest that fluency plays a role in consensus judgments, but the extent to which individuals rely on this fluency likely depends on specifics of the context and type of judgment.

Email: Kiran Dogra, dograk@wwu.edu

6:00-7:30 PM (6060)

Cognitive Ability Associations With Existential Risk Judgments. MACKENZIE CRINER, *University of Central Arkansas*, JORDAN MILLER, *University of Central Arkansas*, ANNA TEMPLE, *University of Central Arkansas*, VINCENT MEDINA, *University of Central Arkansas* — Prior research has found that people do not tend to believe that an extinction scenario is uniquely bad compared to a near-extinction scenario. This work found that reflectiveness was positively correlated with detecting extinction as uniquely bad, but little else is known about the cognitive mechanisms of existential risk judgments. We investigate the role of reflectiveness, attention control, and fluid intelligence in these judgments by using the Cognitive Reflection Test 2, the adaptive Stroop task, and Raven's Advanced Progressive Matrices Test respectively. We expect to replicate the finding that reflectiveness is positively correlated with judging extinction as uniquely bad. We also expect that attention control and fluid intelligence will both be positively correlated with judging extinction as uniquely bad due to prior research positively correlating reflectiveness, attention control, and fluid intelligence. This study is the first attempt at understanding existential risk judgments through individual differences in various cognitive abilities.

Email: Mackenzie Criner, mccriner23@gmail.com

6:00-7:30 PM (6061)

Disentangling Sensitivity and Response Bias in Judgments about Discrimination Using Signal Detection Theory. MARIE JAKOB, *University of Freiburg*, ANAT SHECHTER, *University of Freiburg*, KARL CHRISTOPH KLAUER, *University of Freiburg*

— Attributions to discrimination are judgments that involve attributing the cause for the unfair treatment of a person to that person's social group membership. Here, we use signal detection theory (SDT) as a framework to differentiate between people's sensitivity (i.e., their ability to differentiate between situations with and without cues to discrimination) and response bias (i.e., their relative tendency for attributing to discrimination) in such judgments. To enable the empirical application of SDT to judgments about discrimination, we introduce a new paradigm that is set in the context of pay raise decisions made by a committee in a fictional company. Participants are presented with several such decisions involving employees of different social groups (as indicated by a picture and a name) and are asked to judge for every decision whether they suspect it to be biased. We present results from a number of experiments employing this paradigm in the context of gender and racial discrimination. Our results suggest that participants' response bias is influenced by decision outcomes and both by their apriori expectations about base rates as well as actual base rates of different types of discrimination.

Email: Marie Jakob, marie.jakob@psychologie.uni-freiburg.de

6:00-7:30 PM (6062)

Does Ostracism Shape Willingness to Share Fake News? PHUC H. LE, *University of California, San Diego*, KIPLING D. WILLIAMS, *Purdue University*, NADIA M. BRASHIER, *University of California, San Diego* — Misinformation undermines democracy, incites violence, and harms human health. People engage with fake news partly to avoid social costs—group members will interact with them less if they fail to share this content. But what happens when exclusion is actually experienced, rather than just anticipated? The current study tests whether the negative effects of ostracism, including aggression and interest in extreme groups, extend to sharing fake news. Participants played Cyberball, a virtual ball-tossing game commonly used to induce experiences of ostracism. Some participants regularly received tosses from other players (included), while others were left out for most of the game (excluded). Then, all participants indicated how willing they would be to share true and false news. They also judged the accuracy of the same headlines. Following a brief period of ostracism, if anything, people were less willing to share both true and false news. This result

counters the common intuition that people share misinformation because they feel rejected.

Email: Phuc Le, phl011@ucsd.edu

6:00-7:30 PM (6063)

Examining the Illusory Truth Effect with Affirmed and Negated Statements: The Influence of Statement Polarity and Delay on Belief in Repeated Statements.

JENNIFER LOZANO, *California State University, San Marcos*, DUSTIN P. CALVILLO, *California State University, San Marcos* — Repeated information is perceived as more truthful than new information, a finding known as the illusory truth effect. Studies have found that presenting eyewitnesses with true, negated post-event statements may increase false memories for that information. Despite the robustness of the illusory truth effect, nearly all studies have used affirmative statements to examine it. The present study examined whether the illusory truth effect occurs with negated statements and if delay affects the magnitude of the effect. In two preregistered experiments, participants (total N=336) rated their interest in a set of statements that consisted of true and false statements that either affirmed or negated information. Subsequently, participants rated the truth of previously rated and new statements. In Experiment 2, participants rated the truth of half of the statements after a one week delay. In both experiments, there was a typical illusory truth effect for statements that were initially affirmed, but this effect substantially declined after a week in Experiment 2. Truth ratings also demonstrated decreased belief for initially negated statements immediately, but not after a delay.

Email: Jennifer Lozano, lozan073@csusm.edu

6:00-7:30 PM (6064)

How the Addition of Error Bars and Y-Axis Lower Truncation Influence People's Perceived Differences Between Groups Among Bar, Line, and Dot Graphs.

SHUO ZANG, *University of Ottawa*, DENIS COUSINEAU, *University of Ottawa* — Graphs are widely used to present data; however, graphs can be easily misleading when the y-axis starting point is not zero. This type of graph distortion is named the y-axis lower truncation and increases people's perceived difference in graphs. Error bars show a difference-adjusted 95% confidence interval. If the error bar of one condition does not include the mean of the other

condition, there is very likely a notable difference between the two groups. This research will discover how adding error bars and the lower truncation interact among bar, dot, and line graphs. The results show that lower truncation increases perceived rating in all conditions. In the no truncation condition, bar graphs tend to have smaller ratings compared to dot and line graphs; vice versa for the truncation condition. Opposite to the hypothesis, the small error bar condition decreases ratings in bar graphs with no truncation; the large error bar increases ratings in bar and line graphs without truncation. In conclusion, adding error bars does not increase the precision in graph perception and can not eliminate the misleading truncation effect. Dot and line graphs are more resilient to the lower truncation effect.

Email: Shuo Zang, zshuo070@uottawa.ca

6:00-7:30 PM (6065)

Japan and the United States in Terms of Existential Risk Judgments.

MEI ISHIMURA, *University of Central Arkansas*, KAYLA EVANS-KENNARD, *University of Central Arkansas*, VINCENT MEDINA, *University of Central Arkansas* — Previous research on existential risk judgments has found that people do not tend to judge an extinction scenario as uniquely bad compared to a near-extinction scenario. This was demonstrated in Western samples. The current project investigates to what extent existential risk judgments are distinguished by Western and Eastern moral values. Based on Eastern collectivism and Western individualism, the primary hypothesis is that a Japanese sample will be more likely than an American sample to judge extinction as uniquely bad because collectivism emphasizes the welfare of the whole group (i.e., humanity's ability to persist after a catastrophic scenario). A secondary hypothesis is that the Japanese sample will score higher on the Cognitive Reflection Test 2, as reflectiveness was positively correlated with judging extinction as uniquely bad in prior work. Age will be examined in exploratory analyses. This study places existential risk judgments in an important, cross-cultural context.

Email: Mei Ishimura, mishimura1@cub.uca.edu

6:00-7:30 PM (6066)

Jargon's Impact on Credibility and Comprehension of Mis/Information Passages.

TANISHA Y. BERRIOS HERNANDEZ, *Texas A&M*

University, DUN-YA HU, Texas A&M University, JYOTSNA VAID, Texas A&M University — Jargon has been shown to elevate credibility judgments of reliable information text. However, it has also been shown to lower comprehension and decrease processing fluency. In study 1, we examined jargon's impact on credibility ratings for both reliable and unreliable passages using a within-subjects design. We found that higher levels of jargon were associated with increased credibility ratings for unreliable passages. Study 2 was conducted to expand on these findings and examine how comprehension is related to credibility across reliable and unreliable texts. Study 2 examined how jargon level, comprehension, and credibility are associated with each other, and if that association differs when participants are presented with misinformation. Three variations of a given (reliable or unreliable) passage were presented, varying in jargon level (none/low/high) in a between-subjects design. We hypothesized that, for both reliable and unreliable passages, as jargon level increases, comprehension will decrease while credibility increases.

Email: Tanisha Berrios Hernandez, tberrios@tamu.edu

6:00-7:30 PM (6067)

Recalibrated Wisdom of Crowds in Detection of AI-Generated Images. PHILLIP C. HEGEMAN, *Indiana University Bloomington*, JENNIFER S. TRUEBLOOD, *Indiana University Bloomington* — As AI models have made it easier than ever to create believable synthetic media, it is of ever-increasing societal importance to improve the accuracy of inauthentic media detection. Judgment aggregation is one method of increasing accuracy beyond that of the typical individual, harnessing the wisdom of crowds. Through analysis of prior published data (Miller et al., 2023) and a new experiment with a more diverse set of stimuli, we investigate the performance of individuals and crowds in identifying AI-generated and authentic images of human faces. In particular, we evaluate the impact of judgment type (binary choice, BC vs. continuous judgment [CJ]; e.g., confidence or probability rating on a 0-100 scale) and recalibration based on responses to a small subset of stimuli (response-conditional accuracy weighting for BC and Platt scaling for CJ) on accuracy. Across both experiments, we find that individuals perform at or below chance for both BC and CJ, with particularly low performance for AI-generated images (compared to authentic images). Naïve crowd aggregates maintain or exacerbate this poor performance; however, crowd

judgment accuracy is improved by recalibration, in part by correcting systematic errors of individuals.

Email: Phillip Hegeman, phegeman@iu.edu

6:00-7:30 PM (6068)

Shades of Blue: Contextual Influences on Perceptions and Judgments of Police Officers.

ASHLEY M. MEACHAM, *Georgia State University*, HEATHER M. KLEIDER-OFFUTT, *Georgia State University* — Research suggests that individuals rely on prototypes when judging faces and recalling behavior. When available, contextual cues (e.g., occupation) also shape memory and judgments, often aligning with activated stereotypes. However, it's unclear if stereotypes function consistently across individuals. In our study, across two tasks, we explored how participants integrated contextual factors—specifically, the race of a citizen in an officer-citizen interaction video and the occupation label paired with a face—into their evaluations of police officers' observed behavior and perceptions of labeled faces, respectively. Results showed that when the citizen was Black, relative to White, participants recalled the officer's behavior more negatively. However, greater accuracy in recalling specific video details correlated with more positive perceptions of the officer's behavior, regardless of citizen race. Additionally, faces labeled as police officers were perceived as more aggressive, threatening, and less trustworthy than the same faces labeled as firefighters. These findings underscore the role of context in activating stereotypes that subsequently bias the recall and inference of others' behavior.

Email: Ashley Meacham, ameacham1@student.gsu.edu

6:00-7:30 PM (6069)

Source Evaluation in Younger and Older Adults:

The Effects of Expertise and Age. YEWON KANG, *University of Minnesota*, PANAYIOTA KENDEOU, *University of Minnesota* — The choices of sources, from personal contacts to social media friends, may vary across age groups, reflecting age-related communication preferences. While source expertise has been widely acknowledged as one of the main dimensions for evaluating sources in previous research, another source characteristic to consider is the age of the source, which can be influenced by various attitudes toward a certain age group. In a series of two experiments, we examined the effects of source expertise and source age on source

evaluation, including perceived credibility and intentions to use and share recommendations from sources, in both younger and older adults. Results suggest that source age functions as an additional dimension to source expertise during source evaluation. Participants perceived older sources as more credible and were willing to use recommendations from them, particularly when they were also of high expertise. Regarding the intention to share, participants prioritized source expertise over source age.

Email: Yewon Kang, kang0504@umn.edu

6:00-7:30 PM (6070)

Evaluating the Role of Mental Sampling in Probability Judgments: Illogical Rankings Occur in a Predictable Manner.

XIAOTONG LIU,
University of Mannheim, ARNDT BRÖDER, *University of Mannheim*, HENRIK SINGMANN, *University College London* — People's probability judgments often appear to be probabilistically incoherent, as exemplified by the conjunction fallacy. Recently, various sampling-based models have been proposed as an integrative account for different biases and fallacies in probability judgments. In the current study, the novel event ranking task was used to investigate sampling-based models of probability judgments. On each trial of the event ranking task, participants were asked to provide a ranking for an event set consisting of four events: A, not-A, B, and not-B, in terms of their perceived likelihoods. Qualitative predictions were formally derived by assuming direct sampling from a fixed underlying probability distribution. Adding read-out noise in the sampling process—as suggested in the Probability Theory plus Noise model (Costello & Watts, 2014)—does not change the qualitative predictions. Two online experiments, where participants ranked 12 different event sets, yielded evidence in line with the qualitative predictions, providing positive evidence for the idea that mental sampling underlies probability judgments.

Email: Xiaotong Liu, liuxiaotong76@outlook.com

6:00-7:30 PM (6071)

The Role of Base Rates in Evaluations of Eyewitness Evidence.

DENIZ HACIBEKTAŞOGLU,
Arizona State University, LAURA SMALARZ, *Arizona State University* — The low proportion of police lineups involving the actual culprit (Wixted et al., 2016) undermines the reliability of eyewitness-identification

evidence (Wells et al., 2015). We examined jurors' sensitivity to the culprit-present base rate. Study 1 used a modified version of the classic taxicab problem (Kahneman & Tversky, 1972), in which participants read that the base rate of culprit presence in police lineups is 15% and that eyewitnesses can correctly identify suspects 80% of the time. They then estimated the likelihood that an identified suspect is guilty. We expected participants' estimates to deviate significantly from the normative response (41%), replicating the base-rate neglect effect. In Study 2, we manipulated information about the culprit-present base rate (20%, 50%, 80%) and participants evaluated eyewitness identification evidence in an armed robbery case. If base-rate neglect is due to perceived irrelevance of the information (Bar-Hillel, 1980), our manipulation should not influence participants' evaluations. However, if it is due to computational demands (Gigerenzer & Hoffrage, 1995), then participants should evaluate the eyewitness evidence as more reliable in the 80% base-rate condition.

Email: Deniz Hacibektaşoglu, dhacibek@asu.edu

6:00-7:30 PM (6072)

To What Extent Do Repeated Photos Increase Perceived Truth?

WAY MING CHAN, *The University of Waikato*, MARYANNE GARRY, *The University of Waikato*, ERYN NEWMAN, *Australian National University* — When people repeatedly imagine events, they become more likely to say those events truly happened (Thomas & Loftus, 2002). Photos produce similar illusions, even when uninformative. For example, people become more likely to say they committed a grade school prank when the false suggestion appears with a class photo than when it appears alone (Lindsay et al., 2004). Likewise, people say claims are true more when the claims appear with decorative photos than alone (Newman et al., 2012). Repetition and photos individually are thought to boost related thoughts, images, and feelings of familiarity, which people misconstrue as evidence (Alter & Oppenheimer, 2009). But might conjoint repetition and photos produce more of these illusions? To investigate, we showed subjects some photos once and some five times in Phase 1. In Phase 2, we presented subjects with trivia claims alone or with photos. These photos include ones from Phase 1 and new photos. In Experiment 1, photos biased subjects to judge more claims as true, but there was no significant effect for repeated photos. Experiment 2 will replicate Experiment 1 with greater precision. These results extend

our understanding of how repetition and photos both influence judgements of truth.

Email: Way Ming Chan, wayming95@hotmail.com

6:00-7:30 PM (6073)

Willingness-to-Pay Versus Affect Ratings as Measures of Outcome Value. JORDAN MARTIN, *University of South Florida*, SANDRA L. SCHNEIDER, *University of South Florida* — Most studies of risky choice rely on economic values such as money to define outcomes. Studies of the affect gap, wherein choices for affect-rich experiences are contrasted with choices for affect-poor monetary outcomes, extend the use of economic values by adopting willingness-to-pay (WTP) as a stand-in for qualitative experiences (e.g., Pachur et al., 2014). Decision affect theory (Mellers et al., 1997) offers an alternative method, using anticipated emotion to assign value to outcomes. We examine both measures when comparing monetary and experience outcomes via an online experiment wherein participants are randomly assigned to outcomes in the positive or negative domain. Participants reported their WTPs to engage in or avoid each experience, affect ratings of how much they would enjoy or be upset by each experience, and affect ratings associated with monetary outcome equivalents. We show that the WTP measure is problematic, as it is noisy and unbounded for experience outcomes but precise for monetary outcomes. The affect rating measure has modest variability for both monetary and experience outcomes, providing a fairer comparison of choice strategies for studies of the affect gap.

Email: Jordan Martin, jordanmartin14@usf.edu

6:00-7:30 PM (6074)

Boosting Debiasing: Benefits of Animated Videos on Training Efficacy. NINA FRANIATTE, *LaPsyDE (UMR CNRS 8240 & Université Paris Cité)*, ESTHER BOISSIN, *Cornell University*, ALEXANDRA DELMAS, *onepoint*, WIM DE NEYS, *LaPsyDE (UMR CNRS 8240 & Université Paris Cité)* — Popular dual-process theories often attribute unwarranted heuristic responses to the intuitive system (System 1). However, recent debiasing studies have shown that a text explanation about the correct solution strategy to a reasoning task can help people to reason more accurately, as early as the intuitive stage. In these studies, a non-neglectable group of reasoners remain biased. There is strong empirical evidence that learning outcomes are

improved by presenting the learner with verbal and pictorial information in a coordinated way (the so-called “multimedia principle”). Hence, in the present work we designed video debiasing interventions, adapting the text explanation in animated videos, including only relevant information to avoid increasing extrinsic cognitive load, and adding a voice-over. We used the two-response paradigm to track reasoners’ intuitive and deliberate responses. Results showed that the video training significantly improved both intuitive and deliberate reasoning performance. This effect was robust, persisted after two months, and offers a glimpse into the noteworthy benefits (e.g., short, maximizing learning, easily scalable) that video debiasing interventions can provide.

Email: Nina Franiatte, nfraniatte@ensc.fr

6:00-7:30 PM (6075)

Creativity and Irrelevance Processing: Evidence from Online Eye Tracking. MORITZ REIS, *Julius-Maximilians-Universität Würzburg*, SERGIO AGNOLI, *University of Trieste*, WILFRIED KUNDE, *Julius-Maximilians-Universität Würzburg* — Processing apparently irrelevant information has been linked to successful creative ideation. Prior studies within this field relied on in-laboratory eye tracking, which comes with downsides like high costs and slow data collection. To address these issues, online webcam-based eye tracking might be a promising solution. In three preregistered experiments, we transferred an established paradigm from in-laboratory research to the online context. Participants (N=100 for each study) had to come up with possible uses for visually presented items, which were surrounded by apparently irrelevant distractor objects. In line with prior in-laboratory research, we found a positive relation of the time processing this apparently irrelevant information and the originality of the produced uses. Such a relation, however, was limited to contexts where the additional information was somehow related to the given task and could thus stimulate novel ideas. We discuss the potential and limitations of online webcam-based eye tracking.

Email: Moritz Reis, moritz.reis@uni-wuerzburg.de

6:00-7:30 PM (6076)

Decoding Dual Processes: Insights from Computational Modelling. ZOE A. PURCELL, *Université Paris Cité*, WIM DE NEYS, *LaPsyDE (UMR*

CNRS 8240 & Université Paris Cité), KOBE
DESENDER, KU Leuven — Deliberation, characterized by analytic and effortful thinking, is linked to numerous positive outcomes, including improved probabilistic reasoning and reduced susceptibility to misinformation. However, the question remains: what triggers deliberative thinking? Contemporary dual-process reasoning models suggest that lower metacognitive confidence prompts greater analytic thinking, yet these models lack detailed mechanistic explanations. In this project, I present several computational models designed to mathematically capture the verbal hypotheses proposed by contemporary dual-process models. Building on drift diffusion models of decision-making, such as the leaky competing accumulator (Usher & McClelland, 2001) and the dynamic model of value comparison (De Martino et al., 2013), I explore various adaptations and extensions that integrate dual-process reasoning hypotheses. Subsequently, I evaluate these models by comparing their simulations to empirical behavioral data obtained from a base-rate reasoning task. This work offers a critical proof-of-concept, demonstrating the practicality and advantages of developing computational models for understanding reasoning processes.

Email: Zoe Purcell, purcell.z.a@gmail.com

6:00-7:30 PM (6077)

Examining Creative Processing in the Survival Advantage with LEGO. SPENCER MOORE, Tennessee Technological University, DYLAN S. TAYLOR, Tennessee Technological University, STEPHANIE A. KAZANAS, Tennessee Technological University — The survival advantage describes robust memory for words and pictures rated for their survival-relevance, relative to other control conditions (e.g., moving-relevance; Nairne et al., 2007). Wilson (2016) suggests a portion of this advantage may be a function of creative processing, with memory benefitting from identifying an item's various functions that would facilitate survival. Individual differences in creativity may play a role, too (Altarriba & Avery, 2021). The current study directly engages creative processing, where participants are given various LEGO bricks and asked to create representations of what might assist them in survival and moving conditions. Assigning participants to build with either red, blue, yellow, or mixed-color bricks also helps test whether color interacts with condition, such as whether survival processing is

facilitated when engaging with red bricks, relative to other color bricks. Thus, the current study parses out the roles of both scenario and color in the survival advantage.

Email: Spencer Moore, sbmoore44@ntech.edu

6:00-7:30 PM (6078)

Improved Performance in the Tower of Hanoi Task Is Due to Metacognitive Monitoring: Implications for Clinical Assessment and Interventions. YUETING ZHAN, The University of Sydney, KIT S. DOUBLE, The University of Sydney, DAMIAN P. BIRNEY, The University of Sydney — Adaptive problem-solving needed to derive an optimal solution entails the ability to plan and evaluate one or more steps to achieve goals. A key process underlying planning is metacognitive monitoring, which is typically assessed with self-report ratings of confidence. Recent research aimed at understanding how people regulate their learning suggests within-task self-evaluations are “reactive,” affecting on-going task performance. In a series of four experiments (total N=232), we tested for positive reactivity to confidence ratings in the Tower of Hanoi (TOH) task with and without duplicated items. We predicted that if confidence ratings are effective metacognitive prompts, reactivity would be greater when problems were repeated and that this would be more pronounced for those with lower metacognitive ability indexed by meta-d'. We found a robust positive reactivity (Cohen's d) to confidence ratings (range 0.12 to 0.18), and this effect was more profound when items were repeated (range 0.37 to 0.54). Meta-d' did not positively predict TOH performance (range r=-0.27 to 0.17). We discuss how the TOH task may be used to assess learning and planning potential in clinical populations by incorporating metacognitive evaluations.

Email: Yuetong Zhan, yuetong.zhan@sydney.edu.au

6:00-7:30 PM (6079)

Low Empathizing (EQ) Is Associated with a Greater Tendency to Conflate Advisements and Inducements. ROBERT RICCO, California State University, San Bernardino, BARBARA SOSA, California State University, San Bernardino, HIDEYA KOSHINO, California State University, San Bernardino — The empathizing-systemizing (E-S) theory of autism spectrum disorder (ASD) maintains that individuals with ASD have difficulty understanding the mental experience

of others (impaired empathizing) which can limit their appreciation of social behavior and pragmatic meaning. We assessed this claim by exploring the association between empathizing and the ability to distinguish two pragmatically distinct types of “if...then” statements—advisements (“If you arrive early, you will impress your boss”) and inducements (“If you mow my lawn, I’ll give you \$30”). Advisements state sufficient conditions (e.g., for impressing your boss) while inducements state necessary and sufficient conditions (e.g., for receiving \$30). Advisements, therefore, have a conditional form while inducements have a biconditional form. We asked participants to evaluate arguments featuring either advisements or inducements. We assessed empathizing by way of the emotion quotient (EQ). Results indicated that poorer empathizers were less likely to recognize this difference in form between advisements and inducements.

Email: Robert Ricco, rricco@csusb.edu

6:00-7:30 PM (6080)

Theory of Mind in Children with Autism Spectrum Disorder: General Reasoning and Multidimensional Theory of Mind.

SO-YEON KIM, *Duksung Women's University*, MYEONGJU KIM, *Duksung Women's University*, JEJOONG KIM, *Duksung Women's University*, SO YOON KIM, *Duksung Women's University* — While previous studies have explored theory of mind (ToM) in children with autism spectrum disorder (ASD), few have measured multidimensional ToM by dividing it into cognitive and affective dimensions. This study aims to evaluate these ToM components in children with ASD. Eighteen children with ASD and 38 typically developing (TD) children completed a cartoon vignette task, selecting the appropriate ending. The task measured cognitive and affective ToM abilities, with physical causality (PC) measuring general reasoning ability. IQ tests and the Social Communication Questionnaire were also administered. Results of a 2 (Group) x 3 (Task) ANCOVA using IQ as a covariate revealed a significant interaction effect on reaction times (RTs) ($F(2, 106)=4.875$, $p<.01$, $\eta^2=0.084$). Only children with ASD showed slower cognitive and affective ToM RTs compared to the PC [$t(17)=-3.98$, $p<.01$; $t(17)=5.31$, $p<.001$]. Furthermore, multiple regression analyses revealed significant relationships between ASD symptoms and the efficiency of both ToMs. Overall, our findings suggest that children with ASD have lower

cognitive and affective ToM abilities compared to their general reasoning ability, relating to their social communication difficulties.

Email: So-Yeon Kim, vicky4747@gmail.com

6:00-7:30 PM (6081)

Paper Versus Computer: The Impact of Test

Modality on Conditional Reasoning. CHRISTINA G. LUTZ, *University of Geneva*, EVIE VERGAUWE, *University of Geneva* — Studies have suggested better performance on paper than on screen for tasks assessing cognitive abilities such as reading and working memory (e.g., Carpenter & Alloway, 2018; Salmerón et al, 2023). The present study aims to investigate whether conditional reasoning varies depending on the modality of test administration. A group of young adults performed a truth evaluation task on paper and on computer (modeled after the task used by Barrouillet et al., 2008). In both modalities of the task, a conditional statement of the type “If p, then q” was presented together with one of four corresponding logical cases (p q, $\neg p$ q, p $\neg q$, or $\neg p$ $\neg q$; e.g., “If the T-shirt is striped, then the trousers are black”, together with a striped T-shirt and black trousers for case p q). Participants had to indicate whether, given the presented case, the statement was true, false, or whether it was not possible to judge the statements’ truth value. Preliminary analyses of the paper-based data show that our participants do not predominantly display the expected logical interpretation of the conditionals. These results will be compared with participants’ response patterns on the computer and will be discussed in the context of previous findings.

Email: Christina Lutz, christina.lutz@unige.ch

6:00-7:30 PM (6082)

The Effect of Puzzle Reactivation During Incubation on Memory Reorganization and Problem Solving.

KRISTIN SANDERS, *University of Notre Dame*, GRACE HAAK, *University of Notre Dame*, JESSICA PAYNE, *University of Notre Dame* — Decades of research suggest that taking a break, known as incubation, improves the likelihood of solving a problem. However, the cognitive mechanisms that underlie the effect are still being elucidated. One possibility is that restructuring of the problem occurs during the break allowing a clearer path to the solution to become apparent. However, eliciting and measuring this restructuring can be challenging. In the current study, we

employ a novel cuing paradigm to test whether reactivating a problem during an incubation period elicits memory reorganization and predicts later solving. Participants first attempted a series of logic puzzles until they failed to solve four puzzles. Then some participants completed an incubation task with a depiction of two of the puzzles' titles embedded in the task, while other participants did not complete the incubation task. Then all participants completed a memory task and reattempted the puzzles. Participants solved more puzzles after an incubation period; however, preliminary results suggest participants solved more of the puzzles that were not reactivated during the break suggesting that sometimes memory reactivation may impede solving.

Email: Kristin Sanders, ksande22@nd.edu

6:00-7:30 PM (6083)

The Heartfelt Phenomenology of the Aha! Experience.

TRINA KERSHAW, *University of Massachusetts Dartmouth*, SADYE MARIE CLARK, *University of Massachusetts Dartmouth*, HELOISA ALVES, *University of Massachusetts Dartmouth* — The Aha! experience is multidimensional, encompassing feelings such as pleasantness, surprise, suddenness, relief, and certainty. Physiological markers are also involved, including changes in skin conductance, pupil dilation, and heart rate (HR). In Experiment 1, participants solved spatial problems in low interactive or high interactive conditions and rated Aha! experience dimensions. We found that correct solutions had higher ratings of Aha!, pleasantness, suddenness, relief, and certainty than false positives, and that within the correct solutions, the high interactive condition had higher ratings of pleasantness and relief than the low interactive condition. In Experiment 2, participants solved compound remote associates problems, rated Aha! experience dimensions, and had their HR continuously monitored. Like Experiment 1, we found that correct solutions had higher ratings of pleasantness, relief, and certainty. Changes in HR were also associated with the Aha! experience dimensions. Implications for theories of insight problem solving will be discussed.

Email: Trina Kershaw, tkershaw@umassd.edu

6:00-7:30 PM (6084)

Investigating the Longitudinal Effects of Lion's Mane Mushroom (*Hericium Erinaceus*) on Cognition, Mood, and Quality of Life.

LUKE BOYCE, *University of North Texas*, ANTHONY J. RYALS, *University of North Texas*, PRISHA GOYAL, *University of North Texas*, DIANA TOWE, *University of North Texas*, MELISSA A. MATERIA, *University of North Texas*, GILLIAN DIEL, *University of North Texas* — Lion's Mane mushroom (*Hericium Erinaceus*) shows promise as a protective factor against cognitive decline by promoting neuroplasticity, though peer-reviewed human research is scarce. A preliminary pilot study (S1) explored effects on cognition and mood using a blinded, placebo-controlled design over a 10-week period. Limited findings suggested improved working memory (WM) and reduced depression scores. Optimizing our design, study 2 (S2) increased the sample size and dosage considerably, taking place over an 8-week period. Treatment led to significant reductions in reaction time on the trail-making task (TMT) not observed with placebo. On the PANAS-X positive affect subscale, placebo scores significantly decreased, while treatment produced a moderate increase in positive affect. Both groups demonstrated a significant reduction in depression. Preliminary results for S2 also support a benefit for Lion's Mane supplements on mood, affect, and WM. We are continuing recruitment, and we anticipate forthcoming analyses to allow for extended conclusions.

Email: Luke Boyce, lukeboyce@my.unt.edu

6:00-7:30 PM (6085)

Prevalence and Perceptions of AI Usage for Academic Dishonesty.

JAMES D. HENSLEY, *Tennessee Technological University*, STEPHANIE A. KAZANAS, *Tennessee Technological University* — This study investigates the prevalence and perceptions of AI-induced academic dishonesty among college students, building on Huang's (2021) exploration of AI's educational impacts. We investigate how students employ AI to cheat on online exams and their attitudes toward academic integrity. A between-subjects design is utilized, sampling from a large general education course. One section of the course watches a video on AI detection in exams, while a second section does not receive this information. Heightened accuracy and faster response time in the second group indicates AI usage. Additional self-report data on attitudes and actual cheating behavior, echoing McCabe and Treviño (1997), correlates perceived cheating prevalence with AI usage. Other factors to study include significant academic pressure, a known cheating factor according to Simkin

and McLeod (2010). Results shed light on AI-driven academic dishonesty and guide efforts to uphold academic integrity.

Email: James Hensley, jdhensley@tnitech.edu

6:00-7:30 PM (6086)

Punctuation in Texts: Exclamation Points to the Opposite Gender Are Even More Friendly!

APRIL M. DRUMM-HEWITT, *Lycoming College* — It is possible that participants will expect male and female text message writers to behave differently in their punctuation choice depending on who they are writing to and will rate the emotional valence of the text messages differently in accordance with these expectations. The present study replicates and expands past findings that text messages with periods are interpreted as more sarcastic and aggressive than those without punctuation and that text messages with exclamation points are interpreted by readers as more sincere and friendly than messages with no punctuation or periods, $F(1.359, 19.022)=87.643$, $p<.001$, $\eta^2=.862$. A new finding showed that although there was no main effect of Conversational Pair Gender [$F(1, 14)=.876$, $p=.365$], the Punctuation x Conversational Pair Gender interaction was significant [$F(1.359, 19.022)=4.034$, $p<.05$, $\eta^2 = .042$]. Interestingly, text messages sent to the opposite gender containing exclamation points ($M=1.539$, $SE=.115$) are rated as even more friendly than when they are in a text sent to the same gender ($M=1.848$, $SE=.489$). Further study will be needed to discover whether participants specifically interpret these texts as overly friendly, or even flirting.

Email: April Drumm-Hewitt, drummhewitt@lycoming.edu

6:00-7:30 PM (6087)

Self-Regulation Online: How Self-Focused Attention in Social Media Acts on State Self-Esteem.

RICHARD DIVIRGILIO, *Touro University*, DAREUM PARK, *Touro University*, JESSICA ARMANIUS, *Touro University*, JORDAN FLAMHOLZ, *Touro University*, CARRIE DIMATTEO, *Touro University* — One function of self-directed attention is self-regulation, which allows for self-evaluation relative to standards and resulting fluctuations in state-level self-esteem. When using social media, these cognitive processes are at work as our attention shifts between self and others and as we evaluate the content of our own posts relative to others. In the present

study, participants were instructed to look at four of their own versus others' recent social media posts and describe them in detail. After each self or other condition, participants reported their level of state self-esteem. People reported significantly higher social self-esteem after viewing their own compared to others' posts. However, they reported significantly lower performance self-esteem after viewing their own than others' posts. A significant interaction revealed that more self-conscious people reported lower state self-esteem after looking at their own versus others' posts, while less self-conscious people reported higher state self-esteem after looking at their own versus others' posts. These results reveal how shifts in our attention in the context of social media can reveal the underlying processes of self-regulation and how we feel because of it.

Email: Richard Divirgilio, rdivirgi2@student.touro.edu

6:00-7:30 PM (6088)

A Multi-Country Study on Preferences in Regulating Online Choice Architectures.

FRIEDERIKE STOCK, *Center for Adaptive Rationality, Max Planck Institute for Human Development*, PHILIPP LORENZ-SPREEN, *Center for Adaptive Rationality, Max Planck Institute for Human Development*, KAI RUGGERI, *Columbia University*, RALPH HERTWIG, *Max Planck Institute for Human Development* — We use a conjoint survey experiment to investigate individual preferences for regulating online choice architectures. We present participants with randomized combinations of possible "online choice architects" (commercial, governmental, and individual) and also vary the potential motivations behind the design of the online choice architecture, including personal interest, societal interest, and commercial interest. We focus on seven concrete contexts of online choice architecture that can be found on most major platforms. In a first study ($N=1,050$), we found strong preferences for acting as an individual choice architect. In the main study, we aim to provide nuanced insights from 26 countries into factors such as trust and political orientation, which can influence individual preferences for choice architecture design. By engaging individuals in this discourse, we aim to provide valuable insights for digital platforms and policy makers on users' views on choice architecture design.

Email: Friederike Stock, stock@mpib-berlin.mpg.de

6:00-7:30 PM (6089)

Cognitive Offloading as a Strategy for Working Memory Overload. DANIELLE TROXEL, *California State University, Sacramento*, SUREENA DEOL, *California State University, Sacramento*, DENVER SANDERS, *California State University, Sacramento*, ANH TANG, *California State University, Sacramento*, ELYSE BINGHAM, *California State University, Sacramento*, ALEXANDRA MORRISON, *California State University, Sacramento* — Cognitive offloading reduces the mental load of a task by storing information externally, such as on an electronic device. Examining offloading behavior has implications for increasing performance at cognitive overload, a frequent occurrence. The present study ($n=101$) examined offloading during a working memory task with loads of 4, 8, and 12 letters. In half of trials, participants had the choice to offload letters by typing them as notes, and in the other half, they relied solely on their internal memory. A 2 (choice vs. no-choice) by 3 (4, 8, and 12 set sizes) mixed-model ANOVA showed significant main effects and a significant interaction ($p < .001$). Having the choice to offload benefitted performance, and this effect increased as load increased. However, even with the option to offload, there were still errors, especially at loads 8 and 12. We discuss these and other findings related to the strengths, limitations, and correlates of offloading.

Email: Danielle Troxel, dtroxel@csus.edu

6:00-7:30 PM (6091)

Metacognitively Calibrated AI Encourages Advice Utilization. WILL DENG, *University of Illinois Urbana-Champaign*, AARON S. BENJAMIN, *University of Illinois Urbana-Champaign* — Human-AI teams have the potential to combine the strengths of human cognition and the strengths of an AI teammate in complex decision making. A person can generate an initial estimate, assess an agent's advice, and reconcile the initial estimate with the advice to achieve higher team performance. But humans often do not integrate an agent's advice effectively: They may accept advice indiscriminately even when the agent's performance is poor or reject advice when the agent's performance is superior to their own. Confidence ratings provided by agents have been shown to help people assess the quality of the advice and adjust their assessment based on that advice. Yet little is known about the sensitivity of human partners to the calibration of an agent's confidence—that

is, the degree to which confidence is related to accuracy. In two experiments, participants interacted with a calibrated or an uncalibrated agent in a perceptual estimation task. Advice from the calibrated agent teammate was integrated more, rejected less, and adopted wholesale more often. Agents that possess the ability to accurately convey metacognitive states make more useful teammates with their human partners.

Email: Will Deng, wuyizhe2@illinois.edu

6:00-7:30 PM (6092)

Posture and Locomotion Technique Affect Motion Sickness, Distance Estimation, and Memory of a Navigated Virtual Reality Environment.

ALEXANDRA CHASE, *College of the Holy Cross*, MICHAEL LOPEZ, *College of the Holy Cross*, JANE FRANCES CONNELLY, *College of the Holy Cross*, ANURAG RIMZHIM, *College of the Holy Cross* — Although the use of virtual reality (VR) technology for entertainment, research, and training proliferates, motion sickness (MS) remains one of the biggest challenges to VR's usability. We examined how two postures (sitting vs. standing) and two virtual navigation techniques (steering vs. locomotion) most commonly used with VR affect MS, distance estimation, and memory. Sitting and standing are comparable, being ambulatorily restrictive, but differ in vestibular information that can influence spatial navigation and memory. Steering is more natural but also more MS-inducive than teleporting. Seventy-six participants navigated an outdoor and indoor virtual environment using an Oculus Quest 2 head-mounted-display (HMD). Results show that sitting resulted in higher motion sickness than standing, and so did steering than teleporting. System usability negatively correlated with motion sickness. Object recall was better when standing than sitting. Online and offline distance estimation errors were higher when steering than teleporting. These results can inform improving VR's usability.

Email: Alexandra Chase, alexchase004@gmail.com

6:00-7:30 PM (6093)

Technology Overuse and Physical Activity.

AMIYA SIKIDAR, *St. John's University*, DANA CHESNEY, *St. John's University* — Screens have become increasingly ubiquitous in everyday life, with a large majority of today's youth owning a smartphone. With this constant access to technology offering instant

entertainment, one might be concerned that time and energy dedicated to screens is replacing participation in physical activities. If this were true, one would predict a negative correlation between technology overuse and physical activity. We tested this via an online survey of 62 students (38 female, 24 male) at St. John's University. Participants completed an internet addiction questionnaire ($M=46.66$, $SD=12.89$) and physical activity time over the prior 4 weeks ($M=37.45$, $SD=35.38$). To our surprise, we did NOT find that internet addiction scores were significantly related to physical activity, ($r(60)=-0.039$, $p=0.76$). More research is needed to determine if there is a relationship between different kinds of physical activity and technology overuse, and to control for time dedicated to non-leisure activities. Nevertheless, these results suggest that a lack of physical activity cannot be solely attributed to screens.

Email: Amiya Sikidar, amiya.sikidar23@my.stjohns.edu

6:00-7:30 PM (6094)

An Eyetracking Study on Viewing Computer-Altered Faces.

ADDISON ANGSTADT, *Binghamton University, SUNY*, APRIL M. DRUMM-HEWITT, *Lycoming College* — In an online environment where images are now commonly altered or entirely generated by AI, it is important to understand how this affects the perceptions of human observers. This eye-tracking study investigated how people view, perceive, and rate AI-altered photos of human faces. We hypothesized that participants would judge AI-altered images to be more artificial and less likable. We also hypothesized that participants would fixate differently on altered images. Participants each saw 20 images, some of which were altered and some of which were unaltered by Photoshop neural filters. Findings support the idea that participants cannot consciously identify AI-altered images, yet they show different unconscious patterns while viewing those images. It is also evident that humans have an innate bias against AI-altered images, as seen by higher levels of perceived artificiality on Godspeed Scales, shorter total fixation durations on the eyes of altered images, and a signal detection analysis where participants were not able to accurately detect when a photo was altered ($d'=0.00137$).

Email: Addison Angstadt, aangstadt1408@gmail.com

6:00-7:30 PM (6095)

An Investigation of Social Presence in Virtual Reality.

CARLOS A. COUZIN, JR., *California State University, Northridge*, ETHAN CASTANON, *Visual Information Sciences and Neuroscience (VISN) Lab, California State University, Northridge*, RONALD A. GUTIERREZ, *California State University, Northridge*, STEFANIE A. DREW, *California State University, Northridge* — With virtual reality (VR) growing in popularity, it is increasingly imperative to explore online communication within VR virtual environments. This study aimed to help define which factors are more likely to affect the feeling of social presence during a VR gaming context. Social presence can be thought of as the effectiveness of the medium's ability to grant communication between parties. Our design features four experimental conditions varying participants were engaged in conversation and whether avatars were enabled. Participants played Connect 4 against a confederate for 20 minutes and afterward completed a series of self-report measures concerning social presence, immersion, and sickness symptoms. We hypothesized that participants who engaged in conversations with their opponents' visible avatars would report experiencing higher social presence and fewer VR sickness symptoms compared to those without conversation or avatars. A 2 (conversation engagement) \times 2 (avatar presence) ANOVA revealed a statistically significant main effect for conversation on social presence with no significant main effect observed for avatar visibility.

Email: Carlos Couzin, carlos.couzin.685@my.csun.edu

6:00-7:30 PM (6096)

Can Deepfakes Contribute to Epistemic Pollution? An Experimental Study Examining Responses to Real Videos After Deepfake Priming.

DIDIER CHING, *University College Cork*, JOHN TWOMEY, *University College Cork*, CONOR LINEHAN, *University College Cork*, GILLIAN MURPHY, *University College Cork* — Deepfakes are a form of digital audio-visual manipulation in which an individual's face and voice can be cloned onto another in video format. The potential threat of this technology to spread misinformation and defame individuals is evident. However, simply the idea that deepfakes exist may also be dangerous. This knowledge may obstruct individuals from obtaining real information if they suspect

everything is a deepfake. We present an experimental study examining whether the priming of deepfake technology can influence how individual's view real videos. We also test whether the resolution of a real video influences this effect. Overall, we found that individuals who were primed by knowledge of deepfake technology demonstrated reduced trust in real videos. We conclude that the idea of deepfake technology is enough to erode epistemic truth.

Email: Didier Ching, d.ching@umail.ucc.ie

6:00-7:30 PM (6097)

Expressing Guilt in Virtual Apologies at Work.

MONICA A. RIORDAN, *Chatham University*, ELLA GLIKSON, *Bar-Ilan University* — An apology can help rebuild a relationship after a transgression occurs. The effectiveness of an apology, however, often depends on the perceived sincerity of the transgressor's guilt, a complex emotion that is difficult to convey in an online text-based environment. In the current study, we explore how different expressions of guilt affect acceptance of a chat apology from a member of a virtual work team. We find that expressing guilt using either words or an emoji face led to greater willingness to forgive a transgressor than a lack of expression of guilt. This effect was driven by the perceived emotionality of the apology, which led to higher perceived sincerity of guilt, increasing likelihood of apology acceptance. Though words of guilt were perceived as more appropriate than an emoji face, perceived appropriateness only mediated the relationship between words and apology acceptance, not the emoji. These findings suggest that the sincere expression of emotion in online chat is key to relational outcomes such as forgiveness.

Email: Monica Riordan, mriordan@chatham.edu

6:00-7:30 PM (6098)

Linguistic Analysis vs. Gut Instinct: Deception Detection Techniques in 911 Calls in Homicide Cases.

KETHERA MOORE, *James Madison University*, ALEXANDRA SHEFFIELD, *James Madison University* — A growing body of research is focused on techniques to detect deception in people calling 911 to report a crime. Often, the first knowledge of a potential crime is the 911 call reporting the incident. The caller's role in the incident and/or information they have about the incident may be the first evidence in the case, making the truthfulness of such statements important. Linguistic

analysis is based on research claiming there are linguistic characteristics associated with deception. Studies investigating the accuracy of linguistic analysis in lie detection have had mixed results, leaving some question as to whether these approaches are any more accurate than gut instinct. The current study compares results from linguistic analysis to that of untrained participants in determining the guilt of 911 callers in homicide cases.

Email: Kethera Moore, foglerka@jmu.edu

6:00-7:30 PM (6099)

Speakers' Responses to Components of Real-Time Visual Feedback from a Mirror During a Naturalistic Speech Task. ELIZABETH CASSERLY, *Trinity College*, KAITLYN SIEDMAN, *Boston University* — This study aimed to replicate and expand upon prior results showing a negative impact of mirrors on speakers' intelligibility (Casserly et al., 2022). We pursued replication both because of the novelty of such an effect and because the prior method included two potential confounds: presentation order co-varied with the feedback manipulation, and orthographic word prompts created visual competition for the self-feedback. In this study, therefore, we counterbalanced for order and developed a novel elicitation task that avoided simultaneous visual prompts. We also added a third condition with restricted visual feedback (with only speakers' eyes, mouth, or shoulders visible) to test differential impacts of specific feedback components. Thirty speakers completed the production task across three mirror exposures (full, restricted, none); separate naïve listeners ($n=30$) then responded to speech tokens across each condition in fully-crossed 2AFC intelligibility comparisons. The negative effect of mirror self-feedback did not replicate, but listeners did indicate reduced intelligibility when speakers' visual feedback was restricted to the eyes as compared to the mouth and shoulder restrictions.

Email: Elizabeth Casserly, elizabeth.casserly@trincoll.edu

6:00-7:30 PM (6100)

Spanish Picture Naming Norms for the Bank of Standardized Stimuli. ANNA PUSSER, *Auburn University*, AMELIA GRACE, *Auburn University*, SUSAN TEUBNER-RHODES, *Auburn University*, GILDA SOCARRAS — The Bank of Standardized Stimuli (BOSS) project is the most extensive picture database available to researchers, with normative data

available in English and French (Brodeur et al., 2014). Currently, there is no normative data from native Spanish speakers for the BOSS. In this study, we obtained percent Spanish name agreement for 600 photo stimuli from the BOSS with the highest name agreement (>50%), expecting similar name agreement in Spanish. Native Spanish speakers ($n=107$) were recruited through Amazon Mechanical Turk from México (47%), Spain (16%), Colombia (13%), Argentina (12%), and Perú (9%). We found weak albeit significant relationships between Spanish and English for percent name agreement out of total responses ($r=.24$, $p<.001$) and total names given ($r=.19$, $p<.001$). Results highlight variability in cross-linguistic naming patterns. Our study is the first to provide Spanish language norms for BOSS pictures, which can support study development.

Email: Anna Pusser, Pusser.anna@gmail.com

6:00-7:30 PM (6101)

Multisensory Statistical Learning: Evidence Against Modality Constraints in Visual and Auditory Statistical Learning. GWEN RADECKI, *Bucknell University*, AARON MITCHEL, *Bucknell University* — Statistical learning (SL) extends across multiple stimulus domains and modalities, including vision, audition, and touch. However, it remains to be seen whether SL is supported by a modality-general or modality-specific mechanism(s). Prior work examined this by varying the rate of presentation across modalities, finding evidence of modality-specific constraints on learning (Emberson, Conway & Christiansen, 2011). Here we extend this work by testing the effect of presentation rate in standardized audio and visual SL tasks. We familiarized adults to a stream of tones or shapes at one of three presentation rates (375, 750, and 1500ms SOA). Contrasting with previous findings, performance was above-chance and equivalent for auditory and visual stimuli at both 375 and 750ms SOA, though auditory learning was more robust than visual at 1500ms SOA. Thus, our results provide evidence against modality constraints on SL, suggesting instead that SL may be supported by a modality-general mechanism.

Email: Gwen Radecki, gar020@bucknell.edu

6:00-7:30 PM (6102)

What We Talk About When We Talk about Diverse Groups. KALMAN VICTOR, *New York University*, YAACOV TROPE, *New York University* —

When encountering heterogeneous sets of objects, humans often use higher-level representations to try to capture the full range of variation in front. But when it comes to “diverse” groups, which can vary across one or more salient dimensions, we may not be able to rely on existing social categories to meaningfully guide judgments or inferences. While psychologists have studied the development and maintenance of stereotypes with respects to many stable, commonly encountered identity groups, little is known about ad-hoc representations of socially diverse collectives. Using theories and methods from social and cognitive psychology, we examined text from spontaneous descriptions and simulated interactions with groups framed as diverse or homogeneous, looking for linguistic signatures of abstract vs. concrete mental representation. We used existing and original computational approaches grounded in psychological theory, finding that relatively more diversity in group composition leads to more abstract language. We explain and contrast our methods—ranging from a dictionary-based approach to a calculation of semantic similarity to a text’s own summary—and discuss their pros and cons and potential future applications.

Email: Kalman Victor, ksv2012@nyu.edu

6:00-7:30 PM (6103)

White Matter Integrity in the Uncinate Fasciculus and Language Production in Aging. JIE YAN, *The Pennsylvania State University*, XIAOXIAO BAI, *Social, Life, and Engineering Sciences Imaging Center (SLEIC), The Pennsylvania State University*, MICHELE T. DIAZ, *The Pennsylvania State University* — Aging is often associated with word retrieval difficulties, which older adults consider to be one of the most frustrating experiences. Here we used diffusion weighted imaging to examine the link between language production and white matter integrity (WMI) in the uncinate fasciculus (UF) which has been implicated in semantic aspects of language production (left) and executive function (right). We examined the relationship between UF, language production (i.e., verbal fluency [VF]), picture naming, speech elicitation) and executive function (i.e., working memory, Stroop) across adulthood ($N=90$, 20-80 years old). Behaviorally, we found age-related differences in language production and the Stroop effect. WMI declined with increasing age. Different from a control tract, left UF was associated with picture naming accuracy but not pronouncing a control word.

Right UF contributed to speech elicitation, semantic VF, and the Stroop effect (but not working memory). Overall, our results showed that the bilateral UF was related to semantic aspects of language production and right UF was sensitive to executive function.

Email: Jie Yan, jzy5486@psu.edu

6:00-7:30 PM (6104)

Can Conflict Adaptation Impact Sentence Comprehension in Individuals with Mild or Moderate Aphasia? A Case-Series Investigation into the Role of Cognitive Control. ANNA

KRASON, *Moss Rehabilitation Research Institute*, ERICA L. MIDDLETON, *Moss Rehabilitation Research Institute*, MATTHEW E. P. AMBROGI, *Moss Rehabilitation Research Institute*, MALATHI THOTHATHIRI, *The George Washington University* — Cognitive control deficits are common in aphasia, a language disorder after left-hemisphere stroke. These deficits can make it difficult to interpret sentences with syntax-semantics-conflict (e.g., "The cop was handcuffed by the robber"). Neurotypical adults adapt to conflict by upregulating cognitive control, known as conflict adaptation. Do people with aphasia also exhibit conflict adaptation for improving sentence comprehension? Two groups with mild and moderate aphasia completed interleaved Stroop and sentence-to-picture matching trials. By manipulating Stroop and sentence congruencies, we created four conditions: CC, IC, CI, II (where CI=congruent Stroop followed by incongruent sentence, etc. Congruent=No conflict, Incongruent=Conflict). We hypothesized that Stroop congruency would impact the comprehension of incongruent (but not congruent) sentences as they involve conflict and require cognitive control. Results suggest that conflict adaptation can improve sentence comprehension in aphasia, though there is individual variability. Modulating cognitive control could be a potential treatment strategy for aphasia.

Email: Anna Krason, anna.krason@jefferson.edu

6:00-7:30 PM (6105)

Emotional Resonances (Measured via Ratings and SCRs) Are Reduced for LX (a Less Proficient Additional Language) But Increased for L1 When Reading Grammatically Difficult Vs Easy Sentences. CATHERINE L. CALDWELL-HARRIS, *Boston University*, AYSE AYÇİÇEĞİ DINN,

İstanbul Atlas Üniversitesi — The foreign language effect (FLE) refers to how decision-making differs when bilinguals use a more proficient (L1) vs. a less proficient, later-learned language (LX). The FLE is most frequently observed when decisions can be influenced by emotions and intuitions. One account is that the cognitive load of using a less proficient language reduces or obscures emotional signals. Turkish-English bilinguals residing in Turkey read sentences that varied in both grammatical difficulty and emotional intensity. A cross-over interaction was found when emotional intensity was crossed with L1 vs. LX for difficult sentences. In LX, easy sentences were rated as more emotionally intense. This suggests that the difficulty of processing an LX interferes with attending to (or experiencing) the emotional meaning. In L1, syntactically difficult sentences were rated as slightly more emotionally intense than easy sentences, which may be a depth of processing effect. Electrodermal amplitudes were depressed in LX compared to L1, consistent with reduced emotional experience.

Email: Catherine Caldwell-Harris, charris@bu.edu

6:00-7:30 PM (6106)

Learning Words from the Company They Keep. LAYLA UNGER, *University of York*, EMMA FURY, *The Ohio State University*, VLADIMIR SLOUTSKY, *The Ohio State University* — Much of the word knowledge children amass during development comes from encountering words in broader language contexts, such as conversations and stories. Yet, we know little about how children use context to learn words. The present studies pursue a possible route highlighted by extensive evidence that words similar in meaning occur in similar language contexts. For example, words for fruits occur in the context of "juicy" and "sweet". Thus, a child who knows some fruit words such as "apple" and "strawberry" could learn a similar meaning for "lychee" just from encountering it with "juicy" or "sweet". We investigated this "contextual similarity" route by developing a novel measure to quantify the tendency for similar words to occur in similar contexts, and using it to test whether the strength of this tendency predicts word learning. Across analyses of language input and word learning in young (0-4 year-old) and school-age (7-12 year-old) children, we found words tend to occur in similar contexts to words similar in meaning that children already know. Critically, the strength of this contextual similarity is a robust predictor of word

learning, even controlling for other key predictors such as word frequency and concreteness.

Email: Layla Unger, unger.layla@gmail.com

6:00-7:30 PM (6107)

Colorful, But Never Meaningless: Morphological Decomposition and Semantic Processing of Complex Pseudowords. IVA SABAN, *University of Milano-Bicocca*, FABIO MARSON, *University of Milano-Bicocca*, GIULIA LOCA, *University of Milano-Bicocca*, MARCO MARELLI, *University of Milano-Bicocca* — The study investigates the role of semantic activation in visual word recognition. We created a set of Italian-looking, morphologically complex pseudowords (“cielomento”), where the stem (“cielo”, Italian for sky) is semantically associated with the color (blue). These pseudowords were integrated into a lexical decision task in which participants must decide whether a letter string constitutes an existing word or not, presented as either congruent (“cielomento” in blue) or incongruent (“cielomento” in green) stimuli. Recent work shows that semantic features associated with a pseudoword determine its perceived meaningfulness. Pseudowords with greater semantic activation are perceived as more meaningful and are harder to refute. This semantic activation is expected to be stronger in the congruent condition, where ink color and stem activate the same semantic concept, resulting in longer response times. We anticipate that semantic access via a fully embedded stem (“cielomento”) will be more influential than a partially embedded stem (“cielabile”). Data collection from 40 native Italian speakers is ongoing. This study will shed light on the interplay between morphological decomposition and semantic processing of complex pseudowords.

Email: Iva Saban, iva.saban@unimib.it

6:00-7:30 PM (6108)

Does Narrative Transportation Affect the Availability of Semantic Knowledge? CHARLES P. DAVIS, *Duke University*, ELIZABETH MARSH, *Duke University* — When we read narratives, we generate a rich representation of the narrative world, responding to events like they were unfolding in real life, in a way that produces distance from readers' daily lives. This experience is called narrative transportation. In two preregistered experiments we test whether narrative transportation affects availability of semantic knowledge.

Participants (total N=292) read a series of narratives that were situated, between subjects, either in the present day or in the past (Experiment 1: 19th century America, Experiment 2: 19th century America or ancient Greece). We reasoned that because semantic knowledge reflects current world knowledge, traveling back in time—by reading a narrative set in the past—would make that knowledge less accessible in a subsequent semantic priming task (i.e., slowed semantic processing). This is precisely what we found. Moreover, the slowing effect increased with the amount of distance traveled (traveling to ancient Greece vs. 19th century). The findings support a framework of narrative transportation wherein traveling to a narrative world that is removed from one's world of origin makes general semantic knowledge less accessible.

Email: Charles Davis, charles.davis@duke.edu

6:00-7:30 PM (6109)

The Conditioning of the Sweet Imagery Ratings of Japanese Words to Pseudowords. TOSHIMUNE KAMBARA, *Hiroshima University*, NAN WANG, *Hiroshima University*, MIZUKI YOSHIO, *Hiroshima University* — Previous research has clarified the conditioning of sensory imagery and emotional ratings of real words to pseudowords or real words. This study examined the conditioning of sweet imagery ratings of Japanese real words to Japanese pseudowords. Based on a survey before an experiment, we made two conditions including sweet food words and unsweet food words. The familiarity, valence, and arousal ratings of the words were controlled between the two conditions. In the experiment, participants conducted a conditioning task and rating tasks before and after the conditioning task. Results showed that after the conditioning, the sweet imagery ratings were higher for pseudowords paired with sweet food words than for pseudowords paired with unsweet food words, while the arousal ratings were reversed in the case of the sweet imagery ratings. In addition, the conditioning increased the familiarity and valence ratings in both the conditions.

Email: Toshimune Kambara, toshimunekambara0@gmail.com

6:00-7:30 PM (6110)

The Role of Entropy of Semantic and Orthographic Information in Meaning Induction from Familiar and Novel Words. ROLANDO BONANDRINI, *University of Milano-Bicocca*, MARCO

MARELLI, *University of Milano-Bicocca* — According to the FastText model, extracting meaning from a written letter string (regardless of its lexical nature) entails combining meaning from the whole word—if it exists—and its constituting word chunks of n letters (ngrams) with equal weight attributed to each component. Here we introduce two modified versions of the FastText model, attributing different importance to ngrams depending on how consistently they appear in specific words (orthographic entropy) vs. how precise is the semantic information that they carry (semantic entropy). We compared the ability of these models (relative to the standard FastText) to fit human data from the British Lexicon Project. Preliminary results suggest that the orthographic entropy produces the best fit to human data, at least for existing words. This finding suggests that when we come across a word, we induce meaning from available ngrams in a way depending on the specificity of orthographic information.

Email: Rolando Bonandrini, rolando.bonandrini@unimib.it

6:00-7:30 PM (6111)

Familiarity and Transparency Norms for 88

Persian Compounds. BAHAREH YOUSEFZADEH, *University at Buffalo, SUNY*, CASSANDRA L. JACOBS, *University at Buffalo, SUNY* — Compounding is an important word formation process in many languages. However, Persian differs from Germanic languages by allowing head-initial and head-final compounds. Head-initials include a phono-syntactic element between the constituents to link the modifier to its head, called Ezafe. (e.g., egg_Ezafe hen, for egg). Further, some opaque compounds with Ezafe also have a literal interpretation; for those without it, some theories suggest that Ezafe that might be "restored." We collected norming data on the relationship between the syntactic structure of two-word Persian compounds that varied in their transparency (N=88) and ratings of familiarity and transparency (N=88) by native speakers of Persian (N=38). We found that the presence of Ezafe did not affect transparency ratings or familiarity ratings. However, opaque compounds were less familiar than transparent ones ($t(3253) = 5.39$, $p < .001$), and less transparent ($t(3339) = 36.6$, $p < .0001$); 8 compounds were re-categorized in terms of transparency. The findings shed light on how Ezafe affects the production of compounds and enable the study of compound processing in an understudied language.

Email: Bahareh Yousefzadeh, baharehy@buffalo.edu

6:00-7:30 PM (6112)

Group Differences in Lexical Source Use and Clustering During Memory Search.

RICHARD LIM, *Bowdoin College*, AMANDA COONEY, *Bowdoin College*, CHANNING E. HAMBRIC, *Bowdoin College*, ABHILASHA A. KUMAR, *Bowdoin College* — Individuals differ in how they search through memory, and this search process is influenced by individual and group-level differences. In this work, we examine differences in internal lexicon structure of individuals across the lifespan and individuals with normal hearing and cochlear implants, using data from the verbal fluency task across multiple domains. Previous work shows that older adults maintain optimal search throughout adulthood, but differ in the time they spend within clusters. We examine the nature of transitions that occur within and between clusters and whether there are differences in the use of semantic, phonological, and frequency-based information between age groups. We also examine whether different instantiations of mental lexicons via speech and text explain search-related differences between individuals with and without normal hearing, and whether these differences are consistent across domains. Overall, this work highlights how age and language-related differences may impact the nature of memory search and retrieval.

Email: Richard Lim, rlim@bowdoin.edu

6:00-7:30 PM (6113)

Semantic Influence on Word Recognition in Spanish-English Bilinguals.

ZUZANNA OSIECKA, *Rutgers University-Newark*, LINSAH COULANGES, *University of Pittsburgh*, SHANNON CAHALAN, *The George Washington University*, JENNIFER AUSTIN, *Rutgers University-Newark*, WILLIAM W. GRAVES, *Rutgers University-Newark* — Most studies examining the role of semantics in word recognition and reading have been conducted in English, a language with inconsistent orthographic-to-phonological mappings. In transparent orthographies, like Spanish, findings vary; some show semantic effects even with regular mappings, whereas others do not show any effects of semantics on word recognition. However, many of these studies were conducted in bilinguals, and it may be the case that their varying levels of proficiency affected the results. Ninety-six Spanish-English bilinguals completed a Spanish lexical decision task and a proficiency questionnaire. For each participant we estimated word frequency and imageability effects on word recognition accuracy and

found that age of Spanish acquisition modulated imageability effects. Our results suggest that semantics is used in word recognition in languages with regular orthographies when available. Future research should account for proficiency when studying word recognition in bilinguals.

Email: Zuzanna Osiecka, zo22@rutgers.edu

6:00-7:30 PM (6114)

Experience Affects Dialect Categorization of Singlish and Highlights Differences in Explicit and Emergent Categories Across Listener Groups.

YIN LIN TAN, Stanford University & National University of Singapore, TING LIN, Stanford University, MEGHAN SUMNER, Stanford University — Linguistic experience increases dialect identification accuracy, but studies often measure listener judgments against researcher-determined labels. We investigate how Singaporean (SG) and American listeners (AM) categorize Singlish, a variety of English in Singapore. In experiments conducted with SG (Experiment 1) and AM (Experiment 2), listeners completed trials comprising two audio clips from podcasts, controlled for semantic content across 10 talkers, and chose the More Singlish clip. Unsurprisingly, SG made finer-grained categorizations than AM. By-group Singlish scores (predicted probability of being chosen as More Singlish) were generated for each clip. Critically, both groups were faster at categorizing clips with higher Singlish scores as More Singlish, but SG were faster overall. SG were faster at categorizing the least Singlish clips, leading to an emergent group without explicit labels. This effect did not hold for AM. Moreover, SG used intonation and speech rate when categorizing, while AM only used speech rate. We argue that listeners categorize unfamiliar dialects with patterns they draw on independently, but more experience yields finer-grained categorizations that leverage detailed category associations and more acoustic cues.

Email: Yin Lin Tan, yltan@stanford.edu

6:00-7:30 PM (6115)

Exploring Perceptual Gradience as a Predictor of Successful Accent Processing.

MEL MALLARD, Washington University in St. Louis, KRISTIN J. VAN ENGEN, Washington University in St. Louis — Little is known about the mechanisms used to support successful processing of accented speech. It is theorized that

perceptual gradience can be leveraged for successful perception of ambiguous speech (Kong & Edwards, 2016; Brown et al., 2018; Kapnoula et al., 2021). In our experiment measuring the listening effort and repetition accuracy of Mandarin Chinese accented speech, we have included a visual analogue scale (VAS) task to assess individual participants' perceptual gradience. We hypothesize that subjects with higher gradience will be more successful in mapping ambiguous L2 speech to L1 representations than subjects with lower gradience. Therefore, we predict that perceptual gradience will have a positive, nonlinear relationship with speech task accuracy scores; we expect that gradience's relationship to accuracy will be weak for high intelligibility conditions, and strong for low intelligibility conditions. Gradience's relationship to effort is subject to two competing hypotheses: 1) high gradience is costly and increases effort, 2) high gradience increases the efficiency of resolving ambiguity, ultimately leading to decreased effort.

Email: Mel Mallard, m.mallard.wustl@gmail.com

6:00-7:30 PM (6116)

Impact of Regional Spanish Accent Varieties on Intelligibility and Real-Time Processing of Native-Accented Speech.

CRISTAL GIORIO, The Pennsylvania State University, JANET G. VAN HELL, The Pennsylvania State University — Accented speech processing has been studied through behavioral and ERP responses to sentences spoken by accents that match or mismatch the listener's own accent. Research on nonnative accents shows that listening to speech that differs from one's own accent can impede comprehension (Interlanguage Speech Intelligibility Benefit; ISIB). Previous research on regional native accent varieties showed mixed results. No study has yet assessed the real-time processing of multiple geographically distinct Spanish varieties by native listeners. We examined how Mexican-Spanish listeners process Spanish varieties that matched or mismatched (Puerto Rican and Spaniard) their own. Measuring ERPs, listeners heard sentences with or without semantic anomalies. Typical N400 responses were observed for matched (Mexican) and highly familiar (Spaniard) accents, but not for less familiar (Puerto Rican) ones. These results suggest processing benefits for matched and highly familiar regional accent varieties within one's native language, further refining the ISIB hypothesis.

Email: Cristal Giorio, cgg5141@psu.edu

6:00-7:30 PM (6117)

Lexically Guided Perceptual Learning May Depend on Linguistically Relevant Variation.

SIYU LIN, *Emory University*, LYNNE NYGAARD, *Emory University* — Previous research has shown that listeners simultaneously track idiosyncratic variation associated with two distinct talkers, engaging in phonetic recalibration conditioned on the specific pronunciation variants associated with each talker. Here, we examined whether this ability can be driven by associations with lower-level acoustic variation, such as sound intensity. In two experiments, listeners were exposed to ambiguous pronunciations in lexically disambiguating contexts, either associated with two different talkers (Experiment 1) or with two different intensity levels (Experiment 2). Experiment 1 replicated prior findings showing talker-specific perceptual learning. Listeners simultaneously registered variation associated with each talker and flexibly recalibrated depending on talker. However, in Experiment 2, when talker variation was replaced with variation in intensity, phonetic recalibration did not occur, despite equivalent perceptual sensitivity to changes in talker and intensity. Our results suggest that socially or linguistically relevant variation is more likely to be integrated with, and activate, lexically induced interpretations of acoustic-phonetic ambiguities.

Email: Siyu Lin, siyulin12@gmail.com

6:00-7:30 PM (6118)

Listening Effort Modulates Aperiodic Neural Activity in Younger and Older Listeners During Speech Comprehension.

SARAH J. WOODS, *University of Utah*, JACK W. SILCOX, *University of Utah*, BRENNAN PAYNE, *University of Utah* — In the current study, we test whether stimulus-induced changes in broadband aperiodic EEG activity may index listening effort during speech comprehension. In two studies, we examined aperiodic spectral EEG activity (e.g., broadband 1/f spectral slope and offset) while younger and older adult participants listened to sentences presented either in quiet or in +3dB SNR speech-shaped background noise. In both groups, we found that the spectral slope and offset were sensitive to background noise, particularly over prefrontal electrodes. Both groups showed evidence for a flattened broadband spectral slope when listening to sentences with background noise as compared to sentences presented in quiet. We argue that this effect reflects a LE-dependent

change in the balance between cortical excitation and inhibition in speech processing. These findings have implications not only for understanding the cognitive processes involved in effortful speech comprehension but also for the general treatment of spectral EEG data in cognitive tasks.

Email: Sarah Woods, woods.sarahj@gmail.com

6:00-7:30 PM (6119)

Local Exposure and Global Social Effects on Perceived Linguistic Geography: Mandarin Accents In China.

IRENE YI, *Stanford University*, MEGHAN SUMNER, *Stanford University* — Perceptual dialectology research has consistently found that people make fine-grained categories for talkers from regions close to them, but broad categories for those far away. For example, US Northerners reliably identify the US South as a broad category in perceptual dialectology tasks. However, the US South is a robust social category too, reinforcing this broad categorization. This broad-category reinforcement may mask fine-grained representations that participants might have, but not access in this context or these experimental tasks. We turn to China, where fine-grained labels from remote regions may be available due to different linguistic and social landscapes. Participants used a Map Survey Instrument to create categories of Mandarin-accent variation in China. Aggregated heatmaps for two participant groups (Chinese Northerners and Southerners) show that all groups created fine-grained categories for all regions in China, whether local or remote. This study complicates the geographical proximity explanation in perceptual dialectology, suggesting that there is not a one-to-one mapping between mental representations and actual produced categorizations in a task.

Email: Irene Yi, ireneyi@stanford.edu

6:00-7:30 PM (6120)

Neurophysiological Effects of Language Dominance on Phonetic Encoding in Bilingual Heritage Spanish Speakers.

MADISON C. LACANLALE, *University of California, Merced*, HEATHER BORTFELD, *University of California, Merced*, KRISTINA C. BACKER, *University of California, Merced* — Prior studies have revealed that speech-in-noise comprehension of a non-native language is more difficult for bilinguals than that of their native

language. However, the underlying mechanism for this observation remains unclear. The current study examined how differences in language dominance in Heritage Spanish-English bilingual young adults influences their phonetic encoding of speech in quiet and in noise. Using electroencephalography (EEG) and a behavioral discrimination task, we recorded participants' auditory evoked potentials (AEPs; P1-N1-P2) to observe neural adaptation to and discrimination accuracy of consonant-vowel syllable pairs (CVs) present in Spanish and/or English (e.g., /ba/, /va/, /ma/). If shared neural populations underlie the phonetic encoding of two different CVs, then we should observe neural adaptation (i.e., an attenuated AEP) to the second CV. Thus, as English dominance increases, listeners should have less neural adaptation when an English-specific CV (e.g., /va/) follows a CV that is shared across Spanish and English (e.g., /ba/)—especially in noise. Data collection is underway. The results will reveal how language dominance may modulate the neural populations that underlie phonetic encoding.

Email: Madison Lacanlale, mlacanlale@ucmerced.edu

6:00-7:30 PM (6121)

Passive Exposure Facilitates Perceptual Learning of Non-Native Accented Speech. BYONNE ATAMNA, *San Jose State University*, CHRISTINA TZENG, *San Jose State University* — Listeners rapidly adapt to variation in speech through perceptual learning. The present study examined the extent to which perceptual learning of non-native accented speech varies as a function of task-directed shifts in attention. Listeners completed an exposure phase during which they heard English sentences produced by Spanish accented talkers while completing tasks requiring different levels of attention to the target stimuli. Across conditions, listeners completed either alternating transcription and talker identification tasks (task-relevant condition), a symbol-to-number matching task (task-irrelevant condition), or the same task as in the task-relevant condition but with native English sentences (control). At test, listeners transcribed novel sentences spoken by novel Spanish-accented talkers. The trajectory of perceptual learning differed across conditions such that during the first half of test trials, transcription accuracy was reliably higher for the task irrelevant versus the control condition. This suggests that, especially for first encounters with novel voices, passive exposure to a non-native accent can potentially yield learning of accent-general

characteristics that transfers to novel talkers and utterances.

Email: Byonne Atamna, byonne.atamna@sjsu.edu

6:00-7:30 PM (6122)

Recognizing Emotion in Second-Language Speech: A Study of Bilinguals' Emotional Prosody Recognition in Quiet and Noisy Conditions. ADRIANA R. MILLER, *The Pennsylvania State University*, GABRIELLE STOKES, *The Pennsylvania State University*, SUSANNE BROUWER, *Radboud University*, JANET G. VAN HELL, *The Pennsylvania State University* — Individuals can identify emotion in foreign pseudo-speech, indicating universality in emotional prosody recognition, but show greater accuracy for their native language (L1) than foreign languages ("in-group advantage"). We asked how this may apply to bilinguals' recognition of emotion in a second language (L2), and how background noise may affect emotion recognition. We examined Dutch-English bilinguals' emotion recognition accuracy of pseudo-sentences presented in L1 Dutch, L2 English, and foreign languages Hindi and Arabic, in quiet and noisy (Dutch multi-talker background babble) conditions. Results support the universality effect (accuracy above chance for all languages) and indicate that noise negatively affects accuracy. An in-group advantage was found for L1 and L2 (English and Dutch > Hindi and Arabic). Extension of the in-group advantage to L2 (and a positive correlation between accuracy and English proficiency) suggests that emotion recognition is not just based on cultural in-group membership but can be learned by L2 users.

Email: Adriana Miller, adrimiller8@gmail.com

6:00-7:30 PM (6123)

Seeing Intent: The Influence of Speakers' Facial Cues on Audio-Visual Intent Perception. RYAN PILI, *University of California, Santa Cruz*, ALAN KAWAMOTO, *University of California, Santa Cruz* — Visual facial cues can sufficiently convey a speaker's intent to listeners in the absence of speech acoustics, at least when viewing a single English speaker. However, it is unclear whether listeners will exhibit similarly accurate intent perception when viewing continuously varying, natural speakers. We tasked participants with identifying whether a speaker had intended their utterance as a question or a statement. Audio-visual

sentence recordings were generated by a set of untrained, naive speakers. The unique speaker on each trial was randomly assigned. The sentences were presented under three presentation modalities: audio-visual, audio-only, and visual-only. Intent identification accuracy was highest in audio-visual presentations, followed by audio-only, and lowest in visual-only. Importantly, all three presentation modalities still supported above-chance intent identification. These results suggest listeners can draw sufficient information from visual facial cues of multiple varying speakers to support intent perception. The evidence of audio-visual enhancement may inform models of multi-sensory intent perception.

Email: Ryan Pili, rpili@ucsc.edu

6:00-7:30 PM (6124)

Semantic Shifts Modulate Language Network Activity During Continuous Speech Perception.

HANNAH MECHTENBERG, *University of Connecticut*, JAMIE REILLY, *Temple University*, JONATHAN PEELLE, *Northeastern University*, EMILY MYERS, *University of Connecticut* — During spoken discourse, the listener contends with numerous semantic shifts as the speakers change topic throughout the conversation. The semantic distance of these shifts varies widely—from small sidesteps into similar topics to grand leaps into entirely new areas of semantic space. The question at hand is how these semantic shifts modulate neural activity. Seventy-nine participants passively listened to a 10-minute segment of a podcast during fMRI. We modeled inter-word semantic distance, excluding function words, while controlling for lexical-level properties (i.e., word frequency and phonological neighborhood density) to capture topic change over the length of the podcast. Activity in bilateral superior temporal gyrus, left inferior frontal gyrus, and bilateral precuneus negatively correlated with increasing semantic distance, perhaps reflecting how larger topic shifts rely less on canonical language areas. Further characterization of this relationship will use network-centered approaches to create a holistic understanding of semantic topic shifts in discourse.

Email: Hannah Mechtenberg, hannah.mechtenberg@uconn.edu

6:00-7:30 PM (6125)

The Role of Familiarity in Processing Across-Accent Speaker Switching.

DAPHNE WEISS, *Basque Center on Cognition, Brain & Language*

(BCBL), DREW MCLAUGHLIN, *Basque Center on Cognition, Brain & Language (BCBL)*, YEVGENIY MELGUY, *Basque Center on Cognition, Brain & Language (BCBL)*, MARIAN SIMARRO, *Basque Center on Cognition, Brain & Language (BCBL)*, EFTHYMIA C. KAPNOULA, *Basque Center on Cognition, Brain & Language (BCBL)* & Ikerbasque — Switching between speakers during speech comprehension can impose a processing cost on listeners. Moreover, the cognitive cost for switching between talkers with different accents is asymmetrical: switching from an L2 accent to an L1 accent is less costly than switching from an L1 to an L2 accent. We ask whether familiarity with the L1 accent drives this benefit. This would align with proposed models of listener accommodation in which mappings between a speaker's production habits and phonemes are stored in memory. In this framework, familiar switches should be easier because they do not require new mappings to be computed in real-time. Rather, the known mappings can be recalled, which is less cognitively demanding. To test this, we randomly assigned L1 Spanish listeners to complete exposure-based training with one of two previously unfamiliar accents (American-accented or Italian-accented Spanish). Participants listened to 30-minute daily extracts of *Harry Potter* for one week. Then, we used a pupillometry task to assess cognitive load when switching between the familiar and unfamiliar accented speakers. We expect the switching cost to be lower when a familiar talker follows an unfamiliar talker than the reverse.

Email: Daphne Weiss, d.weiss@bcbl.eu

6:00-7:30 PM (6126)

Turkish Listen-and-Repeat Accuracy Predicts Receptive Vocabulary Acquisition in a Computer-Assisted Language Learning Study.

SABINA SHARIFOVA, *CUNY Graduate Center*, ARSHIA K. LODHI, *CUNY Graduate Center*, MAYA ROSE, *CUNY Graduate Center*, SHAN JIANG, *CUNY Graduate Center*, VALERIE SHAFER, *CUNY Graduate Center*, SUZANNE V.H. VAN DER FEEST, *CUNY Graduate Center*, PATRICIA J. BROOKS, *College of Staten Island, CUNY* — This study examined the role of production accuracy in predicting vocabulary learning at the onset of second language learning of Turkish by English-dominant adults. Participants (N=52, 18-27 years) learned a miniature version of Turkish via an online computer-assisted language learning paradigm

recorded on Zoom. Participants completed the Culture Fair test of nonverbal ability as an indicator of language-learning aptitude, and a language background questionnaire. Stimuli encompassed 36 Turkish nouns, inflected for case (dative, ablative) and number (singular, plural), and presented in spoken dialogues. Participants' accuracy in listening-and-repeating Turkish nouns was coded at the start and completion of three practice blocks, $r(50)=.75$. Controlling for nonverbal ability and language background, pronunciation accuracy at the start of practice ($M=58\%$, $SD=14\%$) predicted scores on a final receptive vocabulary test ($M=71\%$, $SD=18\%$), $Beta=.42$, $p=.02$. Further analyses examined acquisition of Turkish vowel harmony. Unlike children learning Turkish as a first language, preliminary results indicated that adult learners often failed to properly apply vowel harmony rules as indicated by pronunciation errors.

Email: Sabina Sharifova, ssharifova@gradcenter.cuny.edu

6:00-7:30 PM (6127)

A McCollough Aftereffect with Auditory Speech.

JEAN VROOMEN, *Tilburg University*, JEROEN STEKELENBURG, *Tilburg University*, MARTIJN BAART, *Tilburg University* — Perception of colour is usually not influenced by orientation. Yet this independence can easily be altered by brief exposure to artificially correlated stimuli (the McCollough aftereffect). We report, for the first time, an analogous contingent aftereffect in the auditory system that persists for minutes after initial adaptation. Participants wearing headphones were adapted to alternating vowels /ø/ (as in 'fur') in the left ear and /e/ (as in 'made') in the right ear (or vice versa). Then they were tested with ambiguous stimuli from an /ø/-/e/ continuum. Results showed large ear-specific contrastive aftereffects: The same ambiguous test sound was perceived as /ø/ in the /e/-adapted ear and as /e/ in the /ø/-adapted ear (up to 90% difference). These effects were still detectable 10 minutes later. Similar results were obtained when the adapters were presented simultaneously as fused dichotic stimuli. These findings imply that the neural mechanisms underlying simple auditory contrast effect may involve the cochlea (the first stage in auditory processing), whereas contingent aftereffects are not specific to vision, but reflect general properties of sensory neural processing, as was further demonstrated with EEG-decoding techniques.

Email: Jean Vroomen, j.vroomen@uvt.nl

6:00-7:30 PM (6128)

Exposure to Second Language Accent Prompts Recalibration of Phonemic Categories.

DREW MCLAUGHLIN, *Basque Center on Cognition, Brain & Language (BCBL)*, ARTHUR G. SAMUEL, *Basque Center on Cognition, Brain & Language (BCBL)*; *Ikerbasque; Stony Brook University* — We examine how first language (L1) Spanish listeners with varying levels of experience with English recalibrate their phonemic category boundaries following exposure to second language (L2), American English-accented Spanish. Specifically, we measure changes to voice onset time (VOT) boundaries, which are often positively-shifted when produced by English-accented Spanish speakers. Our results show that listeners adjust their category boundaries following exposure to accented words with the critical sounds (e.g., "baílar" ["to dance"] and "parir" ["to give birth"] for the /b/ and /p/ categories). Generalization of phonemic learning was also observed, such that boundaries for categories that were not presented in training were also adjusted. Spanish listeners with more English experience showed more positively shifted (English-like) boundaries in the pre-test session, suggesting that they may have rapidly identified the American English-accented Spanish and applied their English category boundaries accordingly. We conclude that listener accommodation of L2 accent is supported by a phonemic recalibration mechanism, and that experience with the L1 of an L2-accented speaker facilitates rapid recalibration of phonemic categories.

Email: Drew McLaughlin, d.mclaughlin@bcbl.eu

6:00-7:30 PM (6129)

Investigating Bilingual Phonemic Activation: An ERP and sLORETA Study of Brain Regions in Dual Language Contexts.

ADRIÁN GARCÍA-SIERRA, *University of Connecticut* — We explored whether the activation of phonemic categories in bilingual individuals occurs independently or amid competition from a non-target language. This study involved 27 Spanish-English bilinguals and 30 English monolinguals who were presented with two speech sounds representing two phonemic categories in English ('ga' and 'ka') and one in Spanish ('ka'). The neural generators of the Mismatch Negativity (MMN) were calculated using sLORETA to identify brain areas associated with phonemic category activation in either an English or Spanish language context. The findings

revealed activation in brain areas linked to the executive control network, indicating competition from both languages, even when only one language was used. Our analysis, along with comparisons with monolinguals, suggests that bilinguals develop a shared phonetic space instead of distinct, independent phonetic categories for each language. Additionally, these results contribute to our understanding of bilingual language processing and the neural underpinnings of shifts in language dominance.

Email: Adrián García-Sierra, adrian.garcia-sierra@uconn.edu

6:00-7:30 PM (6130)

Does AI Assistance Improve People's Ability to Discriminate Between Correct and Incorrect Eyewitness Identifications? LAUREN KELSO,

University of Virginia, JESSE GRABMAN, New Mexico State University, DAVID G. DOBOLYI, University of Colorado, Boulder, CHAD S. DODSON, University of Virginia — From customer-service chatbots to predicting recidivism, artificial intelligence (AI) is playing an increasingly larger role in human decision-making. Will AI assistance improve people's ability to distinguish between accurate and inaccurate eyewitness lineup identifications? Our participants ($N=1,092$) saw an eyewitness's lineup identification, accompanied by the eyewitness's verbal confidence statement (e.g., "I'm pretty sure") and either a featural ("I remember his eyes"), recognition ("I remember him"), or familiarity ("He looks familiar") justification. They then judged the accuracy of the eyewitness's identification. AI assistance (vs. no assistance) improved people's ability to distinguish between correct and incorrect identifications, but only when they evaluated lineup identifications based on recognition or featural justifications. Discrimination of identifications based on familiarity justifications showed little improvement with AI assistance. This project is a first step in evaluating human-algorithm interactions before widespread use of AI assistance by law enforcement.

Email: Lauren Kelso, lek9kx@virginia.edu

6:00-7:30 PM (6131)

Estimator and System Variables on Recognition Memory Performance: Applications to Eyewitness Memory. GABRIELLA LARSON,

Syracuse University, AMY CRISS, Syracuse University — The goal of this research is to leverage standard, well-

understood approaches to studying recognition memory in the lab, to better understand eyewitness memory. A mixed design study aimed to investigate lineup size, encoding strength, and retention interval in an eyewitness design for sequential lineups was utilized. Lineup size (9, 6, 3, 1) was manipulated within-participant and an increase caused a decrease in hit rates and an increase in false alarm rates. Encoding strength was manipulated within-participant as study repetition (1, 2, 3) and resulted in an increase in hit rate. Retention interval (5 min., 2 day, 7 day) was manipulated between-participant and resulted in a decrease in hit rates and an increase in false alarm rates. Discriminability, positive predictive value, and the confidence accuracy relationship will also be investigated. Implications for how system (lineup size) and estimator (encoding strength and retention interval) variables are similar or different in eyewitness studies and typical lab studies will be discussed.

Email: Gabriella Larson, gklarson@syr.edu

6:00-7:30 PM (6132)

Examining the Impact of Response-Scale Length on Identification Accuracy from Eyewitness

Lineups. REBECCA C. YING, *Iowa State University*, ANDREW M. SMITH, *Iowa State University*, NYDIA T. AYALA, *Washington and Lee University* — Lineups are more effective at incriminating the guilty than they are at clearing the innocent. This is partly attributable to a design flaw. When a witness identifies a suspect, confidence indexes the degree of match between that person and the witness' memory for the culprit, which serves as an excellent proxy for suspect guilt. But when a witness rejects a lineup, confidence usually indexes the degree of match between a non-suspected lineup filler and the witness' memory for the culprit, which is unhelpful for estimating suspect innocence. One potential solution to this problem is to have the witness make a categorical lineup decision and then assign a confidence rating to each lineup member (Ayala et al., 2022; Smith et al., 2023). Alternatively, one might eschew the categorical decision entirely and have witnesses proceed directly to assigning confidence ratings to each lineup member (Brewer et al., 2020; Sauer et al., 2008). We experimentally compared these two competing solutions. Because lengthier response scales increase decision noise (Benjamin et al., 2013), we predicted that having witnesses make a categorical



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decision prior to assigning confidence ratings would lead to superior performance.

Email: Rebecca Ying, [rjing@iastate.edu](mailto:rying@iastate.edu)

6:00-7:30 PM (6133)

Stereotype Threat Impacts Older Adult

Eyewitness Attention and Memory. MCKINZEY G. TORRANCE, *Tufts University*, AYANNA K. THOMAS, *Tufts University* — Past research has found age-based stereotype threats (ABST) can impact older adult eyewitness memory. Importantly, research has not considered how ABST impacts eyewitness attention, or the ability to notice a crime (i.e., crime blindness). The present study explored how ABST could further exacerbate or alleviate crime blindness and memory accuracy in older adult eyewitnesses. Subtle instructions prior to watching a video were used to manipulate attention (i.e., full, divided) and stereotype threat (i.e., stereotype threat, no threat, stereotype lift). Older adults that had received a threat were more likely to report noticing the crime, regardless of attention manipulation. Additionally, participants that received stereotype threat or stereotype lift had significantly higher memory accuracy compared to those in a control condition. ABST reduced crime blindness errors and positively impacted memory performance, suggesting that regulatory focus may have been impacted. Furthermore, stereotype lift and stereotype threat may both benefit memory accuracy in a crime blindness paradigm.

Email: McKinzeey Torrance, mckinzeey.torrance@tufts.edu

6:00-7:30 PM (6134)

The Cross-Race Effect in Lineups vs. Showups.

KYROS SHEN, *University of California, San Diego*, JOHN WIXTED, *University of California, San Diego*, SHIQI CHEN, *University of California, San Diego* — A witness's ability to discriminate innocent from guilty suspects is reliably higher for same-race than for cross-race faces. We investigated the relative magnitude of this well-established effect in lineups vs. showups. Based on diagnostic feature-detection theory, we hypothesized that the cross-race effect for showups would be larger than that for lineups (i.e., lineups would yield a beneficial effect). In addition, based on likelihood ratio theory, we predicted that, for both procedures, the confidence-accuracy relationship would be similar for same-race and cross-race conditions. Contrary to our predictions, a similarly strong cross-race effect was observed for showups and lineups, and high-confidence accuracy

trended lower in the cross-race condition regardless of presentation format (showup vs. lineup). These results may indicate that witnesses did not initially encode certain diagnostic features of cross-race faces that might otherwise be put to good use by lineups. Moreover, the apparent failure of participants to adjust for the lower discriminability in the cross-race situation when expressing confidence may indicate that they do not appreciate how much more difficult it is to identify faces of a different race.

Email: Kyros Shen, jis165@ucsd.edu

6:00-7:30 PM (6135)

The Effect of Lineup Size on Discriminability is Dependent on Filler Similarity and Independent of Encoding Strength.

ALLAN LAM, *University of California, San Diego*, JOHN WIXTED, *University of California, San Diego* — A photo lineup, which consists of one suspect and several physically similar fillers, is often used by the police to test an eyewitness's memory. Recent work suggests that including fillers who match the basic characteristics of the perpetrator (e.g., same age, race, gender) but who are otherwise maximally dissimilar to the suspect optimizes discriminability. However, the optimal lineup size has been found to vary with filler similarity, with larger lineup sizes increasing or decreasing discriminability depending on whether low-similarity or high-similarity fillers were used, respectively. Because manipulating filler similarity at retrieval affects overall search performance (i.e., the task is harder when high-similarity fillers are used), we investigated whether encoding manipulations that affect overall performance also affect how lineup size influences discriminability. We found that whether overall performance was low or high due to these encoding manipulations, discriminability still increased as a function of lineup size when low-similarity fillers were used and decreased as a function of lineup size when high-similarity fillers were used. A theoretical explanation of ensemble bias is proposed to address the observed effect.

Email: Allan Lam, alam@ucsd.edu

6:00-7:30 PM (6136)

Effects of Race and Disguise on the Facial Recognition Confidence-Accuracy Relationship.

EMILY IVES, *University of Virginia*, JESSE GRABMAN, *New Mexico State University*, CHAD S.

DODSON, *University of Virginia* — The optimality hypothesis posits that the relationship between confidence and accuracy is strongest under optimal conditions, however natural conditions are rarely optimal (Deffenbacher, 1980). Faces are often encoded while partially obfuscated or disguised, diminishing a person's ability to recognize a face later. Other factors, such as more frequent exposure, cross race identifications, and individual face recognition ability may also impact reliability of confidence statements (Grabman et al., 2019; Semmler et al., 2018). We examined the interaction between these elements within an old/new recognition paradigm. Participants viewed photos of individuals of their same race or a different race that were disguised (masked or sunglass-clad) or undisguised, and subsequently performed a recognition test on undisguised faces. Confidence was a stronger predictor of accuracy in the most optimal conditions and when responding to same race faces. While discriminability was diminished by either disguise, disguises also reduced the cross-race effect and reliability of high-confidence responses.

Email: Emily Ives, xby5us@virginia.edu

6:00-7:30 PM (6137)

Four (and a Half) Pre-Registered Failures to Replicate the Weapon Focus Effect in Online Samples. JOHN T. WEST, *The Pennsylvania State University*, NEIL W. MULLIGAN, *University of North Carolina at Chapel Hill*, BRIAN H. BORNSTEIN, *Duke University*, JULIET M. PALUMBO, *The Pennsylvania State University*, MICHAELA B. TOVAR, *The Pennsylvania State University* — Prior research suggests that witnesses have worse memory for armed compared to unarmed perpetrators, a finding known as the weapon focus effect (WFE). Because the majority of legal professionals believe that the presence of a weapon has harmful effects on witness memory, determining the generality of this effect is of great importance. Initially, the current investigation was concerned with identifying moderators of the WFE. However, because we were unable to replicate the WFE in an online study, subsequent experiments were concerned with investigating the effect's replicability in the context of online samples. In total, we conducted five pre-registered experiments ranging from 100 to 800 participants each (total n=1,261). Experiments varied in whether they used videos or slides, audio or no audio, and student or non-student samples. Evidence supporting the replicability of

the WFE was weak. The WFE was not significant in any experiment, and some experiments showed significant anti-WFEs, where participants had better memory for armed compared to unarmed perpetrators. Taken together, the current results suggest that the WFE is either not replicable or is highly dependent on methodological factors such as study modality.

Email: John West, johnwest@psu.edu

6:00-7:30 PM (6138)

On the Use of Receiver Operating Characteristic Area Under the Curve in Eyewitness Memory Research. PAUL Riesthuis, *KU Leuven*, HENRY OTGAAR, *Maastricht University* — Eyewitness memory research has reformed police practices and policy and is sometimes relied upon in legal proceedings. Due to the practical implications derived from this research, it is imperative to evaluate how practical recommendations are postulated. To assess the practical relevance of research, effect sizes and its interpretation play a pivotal role. In this study, we examined how the frequently used effect size area under the curve (AUC) obtained via receiver operating characteristic (ROC) curves are used and interpreted in eyewitness memory research. Via a systematic literature search, we identified 157 eyewitness memory related articles that conducted ROC curve analyses resulting in 1,580 AUC values. Approximately 90% of the studies relied on statistical significance to interpret the AUC values. Also, the majority of studies did not report 95% CIs for their AUC values. Finally, power analyses were frequently not conducted or not reproducible. To improve the practical inferences of eyewitness memory research, we highlight the need of establishing a smallest effect size of interest, focusing on 95% CIs, and conducting reproducible power analyses.

Email: Paul Riesthuis, paul.riesthuis@kuleuven.be

6:00-7:30 PM (6139)

Development and Utilization of a Continuous-Space Description of Paintings. EZGI MELISA YUKSEL, *University of Wisconsin-Madison*, C. SHAWN GREEN, *University of Wisconsin-Madison*, HALEY VLACH, *University of Wisconsin-Madison* — Theories of category learning suggest that some aspects of item similarity (e.g., exemplar to exemplar; category-center to category-center) play a key role in predicting human learning. Yet, measuring the distance between items can be difficult for real-world categories, so

researchers often use contrived items (e.g., aliens with 1 to 5 circles on their chest). Here, we examined the role of similarity using more naturalistic categories: painting styles. To measure perceived distance between paintings, participants ($N=1,335$) completed 512 trials of a triplet task, wherein they chose which of two painting options was visually most similar to a target painting. The triplets were drawn randomly from 475 still life and landscape paintings by 40 artists. A machine learning algorithm then placed the paintings in a continuous space based on the 571,286 total decisions. Finally, we used this continuous-distance space by presenting a subset of paintings, labeled by author, to new participants ($N=178$), who then identified the artist of previously seen/unseen paintings. Initial results suggest distances, both within- and across-categories, predicted learning the artists' styles, which will be discussed in the context of categorization theories.

Email: Ezgi Yuksel, yksel@wisc.edu

6:00-7:30 PM (6140)

Do Faculty Characteristics Predict Instructors' Beliefs About Student Abilities? VERONICA CUI, *McMaster University*, NOOR BUTT, *McMaster University*, MEGAN CERILLI, *McMaster University*, ATARA LIPETZ, *McMaster University*, ELIZABETH CANNING, *Washington State University*, FARIA SANA, *McMaster University & Athabasca University*, JOSEPH KIM, *McMaster University* — A growth mindset is the belief that one's abilities can be developed over time through effort. Conversely, a fixed mindset is the belief that these abilities do not change over time. An instructor's growth and fixed mindset beliefs affects a student's motivation, engagement, and academic performance. Previous research has found no significant differences in growth and fixed mindset across faculty characteristics, but has not yet examined whether faculty characteristics predict beliefs about whether an innate talent is required for success (brilliance) and the distribution of potential of success (universality). In this study, STEM instructors ($n=28$) at McMaster University completed a survey to assess their faculty characteristics and mindset beliefs. Our results showed no significant differences for growth and fixed mindset across disciplines and characteristics but suggest that brilliance and universal beliefs are predicted by faculty characteristics and may be more concentrated in various STEM disciplines. Taken together, these results support that brilliance and universal beliefs are distinct from

mindset beliefs and should be further investigated to better understand their implications on student success and engagement.

Email: Veronica Cui, cui.v@mcmaster.ca

6:00-7:30 PM (6141)

Evaluating the Effectiveness of a Guided Reflection Tool that Leverages Structured Event Perception in Simulation Education. MADISON LEE, *Vanderbilt University*, DANIEL T. LEVIN, *Vanderbilt University*, MARY ANN JESSEE, *Vanderbilt University* — Fostering self-regulated learning is crucial for adaptive expertise development in professional fields, and theories of event cognition suggest that segmenting videos of simulation learning experiences may improve the quantity and quality of self-regulation learners deploy. To test these hypotheses, we developed a reflection tool for nursing students to view, segment, and reflect upon egocentric eye-tracking footage of their clinical simulations. These reflections encourage students to focus both on specific actions and higher-level goals for each event they identified. From pre- to post-reflection, 25 students demonstrated significant increases in confidence and change in metacognitive judgments about their clinical performance. We are also examining how this tool supports nursing students' memory formation, metacognition, and subsequent clinical performance in a within-subjects design. We hypothesize that the tool will offer self-regulation support, improving outcomes across all measures relative to a control condition. This interdisciplinary research advances our theoretical understanding of event cognition and self-regulated learning and suggests the efficacy of personalized debriefing practices rooted in cognitive psychology.

Email: Madison Lee, madison.j.lee@vanderbilt.edu

6:00-7:30 PM (6142)

Explorations in Implied and Direct Instructing Methods. YUTIAN MA, *McMaster University*, JOSEPH KIM, *McMaster University*, FARIA SANA, *McMaster University & Athabasca University* — The generation effect describes when learners have better memory of content they create over content they just read. It is a robust learning phenomenon that can be seen with multiple different methods of generation, like making summaries, drawing, or teaching others. Currently, much of the generation effect literature

focuses on using direct instructions to prompt students to generate. We explored the viability of using indirect wording and implications to prompt generation implicitly, potentially resulting in learning benefits without direct instructions. To do so, sentences written with implications were read by participants. These sentences were designed to prompt the generation of specific ideas. In another condition, these ideas were written directly. After reading a variety of direct and implied sentences, participants took a multiple choice test. Preliminary results ($N=36$) showed that ideas presented in a direct manner were much more likely to be remembered. This may be due to multiple choice tests relying on participant's recognition rather than their ability to recall. Our next steps involve exploring how we can manipulate the experiment so that we are better able to prompt generation.

Email: Yutian Ma, may60@mcmaster.ca

6:00-7:30 PM (6143)

How Does Semantic Elaboration Affect Retrieval from Episodic Memory? JOSCHA DUTLI,

University of Zurich, KLAUS OBERAUER, University of Zurich, LEA M. BARTSCH, University of Zurich —

How well information is remembered is influenced by the way it is studied. A well-known example for this is the semantic elaboration benefit: Words are better remembered if processed together with semantically congruent compared to incongruent orienting questions. This has been taken as evidence that the operations carried out at encoding determine later memory performance. In a series of experiments, we found consistent elaboration benefits in (a) recognition tests of target words, (b) cued recall of target words (i.e., cueing with questions), and (c) cued recall of orienting questions (i.e., cueing with words). Together, this suggests that elaboration establishes strong retrieval cues that can be used when either target words or orienting questions are provided. In free recall, however, we found the elaboration benefit to be either absent or inconsistent. Hence, establishing strong retrieval cues through semantic elaboration does not seem to guarantee that they are freely accessible. We conclude that elaboration benefits in free recall are less consistent than previously assumed, and discuss that increased semantic overlap between orienting questions could enhance the accessibility of established retrieval cues in free recall.

Email: Joscha Dutli, joscha.dutli@psychologie.uzh.ch

6:00-7:30 PM (6144)

Incorporating a Generative Learning Activity During Learning a Procedural Skill in Immersive Virtual Reality. CYNTHIA Y. DELGADO, *University of California, Santa Barbara, RICHARD E. MAYER, University of California, Santa Barbara —* This study examined the effects of asking learners to answer explanatory questions during pauses in an immersive virtual reality (IVR) lesson on the scientific procedure of pipetting. The goal was to apply a generative learning activity, effective for declarative knowledge with conventional media, to learning procedural knowledge with immersive media. College students learned how to conduct a serial dilution in IVR. During the lesson, students in the explanation group removed their headsets during pauses and answered topic-specific questions, while the control group did not. After the lesson, students performed a serial dilution in IVR, followed by a real-life serial dilution, and a knowledge posttest. There were no significant differences between the explanation and control groups in the virtual or real-life serial dilution tasks or the knowledge posttest. The results highlight the challenges of applying generative learning activities to teaching procedural knowledge with immersive media, as logistics may have caused distractions.

Email: Cynthia Delgado, cynthiadelpgardo@ucsb.edu

6:00-7:30 PM (6145)

Morphological Learning in an Online Language App: Evidence from Lingvist Users. JORDAN GALLANT, McMaster University, VICTOR KUPERMAN, McMaster University —

This study explores the acquisition of morphological knowledge in asynchronous online language learning, using data from Lingvist. Learners read context sentences in the target language and complete missing vocabulary items with translations in a source language, including both morphologically complex and simplex words. We examine the effects of type frequency of suffixes on future production of these suffixes, distinct from token frequency effects. Additionally, we investigate the role of morphosemantic knowledge through type and token frequency effects of three-letter sequences in the final rime of morphological simplex words. Analysis of data from 4,834 Japanese-speaking and 7,115 German-speaking learners of English shows a significant facilitatory effect of type frequency, but not token frequency, for English suffixes. Similar effects were

observed for orthographic patterns in the rime of simplex words. These findings suggest that morphological learning is driven by surface-level orthographic and phonological forms rather than deeper semantic structures.

Email: Jordan Gallant, gallaj20@mcmaster.ca

6:00-7:30 PM (6146)

Optimal Sequence as a Function of Note-Taking and Note-Having with a One-Week Delay. SEAN KOTTA, *California State University, East Bay*, TAYLOR MORIARTY, *California State University, East Bay*, JOSEPHINE FEALY, *California State University, East Bay*, SINCLAIR NGO, *California State University, East Bay*, KAE LA VILLARUEL, *California State University, East Bay*, JERI L. LITTLE, *California State University, East Bay* — Mixing up items from different categories (i.e., interleaving) tends to be better for learning than blocking items by category. Surprisingly, little research has investigated whether note-taking interacts with study schedule to influence learning. We had students study paintings from different artists, with paintings by half of those artists blocked by artist and paintings by the other half mixed up with paintings by other artists. Some of the participants were instructed to take notes, and some were not. Then, one week later, participants classified new paintings by the studied artists (half of the note-takers were able to use their notes on the test). Although interleaving was better than blocking in the no notes condition and the notes-removed condition, it was not better than blocking in the condition in which participants were able to use their notes on the test. This study has clear implications for learning in educational contexts.

Email: Sean Kotta, skotta2@horizon.csueastbay.edu

6:00-7:30 PM (6147)

Student Control over Complex Science Simulations Benefits Learning. ANG LI, *University of Arizona*, JONATHAN G. TULLIS, *University of Arizona* — Education increasingly allows students to control their own instruction, particularly in online contexts. In simple tasks (e.g., word or picture memory), students typically learn more when they control their study; the learning benefits of controlling one's study are, however, less clear in complex tasks (e.g., navigating through websites). Here, we investigated whether students benefit from controlling study of a complex

computer simulation of climate change. Participants were alternatively assigned to three conditions: full control (where they chose how much time they spent and what combinations of variables to simulate), timed condition (where they chose simulation actions, but had to spend the same time as a yoked learner from the full control condition), and video condition (where they watched a video of the actions taken by a yoked full control participant). The full control and timed conditions outperformed the video group on the final comprehension test, but did not differ from each other. Learners effectively regulated their learning of complex science concepts, suggesting that they successfully identified aspects of the simulation that needed particular focus and allocated effort to address their misunderstandings.

Email: Ang Li, li111@arizona.edu

6:00-7:30 PM (6148)

The Effect of Evaluation Activities on Academic Performance. MIN HAE SONG, *Seoul National University*, JOOYONG PARK, *Seoul National University* — Students can learn by both evaluating others and being evaluated. However, most studies have focused on the learning effect of being evaluated. And there are few studies on whether evaluating others, through evaluation activities, enhances academic performance. Therefore, the current study examined the effects of evaluation activities on academic performance in both short-term and long-term contexts by conducting two experiments. In Experiment 1, which involved 62 participants, the results indicated that participants who evaluated four other answers performed better than those who solved the problem and then received feedback, or those who just solved the problem, in both the short-term and long-term. In Experiment 2, we replicated the results using learning material covering statistics with 68 participants. These findings suggest that evaluation activities can improve academic performance, indicating that they can be an effective learning activity.

Email: Min Hae Song, suru0224@snu.ac.kr

6:00-7:30 PM (6149)

The Effect of Multitasking on Learning During Video Lectures. ZUBEIRU MAHAMA, *Washington University in St. Louis*, ANDREW C. BUTLER, *Washington University in St. Louis* — Multitasking during lectures can help or hinder learning, depending on

whether the secondary task is relevant or irrelevant to the lecture material, and students are more likely to multitask in asynchronous than synchronous settings. However, prior research has been observational in nature, conducted in synchronous classroom settings, and/or focused on a single type of secondary task. We experimentally manipulated the type(s) of secondary tasks that participants engaged in while watching an asynchronous video lecture about geological science. One hundred participants were randomly assigned to one of four conditions: lecture-only (control), lecture-relevant multitasking (note-taking), lecture-irrelevant multitasking (completing an unrelated survey), or hybrid multitasking (both note-taking and survey). Participants completed several attention checks during the lecture and took a retention test afterwards. Results confirmed that engaging in irrelevant tasks during the lecture decreased attention to and retention of the material, consistent with previous findings. Our findings provide practical implications for improving instruction in asynchronous settings.

Email: Zubeiru Mahama, m.zubeiru@wustl.edu

6:00-7:30 PM (6150)

Using AI to Write Text Summaries Increases Metacognitive Predictions. HOSAIN HESHMATI, *University of Arizona*, JONATHAN G. TULLIS, *University of Arizona* — Students today have access to a wealth of educational resources including artificial intelligence (AI) tools that are now widely accessible. AI assistants like ChatGPT can generate summaries of complex texts, potentially aiding comprehension. Here, we investigated the impact of using ChatGPT to write summaries on learners' comprehension and metacognition. Participants were alternatively assigned to generate their own summaries of reading passages or have ChatGPT generate a summary for them. All participants, then, answered several factual and inference questions about the texts. While the groups performed similarly on the final comprehension tests, the AI-generated group predicted they had learned more than the student-generated group. Offloading the writing of summaries to AI did not impair comprehension of texts; however, offloading the writing of summaries may impair the accuracy of students' metacognition. The ease of using AI to write summaries may mislead students to think they have learned the material better than they have. Using AI may obscure diagnostic cues (like ability to retrieve ideas and one's own fluency with the material)

that could allow learners to predict their learning accurately.

Email: Hosain Heshmati, heshmati@arizona.edu

6:00-7:30 PM (6151)

Pupil Fluctuations in Item-Method Directed Forgetting. HUIYU DING, *University of Illinois Urbana-Champaign*, LILI SAHAKYAN, *University of Illinois Urbana-Champaign* — Pupil dilation is linked to long-term memory retrieval, where correctly identifying studied items elicit greater pupil dilation than correctly rejecting novel item (i.e., pupil old/new effect). The underlying mechanism behind the effect and how cognitive control might modulate the effect remain unclear. The current study explored this phenomenon by implementing a modified item-method directed forgetting procedure. At learning, participants studied nature scenes, each followed by a memory instruction (Remember and Forget). At the test, participants were presented with either the identical images (Old) or the mirrored version of a studied image (Similar Lure), to which they needed to judge the status of the image (Old or Similar Lure). We investigated whether active forgetting (forget-cued items later on forgotten) elicit differential magnitude of pupil dilation at test compared to passive forgetting (remember-cued items later on forgotten). Additionally, we controlled the veridical item status and item responses to specifically investigate whether pupil dilation reflect existing memory traces or subjective recognition judgement, a critical confounder that has not yet been systematically explored in the literature.

Email: Huiyu Ding, hding12@illinois.edu

6:00-7:30 PM (6152)

The Impact of Music on Source Memory and Related Confidence After a Delay. MEGAN P. SHEPARD, *Texas State University, San Marcos*, CRISTIAN M. CURRAN, *Texas State University*, REBECCA G. DEASON, *Texas State University* — Music is often touted as a mnemonic device to improve memory, but its effects are still not fully understood. In patients with Alzheimer's disease and healthy young adults, pairing music with unfamiliar lyrics enhances confidence and accuracy in memory decisions. This study explores whether repeated exposure to to-be-learned information paired with music can enhance source memory after a 24-hour delay. Participants were

presented with unfamiliar lyrics paired with either spoken or sung recordings, with varied vocalist genders to examine source memory. Each recording was presented twice, with participants rating the lyrics first on preference and then on positivity. After a day delay, participants performed a recognition test (identifying lyrics as sung, spoken, or new) and a source memory test (recalling vocalist gender) with corresponding confidence judgments. While no differences were found in accuracy between sung and spoken conditions in preliminary analyses, there were interesting patterns to be seen in confidence judgments compared with our prior studies using shorter delays. These results provide more information about the versatility and generalizability of the memory-enhancing benefits of music.

Email: Megan Shepard, mps96@txstate.edu

6:00-7:30 PM (6153)

The Impact of Sharing Headlines in Social Media on Memory for True Versus Fake News. LUISE METZGER, *University of Mannheim*, KAMALJIT BAJWA, *University of Victoria*, JASKIRAT BAJWA, *Kwantlen Polytechnic University*, GORDON PENNYCOOK, *Cornell University*, DANIEL M. BERNSTEIN, *Kwantlen Polytechnic University*, EDGAR ERDFELDER, *University of Mannheim* — In two online experiments (total N=512), we explored sharing of news headlines on social media. Unbeknownst to participants, half the headlines were real news and the other half fake news. Participants first chose which headlines to share. After a 10-minute retention interval, participants completed an unexpected headline source monitoring test. Participants provided old-new recognition judgments and indicated their remembered behavior (i.e., shared vs. not shared) for each recognized headline. Multinomial processing tree (MPT) analyses revealed little impact of headline truth value on both sharing behavior and memory parameters. While recognition memory was significantly better for shared headlines, source memory for shared vs. not shared was good for all recognized headlines. Hierarchical MPT analyses additionally explored correlations between model parameters and the impact of individual differences in cognitive reflection and open-minded thinking on model parameters. We explain our results using a metacognitively informed mental-tagging account.

Email: Luise Metzger, luise.metzger@uni-mannheim.de

6:00-7:30 PM (6154)

Guessing and Memory Processes in Output Interference in Recognition Memory—Analyses with a Non-Stationary Diffusion/Fast Guess Mixture Model. SELINA ZAJDLER, *University of Mannheim*, MARTIN SCHNUERCH, *University of Mannheim*, LUKAS SCHUMACHER, *University of Basel* — Output interference refers to the decline in accuracy over the course of a memory test. Previous research has focused on how different diffusion model parameters develop over the course of a test to measure changes in retrieval (drift rate) and motivation (boundary separation). However, a decrease in motivation may also manifest itself in more fast guesses towards the end of an experiment to avoid engaging in a more effortful cognitive process. Moreover, the parameter evolution throughout a test has typically been assessed in trial blocks. We use neural superstatistics, an emerging method to infer parameter trajectories from empirical data, to develop a non-stationary diffusion/fast-guess mixture model to a) parametrize the influence of guessing and b) obtain trial-level parameter estimates. The model was fitted to empirical recognition memory data from forced-choice and yes/no categorization tasks. We found evidence for memory and motivational influences on output interference: the drift rate declined and the probability to resort to fast guessing increased. The results highlight the value of non-stationary cognitive models and emphasize the importance of considering guessing in output interference in recognition memory.

Email: Selina Zajdler, selina.zajdler@uni-mannheim.de

6:00-7:30 PM (6155)

When Not Remembering Is Memorable: Distinctiveness Heuristics Support Later Recognition of Rejected Lures. ECEM EYLUL ARDIC, *Washington University in St. Louis*, IAN G. DOBBINS, *Washington University in St. Louis* — This study investigates confidence-memory relationships using a novel double-test paradigm in which all items from a first recognition test are retested. As expected under signal detection theory (SDT), two initial experiments showed that the confidence of Test1 hits predicted likelihood of later recognition during Test2. However, SDT also predicts that confidence for Test1 correct rejections should be anti-predictive of Test2 recognition because higher rejection confidence indicates

lower memory strength. The opposite occurred. High confidence rejections from Test1 were better subsequently recognized than low confidence ones. We hypothesized this occurred because high rejection confidence often results from distinctiveness heuristics that foster memorable Test1 experiences. This was tested by randomly collecting verbal justifications for Test2 hits that had been Test1 correct rejections. A language classifier reliably differentiated these justifications for previously high vs low confidence rejections, revealing that subjects more often remembered thoughts about memorability and distinctiveness for the former. Thus, high confidence that an item was not studied can render that item subsequently memorable.

Email: Ecem Eylul Ardic, a.ecemeylul@wustl.edu

6:00-7:30 PM (6156)

Why Does Self-Paced Learning Enhance Recognition Memory? ANNA KAZATCHKOVA, *University of Guelph*, CHRIS M. FIACCONI, *University of Guelph*, NASEEM AL-AIDROOS, *University of Guelph* — A student's capacity to effectively regulate their study habits is an important aspect of academic success. Previous literature demonstrates that individuals show better memory performance when study is self-paced, in comparison to when it is experimenter-paced. However, it remains unclear why such benefits in learning and memory occur. Across two experiments, four experimental conditions that matched overall study time were used to investigate the importance of self-regulated study time allocation and encoding strategy decisions for recognition memory performance. Similarly, we found that self-paced study enhanced item discriminability relative to a series of yoked control conditions. Interestingly, self-pacing not only increased hit rates, but reduced false alarm rates yielding a novel demonstration of a mirror effect. Moreover, we found that self-paced participants adopted more effective encoding strategies relative to their yoked counterparts, but that differences in strategy use alone were insufficient to explain the full benefit associated with self-pacing. These findings offer new insights into the mechanisms that drive the benefits of metamnemonic control over encoding.

Email: Anna Kazatchkova, akazatch@uoguelph.ca

6:00-7:30 PM (6157)

Feature-Space Dimensionality and the Production Effect. JEREMY CAPLAN, *University of*

Alberta, DOMINIC GUITARD, *Cardiff University* — Reading words aloud leads to better episodic recognition than reading silently. Different than other manipulations of encoding strength, production effects are larger on lists of mixed production than between pure lists. We explain this difference with attentional subsetting theory (Caplan, 2023). Production adds phonological features to the functional representations, introducing considerable similarity-based confusion because the feature-space is low-dimensional. Duration and repetition strengthen by adding features (semantic, imagery, etc.) that are sparsely subsetted from larger subspaces, producing negligible similarity-based confusion. The model provides good quantitative fits of several production datasets and is validated with replications of the theory's predicted inverted list-strength effect when manipulating study time. Although demonstrated in the very simple matched filter model, attentional subsetting, with the feature-dimensionality considerations, can be incorporated into the vector representation of major episodic memory models.

Email: Jeremy Caplan, jcaplan@ualberta.ca

6:00-7:30 PM (6158)

Heightened Familiarity Drives the Negative Retrieval Bias in Depression: Evidence from the PRISM Task. ANDREA M. CATALDO, *McLean Hospital, Harvard Medical School*, DANIEL G. DILLON, *McLean Hospital, Harvard Medical School* — Depressed adults show a negative memory bias. The Drift Diffusion Model can account for this in two ways: increased familiarity, where evidence is stronger for all negative material (even lures) or motivated retrieval, where there is a propensity to judge all negative evidence as "old," even if it is weak. We distinguish these accounts via the Parcelling Recognition Into Strength and Motivation (PRISM) task (Starns et al., 2018). PRISM parses memory from decision processes by generalizing single-item recognition to forced choices between targets and lures. Though motivation to respond "old" can bias single-item judgments, it is irrelevant when deciding which of two items is old; thus, increased familiarity is implicated when valence effects extend across tasks and motivation is implicated when they do not. As expected, depression was associated with more "old" judgments for negative vs. positive words, both for targets and lures. As predicted by increased familiarity, valence effects extended to forced choice: Depression was linked to worse identification of positive but better identification

of negative targets paired with negative vs. positive lures. These data suggest that increased familiarity drives the negative retrieval bias.

Email: Andrea Cataldo, amcataldo@mclean.harvard.edu

6:00-7:30 PM (6159)

Memorable by Design: The Intrinsic Properties of Effective Symbols.

BRADY R.T. ROBERTS, *The University of Chicago*, WILMA A. BAINBRIDGE, *The University of Chicago* — Recent work has begun to evaluate the memorability of everyday visual symbols (e.g., !@#\$%) across individuals as a new way to understand how abstract concepts are processed in memory. Symbols were previously found to be highly memorable, especially relative to words, but it remained unclear what was driving this memorability. Here, we bridged this gap by exploring the visual and conceptual attributes driving high memorability of symbols. Participants underwent a continuous recognition test to provide a measure of each symbol's memorability, then sorted symbols spatially based on visual and conceptual features. Principle component analyses revealed visual and conceptual dimensions that can predict whether a symbol will be memorable or forgettable. A symbol was more likely to be memorable if its visual form consisted of thin, straight lines with low vertical symmetry, and if it was a common and/or highly salient symbol (such as those for dangers or religions).

Email: Brady Roberts, bradyrroberts@gmail.com

6:00-7:30 PM (6160)

Proactive Interference in Relational Memory: Eye-Tracking and the Time Course of

Interference Resolution. MICHAEL R. DULAS, *Binghamton University, SUNY*, HILLARY SCHWARB, *University of Nebraska*, NEAL J. COHEN, *University of Illinois* — Proactive interference, where previous information impairs memory for new information, has been suggested to potentially reflect early “capture,” suggesting strongly associated but incorrect “lures” are retrieved and accepted before full recollection occurs. We used eye-tracking to assess whether early attentional capture by proactive interference is evident in relational memory. Participants studied objects, each paired with two faces across five study blocks, and tried to remember which face each object was paired with last. Interference was manipulated by how frequently the target was paired with the object. Relational memory was significantly

impaired for High compared to Low interference trials. Eye-tracking data for correct trials showed preferential viewing toward the target within 500ms, and no significant differences between high and low interference, suggesting similar interference resolution mechanisms drive memory-guided attention, despite overall performance differences. On lure-selected trials, preferential viewing was significantly slower and weaker than correct trials, suggesting that, at least in relational memory, interfering information results in weaker, slower retrieval, rather than an early capture mechanism.

Email: Michael Dulas, mdulas@binghamton.edu

6:00-7:30 PM (6161)

The Domain-Generality of Working Memory and Fluid Intelligence: A Novel Psychometric Network Re-Analysis of Kane et al. (2004).

HAN HAO, *Tarleton State University*, KEVIN P. ROSALES, *California State University, San Bernardino*, KRISTÓF KOVÁCS, *Eötvös Loránd University*, MICHAEL J. KANE, *University of North Carolina at Greensboro*, ANDREW CONWAY, *New Mexico State University* — Working memory (WM) is a critical system enabling temporary storage and manipulation of information for performance of complex cognitive tasks. Several individual differences studies have shown that WM capacity is strongly correlated with fluid intelligence, suggesting that WM capacity is largely domain-general (e.g., Kane et al., 2004). In the current study, we re-analyzed data from Kane et al. (2004), to compare traditional factor analytic models and more recent psychometric network models. The results from our network models suggest that domain-specific abilities play a more significant role than previously recognized, highlighting the limitations of relying primarily on traditional latent factor approaches, which emphasize domain-general sources of variance in WM capacity. The findings of the current study suggest that both domain-general and domain-specific abilities should be considered to better understand individual differences in WM capacity, fluid intelligence, and other broad cognitive abilities.

Email: Han Hao, hanhaohh2016@gmail.com

6:00-7:30 PM (6162)

The Psychometric Structure of Working Memory: An Analysis Utilizing Network Modeling.

KEVIN P. ROSALES, *California State*

University, San Bernardino, JASON F. REIMER, California State University, San Bernardino, DYLAN M. DIAZ, California State University, San Bernardino, STEPHANIE CANCHOLA, California State University, San Bernardino, JONATHAN MARTINEZ, California State University, San Bernardino, LYSETTE V. MELENDEZ, California State University, San Bernardino, LAILA DELGADO, California State University, San Bernardino, BRANDON GARIBALDI, California State University, San Bernardino, ELOY PONCE, California State University, San Bernardino, ANTHONY P. NALVARTE, California State University, San Bernardino, DOMINIQUE A. WHEELER, California State University, San Bernardino, JAZMIN M. MIER, California State University, San Bernardino — It is well established that working memory (WM) is a limited capacity system that is strongly associated with important cognitive abilities and outcomes. Over the years, several different definitions and theories of WM have been proposed, leading to the development of a variety of WM tasks. A key challenge in comparing psychometric models of working memory is the inconsistency of results arising from the use of different working memory tasks. Recently, network analysis has emerged as a powerful alternative psychometric modeling approach to studying individual differences in cognition. Network analysis does not rely on the same problematic assumptions inherent to latent variable modeling and is compatible with recent theories of cognition (e.g., process overlap theory). In a preliminary study, we compared network and latent variable models of WM that included multiple components, namely, attention, verbal storage, spatial storage, and episodic memory retrieval. We found that a network model of WM fit the data as well as a latent variable model and successfully predicted fluid intelligence. By integrating theoretical and psychometric models of WM, these results help to further elucidate the measurement and structure of WM.

Email: Kevin Rosales, kevin.rosales@csusb.edu

6:00-7:30 PM (6163)

Training Verbal Working Memory with Familiar and Unfamiliar Tasks to Observe Training and Transfer Effects. ELVIRA MASOURA, Aristotle University of Thessaloniki, IOANNIS GOUMAGIAS, Aristotle University of Thessaloniki, DESPINA MORAITOU, Aristotle University of Thessaloniki — We investigated the effects of training on verbal working

memory (VWM) by manipulating the training tasks' demands according to familiarity with participants' native language to observe if an unfamiliar, demanding task affects improvement more than a simple verbal task. Forty adults participated in the study, allocated randomly into two groups: the experimental group trained in a demanding version of digit span (recalling digits in an unfamiliar language [Finnish]) and the control group in a simple digit span task (in their native language [Greek]). Before and after training participants' VWM assessed with: 1. digit span (visual/verbal), 2. digit span (verbal only), 3. pseudoword repetition 4. digit matrix. Both groups improved equally on the two digits span tasks but differ significantly on performance on the native pseudoword task, with experimental group showing better improvement, possibly due to a near transfer effect or because pseudoword repetition captures sensitively VWM's capacity and demonstrated the training gains.

Email: Elvira Masoura, emasoura@psy.auth.gr

6:00-7:30 PM (6164)

Working Memory and Language Comprehension: A Meta-Analysis 25+ Years after Daneman and Merikle (1996). BRENDA A. HANNON, Texas A&M University, Kingsville — It has been nearly 30 years since Daneman and Merkle (1996) published their seminal meta-analysis showing that: (i) verbal processing+storage measures of working memory are better predictors of language comprehension than are measures that assess just storage, and that (ii) math processing+storage measures of working memory are also good predictors of language comprehension. The present meta-analysis, which included data for 20,562 participants from 153 samples, replicates Daneman and Merikle's findings, but we also show that: (i) verbal processing+storage measures of working memory are better predictors of comprehension than are measures of math processing+storage, (ii) measures of math processing+storage are better predictors of comprehension than are measures of spatial

processing+storage and (iii) our overall pattern of results applies to both adults and children. We also combined the data of the present meta-analysis with that of Daneman and Merikle to show the results of more than forty years of working memory-comprehension research.

Email: Brenda Hannon, brenda.a.hannon@gmail.com

6:00-7:30 PM (6165)

Retrieved Information from Long-Term Memory

Does Not Bypass Working Memory, Even When

Full. MICHAEL K. MUGNO, *University of Delaware*,

TIMOTHY J. VICKERY, *University of Delaware* —

Information retrieved from long-term memory (LTM) enters working memory (WM), and the amount of information that can be retrieved is constrained to the limits of WM (about 3-4 items; Fukuda & Woodman, 2017). Can LTM retrieval occur when WM is full, without consequence to either the retrieved or maintained information? Liu, Li, Theeuwes, Wang (2022) presented evidence that, under such conditions, retrieved information bypasses WM, where measures of the number of maintained items increased by an item when information was retrieved. We investigated this further by introducing continuous reporting of retrieved information and WM contents to their paradigm. If retrieval bypasses WM, then there should be no impairment of report accuracy to either WM contents or LTM-retrieved information. In two experiments, we found that when WM is full (4 items), the fidelity of LTM reports suffered compared to when WM was not full (2 items). Additionally, WM contents were reported with lower fidelity when a LTM item was retrieved compared to a WM-only condition, under both two-item and four-item WM load. We conclude that LTM retrieval does not bypass WM.

Email: Michael Mugno, mmugno@udel.edu

6:00-7:30 PM (6166)

The Potential Role of Chunking in Preschoolers'

Novel Word Learning. HUANHUAN SHI, *New York University*, SUDHA ARUNACHALAM, *New York University* —

Children can learn new word meanings from linguistic context (Arunachalam & Waxman, 2011; Yuan et al., 2012) but only if it is the context is not too demanding for working memory (Fernald et al., 1998). In prior research, preschoolers could learn verbs in simple contexts (e.g., the boy is pilking) but struggled in contexts with modified determiner phrases due to processing difficulties (e.g., the tall boy is pilking) (He et al., 2020). This study assessed if chunking (Christiansen & Chater, 2016) modified determiner phrases reduces processing load (RQ1) and supports verb learning (RQ2). Monolingual English-speaking children (N=194, mean age=33.2 months) participated in an online verb-learning experiment. Before learning novel verbs, children were

exposed to modified determiner phrases either as chunks or with the words separated. Results suggested chunking did not reduce processing load (RQ1) or support learning (RQ2). In RQ3 (data analysis ongoing) we aim to replicate prior findings of success with unmodified noun phrases to ensure appropriateness of the online platform.

Email: Huanhuan Shi, hs3035@nyu.edu

6:00-7:30 PM (6167)

Binding Working Memory and Fluid

Intelligence. W FRED GARVEY, *University of*

Sheffield, ALICIA FORSBERG, *University of Sheffield*,

CLAUDIA C. VON BASTIAN, *University of Sheffield* —

Binding refers to the connections formed between representations in the mind and their contexts. Binding has been proposed to account for the relationship between working memory (WM) and fluid intelligence (Gf), but the extent that binding is reported to underlie WM or Gf is inconsistent. This inconsistency may be explained by inconsistent operationalizations of binding. In local recognition tasks, bindings between memoranda and their serial position in a list or grid are tested. In associated pairs tasks, bindings between memoranda (e.g., a word) and other similar memoranda (e.g., another word) are tested. In monitoring tasks, bindings are continuously updated until a set condition is identified. In relation representation tasks, bindings are continuously visible and must be matched. These tasks all involve the processing of relations but differ in complexity, memory, and updating requirements. Using structural-equation modelling we will compare local recognition, associated pairs, relation representation, and monitoring tasks to investigate whether they measure the same ability and differentially relate to WM and Gf. We will also investigate whether binding mediates the relation between WM and Gf.

Email: W Fred Garvey, wfgarvey1@sheffield.ac.uk

6:00-7:30 PM (6168)

Identifying Separate Factors for Phonological

and Semantic Working Memory. RACHEL ZAHN,

Rice University, YU LU, *Rice University*, RANDI C.

MARTIN , *Rice University* — The domain specific model of verbal WM proposes separate capacities for maintaining phonological and semantic information, with much of the evidence coming from brain damaged individuals showing dissociations in WM performance related to these factors. The separation of these WM

capacities has not been widely studied in healthy participants or with multiple tasks to tap each capacity. In the current study, we tested 61 older adults (ages 50–80) and 91 younger adults (18–22) on phonological WM tasks (digit matching, rhyme probe, digit span, and nonword repetition) and semantic WM tasks (category probe, conceptual span, and synonym probe). Using a principal components analysis with varimax rotation, we found that the phonological WM tasks loaded significantly on one factor and the semantic WM tasks on another. A confirmatory factor analysis showed that a two-factor solution was optimal. These findings provide additional support for the separation of semantic and phonological WM capacities.

Email: Rachel Zahn, rzc1@rice.edu

6:00-7:30 PM (6169)

Assessing the Attentional Demands of Visuospatial Working Memory for Order vs. Item Information. JOHANNA HEIN, *University of Geneva*, ROBIN REMOUCHAMPS, *University of Liège*, STEVE MAJERUS, *University of Liège*, EVIE VERGAUWE, *University of Geneva* — Recent studies propose working memory for order information to be more attention-demanding than working memory for item information (e.g., Guitard et al., 2021). To test this in visuospatial working memory, we manipulate the attentional load of a concurrent tone task presented during either encoding or maintenance and examine its effect on item and order memory in either a serial recall task or a recognition task. If working memory for order information is more attention-demanding, then we should see an interaction in the direction of memory for order information being more impacted by the attentional load than memory for item information, regardless of the nature of the memory task (recall vs. recognition) and of when the tone task is presented (encoding vs. maintenance). Overall, the results indicate that recall of order information is affected more strongly by the concurrent attentional load than recall of item information, especially when the attentional load is presented during maintenance. These findings will be compared with those of the recognition experiments, and theoretical implications will be discussed.

Email: Johanna Hein, johanna.hein@unige.ch

6:00-7:30 PM (6170)

Comparing Auditory Working Memory and Visual Attention of Different Types of Video Gamers.

JAMES QIAN, *Brandeis University* — Previous studies suggest that playing action video games is associated with improvements in various cognitive domains, particularly the visual domain. Taking a domain-general view, this study examined the relationship between action video gaming and cognitive skills in the auditory and visual domains. Sixty young adults completed a gaming experience questionnaire and were categorized into 3 types of gamers: first-/third-person shooter gamers, multiplayer online battle arena (MOBA) gamers, and non-action gamers. Participants completed an auditory n-back task and a multiple object tracking (MOT) task measuring auditory working memory and visual attention, respectively. Shooter gamers and MOBA gamers outperformed non-action gamers on the MOT ($p=.01$, $\eta^2=.15$) and n-back ($p=.001$, $\eta^2=.22$), suggesting that playing action video games may be associated with improved visual attention and auditory working memory. These findings expand our understanding of cognitive enhancement through action gaming to include the auditory domain. This work also suggests that the benefits of training working memory via video gaming may extend to broader executive functions, indicating potential generalization effects across different perceptual domains.

Email: James Qian, jamesqian@brandeis.edu

6:00-7:30 PM (6171)

Declarative Versus Procedural Working Memory: Similarities in Repetition Learning.

ISABEL COURAGE, *University of Zurich*, GIDON T. FRISCHKORN, *University of Zurich* — Researchers distinguish between two types of working memory representations: Declarative representations refer to objects of thought whereas procedural representations refer to actions performed on them. Yet, it is still unclear if they are maintained equally or differently in working memory. Methodological differences in previous research hinder the comparison between these representations. To address these differences, we developed a declarative and a procedural Hebb repetition task, consisting of lists in which the contents either repeated fully, partially, or not at all. To dissociate the processes underlying maintenance and repetition learning, we implemented a cognitive measurement model. Results indicate that repetition learning unfolds

similarly in fully repeated lists for declarative and procedural contents. We also observed that previous response selections and build-up of proactive interference for partially repeated lists impact both representation types alike. In sum, there is clear overlap in the maintenance of declarative and procedural representations in working memory and the processes underlying repetition learning.

Email: Isabel Courage, i.courage@psychologie.uzh.ch

6:00-7:30 PM (6172)

Decoding the Semantics of Gaze in Person Perception: A Two-Step Qualitative-Quantitative Approach. LYNN HUESTEGGE, *Julius-Maximilians-Universität Würzburg*, EVA LANDMANN, *Julius-Maximilians-Universität Würzburg*, CHRISTINA BREIL, *Julius-Maximilians-Universität Würzburg*, ANNE BOECKLER, *Julius-Maximilians-Universität Würzburg* — Interpreting gaze is essential in social interactions. We investigated effects of different gaze patterns on gaze perception. Participants watched videos of persons listening to narrations by another (invisible) person. The listeners' gaze was manipulated in terms of directions as well as gaze shift and blink frequencies; emotional context was manipulated by presenting neutral vs. negative narrations. In Experiment 1 (qualitative-exploratory), participants freely described which states/traits they attributed to the listeners, allowing us to identify relevant aspects of gaze-related person perception in a bottom-up manner and to construct rating scales that were implemented in Experiment 2 (quantitative-confirmatory). Overall, results revealed systematic meanings ascribed to the listeners' gaze behavior. Rapid blinking and fast gaze shifts were rated more negatively (e.g., as restless/unnatural) than slower gaze behavior; downward gaze was evaluated more favorably (e.g., as empathetic) than other gaze aversion types (e.g., sideways or upwards), particularly with emotionally negative messages. The study represents a first step towards a more systematic (and less theoretically pre-determined) understanding of social gaze semantics.

Email: Lynn Huestegge, lynn.huestegge@uni-wuerzburg.de

6:00-7:30 PM (6173)

Face Detection and Classification: Non-Normal Face Inferiority. DEAN G. PURCELL, *Oakland University*, ALAN L. STEWART, *Stevens Institute of*

Technology — Observers can detect a picture of an upright face more quickly than a face with rearranged features. We call this phenomenon the Face Detection Effect (FDE). Observers can also classify normal faces, as such, better than they can classify rearranged feature faces. We call this phenomenon the Face Classification Effect (FCE). The experiment was conducted on the same observers in two stages. Initially a two-alternative forced-choice was used to determine the Target—Mask Stimulus Onset Asynchrony (SOA) detection threshold for both face types. Then we determined the classification percent correct at the detection threshold and at SOA intervals 15 and 20ms above the detection threshold. The FDE was not determined by an advantage for normal faces, but by a disadvantage for rearranged faces. Regression analysis showed that, at the detection threshold, performance on rearranged faces more strongly predicted the FDE and FCE than did performance on normal faces. However, at an SOA of 20ms this relationship reversed: The FCE was predicted by performance on normal faces.

Email: Dean Purcell, purcell@oakland.edu

6:00-7:30 PM (6174)

The Influence of Predictability on Parafoveal Processing of Objects in Scenes. HANNAH LUM SMITH, *Queen's University*, MONICA S. CASTELHANO, *Queen's University* — Cognitive load is eased by predicting the identity of objects in our peripheral vision. Here, we examined whether variability in the association between an object and the scene location affects parafoveal processing of objects. We examined this by placing critical objects in expected or unexpected locations in a scene. Further, we manipulated whether spatial position of the object was highly predictable from the context (i.e., spatial predictability index). Using a modified-boundary paradigm, participants were instructed to fixate a dot probe. Once fixated, the critical object would suddenly onset at a distance of 4° for 80ms. Participants responded to the identity of the object while their eye movements were recorded. We found a significant interaction for RT and accuracy, which suggests placement affected high predictability object, but did not have the same effect on low predictability ones. Eye movement measures reflecting initial processing showed a significant effect of predictability, but no interaction. These contrasting results suggest predictability's effect on processing reflected by eye movements differs from the resultant



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responses. We conclude predictability effects on object processing unfold differently over time.

Email: Hannah Lum Smith, 15hls@queensu.ca

6:00-7:30 PM (6175)

The Asymmetry Between Symmetry and Asymmetry Revisited. YING-YU CHEN, *The University of Texas at San Antonio*, JOSEPH W. HOUPT, *The University of Texas at San Antonio* — Some have argued that symmetry is a core feature in the field of perceptual organization. We examine whether the assumption depends on the task context using systems factorial technology. Using symmetry or asymmetry as cue, we asked participant identify whether a target stimulus differed from a probe. The results suggested that when target is asymmetric lines, people are super capacity for symmetric probes but when the target is symmetric and probe is symmetric, we found unlimited capacity. In contrast, both symmetric and asymmetric targets led to limited capacity with an asymmetric cue. The present study examines the connection between workload capacity, architecture and stopping rule. We found participants with limited capacity used serial exhaustive or self-terminating stopping while participants with unlimited capacity use parallel exhaustive or self-terminating stopping. Participants with super capacity is associated with coactive processing. Our findings support the view that symmetry is a core perceptual feature because changes in symmetry boost processing efficiency.

Email: Ying-Yu Chen, yingyu.chen@utsa.edu

6:00-7:30 PM (6176)

Perceptual Changes in Meditation. ROBERT G. ALEXANDER, *New York Institute of Technology*, BRIANA ALCINDOR, *New York Institute of Technology*, JOVELIS TORIBIO, *New York Institute of Technology*, AMY PATEL, *New York Institute of Technology*, LEKHANA RAMACHANDRA, *New York Institute of Technology* — Meditation has been linked to many changes in perception, including colors becoming more vivid, changes in brightness, and the blurring of boundaries between objects. The mechanisms behind these perceptual changes are unknown. Here, we describe a “meditation” task that we conducted in the lab, which we can use to test different possibilities. In the current experiment, we presented an image of a clay pot on a computer monitor for 15 minutes. Participants sat at a fixed distance in front of the monitor and were told to

focus all their attention on the clay pot and exclude all other thoughts or feelings. This task strongly resembles many forms of meditation. We then asked participants a series of debriefing questions designed to elicit comments about perceptual effects that might have occurred but without the potential for participants to simply agree with our expectations. While most participants reported that nothing happened during the task, about a third of participants reported some perceptual effects. By knowing when the effects occur during the experiment, we can explore whether other physiological events happen around those times and thus begin to determine the mechanisms underlying these experiences.

Email: Robert Alexander, ralexa04@nyit.edu

6:00-7:30 PM (6177)

Severe Failure of Color Perception in a Real-World Setting. JAVID SADR, *University of Lethbridge* — Color perception is an important part of the perceptual machinery that allows us to safely and successfully navigate and act in the world. It is not a simple, automatic product of retinal cone activity, however, nor of the absolute wavelengths in a scene; it relies crucially on the mechanism of color constancy: the broader analyses of the lighting source, surface reflectances, and contextual factors which allow us to withstand ever-varying lighting conditions and maintain accurate color percepts. Certain manipulations can disrupt color constancy and cripple color perception, however, and here, in a common and potentially very dangerous real-world circumstance, we find that the filtering of light by colored translucent containers—common medical prescription bottles dispensed by pharmacies—results in gross misperception of colored items within, i.e., prescription pills. We demonstrate that normal color vision is thoroughly corrupted when colored pills are viewed in their most common form of containment, and that this persists whether attempting to name, match, or simply discriminate colors. This generates great concern regarding the very real and common danger of medical mishaps in prescription pill use by patients.

Email: Javid Sadr, sadr@uleth.ca

6:00-7:30 PM (6178)

Visual Information Used for Face Detection Using Bubbles. LAURIANNE CÔTÉ, *Université du Québec en Outaouais*, ALEXIS BELLEROSE,

Université du Québec en Outaouais, JÉRÉMY LAMONTAGNE, Université du Québec en Outaouais, CAROLINE BLAIS, Université du Québec en Outaouais, DANIEL FISET, Université du Québec en Outaouais — In the field of face processing, an increasing amount of data suggests a dissociation between the cerebral mechanisms involved in face detection and those associated with identification. Psychophysical studies have shown that the eye region in medium to high spatial frequencies is crucial for identification (Royer et al., 2018). However, the key facial areas for face detection are not well understood. Twenty participants completed 3,000 trials divided in two face detection tasks (1. Which of the two stimuli contains a face? 2. Does the presented stimulus contain a face?), with the non face stimuli being 100% wavelet decomposed faces. In both tasks, stimuli were overlaid with bubbles across five spatial frequency (SF) bands (Gosselin & Schyns, 2002). Classification images suggest that accurate face detection relies on all features (eyes, nose and mouth, $p=.001$) in all SF bands but that the presence of the eyes is associated with faster reaction times. These data suggest a more important role for low spatial frequencies in detection than in identification.

Email: Laurianne Côté, cotl11@uqo.ca

6:00-7:30 PM (6179)

Does Object Movement or Sound Affect Object Discrimination and Categorisation? MARTINA M. SEVESO, Trinity College Dublin, ALAN O'DOWD, Trinity College Dublin, REBECCA J. HIRST, Trinity College Dublin, FIONA N. NEWELL, Trinity College Dublin & New York University Abu Dhabi — Feature similarity has been proposed as a basis for object categorisation but how object categories are defined by similarities across multiple feature dimensions is uncertain. We explored the influence of object motion (Experiment 1) and sound (Experiment 2) on perceived similarity of shape using 3D novel objects. Participants provided shape similarity ratings to object pairs presented in three motion conditions (static-only; same-, different-motion). Object pairs were rated as more similar in the same- versus different-motion conditions. The addition of object sounds, which were correlated with object movement, did not further influence object similarity ratings. Finally, we investigated if shape and motion were integral or separable dimensions (Experiment 3) with an adapted Garner Interference Paradigm. The results suggested an asymmetric

interference between shape and motion on object perception, indicating separable dimensions. Our research offers important insights into the role of object motion in the categorisation of novel objects.

Email: Martina Seveso, sevesom@tcd.ie

6:00-7:30 PM (6180)

EasyEyes—A New Method for Accurate Fixation in Online Vision Testing. MARIA POMBO, New York University, JAN KURZAWSKI, Maastricht University, AUGUSTIN BURCHELL, New York University, NINA HANNING, Humboldt-Universität zu Berlin, SIMON LIAO, New York University, NAJIB MAJAJ, New York University, DENIS PELLI, New York University — Compared to in-lab testing, online methods allow easier testing of large and diverse samples. Many psychophysical measures, like visual crowding, require accurate eye fixation. EasyEyes open-source software reliably measures peripheral thresholds online with accurate fixation achieved in a novel way, without gaze tracking. Observers use their cursor to track a moving crosshair, and at a random time during successful tracking, a brief peripheral target is presented. Then the observer responds by identifying the target. To evaluate EasyEyes fixation accuracy and thresholds, we tested 12 naive observers in three ways in a counterbalanced order: first, in the lab, using gaze-contingent stimulus presentation; second, in the lab, using EasyEyes while independently monitoring gaze; and third, online at home, using EasyEyes. We find that crowding thresholds are consistent and conserve individual differences. The small size of the root mean square fixation error (0.6 deg) during target presentation eliminates the need for gaze tracking. This method enables fixation-dependent measurements online for easy testing of larger and more diverse populations.

Email: Maria Pombo, mp5561@nyu.edu

6:00-7:30 PM (6181)

Exploring the Connections Between Visual Perceptual Learning, Error-Based Motor Learning, and Executive Functions. HSIN-TING LO, Institute of Cognitive Neuroscience, National Central University, ERIK CHIHUNG CHANG, Institute of Cognitive Neuroscience, National Central University — This study investigates the connections between visual perceptual learning, error-based motor learning, and executive functions, using texture

discrimination, visuomotor adaptation, and selected tasks from the NIH cognitive battery as operational measures. Previous research hints at shared mechanisms across perceptual and motor learning domains. Our study aims to further delineate these domain-general characteristics and explore the underlying mechanisms. Initial findings reveal only marginal correlations between learning in visuomotor adaptation and executive function performance, particularly in tasks measuring flanker and visual reasoning abilities. These results suggest that the overlap between perceptual and motor learning mechanisms may be context-dependent. Continued research is necessary to clarify the boundaries of these commonalities and to understand the extent of their applicability across different domains of learning.

Email: Hsin-Ting Lo, hsinting@g.ncu.edu.tw

6:00-7:30 PM (6182)

How Task Type Influences Perceptual and Metacognitive Sensitivity in Peripheral Vision.

TREVOR CARUSO, *University of Florida*, ANGUS MACGREGOR, *University of Florida*, BRIAN ODEGAARD, *University of Florida* — How does perceptual or metacognitive sensitivity change depending on the task we must perform? In our experiment, after staircasing a single stimulus for each task in peripheral vision at 22.6°, participants completed either a Gabor detection or a Gabor discrimination task on each trial, and rated confidence on a 1-4 scale. Five locations were tested from 0-40°, and perceptual sensitivity (d') and metacognitive sensitivity (meta- d') were estimated at each location in both tasks. For perceptual sensitivity, results showed an interaction between task type and eccentricity: while discrimination was better than detection at 0 degrees, detection was better than discrimination at 30 and 40 degrees. For metacognitive sensitivity, discrimination meta- d' was higher than detection meta- d' overall, driven mainly by differences at 0 degrees and 10 degrees. These findings demonstrate that task type significantly influences visual capacities and metacognitive decisions, providing important insights into how task demands influence judgments across the visual field.

Email: Trevor Caruso, trevorcaruso@ufl.edu

6:00-7:30 PM (6183)

Mind Wandering as Perceptual Decoupling and the Effect on Learning in Educational Videos.

GERRIT ANDERS, *Leibniz-Institut für Wissensmedien*, JÜRGEN BUDER, *Leibniz-Institut für Wissensmedien*, LISA RAUSCH, *Eberhard Karls Universität Tübingen*, MARKUS HUFF, *University of Tübingen* — This project investigates mind wandering during dynamic visual learning tasks using eye-tracking technology. We aim to determine if mind wandering causes perceptual decoupling and how early visual processing affects learning outcomes. We introduce gaze coherence as a measure of visual perception while watching learning videos. N 56 participants watched three math videos (mean duration: 499 s.) explaining derivatives while we measured their eye movements (1000 Hz). A pre-post knowledge test assessed participants' knowledge gain. Our findings show that self-reported mind wandering changes gaze behavior and results in a drop in gaze coherence. However, these changes are not related to learning outcomes, thus, challenging the perceptual decoupling hypothesis of mind wandering. Instead, we argue that not merely visual attention but the type of mind wandering is crucial. A temporal analysis of gaze behavior in learning videos raises an intriguing question: Do we literally lose sight of what we study?

Email: Gerrit Anders, g.anders@iwm-tuebingen.de

6:00-7:30 PM (6184)

The Effect of Fixation Location on Face Perception in Younger and Older Adults. MO

ERIC CUI, *Rotman Research Institute & University of Toronto*, FARHAN VAHEED, *McMaster University*, DAVID MATTHEW CLARK, *Baycrest Health Sciences*, BJÖRN HERRMANN, *Rotman Research Institute & University of Toronto*, ALLISON SEKULER, *Rotman Research Institute, University of Toronto, & McMaster University* — Information is distributed in various facial regions. The eye region is informative for identity perception. However, there are differences in the region in which younger individuals fixate for identity perception: some prefer the eyes, the nose for the others. Meanwhile, older have more fixations on the lower half of the face compared to younger adults. When fixation is restricted to specific regions, younger adults demonstrated the best identity perception when fixation was restricted to the eye. Where do younger and older adults look on faces, and can they show improved performance in recognizing faces when focusing on specific facial regions? The diamond condition began with a fixation square outside the face's anticipated display area. The midline condition started with a



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fixation square on the forehead, eye, nose, or mouth. Preliminary analysis showed age-related in both conditions (27 younger and 27 older adults). Restricting the fixation location reduces these age-related differences, with older adults showing improved performance, particularly at the eye and nose locations. An age-related difference emerges at the nose location, where older adults benefit more from nose restriction fixation than younger adults.

Email: Mo Cui, mo.eric.cui@gmail.com

Poster Session VII

Saturday, November 23, 2024, 7:45-9:15 PM US EST

7:45-9:15 PM (7001)

'Forgotten' Objects and Features in Working Memory and the Guidance of Attention. BRYAN R. BURNHAM, *University of Scranton*, JOHN THOMAS, *University of Scranton* — The contents of working memory can guide attention during visual search. Soto and colleagues had observers encode and maintain objects in working prior to a search task (e.g., Soto, Heinke, Humphreys & Blanco, 2005). Although the item in working memory was irrelevant for visual search, responding was faster when the target location coincided with the location of an object in working and slower when it did not, suggesting working memory contents guided attention. However, Sasin, Morey, and Nieuwenstein (2017) found that this attentional guidance was eliminated when observers were instructed to “forget” the object held in working memory. We replicated Sasin et al. (2017) by showing that working memory objects do not guide attention when they are “forgotten.” We then extended this to cases when multiple objects are held in working memory, but found that observers can forget one item, but not two from working memory. We also found that specific features (i.e., shape, color) of objects held in working memory cannot be forgotten independent of the other feature, suggesting object features may be bound into tokens in working memory.

Email: Bryan Burnham, bryan.burnham@scranton.edu

7:45-9:15 PM (7002)

Shattering the Attentional Window Account: The Attentional Window Does Not Determine Capture But Search Strategies Do. DOMINICK TOLOMEO, *Oregon State University*, EMILY BURGESS, *Oregon State University*, ERIC

RUTHRUFF, *The University of New Mexico*, MEI-CHING LIEN, *Oregon State University* — Belopolsky et al. (2007) proposed that capture occurs only within the attentional window. In the present study, we attempted to replicate their experiment while also manipulating target search strategy. Participants performed a go/no-go task based on the shape of the overall search array (broad attentional window) or based on the central fixation point (narrow attentional window). Whereas Belopolski et al. found larger capture effects from a color singleton appearing within a broad attention window than one appearing outside a narrow window, we found no such effect (Experiment 1). When we changed the task from a feature search task in Experiment 1 to a singleton search task in Experiment 2, capture effects increased but were similar for the broad and narrow attentional windows. Our findings shatter the attentional window account and suggest an alternative account of capture: singleton search mode makes color singletons capture attention due to task relevance.

Email: Dominick Tolomeo, tolomeod@oregonstate.edu

7:45-9:15 PM (7003)

While You Wait: Eye Movement Behavior Between Trials in an Attentional Capture Task. CARLY J. LEONARD, *University of Colorado, Denver* — Eye movements occur while we are actively completing tasks and also while we are not. Measurements of oculomotor behavior during visual search tasks have often been studied, especially with regard to how salient distractors may capture gaze. Here, I investigate how the eye movement behavior that occurs naturally in participants before the onset of the search display relates to subsequent search performance. In the experiment, participants faced a blank screen during a 2-3 second intertrial interval before a central fixation point appears requiring fixation. After fixation, a typical additional singleton search task occurred. Participants were not instructed about what to do during this delay, and only told they must look at the central fixation when it appears to initiate the search task. Substantial differences in pre-trial eye movement behavior occurred between individuals and across trials. Some differences during the intertrial interval, particularly in number of saccades and saccadic amplitude, related to search task behavior. Overall, these results suggest that gaze dynamics when there is no explicit task may indicate variations in attentional state that have an influence on subsequent task-related behavior.

Email: Carly Leonard, carly.leonard@ucdenver.edu

7:45-9:15 PM (7004)

'Go Deep!': Social Gaze Cuing System Is Only Sensitive to Depth in Immersive Environments.

TIMOTHY N. WELSH, *University of Toronto*, APRIL KARLINSKY, *California State University, San Bernardino*, XIAOYE MICHAEL WANG, *University of Toronto* — Changes in the direction of another person's gaze can lead to shifts of the observer's attention in the direction of the observed gaze. The present studies determined: 1) if the social gaze cuing system is sensitive to depth and 2) if sensitivity to depth occurs in both immersive 3D virtual reality (VR) and a 2D rendering of 3D VR. Participants were presented with a model who rotated to gaze at 1 of 4 target locations formed in a rectangle around the model. Red or blue targets randomly appeared at one location 100 or 1000ms after the model stopped rotating. Participants pressed a left/right button to the blue/red target. One group of participants completed the task in an immersive 3D VR environment and another group on a 2D computer screen. There was a Side of Gaze effect (response times [RTs] to targets on the same side of space as the direction of gaze were shorter than RTs to targets on the opposite side) in both environments. A Depth of Gaze effect (RTs to targets at the same depth of gaze were shorter than RTs to targets at a different depth) only emerged in the immersive 3D environment. These data suggest that the social gaze cuing system may only be sensitive to depth when sufficient depth cues are available.

Email: Timothy Welsh, t.welsh@utoronto.ca

7:45-9:15 PM (7005)

Attention Is Guided by a Range of Feature Values When Visually Similar Features Are Held in Visual Working Memory.

RYAN S. WILLIAMS, *University of Toronto*, JAY PRATT, *University of Toronto*, SUSANNE FERBER, *University of Toronto* — Does inter-item similarity influence whether attention is guided by visual working memory (VWM) when multiple features are maintained? To test this, we had individuals maintain two colors in VWM, which differed by either 100 (Experiment 1) or 50 degrees (Experiment 2) along a color wheel. Between study and test, a visual search array was presented, and individuals were required to respond to a shape-defined target. Importantly, a uniquely colored distractor was always present in these displays that was defined in relation to a

value that fell exactly between the two maintained colors and could span a range of 0 to +/- 150 degrees. In the case of discrete color maintenance (Experiment 1), guidance to this critical distractor was unaffected by the contents of VWM, as attentional capture was equivalent across feature values. In contrast, when the two colors were visually similar (Experiment 2), memory-matching distractors captured attention over and above those that fell well outside of the range of the colors held in memory, but not those that fell within this color range, or just outside of it. As such, when visually similar features are held in memory, attention is automatically guided by a single, banded range of feature values.

Email: Ryan Williams, ryanscott.williams@mail.utoronto.ca

7:45-9:15 PM (7006)

Early Sensory Processing Signatures of Oculomotor Capture Versus Goal-Directed Override.

EMILY E. OOR, *Wake Forest University*, ANTHONY W. SALI, *Wake Forest University* — Exogenous physically salient stimuli can rapidly and involuntarily capture attention and gaze (Theeuwes, 2010; Yantis & Jonides, 1984; Salinas et al., 2019). Using an urgent antisaccade task that tracks the moment-by-moment development of oculomotor choices based on the length of time the participant views the cue, referred to as processing time (PT), Salinas et al. (2019) found that exogenous salient stimuli attract the participant's gaze within ~100 ms of PT. However, this effect can be overridden by goal-directed intentions ~45 ms later. Here, we leveraged an urgent paradigm that mimics an interleaved pro- and antisaccade task in conjunction with event-related potentials to investigate the neural signatures of the sensory processing of exogenous visual information for trials when oculomotor capture is likely relative to those when it is regularly overcome. The P1 response to a lateralized salient target (prosaccade) or distractor (antisaccade) had a larger amplitude for trials with PTs associated with capture than for those with longer PTs. Our findings show that early sensory processing nuances correlate with the ability to suppress reflexive responses to exogenous salient stimuli.

Email: Emily Oor, oore220@wfu.edu

7:45-9:15 PM (7007)

Suppression of Salient Distractors Inside Versus Outside the Attentional Window.

XIAOJIN MA, *University of Missouri*, STEVEN J. LUCK, *University of*

California, Davis, NICHOLAS GASPELIN, University of Missouri — Do salient distractors have an automatic power to capture attention? Much evidence has shown that salient distractors can be actively suppressed to prevent capture. However, much of the initial evidence supporting this account has been called into question. Specifically, the attentional window account of Theeuwes proposes that capture can be prevented by narrowly focusing the attentional window, as during serial search. When attention is spread diffusely, as under parallel search, this account proposes that capture by salient distractors will be unavoidable. We tested this account using a novel paradigm that directly manipulates the spread of attention; we measured attention allocation to salient distractors using event-related potentials (ERPs). We found that, regardless of whether attention was diffusely or narrowly focused, singleton distractors produced no evidence of attentional capture. Instead, salient distractors often elicited a distractor positivity (Pd) component, indicating active inhibition. These findings directly challenge the attentional window account, and instead support models which propose that top-down control can be used to inhibit salient distractors, such as the signal suppression hypothesis.

Email: Xiaojin Ma, xma@missouri.edu

7:45-9:15 PM (7008)

Distraction by Deviant Sounds: Facilitating Response Change and Hindering Response Repetition. ELENA GARCÍA-LÓPEZ, *University of Balearic Islands*, FABRICE B. R. PARMENTIER, *University of the Balearic Islands* — Previous work shows that unexpected deviations in a repetitive stream of task-irrelevant sounds (deviant vs. standard sound) lengthen RTs in the task at hand. Some evidence suggests that this effect is larger when participants repeat a response rather than change it in 2-AFC tasks. The underlying mechanisms for this effect remain unknown: Do deviant sounds impair response repetition, facilitate response change, or both? To address this, we measured deviance distraction for response repetitions and response changes in 2- and 4-AFC tasks requiring participants to categorize the location of a visual stimulus within a 2x2 grid. A task-irrelevant sound (standard, p=.8, or deviant, p=.2) was presented immediately prior to each visual stimulus. Compared to the standard sound, the deviant sound yielded longer RTs for response repetitions (in both 2- and 4-AFC tasks). In contrast, deviant sounds sped up response change, with a

larger effect in the 2-AFC task. These results suggest that deviant sounds affect performance through two mechanisms: hindering response repetition (independent of response set size) and facilitating response change by potentiating alternative responses (modulated by response set size).

Email: Elena García-López, elenagarciauib@gmail.com

7:45-9:15 PM (7009)

Salience Effects on Attentional Selection Are Enabled by Task Relevance. YUE ZHANG, *University of Missouri*, NICHOLAS GASPELIN, *University of Missouri* — Attention is a limited resource that must be carefully controlled to prevent distraction. Much research has demonstrated that distraction can be prevented by suppressing salient stimuli. However, there has been considerable debate about whether highly salient objects can be ignored. The current study tested the role of salience in attentional selection using two complementing tasks. An initial control experiment evaluated a salience manipulation in a task where the singletons were the target. Shifts of gaze showed that high-salience singletons were found much more easily than low-salience singletons. A following experiment used the same displays but made the singletons distractors that needed to be ignored. Low- and high-salience singletons were suppressed, suggesting neither involuntarily captured attention. These results suggest that salience can powerfully modulate attentional selection, but only when salience is made task relevant.

Email: Yue Zhang, yuezhang@missouri.edu

7:45-9:15 PM (7010)

An Investigation of the Differential Effects of Priority on the Temporal Distribution of Attention. CARLY CHAK, *University of California, Santa Barbara*, ANH THU VAN, *University of California, Santa Barbara*, BARRY GIESBRECHT, *University of California, Santa Barbara* — To combat the limits of attention in the spatial domain, information can be prioritized based on physical or motivational salience, resulting in improved performance when the prioritized information is consistent with one's goals or impaired performance when it is not. It remains unknown how different priority signals uniquely influence the temporal limits of attention. To investigate this, we took advantage of the attentional blink (AB), a phenomenon responsible for the impaired identification of targets that

appear within 200ms-500ms of a previous target. Participants did a RSVP task in which the first (T1) of two targets was embedded in a circle whose color was either physically salient, previously rewarded, previously selected, or neutral (black). Results ($n=33$) show an effect of the priority manipulation for T1 only. When T1 was associated with any of the priority signals, T1 performance improved. Further, the effect of reward and selection history increased T1 performance as lag increased. These results suggest that experience-dependent priority signals may be differentially sensitive to the temporal distribution of concurrent processing demands.

Email: Carly Chak, chorner@ucsb.edu

7:45-9:15 PM (7011)

Examining the Impact of Curiosity on Cognitive Control.

SEEMA PRASAD, *Technische Universität Dresden*, BERNHARD HOMMEL, *Shandong Normal University*, BESTE CHRISTIAN, *Technische Universität Dresden* — A common assumption in lab-based tasks is that any behaviour not in alignment with the task instructions indicates a failure of top-down control. But, what if people engage in task-irrelevant behaviour out of curiosity, which is a concurrent motivation in most humans? We examined if curiosity leads to greater processing of irrelevant flankers. On each “experimental” block trial, participants were shown a trivia question and a flanker task with five directional arrows. Confidence and curiosity ratings were elicited through a self-report scale. Additionally, in Experiment 1 ($n=40$), the flanker task without trivia questions was administered as a control block. In Experiment 2 ($n=40$), extremely low curiosity trivia questions were included in the control block for better comparison with the experimental block. In Experiment 3 ($n=40$), the same low curiosity question was presented on every control block trial to reduce the uncertainty. The experimental block, which was the same in all experiments, showed greater compatibility effects than the control block only in Experiment 1. We discuss whether our manipulation truly induced curiosity or if there are alternate explanations.

Email: Seema Prasad, seema.prasad@ukdd.de

7:45-9:15 PM (7012)

Improving Sustained Attention with Real-Time Monitoring of Attentional Lapses.

MATTHIEU CHIDHAROM, *The University of Chicago*, MONICA ROSENBERG, *The University of Chicago*, EDWARD VOGEL, *The University of Chicago*, ANNE BONNEFOND, *Institut National de la Santé Et de la Recherche Médicale (Inserm)* — Lapses in attention are common in everyday life, increasing the risk of errors such as missing a highway exit. In this study, we examined participants' ability to externally monitor their attentional lapses in real-time to prevent behavioral errors before they occur. Thirty participants performed a go/no-go task in which they were instructed to respond to frequent-category images (e.g., indoor scenes) and withhold response to infrequent-category images (e.g., outdoor scenes). Fast reaction times, previously identified as strong predictors of no-go trial errors, were measured during task performance and used to track periods of inattention. During the intertrial-interval, a white fixation cross turned red whenever an error-prone period of fast responding was detected. A generalized mixed model showed that participants could reduce errors by monitoring their lapse states, compared to blocks where the red-cross appeared randomly. Notably, individuals with better performance overall were more likely to benefit from external monitoring.

CHIDHAROM, *The University of Chicago*, MONICA ROSENBERG, *The University of Chicago*, EDWARD VOGEL, *The University of Chicago*, ANNE BONNEFOND, *Institut National de la Santé Et de la Recherche Médicale (Inserm)* — Lapses in attention are common in everyday life, increasing the risk of errors such as missing a highway exit. In this study, we examined participants' ability to externally monitor their attentional lapses in real-time to prevent behavioral errors before they occur. Thirty participants performed a go/no-go task in which they were instructed to respond to frequent-category images (e.g., indoor scenes) and withhold response to infrequent-category images (e.g., outdoor scenes). Fast reaction times, previously identified as strong predictors of no-go trial errors, were measured during task performance and used to track periods of inattention. During the intertrial-interval, a white fixation cross turned red whenever an error-prone period of fast responding was detected. A generalized mixed model showed that participants could reduce errors by monitoring their lapse states, compared to blocks where the red-cross appeared randomly. Notably, individuals with better performance overall were more likely to benefit from external monitoring.

Email: Matthieu Chidharom, matthieuchidharom@gmail.com

7:45-9:15 PM (7013)

Resolving Conflict in the Auditory Modality: Spectrotemporal Characterization of a Speech-Based Flanker Task.

LAUREN PETLEY, *Clarkson University*, JULIA BRZAC, *Clarkson University*, SARAH JANE GASCOYNE, *Clarkson University*, LAUREN MEYERS, *Clarkson University*, JORDAN CHATWIN — To date, there is no auditory equivalent of the intuitive “arrows flanker task,” which has seen wide adoption in the study of cognitive development and neuropsychological deficits. In the auditory modality, only speech has the same overlearned symbolic value as arrows, but concurrent target and flanker speech raises the possibility of perceptual masking. In a series of three experiments, using 142 healthy young adults aged 18-24 (mean 19.5, SD 1.4 years of age, 65 female), we demonstrate that the risk for masking varies with the spectral separation between the voices and the direction of attention. Similarly to spatial separation in visual tasks, spectral separation also influences the strength of conflict effects. A fourth study using 22 healthy young adults aged 18-23 (mean 19.6, SD 1.5, 10 female) reveals slightly better same-day test-retest reliability and similar



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distributional properties for the speech-based and visual arrows tasks.

Email: Lauren Petley, lpetley@clarkson.edu

7:45-9:15 PM (7014)

Whether Eye Gaze Causes Special Spatial Interference Depends on the Visual Context.

TIANFANG HAN, *University of Idaho*, BENJAMIN MCDUNN, *University of Idaho* — Recent evidence with a spatial Stroop paradigm has shown that arrows and eye gaze yield opposite response congruency effects. The present study aimed to replicate this dissociation with an emphasis on how the congruency effect changed across the reaction time (RT) distribution. In two experiments, participants responded to the direction of arrow and eye gaze stimuli in a spatial Stroop task. The stimuli in Experiment 2 were presented on a rectangle which separated the area surrounding the stimuli from the background, but such rectangles were absent in Experiment 1. The reversed congruency effect with eye gaze was absent in both experiments. In Experiment 1, RT distribution analyses revealed that the congruency effect caused by eye gaze changed in a comparable way as arrows, with the advantage of congruent trials diminishing as RT increased. With the inclusion of the rectangle in Experiment 2, the congruency effect caused by eye gaze changed in the opposite manner, with the advantage of congruent trials increasing as RT prolonged. The results indicate that whether eye gaze causes the same or a different type of spatial interference than arrows depends on the visual context.

Email: Tianfang Han, tianfanghan@uidaho.edu

7:45-9:15 PM (7015)

Exploring the Reliability and Nomological Network of Probed Mind-Blanking Reports.

CHANDNI LAL, *University of North Carolina at Greensboro*, MATTHEW S. WELHAF, *Washington University in St. Louis*, MICHAEL J. KANE, *University of North Carolina at Greensboro* — Recent studies have identified “mind-blanking” (MB) as a mental state sometimes experienced during off-task periods. We extend our previous construct-validity investigations by exploring MB rates across multiple tasks and thought-probe types and assessing their relation to other phenomena, traits, and experiences that might be positively or negatively associated with MB propensity. A large undergraduate sample completed four

computerized attention tasks in the laboratory that each presented one of two thought-probe types, all of which included MB and various mind-wandering categories to assess subjects’ immediately preceding mental states. We compare MB rates across tasks and probe types, assess their cross-task and cross-probe-type reliability, and test their correlations with probed mind-wandering rates and with self-report constructs including sleep quality, fatigue, attention-deficit symptoms, mentation rate/racing thoughts, anxiety and depression symptoms, boredom proneness, openness to experience, and mindfulness.

Email: Chandni Lal, c_lal@uncg.edu

7:45-9:15 PM (7016)

Are We Aware of What We Are About to Do?

New Experimental Approaches to Voluntary Action and Conscious Awareness. ZHENG HUANG, *University College London*, SILVIA SEGHEZZI, *Birkbeck, University of London*, PATRICK HAGGARD, *University College London* — Generating a voluntary action typically involves some experience of conscious intention. Prospective theories propose that conscious intention is a readout of action preparation processes, while retrospective theories view conscious intention as an inference retro-inserted into narratives of one’s own behaviour. Studying conscious intention experimentally is difficult, because (a) eliciting voluntary actions in laboratory settings is problematic and (b) existing measures of conscious intention using post-action reports could involve post hoc biases. We developed touch-typing versions of a verbal fluency task to elicit voluntary actions to address (a), and then interrupted participants quasi-randomly, asking “Were you about to type your next word?”, to address (b). Across two experiments with 51 participants, we found conscious intention emerged at 1079 ms ($SD=1366$ ms) and 1258 ms ($SD=749$ ms) before the estimated time of upcoming action. EEG results showed a greater readiness-potential-like deflection prior to probes that elicited reports of conscious intention, compared to probes that did not. Our results support prospective theories of conscious intention and may partly address methodological difficulties of previous studies.

Email: Zheng Huang, zheng.zora.huang.22@ucl.ac.uk

7:45-9:15 PM (7017)

Exploring Capacity Limits for Unconscious

Memoranda in Visual Working Memory. AMY UNDERWOOD BARTON, *Northwest Missouri State University*, FERNANDO VALLE-INCLÁN, *University of La Coruña*, TAYLOR STEIN, *Northwest Missouri State University*, ALYSSA GROUT, *Northwest Missouri State University*, STEPHANIE AKINDELE, *Northwest Missouri State University* — Previous work from this lab has demonstrated that presentation of unconscious stimuli interferes with recall of previously presented conscious ones (Barton et al., 2022). The source of this interference effect—be it interference of encoding or maintaining of visible memoranda in visual working memory (VWM)—remains unclear. We conducted two experiments in which conscious items were presented either simultaneously with or shortly after unconscious (masked) items. Following a retention interval, participants reported whether a test probe (presented where either a conscious or unconscious item had been shown) changed orientation. In both experiments, impairment of change detection for conscious items increased with the number of unconscious items. Change detection for unconscious items was just above chance. These findings replicate the interference effect (Barton et al., 2022) and suggest that unconscious items are encoded in VWM, but stored with low precision or are not consciously accessible.

Email: Amy Barton, abarton@nwmmissouri.edu

7:45-9:15 PM (7018)

Capturing Drifting Minds: A Novel Behavioral Method to Detect Mind-Wandering Onset.

TAREN ROHOVIT, *University of Oregon*, ULRICH MAYR, *University of Oregon* — Studying mind-wandering faces a significant challenge in accurately identifying its onset. While several methods have been developed to measure when mind-wandering begins, the field still lacks a robust behavioral index. In this study, we introduce a new paradigm that combines an audio-book listening paradigm with a memory task to detect the onset of mind-wandering. While we demonstrate its effectiveness in a reading task, this paradigm can also be applied to other tasks, such as breath counting. We validate this new approach using pupillometry, showing a clear shift in focus corresponding to the moment mind-wandering is detected by our behavioral paradigm.

Email: Taren Rohovit, trohovit@uoregon.edu

7:45-9:15 PM (7019)

Time After Time: Exploring the Relationship Between Time Perception and Mind Wandering.

LIAM T. YEO, *University of Manitoba*, NICHOLAUS BROSOWSKY, *University of Manitoba* — Mind wandering is the attentional shift from on-task, goal-oriented thoughts inwards to internally generated, off-task thoughts. The internal processes that cause this shift and maintain our mind wandering are largely unknown. In the current study, the relationship between time perception and mind wandering was investigated to determine whether the theoretical mechanisms that operate our subjective time perception can also cause the initiation of off-task thoughts. Participants completed tasks designed to manipulate their subjective time perception and assessed sustained attention while measuring mind wandering with thought probes. The time perception manipulations were found to alter the subjective time perception of the participants and successfully replicate previous findings.

Email: Liam Yeo, yeol@myumanitoba.ca

7:45-9:15 PM (7020)

Trajectories in Semantic Space as a Window into the Dynamics of the Stream of Thought.

JEROME SACKUR, *Ecole des Hautes Etudes en Sciences Sociales*, ADRIEN KÉRÉBEL, *Laboratoire de Sciences Cognitives et Psycholinguistique (ENS, CNRS, & EHESS)*, BENTE VISSEL, *Laboratoire de Sciences Cognitives et Psycholinguistique (ENS, CNRS, & EHESS)* — The stream of thought has been famously described by William James as comprising distinct moments of stability and moments of transition. However, cognitive psychology faces challenges in objectively quantifying and characterizing this distinction due to the subjective nature and long timescale of these moments. Here, we discuss a series of experiments that try to address these challenges using free word production tasks ("association of ideas"), which we analyze through semantic word embedding (FastText). I focus on two series of results. First, I show that periods of transition can be characterized as exploration in semantic space, in contrast to periods of local exploitation. Second, we show that non-semantic distractors create local disorganization within the stream of thought. Throughout, I will underscore the relevance of this characterization of the stream of thought in relation to the symptomatology of attention

deficit/hyperactivity disorder (ADHD), with an increased semantic and temporal variability.

Email: Jerome Sackur, jerome.sackur@gmail.com

7:45-9:15 PM (7021)

Steady-State Operational Noise Impact on Cognition (SONIC). ELIZABETH L. FOX, *Air Force Research Laboratory*, STEVEN CAMPBELL, *Air Force Research Laboratory*, ASHLEY COOK, *Air Force Research Laboratory*, ANDREW MANORY, *Consortium of Universities of the Washington Metropolitan Area*, GREGORY BOWERS, *BAE Systems, Inc.* — The level of acoustic noise in many environments often exceeds safety standards, especially during long exposures. While research has assessed the acoustic properties that drive deficits, most focus on distraction after bursts or errors in communication. In turn, more research is needed to explore how steady-state noise affects cognition. In a within-subjects experiment, we asked participants to perform a visual search (VS) task, working memory (WM; 3 difficulty levels) task, or their combination while exposed to no noise or low, moderate, or high levels of fifth generation aircraft (e.g., F-35) cockpit noise (60, 70 or 80 dB A-weighted under hearing protection). The noise level was pseudorandomized across 4 sessions. We utilize decision-making (DM) models to assess how operational noise alters one's DM processes. Our results indicate shifts in DM processes occur due to acoustic noise, and the degree of shift depends on the task(s) and level of exposure. Additionally, this work investigates how the impact of noise on DM is mediated by one's noise sensitivity and their affect state change after noise exposure. Finally, we discuss the associated implications for operators that make decisions in loud noise environments.

Email: Elizabeth Fox, elizabeth.fox.9@us.af.mil

7:45-9:15 PM (7022)

Scripted Negotiations as a Tool for Distracted Driving Research. HANNAH PANNELL, *University of South Florida*, PAUL ATCHLEY, *University of South Florida*, RUTH ANN ATCHLEY, *University of South Florida* — This methods-focused research program examines the bidirectional effects of conducting work-related phone calls while driving. Driving research typically examines the impact of conversations on driving while the effect of driving on the quality of the conversation, particularly work-relevant conversations, is

less established. Experiment 1 established foundational data using a hazard perception task and a negotiation task to measure the impact of multitasking on driving and negotiation performance. Results indicated that dual-tasking negatively impaired both driving reaction times and negotiation outcomes, but there were issues with negotiation quality that led to the exclusion of both negotiation and driving data. To address the variability in negotiation quality observed in Experiment 1, we used a scripted negotiation protocol in Experiment 2. This methodological enhancement standardized negotiation interactions to improve data quality by using trained researcher accomplices who guided the negotiations. Benefits and drawbacks of this approach as well as negotiation and driving data will be summarized.

Email: Hannah Pannell, hvpannell@usf.edu

7:45-9:15 PM (7023)

Cognate Facilitation in Different-Script Trilinguals as a Function of Task Demands. MARIANA ELIAS, *University of Haifa*, JANET G. VAN HELL, *The Pennsylvania State University*, TAMAR DEGANI, *University of Haifa*, ANAT PRIOR, *University of Haifa* — The current study aimed to answer three questions: (1) is cognate facilitation evident in different-script trilinguals?; (2) which of the trilinguals' languages contribute to third language (L3) processing?; and (3) how might task demands modulate cognate facilitation? To this end, different-script Arabic-Hebrew-English trilinguals processed cognates in their L3 across three experiments (semantic decision, lexical decision, and sentence reading eye tracking) utilizing the same set of cognate stimuli (double and triple cognates). A cognate facilitation effect was evident in the semantic decision task only, but not in lexical decision or reading tasks. This pattern supports the role of phonological overlap in cognate facilitation, and further suggests that it is task dependent. Moreover, there were no consistent differences in the magnitude of facilitation across the cognate types in the semantic decision task, indicating that both the first and the second language contribute to cross-language influences in L3 lexical processing.

Email: Mariana Elias, m.n.e.420@gmail.com

7:45-9:15 PM (7024)

Language Dominance Affects Picture Naming More than Word List Memory. MARIA F. GAVINO, *University of California, San Diego*, TAMAR

H. GOLLAN, *University of California, San Diego* — The present study investigated language dominance effects on picture naming versus word list memory. Thirty-five older cognitively healthy Spanish-English bilinguals were presented with two lists of 10 words in each language, with two learning and recall trials for each list (switching languages just once after the first two lists). They also completed a picture naming task in both languages. Bilinguals performed both tasks better in their dominant than their nondominant language, but language dominance effects were much stronger on the picture naming task. Language dominance effects shrank even further with repetition within the word list memory task. While language dominance effects were strong on Trial 1 (when initially learning the word list), by Trial 2 language dominance effects were no longer significant. Thus, while language dominance has robust effects on initial list learning, the disadvantage of remembering in a nondominant language dissipated after just one learning/recall trial. These results resemble previous demonstrations of larger repetition priming effects for the nondominant than for the dominant language in picture naming, and may have practical implications for maximizing learning in a less proficient language.

Email: Maria Gavino, mgavinorodriguez@health.ucsd.edu

7:45-9:15 PM (7025)

Language Learning in Multilinguals—the Effect of Variability in Language of Instruction . ZOYA HIROSH, *University of Haifa*, TALI BITAN, *University of Haifa*, TAMAR DEGANI, *University of Haifa* — In novel word learning, multilinguals may leverage translations in all known languages to enhance learning. As a proxy of this possibility, in the current study we used variability of the Language of Instruction (LOI). 96 adult Hebrew-English bilinguals learned 50 novel German words in one of three conditions: in association with their Hebrew (L1) translation; their English (L2) translation; or with both Hebrew and English translations (variable LOI). Participants first learned the German words auditorily and then performed three tests: a familiarity judgment test assessing recognition of the novel word form, a picture matching test examining learning of the word's meaning, and a translation recognition test evaluating the association acquired between the novel word and its Hebrew and English translations. Although accuracy across the three groups showed no significant differences, reaction time data indicated that the variable LOI group responded faster in

the picture matching test and in both Hebrew and English translation recognition tests. These results suggest that LOI variability can facilitate word learning in multilinguals, offering valuable insights for optimizing language instruction in multilingual educational settings.

Email: Zoya Hirosh, zoyahirosh@gmail.com

7:45-9:15 PM (7026)

Mentalizing During First and Second Language

Reading: An Eye-Tracking Study of Bilingual

Adults. KARLA TARIN, *McGill University*, MEHRGOL TIV, *United States Census Bureau*, ANTONIO INIESTA, *McGill University*, VEGAS HODGINS, *McGill University*, CHAIMAA EL MOUSLIH, *McGill University*, DEBRA TITONE, *McGill University* — Bilingual adults have shown varied mentalizing abilities (i.e., attributing mental states to oneself and others) compared to monolinguals (Antoniou, 2019; Goetz, 2003). However, differences within bilinguals during second (L2) vs. first (L1) language are less understood (Tiv et al, 2023; Navarro et al, 2022). We thus used eye-tracking with 28 English-dominant and 29 French-dominant bilingual adults as they read texts requiring mentalizing (“Jane read about the increase in crime, she locked the front door”) vs. logical inferences (“Jane took out the house keys, she locked the front door”). L2 late-stage measures (total reading time) showed that mentalizing inferences took longer than logical inferences. For L1 reading, mentalizing and logical inferencing was comparable, however, increased compartmentalized daily language use by L1 readers patterned with longer reading times for logical inferences. Taken together, mentalizing during bilingual adult reading differs for the L1 and L2, and is variably impacted by readers’ language experiences.

Email: Karla Tarin, karla.tarin@mail.mcgill.ca

7:45-9:15 PM (7027)

Third Language Morpho-Syntactic Sensitivity:

Implicit Versus Explicit Processing. NAWRAS

ABBAS, *University of Haifa*, TAMAR DEGANI, *University of Haifa*, ANAT PRIOR, *University of Haifa* — Is morpho-syntactic sensitivity in third language (L3) linked to automatic and implicit processing or to strategic and explicit processing? We tested morpho-syntactic processing of L3 English among Arabic-Hebrew-English university student trilinguals (n=104). Participants performed an implicit online eye tracking

task, and a separate explicit offline grammaticality judgment task, on grammatical and ungrammatical English sentences. We found that morpho-syntactic sensitivity was evident in grammaticality judgements and in the middle and late stages of online reading, but not in first pass sentence reading. Thus, the degree of alignment between online and offline sensitivity depended on the time-course of the reading process. This pattern suggests that morpho-syntactic sensitivity in L3 arises during strategic processing that includes integration into higher-level representations and is reliant on explicit knowledge, but we do not find evidence for sensitivity in low-level implicit automatic processing.

Email: Nawras Abbas, abbasnawras@gmail.com

7:45-9:15 PM (7028)

Utterance Recall as a Measure of Second Language Proficiency. SERENE Y. WANG, *Cornell University*, SIYI TU, *Zhejiang University*, JING YANG, *Zhejiang University*, PABLO CONTRERAS KALLENS, *Saarland University*, MORTEN H. CHRISTIANSEN, *Cornell University* — Accurate and efficient assessments of second language (L2) proficiency are crucial for both research and educational purposes. In two experiments, the current study tested the effectiveness of utterance recall, utilizing naturalistic stimuli and fine-grained automatic scoring, as a measure of real-time L2 proficiency. The utterance recall task uniquely integrates chunking, real-time language processing, and long-term L2 knowledge while simultaneously tapping into both comprehension and production skills, positioning it as a valuable tool for assessing and understanding L2 proficiency. Experiment 1 confirmed that the utterance recall task was a better predictor of real-time proficiency than traditional L2 measures such as self-reports and standardized multiple-choice tests in native Chinese speakers learning L2 English. Experiment 2 broadened the scope to a more diverse range of language backgrounds, demonstrating the applicability of both the task and automatic scoring in immersive L2 environments and supporting their validity across varied learner profiles. The current study contributes to refining L2 assessment methods, promoting inclusivity of diverse learners, and offering practical implications for language educators.

Email: Serene Wang, yw2396@cornell.edu

7:45-9:15 PM (7029)

An Examination of Cross-Language Phonological Similarity Effects in Chinese-Japanese Cognates in Naming and Lexical Decision Tasks. YUMENG XU, *Tohoku University*, MASAHIRO YOSHIHARA, *Tohoku University*, HYEONJEONG JEONG, *Tohoku University*, STEPHEN J. LUPKER, *The University of Western Ontario*, MARIKO NAKAYAMA, *Tohoku University* — Chinese-Japanese cognates, unlike cognates of many other language combinations, can be phonologically quite dissimilar in the two languages. In previous L1-L2 masked priming studies with Chinese-Japanese bilinguals, Liu et al. (2022, 2023) found that phonologically similar cognates were overall named significantly faster than dissimilar cognates. In contrast, no phonological similarity effect emerged in cognate priming effects. The present study was conducted to find the locus of the overall facilitation. Experiment 1, employing a single-word presentation methodology, tested the reliability of the phonological similarity effect with a set of more stringently controlled stimuli. The naming task results replicated the advantage for phonologically similar cognates. In Experiments 2 and 3, the same stimuli were tested in a lexical decision task to see if the advantage extends to a task not specifically phonologically based. The results showed no phonological similarity effect. Our results, coupled with the null phonologically based priming effect observed by Liu et al., indicate that the similarity effect arises during the process in which the phonology of the target is assigned post-lexically for the purpose of naming targets.

Email: Yumeng Xu, xu.yumeng.r4@dc.tohoku.ac.jp

7:45-9:15 PM (7030)

Bilingual Irony Processing in the First and Second Language: A Within-Participant Eye-Tracking Investigation. VEGAS HODGINS, *McGill University*, MEHRGOL TIV, *United States Census Bureau*, CHAIMAA EL MOUSLIH, *McGill University*, KARLA TARIN, *McGill University*, ANTONIO INIESTA, *McGill University*, DEBRA TITONE, *McGill University* — Irony comprehension is more challenging than literal comprehension in eye-tracking measures of reading (Olkoniemi & Kaakinen, 2021), particularly for ironic compliments vs. criticisms (Pexman & Olineck, 2002). However, open questions remain about how people mentalize in their first or second language as a function of prior bilingual experience (Tiv et al., 2023).

We thus investigated how 54 adults read ironic texts in both the L1 and L2, enabling us to uniquely examine L1 vs. L2 within-participants. Linear mixed effects modelling indicated no global L1 or L2 effects but showed increased difficulty for ironic complements vs. criticisms during L2 reading. Moreover, readers' language experience (i.e., general language entropy) modulated irony processing for L2 go-past time, which reflects both early and late stages of comprehension. Taken together, both linguistic and person-related factors appear to modulate L1 and L2 irony processing, consistent with past work (e.g., Tiv et al., 2023).

Email: Vegas Hodgins, vegas.hodgins@mail.mcgill.ca

7:45-9:15 PM (7031)

Co-Registered ERP and Pupilometry Analysis Reveals Distinct Neurocognitive Mechanisms Underlying Bilingual Code-Switch Processing.

DANIEL PFAFF, *University of California, Santa Cruz*, LIV J. HOVERSTEN, *University of California, Santa Cruz* — Bilinguals must be ready to receive input in different languages depending on the context. However, much remains unknown about the underlying neurocognitive processes involved in comprehending code switches between languages. Co-registration of ERP and eye-tracking data while 45 Spanish-English bilinguals listened to mid-sentence code switches revealed that 1) code switches increased both N400 amplitude and the pupil dilation response (PDR), 2) trial-by-trial variation in these two measures did not correlate with one another, and 3) pre-trial pupil size predicted N400 amplitude in response to code switches but not non-switches. These results suggest that the N400 and PDR reflect distinct types of switch costs related to lexicosemantic retrieval and attentional shifts, respectively. Furthermore, increased listener effort on a particular trial appears to increase the subsequent lexical retrieval effort required when a switch is encountered, but has no detectable effect on lexical retrieval when the sentence continues in the same language. These results demonstrate that combining ERP and eye-tracking methods can provide novel insights into the neurocognitive mechanisms underlying bilingual code switch comprehension.

Email: Daniel Pfaff, pfaff@ucsc.edu

7:45-9:15 PM (7032)

Impact of Formal Education in the Heritage

Language on Word Retrieval. ANDY HUYNH, *The University of Texas at El Paso*, ANA I. SCHWARTZ, *The University of Texas at El Paso* — Heritage speakers are bilinguals who speak a language at home that is different from the official language of their surrounding sociopolitical context. This is a diverse group with large variation in the extent to which they receive formal education and/or read texts in their home language. Such experiences likely have significant impact on the underlying representation and retrieval of words in the heritage language. In the present study, we examined whether individual differences in years of formal schooling in the heritage language predicted performance on verbal fluency tasks. Spanish-English bilinguals completed the Multilingual Naming Test, completed verbal fluency tests in English and Spanish, and provided a detailed profile of their educational experiences in the two languages. In our results, participants' extent of Spanish schooling (measured in years) positively correlated with performance on Spanish tasks. Crucially, participants' extent of Spanish schooling did not negatively correlate with performance on English tasks.

Email: Andy Huynh, aahuynh@miners.utep.edu

7:45-9:15 PM (7033)

Examining the Effect of Language Dominance on Word Memory in Bilingual Heritage Spanish Speakers.

MICHELLE FRANCO, *University of California, Merced*, KRISTINA C. BACKER, *University of California, Merced*, HEATHER BORTFELD, *University of California, Merced* — Memory has been a topic of extensive research. Despite this, there remains scant knowledge on how real-world factors, such as one's language experience, impact the memory of words. The objective of this study is to determine how language dominance affects memory for English and Spanish words in bilingual heritage Spanish speakers. We tested this under two modalities, written and spoken. Bilingual young adults ($n=26$) completed four blocks of a word memory task (two languages x two modalities); each block consisted of a study phase (one word presented at a time), followed by a test phase (Old/New recognition test). We hypothesized that as English dominance increases, participants will exhibit enhanced memory performance for English words than Spanish words, especially in the written modality (since their formal

education is typically in English). Preliminary results revealed stronger memory performance overall for the Spanish words. Further analyses will directly examine the impact of language dominance on memory performance. The results have broad implications for our current understanding how one's language experience impacts memory, as well as educational implications for bilingual heritage Spanish speakers in the US.

Email: Michelle Franco, mfranco10@ucmerced.edu

7:45-9:15 PM (7034)

False Memories in Bilinguals: False Recognition Patterns are Influenced by Intervening Recall.

BIANCA V. GURROLA , *The University of Texas at El Paso*, WENDY S. FRANCIS, *The University of Texas at El Paso* — Research on false memory in bilinguals using the DRM paradigm has shown that false memories transfer across languages for both recall and recognition. Experiment 1, conducted with 96 Spanish-English bilinguals, showed a stronger false memory effect in between-language conditions for both recall and a subsequent recognition test. In Experiment 2, there was no intervening recall test. With a sample of 72 Spanish-English bilinguals, the rate of critical lure recognition did not differ across within-language, between-language, and mixed-language conditions. Across experiments, consistent with the literature, the strength of the false memory effect was stronger for between-language conditions than within-language conditions when recognition followed a series of study-recall cycles but not when only recognition was tested. The equivalence of the mixed-language condition indicates that proficient bilinguals can integrate information across their languages via a shared semantic network to form false memories. Bilingual language proficiency was not associated with the false memory rate in either experiment.

Email: Bianca Gurrola, bvgurrola@miners.utep.edu

7:45-9:15 PM (7035)

Feedback, Error Correction, and Cognate Status: Keys to Successful Vocabulary Learning in Second Language Acquisition. JAJAIRA L.

REYNAGA , *University of California, Santa Cruz*, LIV J. HOVERSTEN, *University of California, Santa Cruz*, HANNAH HAUSMAN, *University of California, Santa Cruz* — Prior research has highlighted the impact of positive and negative transfer from an ingrained first

language to a new second language during second-language acquisition (SLA). Other research has shown a generation effect in learning, where guessing the answer and receiving feedback can sometimes enhance outcomes. Our study examines generation, feedback, and cognate status in SLA to uncover mechanisms of both the generation effect and positive and negative transfer. Four experiments compared learning of Dutch-English cognates, false cognates, and non-cognates in English-speaking adults. Experiment 1 compared direct vs. generative learning, and Experiment 2 varied learning sequences to isolate generation and repetition effects. Experiments 3 and 4 explored how 2- and 4-choice recognition tasks reinforce development of lexical representations. Preliminary results reveal distinct impacts of generation across word types and learning rounds, as well as improved error detection with the inclusion of recognition tasks during training. Together, results reveal the effect of generation on positive and negative transfer, elucidating how learners navigate conflicting linguistic information and refine their lexical representations during SLA.

Email: Jajaira Reynaga, jlreytag@ucsc.edu

7:45-9:15 PM (7036)

The Role of Short and Long-Term Memory Systems in Language Learning in Adults with ADHD.

MARYNA RIDCHENKO , *University of Illinois Chicago*, JESSICA SAKALAS, *University of Illinois Chicago*, VICTOR A. HERNANDEZ, *University of Illinois Chicago*, KARA MORGAN-SHORT, *University of Illinois Chicago* — Whereas research suggests that individual differences in memory can influence second language (L2) learning in adults with neurotypical cognition, it remains unknown what role memory systems play in L2 learning in adults with ADHD. To examine this question, participants completed a) L2 training and testing with an artificial language with analogical and affixation rules; b) cognitive measures of working (visual modality in the first study; auditory modality in the second study), declarative, and procedural memory; c) ADHD and depression questionnaires. Mixed model results of the first study ($N=150$) showed a significant effect of the visual working memory on learning of affixed rules ($\beta=0.20$, $p<.001$), but no effects for analogical rules. The results of the second study ($N=34$) revealed a significant effect of auditory working memory ($\beta=0.16$, $p<.05$) and declarative memory ($\beta=-0.64$, $p<.01$) and an interaction

between auditory working memory and ADHD symptomatology ($\beta=0.27$, $p<.001$) on analogical rules, but no effects for affixed rules. Overall, evidence was provided for a role for short and long term memory in L2, which may interact with ADHD for some forms. Interpretation and implication of these results will be discussed.

Email: Maryna Ridchenko, mridch2@uic.edu

7:45-9:15 PM (7037)

Reality Monitoring in Bilinguals and

Monolinguals. RENEE M. PENALVER, *California State University, Monterey Bay*, WENDY S. FRANCIS, *The University of Texas at El Paso*, BIANCA V. GURROLA, *The University of Texas at El Paso*, URIEL SAPIEN, *The University of Texas at El Paso*, MARIA ISABEL RIVERA, *The University of Texas at El Paso* — Our previous research showed that external source monitoring was more accurate in bilingual than monolingual speakers and that accuracy did not depend on language proficiency (Francis et al., 2019). We tested whether this advantage might extend to reality monitoring. In Experiment 1, Spanish-English bilinguals and English monolinguals viewed a sequence of pictures and were cued to name them or only think about the name. At test, the pictures were presented again, and participants were to whether they had named them or only thought about the name. Reality monitoring accuracy was higher for low- than for high-frequency words, but performance was near ceiling, making it difficult to detect group differences. In Experiment 2, to make the task more difficult, cues to speak the word or only think of the name were given after each picture was removed from the screen. On this task, reality monitoring was indeed less accurate overall and was again more accurate for low- than for high-frequency words. Spanish-English bilinguals exhibited more accurate reality monitoring than English monolinguals, but there were no effects of bilingual proficiency or dominance.

Email: Renee Penalver, rpenalver@csumb.edu

7:45-9:15 PM (7038)

Dual-Language Experience Influences Divergent Thinking. MATIAS FERNANDEZ-DUQUE, *Northwestern University*, ASHLEY CHUNG-FAT-YIM, *Northwestern University*, VIORICA MARIAN , *Northwestern University* — Bilinguals activate both of their languages in parallel, resulting in cross-linguistic

influences that can shape how lexical-semantic information is stored and retrieved. While bilingual co-activation is a well-known phenomenon during language processing, its effects beyond the linguistic domain are unclear. The current study examined the effects of bilingualism on divergent thinking, focusing on the impact of dual-language experience and linguistic context. English monolinguals and Spanish-English bilinguals completed divergent thinking tasks under single-language and mixed-language contexts. Linear mixed-effects models revealed that dual-language experience and linguistic context impact divergent thinking in bilinguals. We also show how novel computational techniques that model the organization of the conceptual system can elucidate the relationship between bilingualism and complex cognitive functions like divergent thinking. We conclude that the consequences of a highly interactive bilingual lexicon extend beyond the linguistic domain and cascade into higher-order cognitive processes.

Email: Matias Fernandez-Duque, matiasfduque2024@u.northwestern.edu

7:45-9:15 PM (7039)

Effects of Testing Language on ASL and English List Memory for Deaf Bilinguals.

SADIE CAMILLIERE, *San Diego State University*, KAREN EMMOREY, *San Diego State University*, PETER C. HAUSER, *Rochester Institute of Technology*, MIKE MCKEE, *University of Michigan*, TAMAR GOLLAN, *University of California, San Diego* — Language dominance can have powerful effects on list memory, but it is not known how language of testing affects free recall in deaf bilinguals. We investigated sign and word list memory in over 50 Deaf, ASL-English bilinguals (ages 20-75). Participants were presented with a list of 10 ASL signs and 10 English words (order counterbalanced) for immediate recall with 3 learning trials and a delayed recall trial (~10 min). Aging reduced free recall in both languages, and older adults recalled more English words than ASL signs on the third recall trial, but more ASL signs than English words after a delay. These results are consistent with previous research showing that signers perform better on immediate serial recall tasks when encoding is speech based. However, the reversal of this trend after a delay for older adults, suggests that the English encoding benefit is not sustained in some circumstances. Additionally, modality-specific strategies were observed that may contribute to successful recall

(e.g., use of the fingers as a method of loci), especially after delay. Given the importance of delayed recall in differential diagnosis it may be critical to test memory in ASL rather than English for older deaf signers.

Email: Sadie Camilliere, sadiecamilliere@gmail.com

7:45-9:15 PM (7040)

Visual Working Memory and Interference

Control in Bilingual Children. THORFUN

GEHEBE, *CUNY Graduate Center*, KLARA MARTON, *CUNY Graduate Center* — Bilingual children with higher language proficiency often exhibit better interference control than children with lower proficiency (Marton & Campanelli, 2018). We examined the relationship between interference control and language proficiency using the interference model of visual working memory (WM) because Thai is a classifier language with underlying visual features. This account posits that while similar context features may lead to interference, similar content features may facilitate recall (Oberauer & Lin, 2017). This study extended the interference model of visual WM to Thai-English bilingual children (N=33; 8-12 years). Participants performed more poorly in the high context-similarity condition than in the low context-similarity condition, suggesting that there is an interference effect when items have similar cues. The facilitative effect of content similarity was observed with smaller deviations from targets in the high content-similarity condition than in the medium and low content-similarity conditions. The complexity of the relationship between interference control and the bilingual language experience will be discussed.

Email: Thorfun Gehebe, Taramridth@gradcenter.cuny.edu

7:45-9:15 PM (7041)

Bilingual Advantage for Memory: Why 'Now You See It, Now You Don't'? LUNA FILIPOVIC,

University of California, Davis — One of the most controversial topics in bilingualism is whether it does or does not have any cognitive advantage over monolingualism. Academic research on both sides of the debate has been gathering pace and presenting contradictory evidence (see Papp et al., 2015, for review). In this poster, I focus specifically on witness memory, rarely discussed in the context of bilingualism research, and ask whether, and if yes when, speaking more than one language is beneficial for remembering

events in two cognitive domains: motion and causation. Drawing on extensive recent experimental findings from multiple studies that include examples from different types of English-Spanish bilingualism and different experimental conditions, the poster illustrates and explains why bilingual advantage for memory of events seems to be there sometimes but not always. Results show that language typology plays a critical role in accounting for the different memory outcomes, as does the specific type of bilingualism (early vs. late) and the type of activation (i.e., single vs. dual language). We can move beyond bilingual vs. monolingual comparisons and instead model bilingualism better by studying different kinds of bilingualism under different conditions.

Email: Luna Filipovic, lfilipovic@ucdavis.edu

7:45-9:15 PM (7042)

Recognition Memory for L1 and L2 Words in Bilinguals: Some Evidence for More Shallow Encoding in L1.

KRISTIN LEMHOFER, *Radboud University*, RACHEL LEMAITRE, *University of Ghent*, ELENA MARKANTONAKIS, *Radboud University* — The degree of prior knowledge has been claimed to change the way we learn new information. We asked how language membership, which may constitute an instance of stronger (L1) vs. weaker (L2) prior knowledge, affects memory for the word itself and for the learning context ("source memory"). 64 unbalanced bilingual speakers were first presented with Spanish (L1) and English (L2) words each surrounded by a colored frame, and then tested for recognition of the words and (in case of an "old" response) the word's frame color. To test for the precision of item memory, we also added synonym pairs (e.g., couch-sofa), one member of which was presented during encoding and one used as a foil during recognition. Results show, first, that L2 words were recognized better than L1 words, contrary to typical prior-knowledge effects on item memory. Second, source memory was also better in L2. Both results fit with earlier reports of reduced false memories in L2. Third, participants, especially those with lower English proficiency, showed more false alarms on synonyms in L1 than in L2, indicating lower form-based precision of recognition memory for L1 words, supporting the idea of more "shallow" encoding when prior knowledge is strong.

Email: Kristin Lemhofer, kristin.lemhofer@donders.ru.nl

7:45-9:15 PM (7043)

The Foreign Language Effect in Anchoring.

EMILIA EZRIN, *Carnegie Mellon University* — Bilinguals sometimes show less biased and less emotional reasoning in their second language—the foreign language effect (FLE). Does the FLE operate in anchoring estimates? Monolinguals, English-dominant bilinguals, and non-English-dominant bilinguals compared a certain quantity (e.g., bars in NYC) after exposure to a high or low numeric anchor, provided a numeric estimate, and rated their confidence (Tversky & Kahneman, 1974). Estimates transformed to percentile ranks were compared across the three groups. A mixed effects model showed that estimates were lower following the low anchor and higher following the high anchor (typical anchoring effect) and that the estimates' assimilation to the anchor decreased as the confidence increased. However, there was no language group effect, and therefore no evidence of the FLE. Using English fluency instead of language group yielded a significant anchor x fluency x confidence interaction, suggesting that fluency in English, rather than bilingualism, affects anchoring judgments.

Email: Emilia Ezrin, cezrina@gradcenter.cuny.edu

7:45-9:15 PM (7044)

Phantom Hurdles. ALEXANDRA TZETZO, *Central Connecticut State University*, SHIVANG SHELAT, *University of California, Santa Barbara*, JONATHAN SCHOOLER, *University of California, Santa Barbara*, JOHN PROTZKO, *Central Connecticut State University* — A simple task that is delayed can evolve into one that is imagined to be onerous and stressful: a phantom hurdle. In three studies, we investigate the nature of these unfinished tasks we have on our to-do lists. We ask participants to list their unfinished but small tasks and identify how much time and effort it would take to complete each task. Participants averaged six tasks. We found personality traits and behavior scales do not predict the total number of subjects' unfinished tasks. However, having the personality trait of low self-esteem predicts an increase over time in the perceived required effort to perform unfinished tasks. We also randomly selected one task and asked the participants to commit to finishing their task over the next two weeks. However, this commitment was not strong enough to have participants complete the reminded task. Results revealed that the task(s) participants provided were more effortful than they envisioned. Current work focuses on adding

emotional component questionnaires and asking participants if they completed their unfinished task, why they either did or did not finish the task they stated at the beginning of the survey, and how this task makes them feel (e.g., anxious, motivated, excited).

Email: Alexandra Tzeto, atzetzo3@gmail.com

7:45-9:15 PM (7045)

The Berlin Decisions-from-Experience Database.

YUJIA YANG, *Max Plank Institute for Human Development*, MIKHAIL SPEKTOR, *University of Warwick*, RALPH HERTWIG, *Max Planck Institute for Human Development*, DIRK U. WULFF, *Max Planck Institute for Human Development* — An important way to learn about the consequences of decisions is by experiencing outcomes. Such decisions from experience are intensely investigated in various fields, including psychology, economics, and neuroscience. However, there is little cross-talk between these fields, which can be attributed in part to poorly understood differences in experimental design concerning aspects such as whether the observation of outcomes is consequential or whether outcomes are available for non-chosen options. To help integrate research from experience across disciplines, we gathered a large number of data sets from published research and compiled the Berlin Decisions-from-Experience Database. Our database contains the raw data of trial-level from 182 experiments from 124 papers. The experiments include various paradigms (e.g., sampling, and repeated choice paradigm), research methodology (e.g., behavioral and neuroscientific), and fields (e.g., psychology and economics). Our database organizes the various types of data in a common format to increase usability and facilitate cross-paradigm analyses. By sharing our database we hope to help promote the integration of empirical findings and theoretical perspectives on decisions from experience.

Email: Yujia Yang, yang@mpib-berlin.mpg.de

7:45-9:15 PM (7046)

The Effect of Conspiracy Language on Debunking Effectiveness. YIWEN ZHONG, *Vanderbilt University*, SHAUNA M. BOWES, *Vanderbilt University*, LISA FAZIO, *Vanderbilt University* — Conspiracy theories are widespread. This appeal of conspiracy theories can be partly explained by their ability to fulfill epistemic and existential needs by helping individuals manage uncertainty and offering a sense of safety. Research shows that conspiracy theories



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also are entertaining, as they may spark interest and curiosity. In the current study, we explored whether misinformation debunks written using linguistic features that satisfy these same needs (epistemic, existential, curiosity) would be more effective than those written in a traditional style without these linguistic features. Our pre-registered study supported this hypothesis, after reading articles written to increase certainty, safety and curiosity participants thought that the debunking information was more accurate, and they were more likely to follow the included health advice as compared to control articles. A sense of safety was particularly important, as an increased sense of safety significantly mediated the effect of debunk style on belief. Future research aims to replicate these results with a broader range of articles and to test the durability of the effects.

Email: Yiwen Zhong, yiwen.zhong@vanderbilt.edu

7:45-9:15 PM (7047)

The Effect of Delay and Memory for Source Reliability in the Illusory Truth Effect Paradigm.

ALEX LEÓN, *California State University, San Marcos*, JENNIFER LOZANO, *California State University, San Marcos*, DUSTIN P. CALVILLO, *California State University, San Marcos* — The illusory truth effect occurs when repeated information is perceived as more truthful than new information. Previously, we found that repetition does not increase the perceived truth of headlines that were said to have come from an unreliable source. In the present experiments, we examined how delay affects perceived truth and whether participants remembered source reliability. In two pre-registered experiments, participants rated their interest in headlines that came from reliable and unreliable sources. In Experiment 1 (N=178), participants rated the truthfulness of repeated and new headlines immediately after the interest rating phase and one week later. We hypothesized that the effect of source reliability would be present in the immediate truth rating phase, but not one week later. In Experiment 2 (N=203), participants only completed an immediate truth rating phase, but some were tested on their memory of source reliability during this phase. We hypothesized that participants would remember source reliability when asked about it. The results supported our hypotheses. People remember if a source is unreliable, but truth ratings suggest that memory decays within a week.

Email: Alex León, leon139@csusm.edu

7:45-9:15 PM (7048)

The Effect of Effort on Attention and Cue

Learning in Decision Making. KARISSA PAYNE, *Kansas State University*, MICHAEL YOUNG, *Kansas State University* — Previous research suggests that individuals adapt the strategies they use to gather information based on the costs and benefits of these strategies. This study explores how the cost of effort influences information seeking in a Multiple Cue Probability Learning paradigm. Participants explored a 2D digital environment with their mouse cursor and learned cue information to predict the correct response in a two-alternative forced-choice task in the center of the screen. Cues varied in their predictive validities and distance from the center of the screen, while effort was manipulated by altering the mouse cursor speed. We hypothesized that increased effort cost would limit participants' exploration to nearby, easy-to-obtain cues when they were relatively less predictive of a correct response, even if the farther, harder-to-obtain cues had relatively greater predictive validity. From our preliminary results we begin to model the influence of effort on information seeking and cue learning in decision making.

Email: Karissa Payne, karpayne@ksu.edu

7:45-9:15 PM (7049)

The Influence of Environmental Factors on

Information Foraging Behaviors. ALINA TRAN, *Georgia Institute of Technology*, MAI PHUONG PHAM, *California State University, Long Beach*, DAVID A. ILLINGWORTH, *California State University, Long Beach* — Animal foragers can quickly evaluate the cost of seeking more resources, emergent from numerous environmental factors, to determine whether they should continue or terminate search. Such foraging behaviors have motivated many frameworks to construct a stopping rule for cognitive search in humans. This study investigates whether environmental factors interact with hypothesis-guided search processes to influence search termination in a gamified medical diagnosis task. In Experiment 1, we assessed how different incentive structures would influence a person's search termination. The result showed that participants selected more sources of information when being penalized for an incorrect diagnosis. Experiment 2 will explore how the cost of information and the risks of obtaining irrelevant cues could affect data acquisition patterns. We hypothesize that participants will pursue more information when the

cost of search is low. Both experiments aim to operationalize common environmental constraints in search and applied decision-making domains.

Email: Alina Tran, alinatran2001@gmail.com

7:45-9:15 PM (7050)

The Role of Memory in Multi-Alternative, Multi-Attribute Context Effects. HOYOUNG DOH, Indiana University Bloomington, JENNIFER S.

TRUEBLOOD, Indiana University Bloomington — The attraction effect occurs when an option similar to but worse than another option increases the preference for the latter. This effect is typically studied in situations where individuals have full access to option information during decision-making. However, in many situations, people must make decisions based on their memory of the options. We study the attraction effect in a setting where people made choices among laptops based on memory. Participants (1) observed the CPU speed and RAM size of three laptops, (2) performed a distraction task for 30 seconds, (3) chose a laptop based on their memory, and (4) recalled the CPU speed and RAM size of all laptops. The 1x group observed the CPU and RAM information once, and the 2x group twice. The laptops produced an attraction effect when option information was available at the time of choice (i.e., no memory component) but a null effect in both the 1x and 2x memory groups. Further analyses showed two opposite effects in the 1x memory group: a standard attraction effect when people correctly recalled the relationships among options and a reversed effect when people incorrectly recalled them. The results show the importance of considering mental representations in decision-making.

Email: Hoyoung Doh, hdo@iu.edu

7:45-9:15 PM (7051)

Uncertainty Prompts Similar Social Information Search Across Partisans but Ingroup Social Information Is Weighted More Heavily.

MUBASHIR SULTAN, Center for Adaptive Rationality, Max Planck Institute for Human Development, ANDREA GRADASSI, SCARLETT SLAGTER, WOUTER VAN DEN BOS, RALF KURVERS, LUCAS MOLLEMAN — The use of social information is ubiquitous and plays a key role in almost all areas of human decision-making. Despite a wealth of research on how people use social information, few studies have focused on the process of

searching for social information, especially as people tend to be active agents of their environments. Here, we examine how uncertainty and social identity (ingroup vs. outgroup) affect social information search and subsequent use across four studies and multiple domains (including a U.S. election prediction task; N=677). We find that participants search for more social information under higher levels of uncertainty, regardless of group identity. However, despite similar search, we find that social information coming from ingroup members is given more weight, especially if it signals better outcomes for the ingroup. Our study highlights the importance of disentangling social information search and social information use, and is relevant to debates about the effects of echo chambers, filter bubbles, and polarisation in fragmented populations.

Email: Mubashir Sultan, sultan@mpib-berlin.mpg.de

7:45-9:15 PM (7052)

What Mediates the Relationship Between Decision-Making Competence and Intelligence?

KACIE BAUER, M.A., New Mexico State University, ANDREW CONWAY, New Mexico State University — Individual differences in decision-making competence (DMC) is a rising area of research crucial for real-world decision-makers. DMC is a composite of skills used to make accurate and consistent decisions. It is highly correlated with fluid intelligence (Gf, novel problem-solving ability), but previous research suggests potential mediators, such as numeracy (Num, applied math ability) or attention control (AtC, ability to direct thoughts and behaviors). Crystallized intelligence (Gc, knowledge) is also related to DMC in a way that is not clear. In this study (n=146), structural equation modeling was conducted to examine how Num and AtC together mediate the relationships between Gf and DMC, and Gc and DMC. Based on the models, Num and AtC tentatively mediate both, with Num a stronger mediator. Num and AtC account for 50% of the variance in DMC in the Gf-DMC relationship and 67% in Gc-DMC. So, the effect of an individual's intelligence on their DMC can be understood through their Num and AtC skills, particularly Num. Num is also a trainable skill with potential to help DMC. This study gives us a fuller understanding of the relationships between intelligence and DMC, pointing us toward detecting and improving decision-making deficits.

Email: Kacie Bauer, kbauer260@gmail.com

7:45-9:15 PM (7053)

When Risk Intentions Do Not Match Behavior: A

Fuzzy-Trace Theory Approach. JORDAN ROUE, *Cornell University*, SARAH EDELSON, *Cornell University*, V. F. REYNA, *Cornell University*, ILIANA PECULLAN, *Cornell University* — Although self-reported risk-taking and behavioral intentions (BIs) correlate, fuzzy-trace theory (FTT) predicts that BIs draw more on verbatim analytical thinking (trading off risks and rewards). We created a BI variant of a standard risk-taking scale (ARQ) and administered both scales in random order to 330 young adults to examine the difference between intention to engage and actual engagement in risk-taking; high intention but low action would reflect analytical risk-taking (as opposed to gist-based or impulsive processes). Higher difference scores were predicted to be associated with reduced standard framing (reducing choosing the sure option in the gain frame and the gamble in the loss frame). Results confirmed predictions: Higher differences were associated with reduced standard framing, especially preferring the sure loss, diagnostic of reliance on verbatim thinking. Higher difference scores were also associated with being younger and having higher self-reported psychopathy scores, again in line with FTT's predictions of an increased reliance on verbatim thinking. Examining intention-action differences allows for increased understanding of the role analytical thinking plays in promoting risk-taking.

Email: Jordan Roue, jr976@cornell.edu

7:45-9:15 PM (7054)

Factors Predicting the Temporal and Repetitive

Dynamics of 'Earworms'. BENJAMIN SWETS, *Grand Valley State University*, MATTHEW C. DICKINSON, *North Carolina State University*, BRENDEN WARDLAW, *The University of Texas at Austin* — Previous research has found that "earworms" may occupy the phonological loop (the aspect of short-term/working memory that stores sound-based information). The present study expands on that previous research by posing two new questions. First, what other kinds of memory or attentional abilities, besides verbal short term memory, might predict the likelihood of experiencing earworms? And second, do individual differences in memory span and attentional control predict the frequency and duration of earworm "loops" (sections of music that repeat during an earworm)? In our study, participants completed an online task that

measured the frequency and duration of those loops/sections. They then completed a questionnaire about their general and experiment-specific earworm experiences. We then measured 1) verbal working memory (2 tasks), 2) spatial working memory (2 tasks), and attentional control abilities (3 tasks). Preliminary results show strong relationships between the frequency with which earworm sections repeat, and the extent to which earworms cause worry and distress. However, there is only weak evidence that attention or working memory predict the frequency and duration of earworm loops.

Email: Benjamin Swets, swetsb@gvsu.edu

7:45-9:15 PM (7055)

So You Think You Can Dance? Expertise and

Dance Segmentation. R. LANE ADAMS, *University of Illinois Chicago*, JENNIFER WILEY, *University of Illinois Chicago*, PETER F. DELANEY, *University of North Carolina at Greensboro* — Expertise has effects on both perception and memory for domain-related stimuli. In this study we examine how skilled and novice dancers watch and process dance sequences differently, particularly in segmenting choreography. According to event segmentation theory, action perception relies on prior knowledge, and the segmentation of observed actions is crucial for understanding and remembering sequences. Similarities and differences in the segmentation of skilled and novice dancers will be discussed.

Email: R. Lane Adams, radians29@uic.edu

7:45-9:15 PM (7056)

The Effects of Pitch Stability on Vocal Pitch

Imitation. PETER Q. PFORDRESHER, *University at Buffalo, SUNY*, CHIHIRO HONDA, *University at Buffalo, SUNY* — Several studies document a robust advantage for vocal imitation of pitch/time trajectories based on song in comparison to speech. This advantage is likely based on differences in the acoustic properties of speech versus song. Because speech and song differ in many acoustic dimensions, we conducted an experiment that focused on a specific feature that is thought to play a critical role: pitch stability. We addressed whether variations of pitch stability would lead to differences in vocal imitation when manipulated in brief stimuli that are otherwise ambiguous with respect to speech versus song. Stimuli were brief tones (350 ms) that varied in the

type of pitch patterning that could occur within the tone (rising, falling, rising/falling, or falling/rising) and magnitudes of pitch change across their duration (ranging from 5 to 200 cents). Results showed that vocal imitation of tones was more accurate for smaller than for larger pitch changes, which supports the role of pitch stability in the song advantage reported previously. Future research will address the interplay between this acoustic cue and top-down effects of surrounding context.

Email: Peter Pfordresher, pqp@buffalo.edu

7:45-9:15 PM (7057)

Gaze Behavior Reveals Differences in Musicians' Thinking During Score Study. ROBIN S.

HEINSEN, *Miami University* — While wearing eye tracking glasses, expert and novice music teachers ($N=10$) studied excerpts of Grade 2 musical scores, then described how they would teach each excerpt. Previous researchers have studied expert and novice musicians' eye movements when reading music (e.g., Furneaux & Land, 1999; Goolsby, 1994a, 1994b; Lörch, 2021; Madell & Hebert, 2008; Perra et al., 2022; Zhukov et al., 2019), but no published research to date has examined the interaction between musical score reading and expertise in music teaching. Pedagogical content knowledge enables expert music teachers to interpret notation with an added consideration for creating classroom experiences that teach learners to perform the music skillfully. Results of this study reveal expert music teachers' clarity and intentionality in directing attention to the most informative aspects of the scores, suggesting aspects of attention allocation that inform pedagogical decision-making and facilitate the prioritization and accomplishment of proximal instructional goals. Differences between gaze behavior of experts and novices reflect not only differences in their allocation of attention, but also in their conceptualizations of the activities in which they engage.

Email: Robin Heinsen, heinsers@miamioh.edu

7:45-9:15 PM (7058)

From Noise to Harmony: Exploring the Influence of Background Music on Concurrent Speech

Comprehension. MINE MUEZZINOGLU, *University of Maryland*, ROCHELLE S. NEWMAN, *University of Maryland*, L. ROBERT SLEVČ, *University of Maryland* — We often contend with sounds in the background of

what we're attending to (e.g., lectures or conversations). Music may be an unusual type of background sound because it distracts from and masks speech, but it also involves reward and emotional benefits. Here, 210 participants listened to stories during multitalker babble, music, and reversed music (acoustically matched but presumably less enjoyable) at two different signal-to-noise ratios (SNR). Participants then answered questions assessing passage comprehension and memory. When the background was relatively quiet (high SNR), performance was similar in all conditions. At lower SNR, performance was worse in babble compared to reversed music and music. Comprehension and memory were impacted by the loudness of the background (SNR) for babble and, to a lesser degree, for reversed music, but not for music. This difference between music and reversed music suggests that acoustic differences alone cannot explain performance variance. However, reverse music still maintains a level of musicality; thus, ongoing research manipulates pitch and rhythm to see what aspect(s) of music can counteract noise distraction/masking.

Email: Mine Muezzinoglu, mmuezzin@umd.edu

7:45-9:15 PM (7059)

Listeners Integrate Tonal Context to Perceive Meaningful Events in Naturalistic Music, Regardless of Training. RIESA CASSANO-

COLEMAN, *University of Rochester*, SARAH IZEN, *University of Rochester*, ELISE A. PIAZZA, *University of Rochester* — To make sense of the world, we segment the continuous flow of information into discrete, meaningful events. Music listeners use acoustic cues like tempo, dynamics, and instrumentation/timbre to do this (Krumhansl, 1996; Williams et al., 2022). However, it is not known if listeners use tonal features (changes in harmony) to segment music, and whether musical training impacts this process. To test these questions, we varied coherent tonal context by scrambling MIDI piano music at different timescales. We asked participants ($N=95$) to respond whenever they heard a "meaningful change" in the music. We found that both musicians' and non-musicians' event perception was influenced by the amount of tonal context: they marked more events when the music was more scrambled. Furthermore, both groups' event boundaries were precisely aligned with phrase structure only when context at the timescale of that phrase structure was intact, and this was not driven by local features (i.e., listeners did not reliably respond

to isolated phrase endings that appeared out of context). This suggests that listeners, regardless of formal musical training, segment music according to underlying tonal structure, not just surface-level acoustic features.

Email: Riesa Cassano-Coleman, rcassan2@ur.rochester.edu

7:45-9:15 PM (7060)

Saxolfaction: The Sense of Smell on Saxophone

Performance Intonation. NICHOLAS A.

SVIZZERO, *Bentley University*, PIERRE BERTHON, *Bentley University*, ZHENYAN LIU, *Bentley University*, MOUNIA ZIAT, *Bentley University* — The multimodal task of saxophone performance involves auditory, tactile, and visual senses, but interestingly, it also incorporates both taste and olfaction due to the woodwind nature of the instrument. It is hypothesized that tongue placement, which is crucial for producing accurate tones, may utilize the olfactory sense for its correct positioning. To investigate this, the performance of six saxophonists was evaluated through six exercises under three different conditions: baseline, Vaseline® applied to the woodwind, and Vicks VapoRub™ applied to the woodwind. A linear mixed-effects model was employed to examine the effects of different exercises and olfactory conditions on note-holding consistency (measured in cents) among the saxophonists. The model (REML criterion=15668.3) indicated that the random intercept for Saxophonist accounted for a variance of 131.0 (SD=11.44), with a residual variance of 283.3 (SD=16.83). The fixed effect of Vicks was significant ($\beta=6.26$, SE=2.43, $t(1829)=2.58$, $p=.010$), indicating a substantial increase in pitch deviation. This suggests that the Vicks condition significantly deteriorates note-holding consistency. No significant effects were found for the different exercises or their interactions with conditions.

Email: Nicholas Svizzero, nsvizzero@bentley.edu

7:45-9:15 PM (7061)

Statistical Learning: How Contingent

Regularities Influence Memory and Preference

for Melodic Pairs Presented in a Continuous

Stream. PIERCE JOHNSON, *University at Albany, SUNY*, GREGORY E. COX, *University at Albany, SUNY*, RONALD S. FRIEDMAN, *University at Albany, SUNY* — Memory for information is influenced by its usefulness, particularly information that helps one evaluate or predict aspects of one's environment. If remembering useful information is rewarding, it may

form the basis for aesthetic preferences, including preference for music that enables or confirms predictions (Huron, 2006). We used novel musical material to address two questions concerning relationships between memory, prediction, and preference: how do we learn contingencies within a continuous stream of information; and do contingencies shape preference for information with different predictive value? Participants listened to contingently paired melodies (AB) intermixed in a stream with filler melodies, rated familiarity for intact (AB) and nonintact (AD) pairs, and rated preference for individual melodies (A, B). Participants preferred contingent melodies over novel melodies. Correct memory for pairs was correlated with preference for melodies that confirmed (B) rather than enabled (A) predictions, suggesting a link between memory and preference for having predictions confirmed.

Email: Pierce Johnson, johnsonpierce.c@gmail.com

7:45-9:15 PM (7062)

The Effects of Syncopation, Pattern Density, and Rhythm Perception on Tempo Preference for Drum Breaks.

JASON SCHMIDT AVENDANO, *University of South Florida*, AUSTIN BOWMAN, *University of South Florida*, MARK PEZZO, *University of South Florida* — Music cognition originally focused on pitch and melody, but recent research has examined rhythm perception and preference, particularly the concept of "groove." This project adopts an information processing approach to investigate tempo preferences for rhythmic patterns across three studies, specifically examining the impact of density, initial tempo, and syncopation on ease of processing. In Study 1, participants adjusted the tempo of rhythmic patterns from an initial 120 bpm, using arrow keys to increase or decrease the tempo in 5 bpm increments, and rated enjoyment after reaching a preferred tempo. Study 2 included hi-hats to represent better typical drum beats and aid in comprehending syncopated patterns. Study 3 explored the potential anchoring effect, hypothesizing that longer listening before tempo adjustment might demonstrate a stronger effect. Results showed that while syncopation had little effect on preferred tempo, density and starting tempo significantly influenced tempo adjustments, as denser or faster patterns required slower tempos for easier processing. Future research should further quantify the anchoring effect to enhance our understanding of tempo preferences in music cognition.

Email: Jason Schmidt Avendano, jayrschmidt@outlook.com

7:45-9:15 PM (7063)

Assessment of Global Variation in the Perception of Tonal Hierarchies with a Gamified Tone-Probe Task.

COURTNEY B. HILTON, *University of Auckland & Yale University*, SAMUEL A. MEHR, *University of Auckland & Child Study Center at Yale University* —

Tonal hierarchies are an important feature of human music perception. They describe how we perceive musical tones in relation to each other and how, for a given musical context, some tones are heard as more stable and structurally important. The ordered pattern of such relationships among tones is a tonal hierarchy. For different people, musical contexts, or cultural backgrounds, such hierarchies may vary in theoretically revealing ways. But measuring tonal hierarchies is difficult and prior approaches have several unresolved limitations that limit precision and muddy between-group comparisons. We designed a psychometrically improved measure based on response times and hierarchical diffusion modelling to address these issues. We then embedded this measure in a gamified citizen science experiment to facilitate collecting data from a large global sample of research participants. This large sample size unlocks our ability to explore a large set of naturalistic musical stimuli with a combinatorial trial structure that would simply not be feasible in a typical lab-based study. Initial results validating this novel approach and assessing global variation in tonal hierarchies will be discussed.

Email: Courtney Hilton, courtney.bryce.hilton@gmail.com

7:45-9:15 PM (7064)

System 2 and Cognitive Transparency:

Deliberation Helps to Justify Sound Intuitions During Reasoning.

NICOLAS BEAUVAIS, *LaPsyDE (UMR CNRS 8240 & Université Paris Cité)*,

AIKATERINI VOUDOURI, *LaPsyDE (UMR CNRS 8240 & Université Paris Cité)*, ESTHER BOISSIN,

Cornell University, WIM DE NEYS, *LaPsyDE (UMR CNRS 8240 & Université Paris Cité)* — Recent dual process work indicates that sound responses to classic reasoning tasks are often generated intuitively. This led

to the hypothesis that deliberation would typically contribute to sound response justification rather than mere response generation. To directly test this hypothesis, three studies examined whether people can properly justify their responses to different types of classic bias problems, when these responses were given

intuitively or after deliberation. We used a two-block paradigm where participants were presented with the same problems in two separate blocks. In the initial block, they had to provide fast, intuitive responses under time pressure, while in the final block they had no constraints and were allowed to deliberate before giving their answer. After each problem, participants provided justifications for their responses. Results show that participants generally struggled to provide sound justifications for their correct intuitive responses but tended to properly justify their correct deliberative responses. These findings support the hypothesis that deliberation allows individuals to justify their intuitions and generate explicit reasons for their decisions.

Email: Nicolas Beauvais, nicolas1beauvais@gmail.com

7:45-9:15 PM (7065)

Can You Follow Instructions? Metacognitive Judgments of Instruction Following.

SARAH HADLEY, *University of Saskatchewan*, VALERIE THOMPSON, *University of Saskatchewan* — Meta-reasoning is the study of metacognitive processes that monitor and control reasoning and problem solving. We hypothesized that meta-reasoning processes also underlie understanding and implementing of instructions.

Participants (N=141) were presented two sets of syllogistic reasoning problems that varied in terms of instruction difficulty. Following the instructions produced different answers, so we were able to determine whether participants followed them. We measured Initial Judgments of Instruction Following (iJoIF), final Judgments of Instruction Following (fJoIF), confidence, and measures of cognitive ability. JoIFs were found to be overestimated, decreased over time, were correlated with confidence and not dependent on cognitive ability. iJoIF was sensitive to task difficulty whereas fJoIF was not; neither were found to be reflective of actual instruction following ability. These findings suggest that the meta-reasoning monitoring processes that underlie instruction following are inaccurate, and high prior to the implementation of the instructions and adjust as instructions are being followed.

Email: Sarah Hadley, sarah.hadley@usask.ca

7:45-9:15 PM (7066)

Effects of Polysemous vs. Monosemous RAT Solutions on Insight Experiences.

MATTHEW KIDD, *Texas A&M University*, VISHEETA

CHANDOLIA, *Texas A&M University*, STEVEN M. SMITH, *Texas A&M University* — Remote Associates Test (RAT) problems have been shown to induce insight experiences presumably from their remote cue-to-target associations. However, little is known about the role of cognitive restructuring in solving RAT problems, what may be an essential component of insight. Our study proposed a mechanism of restructuring for RAT problems with polysemous solutions. That is, when evaluating potential solutions, semantic restructuring occurs with the sudden realization of alternative meanings. We tested whether insights are reported at a higher rate for RAT problems with polysemous solutions than problems with monosemous solutions, controlling for difficulty, in support of the important role which restructuring has in the insight experience. Our study highlights the need for explicating the distinct cognitive processes, such as restructuring, that are involved in solving verbal insight problems.

Email: Matthew Kidd, matthew.kidd@tamu.edu

7:45-9:15 PM (7067)

Evidence for Corrective Deliberation:

Reevaluating the Intuitive Nature of Correct Responses on the Bat and Ball Problem. ATAKAN ATAMER, *University of Michigan, Ann Arbor*, PRITI SHAH, *University of Michigan* — The classical dual-process theory claims correct answers to cognitive reflection test questions come from deliberation overriding false intuitions, while the logical intuition account suggests that correct answers are mostly intuitive. Previous research used the two-response paradigm to test these accounts, having participants first answer reworded bat-and-ball problems intuitively under cognitive load and limited time, then deliberate and give a final answer. Findings showed that most participants who provided final correct responses had already given these correct answers in the intuitive phase, supporting the non-corrective function of deliberation predicted by the logical intuition account. The current study, across two experiments ($N=208$), addressed methodological issues using a different cognitive load manipulation (more demanding digit span task), presenting intuitive and deliberative phases as blocked to prevent learning and incentivizing correct answers to ensure deliberation. Although intuitive correct answers were evident, contrary to previous studies, most correct answers were provided only after deliberation, supporting the classical account.

Email: Atakan Atamer, atakann@umich.edu

7:45-9:15 PM (7068)

Fostering Creativity in Science Education

Reshapes Semantic Memory. CLIN K.Y. LAI, *The Pennsylvania State University*, EDITH HAIM, *University of Trento*, WOLFGANG ASCHAUER, *University of Education Upper Austria*, KURT HAIM, *University of Education Upper Austria*, ROGER E. BEATY, *The Pennsylvania State University* — Fostering creativity is vital for tackling 21st-century challenges, and education nurtures this skill. According to the associative theory, creativity involves connecting distant concepts in semantic memory. Here, we explore how a scientific education curriculum—Scientific Creativity in Practice (SCIP) program—impacts the semantic memory networks of 10–18-year-old students in a chemistry class ($n=176$). Students in an Intervention group and a Control group completed creative thinking tests and verbal fluency tasks in general (animal) and specific (chemistry) domains. Results showed that intervention significantly improved fluency scores on a general creative thinking test. Using network science methods, we observed increased interconnectedness in both domains, with lower path distances between concepts and reduced modularity. These traits define a 'small-world' network, balancing connections between closely related and remote concepts. Notably, the chemistry semantic network showed more reorganization, which aligns with the chemistry contents of the SCIP intervention. The findings suggest that semantic memory reorganization may be a cognitive mechanism underlying successful scientific creativity interventions.

Email: Clin Lai, clin.lai@psu.edu

7:45-9:15 PM (7069)

Intuitive Conceptions of Friction Is Not Based on Relative Motion.

ZIXIN ZENG, *Northwestern University*, LANCE RIPS, *Northwestern University* — Physics novices often believe “the direction of frictional force opposes the direction of actual motion” (Kızılçık et al., 2021; Besson et al., 2007; Chia, 1996), but little is known about why they have this misconception. One possibility is that novices have difficulty understanding relative motion; alternatively, they don’t take relative motion into account when reasoning about frictional force, even though they can be fairly accurate at analyzing relative motion. This study presents two experiments focusing on the relation between novices’

conception of frictional force and relative motion. Participants were asked to reason about the direction of frictional force and relative motion in matched physical processes. Overall, novices were more accurate in relative motion compared to frictional force. We also find that novices tend to treat these two concepts separately, suggesting that they don't take relative motion into account when reasoning about frictional force.

Email: Zixin Zeng, zixinzeng2027@u.northwestern.edu

7:45-9:15 PM (7070)

It Doesn't Add Up: Using A Nested-Sets Approach to Facilitate Probabilistic Reasoning.

JOHN VARGAS, *University of Massachusetts Amherst*, JEFFREY J. STARNS, *University of Massachusetts Amherst*, ANDREW L. COHEN, *University of Massachusetts Amherst*, JOY ZHANG, *University of Michigan* — Reasoning with probabilities occurs regularly in everyday life, yet correct inferences are challenging to achieve even for those with high numerical competency. Prior research suggests that correct inferences can be facilitated when the nested-set structure of probability problems are transparent (nested-sets theory). However, research in statistics education also suggests that performance can be facilitated by reducing the demands on working memory (cognitive load theory). This project tests the predictions of these theories through two manipulations: 1) Participants answered probability questions when the summation of two critical probabilities were either less than or greater than 100% and 2) when full or partial probability information was provided. Both greater summations and full probability information were predicted to produce better performance based on nested-sets theory. On the contrary, results are consistent with cognitive load theory, such that summations less than 100% and partial information generated more correct inferences. Implications for cognition and education are discussed.

Email: John Vargas, johnvargas@umass.edu

7:45-9:15 PM (7071)

Sound Intuiting in Intelligence Tests: System 1 Intelligence? LAURA CHARBIT, LaPsyDE (UMR CNRS 8240 & Université Paris Cité), WIM DE NEYS, LaPsyDE (UMR CNRS 8240 & Université Paris Cité), ESTHER BOISSIN, Cornell University — Recent studies on human thinking suggest that sound reasoners can intuitively generate correct responses to classic

heuristics and biases tasks. This study explores whether these findings extend to Raven-like matrices, commonly used as indicators of fluid intelligence. We used a two-response paradigm in which participants first gave an initial intuitive response, under time pressure and cognitive load, and then gave a final response after deliberation. Among the trials for which people gave a correct final deliberate response (56%), 41% were already correct at the initial intuitive stage. These results indicate that fluid intelligence tests not only track the quality of people's reflective (System 2) thinking, but also of their intuitive (System 1) processing.

Email: Laura Charbit, laura.charbit@u-paris.fr

7:45-9:15 PM (7072)

Syntactic Sources of Compound Remote Associates Task Difficulty. VICTORIA

AFANASIEVA, *Russian Presidential Academy of National Economy and Public Administration (RANEPA)*, VLADIMIR SPIRIDONOV, *Russian Presidential Academy of National Economy and Public Administration (RANEPA)* — Compound Remote Associates (CRA) tasks are a common method of learning insight. The most common answer to the Russian-language CRA problems are collocations—a predictable combination of words connected by syntactic relations. The purpose of this study is to find sources of difficulty of CRA tasks that are related to the syntactic structure of collocations. Sources of CRA difficulty are an important part of the problem solving that can be defined by the size of the search space. Using the accuracy of solutions, we found that there is a significant effect when target word in the dependent position, which leads to a significant increase in the accuracy. The number of dependent words in the collocations that made up the accuracy turned out to be significant main effect for a set of CRA tasks consisting of Russian-speaking nouns (one-way ANOVA, $F(3,135)=66.20$, $p<0.001$, $\eta^2=0.33$). Our results indicate that the search for a solution in Russian-speaking CRA tasks goes from the head of collocations to dependents words. Thus, the search in a semantic network has a “three-dimensional” structure and that can be a source of difficulty in Russian-speaking tasks.

Email: Victoria Afanasieva, marly616@mail.ru

7:45-9:15 PM (7073)

The 14-Item Everyday Problems Test: Validity, Reliability, and Relations to Cognitive

Performance. ALICE REINHARTZ, *Medical School Hamburg*, SYLVIE BELLEVILLE, *University of Montreal*, THOMAS JACOBSEN, *Helmut Schmidt University of the Federal Armed Forces Hamburg*, TILO STROBACH, *Medical School Hamburg*, CLAUDIA C. VON BASTIAN, *University of Sheffield* — Navigating problems in everyday life is crucial to living independently throughout all of adulthood. However, most studies focus on assessing everyday problem solving in groups that are at potential risk of reduced independence, e.g., in very old age. Using real-world scenarios, the Everyday Problems Test (EPT; Willis & Marsiske, 1993) is a test to assess everyday problem solving. Validation of the EPT focused on older adults. Furthermore, not all items of the original EPT are up-to-date and applicable outside the US. Therefore, we assessed the validity and reliability of an updated short form across the adult lifespan (18 to 85 years) with items designed to be easily adaptable to different countries. First, we tested multiple items in an UK-based online sample of 300 adults. Second, we selected the most difficult items of this test to evaluate a new 14-item short form on 180 adults with test-retest moments two weeks and three months after initial assessment. We assess the validity of the 14-item test, its relation to age, education, and other cognitive tasks as well as mechanisms underlying cognitive processing speed.

Email: Alice Reinhartz, alice.reinhartz@medicalschool-hamburg.de

7:45-9:15 PM (7074)

A Goal-Conflict Model for Improved Inference of Latent Motives. ANDERSON K. FITCH, *University of Florida*, PETER D. KVAM, *The Ohio State University* — Inferences about other people's intents are important to how we behave in social situations, yet both humans and machines can struggle to understand latent motives. This may be due to a lack of explicit representations of others' hidden states—a deficit that could be remedied by cognitive models. To test this, we evaluated human and machine learning performance in determining a human player's goal from a video of their performance during a dynamic continuous control task. Neural network classifiers were trained either by directly using observable information or by using estimates from a novel goal-conflict model. Comparisons of classifier accuracy suggest that neural networks can learn to classify human intent through direct observation of their position data during the task, descriptive summary statistics of performance, or latent model parameters

estimated from performance. All three approaches far exceeded the accuracy of healthy human controls and participants with self-reported autism spectrum disorders. However, the networks with the greatest accuracy and most efficient training process were those where cognitive models were used to deliberately select important features for intent inference.

Email: Anderson Fitch, andersonfitch@ufl.edu

7:45-9:15 PM (7075)

Remembering Photos We Share on Social Media and Our Interactions with Them. LINDA HENKEL, *Fairfield University*, OLIVIA JAYNE, *Fairfield University*, OLIVIA RISSETTO, *Fairfield University* — Three experiments examined people's memory for photos they shared in different ways, such as posting on social media, discussing with a friend, or reviewing privately and not sharing. Across the studies, people viewed photos of everyday scenes and interacted with them in different ways (e.g., social media posts, social interactions in everyday life, or private/nonsocial interactions), and their memory was later tested for which scenes they remember having seen, for specific visual details in the scenes, and the type of interaction they had. The results showed that people had better memory for photos they had more engagement with (wrote a social media caption, discussed/described) rather than just looked at. Describing the photos' content resulted in superior memory for visual details relative to posting on social media. However, memory for photos' visual details was comparable for ones captioned when posting on social media as for ones engaged with outside of social media (by discussing with a friend or privately reflecting on the photos). Although people reported more engagement and enjoyment when writing social media posts, their memory for what they wrote in their posts was relatively poor.

Email: Linda Henkel, lhenkel@fairfield.edu

7:45-9:15 PM (7076)

Strategy Gone Awry: Errors when Offloading Items from Memory. ALEXANDRA MORRISON, *California State University, Sacramento*, DANIELLE TROXEL, *California State University, Sacramento*, SUREENA DEOL, *California State University, Sacramento*, DENVER SANDERS, *California State University, Sacramento*, ANH TANG, *California State University, Sacramento* — Cognitive offloading occurs

when participants use external storage, for example, a phone or tablet, to reduce the workload of their internal memory storage. Previous work has shown that individuals tend to offload more frequently than needed (e.g., Gilbert et al., 2020) due in part to believing that they will not be able to recall the information they need. While offloading often benefits memory task performance, these benefits assume information has been correctly offloaded and reported. We investigated the incidence and impact of offloading errors during a working memory task. Our participants ($n=101$) recalled loads of 4, 8, or 12 letters. In one block, they had the option to offload the letters by typing them as notes for use at recall. In the other block, they relied purely on their internal memory storage. We compared the frequency of errors across set sizes and found, as predicted, that offloading errors increased as load increased. We discuss this and other error patterns exhibited when offloading memory items.

Email: Alexandra Morrison, alexandra.morrison@csus.edu

7:45-9:15 PM (7077)

Unveiling the Dark Side of Social Media Use: The Impact of Normative Social Media Use on Originality and Fluency. HWAJIN YANG, *Singapore Management University*, HUI SI OH, *A*STAR Institute of High Performance Computing*, SUJIN YANG, *Ewha Womans University* — Employing structural equation modeling, we examined the associations between different types of social media use—normative (checking and browsing), interactive (commenting, liking), and generative (posting)—and various facets of creativity, including flexibility, persistence, fluency, and originality, as assessed by a divergent thinking task. We also investigated the specific cognitive mechanisms through which different types of social media use could influence creativity. We found that neither interactive nor generative social media use predicted flexibility. However, normative social media use negatively predicted flexibility but not persistence, even after controlling for covariates such as age, sex, and screen time. Further analyses revealed that normative social media use indirectly and negatively influenced originality and fluency through flexibility as a mediator. Our study contributes to the evolving understanding of how social media engagement relates to the fluency and originality aspects of creativity.

Email: Hwajin Yang, hjyang@smu.edu.sg

7:45-9:15 PM (7078)

Are the Most Liked Online Posts Better Remembered?

EZGI BILGIN, *Cornell University*, QI WANG, *Cornell University* — Social endorsement cues may facilitate information seeking, comprehension, and memory. In the context of social media, social endorsement cues (e.g., likes, shares) have been shown to increase other users' perceived information credibility, trustworthiness, and validity. For instance, people are more likely to believe posted misinformation when the post has received many likes. We investigate the mnemonic consequences of one particular online social endorsement cue: the number of likes. Participants viewed autobiographical events posted on Facebook that received either a large or small number of likes, and their memory about the events was tested later. We predict that event posts with a large number of likes will be better remembered.

Email: Ezgi Bilgin, ebb88@cornell.edu

7:45-9:15 PM (7079)

A Machine Learning Model for Predicting Visual Engagement with Augmented Reality Using Non-Gaze Signals. NAOMI M. MOSKOWITZ, *U.S. Army Combat Capabilities Development Command (DEVCOM) Soldier Center & Tufts Center for Applied Brain and Cognitive Sciences*, JAMES MCINTYRE, *Tufts University*, ANDREW B. WHITIG, *U.S. Army Combat Capabilities Development Command (DEVCOM) Soldier Center & Tufts Center for Applied Brain and Cognitive Sciences*, AARON L. GARDONY, *U.S. Army Combat Capabilities Development Command (DEVCOM) Soldier Center & Tufts Center for Applied Brain and Cognitive Sciences* — Augmented reality (AR) head-mounted displays have the potential to reduce soldiers' cognitive burden in high-stakes conditions. Imperative to realizing this vision is understanding how soldiers use AR in the field. Eye tracking is the gold standard for monitoring visual attention. However, current eye tracking technologies emit active IR illumination, making them unsuitable for military operations. In the present study, we applied machine learning to head and rifle movements to predict visual engagement with an AR interface. Leveraging a rich dataset from our previous research on gaze-adaptive interfaces, we extracted continuous head and rifle movement time series data to build features and created labels (ground truth) from eye tracking data. We trained several machine learning models, including a neural

network, on this dataset with the goal of classifying participants' gaze toward the AR interface from head and rifle movement alone. We detail our methods, including data processing, model building, and feature selection. Our findings suggest that these non-gaze signals performantly predict AR visual engagement and highlight the potential of non-gaze signals for predicting visual attention with AR.

Email: Naomi Moskowitz, naomi.moskowitz@tufts.edu

7:45-9:15 PM (7080)

Affinity Bias in Perceived System Usability: The Role of Individual Technology Experiences.

KELLY DICKERSON, *US Nuclear Regulatory Commission*, PETER GERHARDSTEIN, *Binghamton University, SUNY*, HEATHER WATKINS, JESSI ALTIERO, MICHAEL HILDEBRANDT, THOMAS ULRICH — Navigating digital environments is critical to successful social and professional interactions. Creation of usable systems to support these interactions relies on human centered research, which can be biased by users' prior experiences and expectations about a new digital system. Traditional user research approaches have limited ability to characterize these biases. This study examines the link between user technology affinity and usability assessments to determine whether individual biases influence study outcomes. We found that technology affinity positively correlated with both system usability ratings and user workload; individual technology affinity biased users towards discounting the difficulty of system interactions, despite no differences in performance as a function of affinity. All users performed poorly on feature detection tasks that were designed to be difficult. These results have implications for bias and decision making research as well as methods development for digital UX and human factors research.

Email: Kelly Dickerson, dickersonkelly23@gmail.com

7:45-9:15 PM (7081)

Are College Students Digitally Literate? An Examination of Students' Digital Experiences, Competences, and Attitudes Toward Technology.

MEREDITH MINEAR, *University of Wyoming*, ANNYHER REYES AYALA, *University of Wyoming*, HAAGEN TOH, *University of Wyoming*, SCOTT FRENG, *University of Wyoming* — Digital literacy is broadly defined as the skillset needed for performing tasks in a digital environment and is a key factor for

21st-century jobs. There is evidence that many college students lack digital literacy and are not gaining the needed experiences in their degree programs to be successful in the workplace (Araújo-Vila et al., 2020). We surveyed students ($N=370$) enrolled in psychology courses on various aspects of their experiences with information technology. This included their attitudes toward digital technologies in the workplace, perceptions of AI, and students' self-rating of digital competencies derived from the following categories: safety, information literacy, communication, content creation, and problem-solving using items adapted from the EU's Digital Competence Framework for Citizens and the International Computer and Information Literacy Study (2018). We explored the effect of variables such as gender, major, and years in school on digital literacy and examined the relationship between academic self-efficacy and different digital competencies.

Email: Meredith Minear, mminear2@uwyo.edu

7:45-9:15 PM (7082)

Commenter Closeness and Comment Positivity: Key Factors in Promoting the Desire to Engage, Interact, and Connect on Social Media.

RACHAEL KARACZUN, *Lasell University*, ZANE ZHENG, *Lasell University* — Social connection theories suggest that social media may enhance mental well-being by fostering connections. However, the specific factors that promote these connections remain unclear. This study examines Instagram (IG) and the comments left on IG posts to understand how comment types and commenter characteristics influence responses and engagement. We constructed a structural equation model to link these features to participants' real-life choices involving the commenter. Results showed that comment positivity, rather than authenticity or humor, mediated the effect of comments on participants' willingness to make sacrifices for the commenter in real-life scenarios. This mediated relationship was moderated by the perceived closeness of participants to the commenter. Positive comments from someone perceived as close significantly increased participants' response tendencies, enhancing their intent to interact both online and offline, ultimately leading to greater real-life sacrifices that foster connection. This study provides evidence for a psychological pathway linking commenter and comment characteristics with participants' responses and behaviors, suggesting a strategy for encouraging active, positive social media use.



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Email: Rachael Karaczun, rkaraczun@lasell.edu

7:45-9:15 PM (7083)

Effects of Narrative Quality and Graphics Quality on Virtual Story-Driven Experiences.

MICHAEL C. VAIL, *Brown University*, ANURAG RIMZHIM, *College of the Holy Cross* — Virtual reality (VR) technology's consumer usage has grown unprecedentedly. VR media creators leverage narrative-driven factors (e.g., a captivating plot) to maximize users' engagement and enhance presence (the subjective quality of "being there" in a virtual environment) and enjoyment. These story-driven experiences can also be influenced by graphics quality. Participants played an interactive desktop VR game. Using a 2×2 experimental design, we measured participants' experiences in high versus low narrative quality conditions (varying in imaginativeness of vocabulary, amount of relevant and irrelevant details, and conciseness) and high versus low graphics quality conditions (varying in texture resolution and polygon count). Preliminary results suggest interactions between narrative and graphics quality for total playtime, presence, social presence, attitude alignment, visual aesthetics, and motion sickness. Higher graphics quality enhanced users' enjoyment, donation amount, and narrative transportation. Both manipulations affected story-driven experiences, but graphics quality had stronger effects.

Email: Michael Vail, michaelcvail@gmail.com

7:45-9:15 PM (7084)

Fake News on Social Media: The Effect of Social Endorsement Cues on Younger and Older Adults.

JOHN PRICE, *Skidmore College*, SARAH BRAUER, *Skidmore College*, EMILY LAWRENCE, *Skidmore College*, HANNAH RICHARDS, *Skidmore College*, EMI BRANES-HUFF, *Skidmore College*, HANNAH EPSTEIN, *Skidmore College*, DANIELLE COUGHLIN, *Skidmore College*, ARABELLA GUO, *Skidmore College*, EMILY KAYSER, *Skidmore College*, SARAH DESOUSA, *Skidmore College*, DANIEL PETERSON, *Skidmore College* — Fake news has proliferated substantially on social media since 2016, with disproportionate sharing and endorsement by older adults. In three samples (older and younger adults on MTurk and undergraduates), we examined whether age influenced the perceived credibility of real and fake news headlines as a function of social endorsement cues (i.e., Facebook likes). Generally, a large number of likes

increases headlines' perceived credibility (e.g., Luo et al., 2020). Critically, the influence of numeric social endorsement cues has not been evaluated in a sample of older adults. Participants viewed 20 news headlines (10 real, 10 fake) in a Facebook-style feed displaying each headline with a randomly generated high or low number of likes. Subsequently, participants rated each headline's credibility. Both younger and older adults had better memory recall for fake than for real news headlines. Surprisingly, older adults were less influenced by numeric social endorsement cues relative to younger adults.

Email: John Price, jmprice909@gmail.com

7:45-9:15 PM (7085)

Online Classroom Accountability or Extraneous Cognitive Load? Consequences of Camera-On Policies for Lecture Comprehension in Body-Conscious Students.

SARA G. GOODMAN, *St. John Fisher University*, KIMBERLY J. MCCLURE-BRENCHLEY, *St. John Fisher University*, TATUM A. SMITH, *St. John Fisher University* — Students are commonly asked to turn their webcams on as a form of accountability in virtual classrooms (Ramirez-Perez et al., 2023). However, this added video input may increase students' monitoring of their own appearance, contributing to extraneous cognitive load. In this quasi-experiment, participants logged in to a Zoom session designed to mimic a typical synchronous virtual classroom. Participants reported body consciousness (McKinley & Hyde, 1996) and were randomly assigned to turn their cameras on or off during a brief lecture. At the conclusion of the lecture, participants completed a comprehension test. As predicted, lecture comprehension was lower for those whose webcams were on, but only when they reported higher levels of body consciousness. Independently, neither camera setting nor levels of body consciousness predicted differences in comprehension test scores. These results suggest a self-awareness tax, such that students who are attentive to their appearance may incur additional extraneous cognitive load by being able to view themselves during virtual lectures.

Email: Sara Goodman, sgoodman@sjfc.edu

7:45-9:15 PM (7086)

The Word Superiority Effect: Fact or Fiction?

BLAINE TOMKINS, *College of Saint Benedict & Saint John's University* — The word superiority effect (WSE)

is the observation that individuals recognize letters more easily when embedded within a word relative to a nonword or when presented in isolation. However, there are serious flaws with the methodology used to illustrate the WSE, known as the Reicher-Wheeler paradigm, making it questionable whether the effect has ever been properly tested. Experiment 1 used a pre-cuing procedure requiring participants to recognize a letter presented within a 4-letter word, 4-letter nonword, or in isolation. Participants recognized letters faster when presented in isolation and showed no differences for words vs. nonwords. In Experiment 2, participants were primed with a word, nonword, or single letter followed by a target letter and indicated whether the target had been present in the prime. Participant responses were faster and more accurate when primed with a word or letter than nonword. The present findings undermine the claim that letters are recognized more easily when embedded within words. The WSE was partially supported only when using a priming procedure. Thus, the WSE should be considered a memory-based effect, not a perceptual-orthographic effect.

Email: Blaine Tomkins, btomkins001@csbsju.edu

7:45-9:15 PM (7087)

Exploring the Effect of Visual Noise and Simulated Environments through a Language Decision Task. FRANCISCO ROCABADO, *Universidad Nebrija*, GIANNA SCHMITZ, *Universidad Nebrija*, JON ANDONI DUÑABEITIA, *Universidad Nebrija* — Previous studies highlighted the effects of visual contrast and simulated environmental conditions via virtual reality (VR) on reading. Yet, the impact on word processing in bilingual contexts under dynamic simulated conditions remains uncertain, as does its comparability with traditional lab settings. Here we examined word processing performance of Spanish and English bilinguals. Through a language recognition task in VR, participants were exposed to 240 words in both languages. We investigated how visual noise (implemented with a static mask), and simulated weather conditions (implemented as virtual sunny and rainy contexts) influenced language decision. No identification differences between languages were found. However, we observed a significant main effect of weather conditions and visual noise on language decision, with no interaction between these factors, suggesting that they exert independent influence. Our research offers insights into bilingual word processing in real-world settings and

suggests future studies on the interaction between VR and cognitive processes in a multilingual environment.

Email: Francisco Rocabado, jrocabado@nebrija.es

7:45-9:15 PM (7088)

The Cognition Effect: Processing Benefits for More Cognitive Concepts. HANNAH CORENBLUM, *The University of Western Ontario*, PENNY M. PEXMAN, *The University of Western Ontario* — Many abstract words refer to internal cognitive events or states such as thinking or believing, or to cognitive products such as theories, ideas, or whims (Binder, 2016). Mental state information is proposed to be an important component in the grounding of abstract meaning (Kiefer et al., 2022, Muraki et al., 2022), such that our inner cognitive experiences form a foundational aspect of semantic representation. We tested this proposal. First, we collected cognition ratings for over 8,000 English words. Second, we used the norms generated from our ratings to examine the unique variance explained by cognition ratings in performance on lexical-semantic tasks. We found a significant effect of cognition, such that there was a facilitative

relationship between cognition ratings and behavioural responses, even when controlling for other key lexical and semantic variables. Specifically, the results showed that words rated as more cognitive in nature elicited faster and more accurate task responses, especially for words with more abstract meanings. This study highlights a novel behavioral effect that is consistent with a multidimensional account of semantic representation.

Email: Hannah Corenblum, hcorenbl@uwo.ca

7:45-9:15 PM (7089)

The Neighborhood Watch: The Influence of Orthographic Neighborhood Size on the Foveal Load Hypothesis in Sentence Reading. ABIGAIL SPEAR, *University of South Florida*, ELIZABETH R. SCHOTTER, *University of South Florida* — On each fixation during reading, readers both process the current word and get a head start on processing the upcoming word in their parafoveal vision. It is unclear how foveal processing depends on the ease of processing the previously fixated word. The foveal load hypothesis (Henderson & Ferreira, 1990) suggests that a harder to process pre-target word will reduce processing resources available to preview the upcoming word, leading to an



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interaction (i.e., a smaller effect of manipulations of the target word on fixation durations on it following a difficult to process pre-target word). This eye tracking study investigated whether a word's orthographic neighborhood size (number of words produced when one letter is changed) impacts fixation durations on that word or produces a foveal load that impacts processing of the upcoming word. Our findings suggest orthographic neighborhood size does not impact foveal processing but does impose a foveal load effect (there was a greater preview benefit (i.e., difference in processing time between high and low frequency target words) for words following a word with a large orthographic neighborhood). We explore potential explanations for the direction of this interaction.

Email: Abigail Spear, aspear@usf.edu

7:45-9:15 PM (7090)

How Language History Influences the Identification of Appalachian Words. JESSICA E. AUSTIN, *Eastern Kentucky University*, ALEXANDRA M. JONES, *Eastern Kentucky University*, SARA INCERA, *Eastern Kentucky University* — The goal of this project is to determine the influence of language history (e.g., where participants grew up, what dialects their family members speak) on vocabulary comprehension, focusing on identifying Appalachian words. Participants were recruited from Eastern Kentucky University. Mouse-tracking software was employed as individuals were tasked with reading words displayed on the screen and identifying their meaning by choosing the right image. The study included terms commonly used in the Appalachian region and terms from other regions across the United States. The study's results indicate that individuals who grew up in eastern Kentucky and those who have family members who speak an Appalachian dialect exhibit better identification of Appalachian words. Investigating how individuals process and comprehend these region-specific terms is crucial for achieving a comprehensive understanding of language dynamics in the United States.

Email: Jessica Austin, jessica_austin19@mymail.eku.edu

7:45-9:15 PM (7091)

Investigating the Letter Superiority Effect: Does Top-Down Processing Influence Feature Detection? ROSEMARY MCKERLEY, *Bates College*, MADELINE S. EWELL, *Bates College*, TODD A.

KAHAN, *Bates College* — "Superiority effect" refers to the phenomenon where it's easier to recognize letters when they are presented as part of a word compared to when they are presented alone or in a random sequence of letters. Current theories of language processing propose that recognition of a stimulus at the word level has the ability to enhance further processing at the letter and feature levels. The current study seeks to explore the possibility of a letter superiority effect. Participants (N=15) completed a feature identification task and results show increased feature-identification accuracy for briefly shown letters compared to non-letters that were created from the same set of composite features. The presence of a letter superiority effect indicates that top-down processing extends its influence to the feature level.

Email: Rosemary McKerley, rmckerle@bates.edu

7:45-9:15 PM (7092)

Is Letter Position Coding Modulated by Semantics? The Impact of Emotion. CELIA MARTÍNEZ, *Universidad Complutense de Madrid*, JOSÉ ANTONIO HINOJOSA, *Universidad Complutense de Madrid*, MANUEL PEREA, *University of València*, ROCÍO CALVILLO, *Universidad Complutense de Madrid*, JORGE GONZÁLEZ ALONSO, *Universidad Nebrija & UiT The Arctic University of Norway*, ANA BACIERO, *Universidad Complutense de Madrid* — Increasing evidence indicates that visual word recognition is influenced by the affective properties of the stimulus (Hinojosa et al., 2020). Emotional words are usually processed faster than neutral words, and one-letter-replacement pseudowords created from emotional words (i.e., irtus from ictus) are categorized as non-words more slowly than those created from neutral words (i.e., drocedario from dromedario). Hence, it is possible that emotion words facilitate the access to lexical representations relative to neutral words, as they express significant information. The present study aims to explore whether and how emotional valence modulates a critical marker of orthographic processing (an essential step in word recognition): the transposed-letter effect. Two pseudoword conditions were created from positive, negative, and neutral words: transposed-letter (transposing two inner consonants from the baseword [i.e., loteria from lotería]) and replaced-letter (replacing those two letters from the baseword [i.e., crueftad from

crueldad]). Results and their theoretical implications will be discussed.

Email: Celia Martínez, cemart15@ucm.es

7:45-9:15 PM (7093)

The Distinctive Role of Vowel Harmony in Visual Word Recognition: The Case of Turkish.

ZEYNEP G. OZKAN, *Universitat de València*, BERCESTE OZDEMIR, *Universitat de València*, PABLO GOMEZ, *Skidmore College*, MANUEL PEREA, *University of València* — Vowel harmony is a phonological

phenomenon present in several families of languages (e.g., Turkic, Finno-Ugric languages) in which vowels within a word maintain certain features (e.g., frontness vs. backness). It is an effective segmenting cue in continuous speech and when reading compound words. The present study examined whether vowel harmony also plays a role in visual word recognition. We chose Turkish, a language with four front vowels and four back vowels in which approximately 75% of words are harmonious (i.e., containing either front or back vowels). If vowel harmony contributes to the formation of coherent phonological codes, harmonious words will reach a stable orthographic-phonological state faster than disharmonious words. In Experiment 1, we selected harmonious and disharmonious Turkish words. Results showed faster lexical decisions for harmonious than disharmonious words, whereas vowel harmony did not affect the response to the pseudowords. In Experiment 2, where all words were harmonious, we found a minimal advantage for disharmonious than harmonious pseudowords. Thus, vowel harmony helps the formation of stable phonological codes in Turkish words, whereas it does not play a key role in pseudoword rejection.

Email: Zeynep Ozkan, zevoz@uv.es

7:45-9:15 PM (7094)

The Influence of Phonological Change in Korean Syllable on Morphologically Complex Word.

SOLBIN LEE, *Korea University*, JOONWOO KIM, *Korea University*, SANGYUB KIM, *Chonnam National University*, SEOYEON KWON, *Korea University*, MIN-MO KOO, *Korea University*, KICHUN NAM, *Korea University* — The current study aimed to test whether phonological changes in syllables influence visual Korean morphologically complex word (MCW), also known as eojeol, recognition. We selected 180 MCWs, a half of them had phonological changes in the first

syllable and the other did not. We performed a visual lexical decision task, and the results revealed a null effect of phonological change. Furthermore, the frequency of phonological syllables also yielded a null effect on reaction time, even though the difference in the variable was significant between two kinds of MCWs. On the other hand, root frequency elicited a significant effect; nonetheless, it was held constant between two kinds of MCWs. We discuss these results in terms of the syllable frequency effect and the interactive activation model.

Email: Solbin Lee, solbin21@korea.ac.kr

7:45-9:15 PM (7095)

The Relationship Between Reading Skill and Pseudoword Spelling Production.

MICHAELA BROOKS, *University of Maryland*, ROBERT W. WILEY, *University of North Carolina at Greensboro*, CORY MCCABE, *Rutgers University–Newark*, DONALD J. BOLGER, *University of Maryland*, WILLIAM W. GRAVES, *Rutgers University–Newark*, JEREMY J. PURCELL, *University of Maryland* — Here, we explored the relationship between participants' reading skill and their ability to produce the most typical spellings of pseudowords. Participants (N=42) were asked to provide their best guess spelling for forty recordings of pseudowords ($M_{\text{probability}}=0.68$). Legal spellings were determined by including all possible grapheme mappings given a string of phonemes ($M_{\text{legal}}=561.93$, $M_{\text{illegal}}=21$, and $M_{\text{max}}=3862$), and the most typical spelling was that of the highest probability per the Sublexical Toolkit. Including only legal responses, participants' proportions of the most typical spellings vs. all other spellings across words were calculated. The Woodcock Reading Mastery Test (WRMT) Basic Reading Skills composite score indexed reading skill. We predicted that higher-skilled readers would provide the most typical spellings more than the low-skilled readers. We found a significant positive correlation between reading skill and spelling typicality ($r=0.41$, $p=0.007$). This work suggests measuring response legality and typicality provides a novel approach to understanding the sublexical mapping system beyond that of binarized (i.e., "correct" vs. "incorrect") standardized tests.

Email: Michaela Brooks, mrbrooks@umd.edu

7:45-9:15 PM (7096)

The Relevance of Top-Down Processes in the Recognition of Incomplete Words: An ERP

Study. TERESA CIVERA, *Universitat de València*, SARVENAZ CHANGIZI, *Universitat de València*, MONTSERRAT COMESAÑA, *Universitat de València*, MANUEL PEREA, *University of València*, MARTA VERGARA-MARTÍNEZ, *Universitat de València* — In behavioral experiments, words composed only of their upper halves are effective in masked priming tasks, reinforcing the perceptual closure effect (i.e., incomplete stimuli can be recognized as a whole). However, these studies cannot address the interplay between bottom-up and top-down processing for these stimuli. To track the electrophysiological signature of upper-half word processing, we presented high- and low-frequency words (a lexico-semantic factor) in two different displays (full words, upper-half words) in an event-related potentials (ERPs) lexical decision task. Results showed an effect of display in three early ERP time-windows: P100, N170, and the negativity closure component (NCl; 260–330 ms). Word frequency influenced earlier processing stages for upper-half words (around 350 ms post-stimulus) compared to full words (around 450 ms post-stimulus). This pattern demonstrates that (1) lexical feedback helps disambiguate perceptually difficult stimuli and (2) the interaction between bottom-up and top-down processes varies as a function of perceptual ambiguity.

Email: Teresa Civera, teciba@alumni.uv.es

7:45-9:15 PM (7097)

Word Hurdles: The Impact of Unfamiliar Vocabulary on Eye-Voice Coordination & Speech Fluency During Oral Reading. ANSLEY DAVIS, *University of South Florida*, ELIZABETH R.

SCHOTTER, *University of South Florida* — Oral reading is a more complex process than reading silently because the reader must coordinate their eyes and voice to pronounce each recognized word. Lack of coordination can lead to an increased eye-voice lag (EVL; time delay between fixation and pronunciation in which the eye is ahead of the voice) which can result in speech disfluencies. Since unfamiliar (i.e., low frequency) words in the parafovea lead to increased processing time during silent reading, we investigated whether that same information impacts word pronunciation while reading aloud by measuring the EVL using a gaze-contingent display change paradigm and a word frequency manipulation. Participants ($n=90$) had a larger EVL for low frequency words, particularly when they had an inaccurate parafoveal preview. This suggests that a longer transition from fixating unfamiliar words to

beginning vocalization may be due to additional attention allocated to word recognition (starting as early as the parafovea). Disfluencies increased (e.g., reader began to say the onset of the preview before saying the target) when the target word was low frequency. Unfamiliarity increases the chances of speech errors that detract from verbal clarity while reading aloud.

Email: Ansley Davis, ansleydavis@usf.edu

7:45-9:15 PM (7098)

Early Top-Down Influence in Visual Word Recognition: Insights from CAPTCHAs.

MARIA FERNÁNDEZ-LÓPEZ, *University of València*, OLGA SOLAJA, *Sissa (International School for Advanced Studies)*, DAVIDE CREPALDI, *International School for Advanced Studies (SISSA)*, MANUEL PEREA, *University of València* — The identification of visually presented words is tolerant to distortions in the input format, as Hannagan et al. (2012) demonstrated in a masked priming lexical decision task, showing identity priming effects with CAPTCHA primes. This tolerance to distortion has two potential explanations: bottom-up normalization in the encoding stage (Dehaene et al., 2005) and top-down lexical feedback (McClelland & Rumelhart, 1981). To examine these accounts, we conducted two masked identity priming experiments with printed and CAPTCHA-like primes on high and low-frequency words. In the lexical decision task, for high-frequency words, identity priming effects were only slightly greater for printed than CAPTCHA primes, whereas this difference was larger for low-frequency words. In the same-different matching task, which allegedly relies on prelexical processing, the identity priming effect was greater for printed primes and was unaffected by word-frequency. Thus, during lexical access, top-down lexical feedback may help normalize the visual input in the early stages of word recognition, challenging bottom-up models of visual word recognition.

Email: Maria Fernández-López, maria.fernandez@uv.es

7:45-9:15 PM (7099)

Enhancing Sensitivity to Lexical Tone in L2 Learning by Observing Pitch Gestures: An ERP Study. BASHAR M. FARRAN, *University of Missouri*, LAURA M. MORETT, *University of Missouri* — In the present study, native English speakers with no tonal language experience completed a pre-test in which they



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heard pairs of Mandarin words with matching or mismatching tones while their behavioral responses and N400 event-related brain potentials were recorded during lexical tone association, word recognition, and word-meaning association tasks. Next, participants learned Mandarin word pairs differing minimally in lexical tone by hearing them while watching videos of a model producing congruent, incongruent, or no pitch gestures. Post-tests, which were conducted immediately after learning and one day later, were identical to pre-tests. We hypothesize that observing congruent pitch gestures during learning will enhance sensitivity to lexical tone between pre-test and post-test, whereas observing incongruent gestures will reduce sensitivity to lexical tone between pre-test and post-test. The results will advance the understanding of how observing gestures conveying phonological (pitch) information affects neural and behavioral processing of newly learned tonal L2 words.

Email: Bashar Farran, bfarran@health.missouri.edu

7:45-9:15 PM (7100)

Learning in the Wild: What Can Children Learn about Morphemic Statistical Regularities Through Reading? MARIA KOROCHKINA, *Royal Holloway, University of London*, MARCO MARELLI, *University of Milano-Bicocca*, MARC BRYSBAAERT, *Ghent University*, KATHLEEN RASTLE, *Royal Holloway, University of London* — Robust

morphological knowledge is necessary to quickly access the meanings of known printed words and to compute the meanings of unfamiliar printed words. There is agreement that it is through reading that children learn what information morphological units communicate; however, research to date has focused on whether children show sensitivity to morphemic information, without regard to a theory of what should have been learned and why. We studied derivational regularities encountered in 1,200 books popular with British children aged 7-16 using a combination of corpus analyses and computational modelling. Our analysis shows that over half the unique words in children's books are morphologically complex. Yet, the complex words are lower in frequency and more poorly distributed across books than monomorphemic words, and this is particularly the case for prefixed (compared to suffixed) words. Critically, the morphological status of many complex words is obscured due to complex orthographic alterations and the presence of bound stems and pseudo-

complex words. We propose that these distributional properties may explain why children typically do not show evidence of morphological decomposition until mid-to-late adolescence.

Email: Maria Korochkina, [mariakorochkina@rhul.ac.uk](mailto:maria.korochkina@rhul.ac.uk)

7:45-9:15 PM (7101)

The Timing of Semantic Processing in Parafovea: Evidences from a Rapid Parallel Visual

Presentation Study. LISA S. ARDUINO, *Libera Università degli Studi Maria Ss. Assunta di Roma (LUMSA)*, MARIALUISA MARTELLI, *Università La Sapienza*, SILVIA PRIMATIVO, *Libera Università degli Studi Maria Ss. Assunta di Roma (LUMSA)* — We adopted the rapid parallel visual presentation (RPVP) paradigm consisting in the simultaneous presentation of two words: one in fovea (W1) and one in parafovea (W2). In three experiments, we manipulated word frequency, semantic relatedness, and the effect of stimulus duration (150, 100, and 50 ms). Accuracy on W2 was higher when W1 and W2 were both of high frequency and semantically related. W1 reading times were faster when 1.) both words were highly-frequent but only in the semantic relation condition (150 ms) and 2.) W2 was highly frequent and semantically related to the foveal word (100 ms). When the stimuli were presented for 50 ms, RTs were reduced when W1 was highly frequent and, crucially, in the semantic relation condition. Our results suggest that we extract semantic information from the parafovea very rapidly and in parallel to the processing of the foveal word. We discussed results in terms of word recognition and eye movements' models.

Email: Lisa Arduino, larduino@lumsa.it

7:45-9:15 PM (7102)

Visual Attention Deployment During Vertical Mongolian Reading. YAQIAN BOROGJOON BAO, *McMaster University*, VICTOR KUPERMAN, *McMaster University*, XINGSHAN LI, *Chinese Academy of Sciences* — Using a combination of the gaze-contingent boundary paradigm and the probe detection task, we examined how visual attention is allocated during vertical Mongolian reading. When participants' eyes fixated a word after crossing an invisible boundary, the sentence disappeared, and a red-rectangle probe appeared at various positions from 2° above to 4° below the fixation point. Participants were instructed to detect

the presence of the probe. Reaction times (RTs), reflecting attention deployment, were the shortest at the foveal fixation position (580 ms). Compared to the foveal baseline, RTs were significantly longer for the up_2 (598 ms), down_3 (601 ms), and down_4 (623 ms) positions, indicating asymmetrical visual attention deployment. These findings provide direct evidence that readers allocate more attention to upcoming novel information and extend the perceptual span in the top-to-bottom reading direction. They also determine the perceptual span boundaries in traditional Mongolian, from 1° of the visual angle above to 2° below the fixation.

Email: Yaqian Bao, baoqy47@mcmaster.ca

7:45-9:15 PM (7103)

An 'RSVP with Flankers' ERP Study of Foveal and Parafoveal Processing in Deaf and Hearing Readers: Effects of Semantic and Syntactic Violations.

EMILY M. AKERS, San Diego State University & University of California, San Diego, KATHERINE J. MIDGLEY, San Diego State University, PHILLIP J. HOLCOMB, San Diego State University, KAREN EMMOREY, San Diego State University — Typically, research investigating sentence comprehension using ERPs utilizes RSVP designs (words displayed one at a time). In contrast, we utilized an “RSVP with flankers” paradigm where three words were presented and appeared to slide into the central point of fixation. This design more closely resembles natural reading, allowing us to investigate ERP effects when words were in the fovea and parafovea. We tested 32 hearing readers and 32 readers who are deaf with similar reading ability in a sentence violation identification task with three violation types: semantic, verb agreement, and word order. For foveated critical words, hearing readers showed a strong P600 for agreement and word-order violations. Readers who are deaf did not show P600 effects for agreement violations (replicating previous studies), but they did exhibit a robust P600 for word order violations. For semantic violations, readers who are deaf showed a stronger N400 than hearing readers for foveated words. Neither group exhibited sensitivity to semantic violations in the parafovea, but both groups showed a robust parafoveal P600 to word order violations.

Email: Emily Akers, eakers@sdsu.edu

7:45-9:15 PM (7104)

How to Help: Novel Words and Low Expertise

Adult Learners. ELEANOR C. RUNDUS, Kent State University, JOCELYN R. FOLK, Kent State University

— We investigated the role of uninformative contexts in incidental word learning in readers who differed in lexical expertise. Previous work supported the instance-based resonance process of word learning, with higher lexical expertise individuals successfully aided by uninformative contexts after foundational learning (Eskenazi et al., 2018). The purpose of the current study was to determine if increased numbers of informative context exposures furnish lower expertise readers with enough semantic knowledge to perform similarly to that of their high skilled counterparts, preventing the damage to word knowledge from uninformative contexts observed in previous work (Eskenazi et al., 2018). To this end, participants read sentences with one novel word (i.e., grile, skeep) embedded in three different conditions: 7 informative, 7 informative followed by 3 uninformative, and 10 informative. Readers’ semantic and form knowledge was then tested with recall and recognition tests. We predicted that knowledge of novel word semantics and form forged from informative context creates a foundation of learning mediated by lexical skill. This prevents backslicing after exposure to uninformative contexts if sufficient knowledge is gained.

Email: Eleanor Rundus, erundus@kent.edu

7:45-9:15 PM (7105)

Motivated Attention in Reading: Lexical Valence Moderates Parafoveal Preview Benefits

Differently in Younger and Older Adults, Evidence from Gaze-Contingent Boundary

Paradigms. CLARA L. LOPES, University of Utah, BRENNAN PAYNE, University of Utah — Parafoveal processing is crucial for efficient reading, enabling readers to process upcoming information prior to fixation. Theories of emotion and attention suggest prioritizing emotional meaning aids goal-directed attention. Indeed, emotional words are read faster and remembered better than neutral words. Despite this, the few extant studies on parafoveal processing of emotional language have yielded conflicting findings. We report evidence of an emotional preview benefit in English, revealing distinct effects of valence in younger and older readers. In Experiment 1, young adults read sentences in which the valence of a parafoveal word was manipulated



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using a gaze-contingent display change paradigm. We found that negatively valenced previews facilitated processing compared to an unrelated preview (i.e., a negativity preview effect). Experiment 2, with older adults, demonstrated a positivity preview effect, consistent with Socioemotional Selectivity Theory. These findings highlight critical age-related differences in affective processing which begin early in visual processing during natural reading.

Email: Clara Lopes, clara.lopes@utah.edu

7:45-9:15 PM (7106)

Predicting GPA: The Impact of College Students' Literacy Skills. ALEXANDRA M. JONES, *Eastern Kentucky University*, JESSICA E. AUSTIN, *Eastern Kentucky University*, SARA INCERA, *Eastern Kentucky University* — Measuring undergraduate students' literacy skills is challenging because reading is a complex and multifaceted process. The goal of this study was to evaluate what reading skills (comprehension, vocabulary, metacognitive awareness, critical reading behaviors) are most influential in determining GPA. We recruited two samples of 100 students through an online survey. We found that ACT Reading scores significantly predicted GPA across both samples and that self-report measures of reading (metacognitive awareness and critical reading behaviors) did not predict GPA in either sample. Interestingly, vocabulary levels did not predict GPA in the first sample (participants recruited at the beginning of the semester with a higher average GPA) but predicted GPA in the second sample (participants recruited at the end of the semester with a lower average GPA). Understanding how reading skills influence academic performance is essential to better serve students.

Email: Alexandra Jones, alexandra_jones@mymail.eku.edu

7:45-9:15 PM (7107)

The CASE of Brand Names During Sentence Reading. MELANIE LABUSCH, *Universitat de València & Universidad Nebrija*, MANUEL PEREA, *University of València* — Brand names are typically presented in a distinctive letter case. In abstractionist models, letter case is considered irrelevant, whereas instance-based models use surface information like letter case during lexical retrieval. Previous brand identification tasks reported faster responses to brands in their characteristic letter case (e.g., IKEAGoogle, whereas Ikea≤IKEA). Thus, during sentence reading,

both the actual letter case and the typical letter case of brands interact dynamically, posing problems for purely abstractionist models of reading.

Email: Melanie Labusch, melanie.labusch@uv.es

7:45-9:15 PM (7108)

The Effect of a Larger Reading Span on Landing Position in Deaf Readers: An Eye-Tracking Study. GRACE C. SINCLAIR, *University of South Florida*, FRANCES G. COOLEY, *Rochester Institute of Technology*, EMILY SAUNDERS, *San Diego State University*, KAREN EMMOREY, *San Diego State University*, ELIZABETH R. SCHOTTER, *University of South Florida* — Deaf readers are highly efficient. They read faster, skip more words, and take in information from a wider reading span than their hearing counterparts. We investigated whether this efficiency derives from better saccade targeting and/or more efficient lexical processing, and how these relate to their increased skipping rates. Hearing readers tend to land short of the center of a word, missing the optimal viewing position (OVP), especially when they skipped the previous word. Once they land, the deviation from the OVP affects processing time: they make shorter fixations as they land further away (an inverted (I)OVP effect). We observed the landing positions and fixation durations for reading-level matched deaf (n=38) and hearing adults (n=52) and replicated the canonical effects for the hearing readers. In contrast, deaf readers landed at the OVP and had a flatter IOVP effect, and their data patterns did not differ based on skipping. Thus, deaf readers' efficiency is due in part to the use of their wider spans to target saccades more accurately, and obtain parafoveal preview from words beyond those they skip, suggesting that their increased word skipping does not incur a penalty as skipping does for hearing readers.

Email: Grace Sinclair, gesinclair16@gmail.com

7:45-9:15 PM (7109)

The Impact of Error Expectancy on Eye Movement Behaviors for Error-Free Sentences. SAMANTHA SCHWARZ, *University of South Florida*, ELIZABETH R. SCHOTTER, *University of South Florida* — Reading behaviors are sensitive to the predictability of the words in the text; readers spend less time on predictable words than unpredictable words. However, it is unclear whether these predictions are purely semantic in nature or also lead to predictions

about the word's orthography. In addition, individuals may have a variety of task-related goals that require them to interact with text differently, such as comprehension or proofreading. The current study investigates how task goals requiring people to focus on semantic and/or orthographic properties may influence eye-movement behaviors related to predictability. Participants complete tasks to identify subtle spelling errors (semantic violation) or blatant word replacement errors (semantic/orthographic violation). We expect that early reading measures, such as skipping and gaze durations may not differ between proofreading tasks, but differences may appear in late measures, such as regression rates. If readers simply identify errors, we expect no differences in regressions between error types. However, if readers attempt to integrate errors and discern the intended meaning, proofreading for blatant errors may produce more regressions due to difficulty reconciling this meaning.

Email: Samantha Schwarz, samanthaschwarz@usf.edu

7:45-9:15 PM (7110)

What Are the Spatial Limits of Parallel Word Reading? MAŠA MLINARIĆ, *Vrije Universiteit Amsterdam*, SANDER A. LOS, *Vrije Universiteit Amsterdam*, JOSHUA SNELL, *Vrije Universiteit Amsterdam* — Various models of reading assume that visuo-spatial attention is distributed across multiple words in a gradient shape. We designed a lexical decision flanker task with three flankers on each side of the target to empirically test this assumption. In two experiments (offline [N=49] and online [N=98]), target words were either orthographically unrelated to all flankers or repeated in one out of six flanker positions, enabling us to investigate the shape of the attentional distribution. Stimuli were briefly presented, allowing us to assume that flanker effects, if any, would stem from simultaneous rather than sequential processing of the target and flankers. We observed flanker effects for flankers immediately left and right from the target word. Repetition of the target word in other positions did not facilitate the word recognition process. Our results suggest that while readers integrate information across multiple words, the attentional distribution does not span more than three words.

Email: Maša Mlinarić, m.mlinaric@vu.nl

7:45-9:15 PM (7111)

Fixation-Related Brain Potentials Reveal that Word Skipping During Reading Reflects Deeper Parafoveal Word Identification. SARA MILLIGAN, *University of South Florida*, MILCA JAIME BRUNET, *University of South Florida*, NESLIHAN CALISKAN, *University of South Florida*, ELIZABETH R. SCHOTTER, *University of South Florida* — Skilled readers skip ~30% of the words in the text while reading for comprehension (Rayner, 1998), raising the question of how they can comprehend text without looking at all of the words. We investigated whether skipped words are thoroughly identified or whether skipping is triggered by shallower heuristics (e.g., comparison of visual properties with context-based expectations) via a co-registration experiment in which we split trials based on skipping behavior and extracted the electric brain potentials time-locked to fixations on the pretarget word. Parafoveal previews were manipulated for whether they were orthographically and/or phonologically similar to the semantically correct word and were either seen in a high- or low-constraint sentence. The N400 effect (ERP response reflecting semantic retrieval) was elicited parafoveally only when words were skipped, and only when the target was predictable. We propose that skipping is associated with extensive parafoveal processing, but words may be skipped even when they haven't been precisely identified (e.g., in low constraint). Eye movement decisions like skipping are linguistically influenced, but do not always directly reflect the underlying comprehension processes in the brain.

Email: Sara Milligan, smilliga@usf.edu

7:45-9:15 PM (7112)

Insights from Refixations into Reading Fluency Deficits in Schizophrenia: Evidence from Eye Movements. ANDRIANA L. CHRISTOFALOS, *University at Albany, SUNY*, M. BELEN ABURTO-PONCE, *Columbia University*, DANIEL C. JAVITT, *Columbia University*, HEATHER SHERIDAN, *University at Albany, SUNY* — To investigate the lower-level visual and oculomotor mechanisms that underlie reading fluency disruptions in schizophrenia (Sz), we conducted location-based analyses using eye-movement data from Dias et al. (2021). Readers with Sz and healthy controls demonstrated no differences in initial landing locations, with both groups typically landing near the

center of words (the optimal viewing position). Refixation rates increased as readers landed farther from the OVP, with readers with Sz exhibiting higher refixation rates than healthy controls across all initial landing locations. Given the significant contribution of frequent refixations to reading fluency deficits, we explored the mechanisms underlying refixations in readers with Sz. Readers with Sz exhibited longer refixation durations and refixations landed closer to the OVP to a greater extent than healthy controls. These findings indicate that readers with Sz may make more refixations due to reduced parafoveal processing efficiency, relying more on foveal processing to compensate. Overall, these insights underscore the importance of parafoveal processing for reading fluency and have implications for models of eye movement control during reading.

Email: Andriana Christofalos, achristofalos@albany.edu

7:45-9:15 PM (7113)

Similar Syntactic and Semantic Integration Processes in Skilled L2 and L1 Reading. LIN CHEN, *University of Illinois Urbana-Champaign*, GAISHA ORALOVA, *University of Pittsburgh*, CHARLES A. PERFETTI, *University of Pittsburgh* — Do skilled L2 readers fully acquire the syntactic processes of native speakers? This study addresses this question by testing the use of syntactic information in meaning processes during L1 and L2 reading. We recorded EEG data for each word as four groups (English native speakers and skilled Spanish-, Korean-, and Chinese-English speakers read authentic newspaper texts. We used syntactic surprisal to measure the syntactic category information of each word. Our findings show differences in syntactic processing between L1 and L2 readers. For L1 readers, syntactic processes captured by syntactic surprisal occurred very early, around 150ms after word onset, suggesting automatic syntactic structure building. In contrast, the syntactic surprisal effect for L2 readers appeared during the N400 time window. However, the integration of semantic and syntactic information occurred for both L1 and L2 reading, as indicated by a phrase structure closure effect on the N400, which became less negative as more structures were closed by a word. We suggest that the phrase structure closure reflects the functioning of syntactic structures in the unification of semantic information associated with the previously open syntactic structures.

Email: Lin Chen, linchen8@illinois.edu

7:45-9:15 PM (7114)

The Locus of the Vertex Effect in Visual Word Recognition: a Coccyx or a Feather of Reading? TÂNIA FERNANDES, *University of Lisbon*, LAURA MEALHA, *University of Lisbon*, SUSANA ARAÚJO, *University of Lisbon* — Orthographic processing builds upon visual word recognition, inheriting its properties. The computational proximity between these systems may explain the observation of a vertex effect in words: visual word recognition is more disrupted when line-junctions (i.e., vertices) than midsegments are removed. However, previous research has used naming tasks, influenced by post-orthographic processes, and vertices relate to 3D information extraction. Thus, rather than a vestigial trait, the role of vertices in visual word recognition could have been coopted for a novel purpose. To examine this, we manipulated the preserved contour (100%, 65%, 45%) and segment (vertex vs. midsegment) in two experiments. Experiment 1 used a naming task with targets in homogenous (by lexicality) or mixed blocks (between-participants). Experiment 2 employed lexical decision. A larger vertex effect was found for words than nonwords in both experiments. In Experiment 2, the vertex effect was null for nonwords (confirmed by Bayesian statistics). These results suggest the vertex effect occurs later in orthographic processing, possibly during lexical access, representing a feather of reading rather than a coccyx.

Email: Tânia Fernandes, tpfernandes@psicologia.ulisboa.pt

7:45-9:15 PM (7115)

Decoder Performance Does Not Predict Memory Advantage for Symmetrical Patterns. JESSE SARGENT, *Francis Marion University*, SAMANTHA TRAMMEL, *Francis Marion University*, KAYLA ALLEN, *Francis Marion University*, KATIE HUNTER, *Francis Marion University*, JAILA DAVIS, *Francis Marion University* — Location memory can be improved for locations that can be chunked together. We are interested in the role that perceptual grouping mechanisms play in the spatial memory advantage for chunks. On each of 120 trials participants saw a pattern of six yellow squares (3 s.) after which a response grid appeared, and participants used a mouse to click on the squares that had been lit. On half the trials the lit squares were selected randomly and on the other half the lit squares made a pattern that was symmetrical about the

vertical midline. Memory was better for symmetrical patterns. Electroencephalography (EEG) data was recorded throughout. We trained support vector machines to discriminate between symmetrical and random pattern trials. We hypothesized that decoder performance might benefit from and reflect stronger symmetry based perceptual grouping. Classifier accuracy was above chance but did not predict the memory advantage for symmetrical stimuli.

Email: Jesse Sargent, jquents@gmail.com

7:45-9:15 PM (7116)

Serial Dependence Effect in Visual Working Memory Is Modulated by the Fidelity of Target and Not Inducer Representation. AYSECAN BODUROGLU, Koç University, BUGAY YILDIRIM, Koç University — Attentional modulation of biases between consecutive representations would indicate an adaptive visual working memory system. We investigated how representation fidelity of successively presented features interact and the attentional modulation of serial dependence effects. Participants reproduced orientations of three sequentially presented teardrop objects (T1, T2, T3) in order. We varied T1-T2 lag as 1, 3, or 7 (110ms, 330ms, 770ms); T2-T3 lag was always 6 (660ms). When T1-T2 lag was 3, due to attentional blink, T2 representation fidelity was reduced. For these lower fidelity T2 representations, there was greater repulsive serial dependence, differentiating them from T1s. For T3, outside any T2-driven attentional blink, there was still a repulsive influence from T2, but this did not vary as a function of T2 fidelity. For targets with reduced fidelity, there is higher repulsive serial dependence but repulsive effects does not vary as a function of inducer (i.e., preceding stimuli) fidelity.

Email: Aysecan Boduroglu, ABODUROGLU@ku.edu.tr

7:45-9:15 PM (7117)

Action-Related and Retro-Cue Prioritization within Visual Working Memory. JOAQUÍN MACEDO-PASCUAL, Universidad Complutense de Madrid, JORGE SAN-SEGUNDO, Universidad Autónoma de Madrid, ALMUDENA CAPILLA, Universidad Autónoma de Madrid, JOSÉ ANTONIO HINOJOSA, Universidad Complutense de Madrid, NURIA CAMUÑAS, Universidad Nebrija, CRISTINA ROMERO-CASAS, Universidad Rey Juan Carlos, CLAUDIA POCH, Universidad Nebrija — Visual

selective attention might act as a control action mechanism, providing a functional link between sensory input and limited bodily responses. Visual working memory research has started to adopt this ecological perspective, focusing on its purpose (i.e., the imminent action on sensory information that is no longer present). Central to our work, planning an action or eye movement to the location of a no-longer present item enhances its WM representation. In this study we investigated whether this benefit is equivalent to the retro-cue selection bias. We compared the selection benefits of an endogenous retro-cue, a spatial retro-cue, or a saccadic preparation cue towards a previously occupied position. Although in the saccadic preparation task there was a benefit for the item matching the saccadic goal, this benefit was not equivalent to that of the endogenous or exogenous retro-cue. This suggests a dissociation between the WM involuntary bias exerted by actions and the retro-cue benefits exerted through voluntary control.

Email: Joaquín Macedo-Pascual, joamac12@gmail.com

7:45-9:15 PM (7118)

Cognitive Training Based on Human-Computer Interaction and Susceptibility to Visual Illusions, Reduction of the Ponzo Effect Through Working Memory Training. HANNA BEDNAREK, SWPS University, JUSTYNA OLSZEWSKA, University of Wisconsin Oshkosh, MAGDALENA PRZEDNICZEK, SWPS University, JAROSŁAW ORZECHOWSKI, SWPS University — The influence of cognitive training on resistance to orientation visual illusions (Poggendorff, Zöllner) and metric visual illusions (Ebbinghaus, Müller-Lyer, Ponzo) was tested. The second goal of the study was to verify whether Witkin's field dependence/independence, defined as an individual's ability to identify parts of an organized visual field as elements separate from that field, moderates the influence of cognitive training on visual illusion resistance. 250 participants aged 19–32 took part in the experiment. In addition to a passive control group, three training groups were used: a working memory-training group, an attention-training group, and a perception-training group. The groups were homogeneous in terms of gender, age, and proportion of field-dependent and field-independent individuals. All groups received about three weeks of adaptive cognitive training, consisting of 18 sessions of 30 min per day. Most importantly, working memory training appeared to be effective in reducing susceptibility to the Ponzo illusion.



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Email: Hanna Bednarek, Hanna.Bednarek@swps.edu.pl

7:45-9:15 PM (7119)

Focusing on a Subset of Items Enhances Visual Working Memory Performance for Low-Capacity Individuals.

HIROYUKI TSUBOMI, *University of Toyama*, KEISUKE FUKUDA, *University of Toronto Mississauga* — Visual working memory (VWM) capacity is typically around 3-4 items, but it decreases when more items need to be remembered (e.g., 8 items). Previous research has shown that VWM exhibits this capacity drop even when participants are instructed to focus on a subset of items. The present study investigated the possibility that such a strategy selectively benefits individuals with low VWM capacity, who struggle with attention regulation in the face of overwhelming competition. Participants were asked to remember 4 or 8 items under three different instructions: "do your best" (control group), "remember a subset," or "remember all items." The results showed that low-capacity participants showed less capacity drop when instructed to remember a subset of the 8 items, whereas high-capacity participants did not benefit from this strategy. These findings suggest that focusing on a subset of items selectively enhances VWM capacity in low-capacity individuals.

Email: Hiroyuki Tsubomi, hsubomi@hmt.u-toyama.ac.jp

7:45-9:15 PM (7120)

Prioritization in Working Memory Requires

Action Planning. CLAUDIAPOCH, *Universidad Nebrija*, JOAQUÍN MACEDO-PASCUAL, *Universidad Complutense de Madrid*, JORGE SAN-SEGUNDO, *Universidad Autónoma de Madrid*, ALMUDENA CAPILLA, *Universidad Autónoma de Madrid*, MARÍA VAILLO, *Universidad Nebrija*, JOSÉ ANTONIO HINOJOSA, *Universidad Complutense de Madrid* — Working memory enables adaptive behavior providing a link between perception and a prospective action. It is well established that not all the items in WM are maintained in the same accessible state. A recent approach proposes that selective attention enables highly accessible or privileged items by coupling the sensory information with its planned action. In this study, we tested whether item prioritization through retrospective cuing relies in the functional coupling of sensory information with action planning. We compared memory performance in two blocks of a retro-cue task, in which participants were or were not required to provide an

unrelated hand response in a non-predictable time between retro-cue and probe. Critically, 30% of the trials were block-invalid in both blocks, which allowed us to isolate action preparation from action execution. We found that WM prioritization was impaired in the motor block, regardless of action execution. This finding suggests that selective attention directed to a WM item brings it to a privileged state not only through an enhancement of sensory information, but also by linking its visual features to its prospective action.

Email: Claudia Poch, cepoch@nebrija.es

7:45-9:15 PM (7121)

The Effect of Spatiotemporal Information on Feature Binding in Visual Working Memory.

JUYEON JOE, *Yonsei University*, MIN-SHIK KIM, *Yonsei University* — Two experiments examined how the visual features are prone to misbinding based on spatiotemporal information. Participants simultaneously viewed two distinct objects appearing across fixation, followed by two new objects in the same locations. Thus, each pair of objects shared either the same time or the same space. Participants indicated if a test probe matched any of the four objects. In the nonmatch case, the test probe consisted of features from objects that either shared space or time, or shared no information. Misbinding occurred more frequently when the features of the test probe shared spatial or temporal information, with no significant difference between them, indicating that both spatial and temporal information are important for binding. Experiment 2 presented two memory objects either unilaterally or bilaterally to investigate whether a spatial advantage in binding was conferred by presenting both objects bilaterally in Experiment 1. Results replicated Experiment 1 in bilateral conditions. In the unilateral condition, however, misbinding occurred more frequently between features of simultaneously presented objects, suggesting temporal information's priority over spatial information within the same visual hemifield.

Email: Juyeon Joe, juy1317@yonsei.ac.kr

7:45-9:15 PM (7122)

The Relationship Between Working Memory Capacity and Attribute Amnesia.

HSIN-MEI SUN, *College of St. Scholastica*, WILLIAM FISHER, *College of St. Scholastica*, CHONG ZHAO, *The University of Chicago* — Attribute amnesia (AA) refers to the phenomenon in which observers fail to report a just-

attended attribute in a surprise memory test, suggesting that not all attended information is available for later report. In the current study, we examined the relationship between AA and working memory capacity (WMC). We hypothesized that individuals with higher WMC would be less subject to AA compared to individuals with lower WMC, as WMC is correlated with overall cognitive ability including selective attention and memory encoding. We had 33 participants perform an AA task in which they reported one attribute (location) of the target (English letter) among non-targets (Arabic numbers) on the pre-surprise trials and a different attribute (identity) of the target on the surprise trial. We also measured participants' WMC using a change localization task. Results showed that participants could easily localize the target letter among distractor numbers in the pre-surprise trials. However, only 13 participants correctly identified the target letter in the surprise trial, indicating the presence of AA. Furthermore, there was no correlation between AA and WMC, suggesting that WMC is not related to the mechanisms underlying AA.

Email: Hsin-Mei Sun, hsun@css.edu

7:45-9:15 PM (7123)

Skill Learning by Two People or One: Are Two Heads Better than One, and What About Two Hearts? BRANDON NOLASCO, *University of California, Riverside*, APRIL KARLINSKY, *California State University, San Bernardino*, DAVID A. ROSENBAUM, *University of California, Riverside* — Scant prior research exists on the question of how two people acquire skills together. To address this concern, we devised a touchscreen task where participants touched colored targets while avoiding distractors. We compared response times as a function of trial number both for solo performers and dyads. Individuals did worse than dyads if the individuals had to switch attention between colors but the dyads did not. When colors were removed, dyads did no better than solo performers, though learning rates were remarkably similar in all these cases. By including the Positive and Negative Affect Schedule and subscales of the Intrinsic Motivation Inventory, we also brought in affect, motivation, and social relations, which, like the study of skill learning by teams, has received little prior attention.

Email: Brandon Nolasco, bnola001@ucr.edu

7:45-9:15 PM (7124)

Does the Past Predict the Future? New Perspectives on Wrongful Convictions Based on Comparisons of Pre- and Post-1989 Exonerations. MICHAEL P. TOGLIA, *Cornell University*, LULU G. MIKULA, *Cornell University*, SARAH SMAIL, *Cornell University*, GARRETT L. BERMAN, *Roger Williams University* — Our previous archival studies explored wrongful conviction causes, including lineup misidentification, documented in the Innocence Project and the National Registry of Exonerations. The present archival analyses report data concerning cases that have received minimal attention, namely pre-1989 exonerations. This momentous 1989 milestone marks the year DNA evidence became available for testing people who were incarcerated and claimed innocence. Therefore, non-DNA exonerations that extend back more than 150 years ago, were compared with two post-1989 samples (DNA and non-DNA overturned convictions). We characterize these contrasts in terms of single-cause vs. multiple-cause convictions; notably a dramatic shift towards multiple causes began in 1959 and has continued in the DNA era. Similarities and differences across pre- and post- 1989 cases concerning race are also presented, as is a discussion of trends in the pre- data as it approached the year 1989. These contrasts provide new perspectives on our archival research strategy of “looking backward to move forward” on understanding and preventing wrongful convictions by designing experiments, developing new paradigms, and promoting criminal justice reform.

Email: Michael Toglia, m.toglia@unf.edu

7:45-9:15 PM (7125)

Useful, Yet Under-Appreciated Indicators of Eyewitness Identification Accuracy. XUEQING CHEN, *University of Bristol*, PHILIP GUSTAFSSON, *Stockholm University*, LAURA MICKES, *University of Bristol* — Confidence, response time, and retrieval effort are often considered indicators of eyewitness memory accuracy, yet it is uncertain if people appreciate and use these indicators when assessing eyewitness identifications. In our two-part study, we investigated how eyewitness confidence, response time, and retrieval effort reflect identification accuracy and how these factors are perceived by others assessing identification accuracy. In Part 1, 399 participant-eyewitnesses

completed an eyewitness identification task while their responses were video-recorded. Identifications made with higher confidence, shorter response times, and less retrieval effort were more accurate. In Part 2, 505 participant-assessors evaluated the accuracy of eyewitness identifications from Part 1. Participant-assessors could not distinguish correct from incorrect identifications, and their confidence did not reflect the accuracy of their assessments. These findings suggest individuals may not effectively use the aforementioned indicators, underscoring the potential for advanced analytical tools, such as artificial intelligence techniques, to aid in criminal justice settings.

Email: Xueqing Chen, xueqing.chen@bristol.ac.uk

7:45-9:15 PM (7126)

Eyewitness Memory in Older Adults: Roles of Stereotype Threat and Cultural Orientation.

WILLIAM BLAKE ERICKSON, *Texas A&M University, San Antonio*, MARIA SANTILLAN IBARRA, *Texas A&M University, San Antonio*, JORGE SANTILLAN IBARRA, *Texas A&M University, San Antonio* — As the US population becomes older and more diverse over the next century, adults 65 and older from many backgrounds will be more likely to become witnesses and victims to crime. Older adults are less accurate than younger adults at lineup identification, and police interactions may exacerbate this disparity by producing an age-based stereotype threat (ABST) where older adults reminded of their group's poor memory will in turn perform poorly. We manipulated ABST among older and younger adults in an eyewitness paradigm. Participants viewed a crime video and made lineup selections. We also measured participants' cultural orientation (individualism vs. collectivism) to determine whether cultural values influence susceptibility to ABST. Data collection are ongoing. Younger adults chose from lineups less often yet more accurately and confidently than older adults, with ABST weakly increasing target-absent rejection rates in both age groups while also weakening the confidence-accuracy relationship. Individualism predicts lineup rejection among target-absent lineups but collectivism predicts rejection of target-present lineups, and these have a weak interaction with ABST susceptibility.

Email: William Erickson, William.Erickson@tamusa.edu

7:45-9:15 PM (7127)

Mistaken Identity: Manipulating Memory Errors in Lineup Identifications. COURTNEY SHECKLER, *Muhlenberg College*, ALEXANDRA K. FRAZER, *Muhlenberg College* — Memory plays a key role in eyewitness testimony and lineup identifications, often being the main source of information for a witnessed crime. Here, we explore memory reconsolidation and source monitoring errors as they relate to lineup identifications and witness confidence. Fifty participants viewed a staged crime, then were asked to make identifications from either a culprit-present or culprit-absent lineup, and rated their confidence. On a separate day, participants came back into the lab to make a second identification from a culprit-present lineup and rated their confidence again. Those in the initial culprit-absent group were significantly more likely to consistently make the wrong identification, made slower identifications, and rated themselves as less confident than those in the initial culprit-present group. Results suggest that people may experience memory reconsolidation and source monitoring errors when initially shown a culprit-absent lineup, which has serious implications for law enforcement and the criminal justice system.

Email: Courtney Sheckler, courtney.sheckler@gmail.com; Alexandra Frazer, afrazer@muhlenberg.edu

7:45-9:15 PM (7128)

Investigating the Impact of Prior Familiarity on Cross-Race Eyewitness Identification. ALEX WOOTEN, *Hollins University*, SOHA MUNIR, *Virginia Commonwealth University*, CURT CARLSON, *Texas A&M University, Commerce*, MARIA CARLSON, *Texas A&M University, Commerce*, HANA OLOF, *University of Manitoba* — The majority of the cross-race effect (CRE) literature has focused on recognition accuracy for unfamiliar faces yet witnesses often interact with suspects prior to a crime. Thus, we examined whether suspect familiarity influenced the CRE using an eyewitness paradigm. To create familiarity, participants studied a series of faces. Later, they went through multiple blocks of the following: a target face, a distractor task, and a lineup containing a Black or White suspect who was either familiar (seen at study) or unfamiliar, and either guilty or innocent. Initially, we found a CRE for familiar suspects but not for unfamiliar ones. After addressing some methodological issues (e.g., lack of counterbalancing, limited stimuli), this pattern

was reversed. Specifically, discriminability was significantly higher for White than Black unfamiliar suspects (i.e., the typical CRE), but discriminability was similar for familiar suspects regardless of race. Across both experiments, the confidence-accuracy relationship was intact for white unfamiliar suspects but impaired for Black familiar suspects.

Email: Alex Wooten, alexwooten@gmail.com

7:45-9:15 PM (7129)

Protecting Older Adults Against Misinformation in Eyewitness Memory Using Warnings.

HIMANSHU CHAUDHARY, *Tufts University*, AYANNA K. THOMAS, *Tufts University*, ELIZABETH RACE, *Tufts University* — Accuracy of eyewitness memory is critical in the criminal justice system, yet can be unreliable. Two factors that affect the reliability of eyewitness memory are age and exposure to misleading information. Prior studies have shown that warning young adults against misleading post-event information improves memory accuracy. The present study tested whether older adults can benefit from the same type of warning. We hypothesized that older adults would be able to use warnings to protect memory from misinformation. Further, we expected that warnings would also support strategic regulation of retrieval output. Results showed that older adults were unable to utilize warnings that either appeared prior to post-event information or following post-event information. In addition, while older adults were able to effectively regulate their memory in the face of misinformation, warnings did not modulate their ability to do so. These findings suggest that warnings are not effective in combatting susceptibility to misinformation in older adults, but older adults can effectively exercise control over memory retrieval processes, and that they may need additional external support to benefit from general warnings.

Email: Himanshu Chaudhary, himanshu.chaudhary@tufts.edu

7:45-9:15 PM (7130)

Why Filler Optimization Remains a Challenging Task in Police Lineups: Testing SDT-Based Predictions Across Similarity Structures and Eyewitness Procedure Formats. JEROME

HOOVER, *University of Massachusetts Amherst*, ANDREW L. COHEN, *University of Massachusetts Amherst*, JEFFREY J. STARNS, *University of*

Massachusetts Amherst, MELISA AKAN, *University of Massachusetts Amherst* — Using model-based simulations Colloff et al. (2021) predict that, from a description-matched pool of fillers, eyewitness memory should be maximized when suspect-filler (SF) similarity is low, regardless of innocent-suspect-perpetrator similarity (SP). Empirical work using a median level of SP similarity support this prediction, but other levels of SP similarity have not been tested. In the present work, we manipulated both SF similarity and SP similarity using tightly controlled, artificially generated faces. When SP similarity was low, eyewitness memory decreased with SF similarity, as predicted. When SP similarity was high, however, the results challenge the model predictions. Specifically, when SP similarity was high, eyewitness memory increased with SF similarity. In particular, if an innocent suspect looks highly similar to the perpetrator, eyewitnesses are more likely to pick them out of a lineup if they are surrounded by maximally dissimilar fillers. These results suggest that, under some conditions, decreasing SF improves eyewitness memory, while under other conditions it hurts eyewitness memory.

Email: Jerome Hoover, jdh Hoover@umass.edu

7:45-9:15 PM (7131)

Analyzing the Informational Value of Multiple Ranking-Style Lineup Procedures. MICHAEL D.

TUTTLE, *University of Massachusetts Amherst*, JEFFREY J. STARNS, *University of Massachusetts Amherst*, ANDREW L. COHEN, *University of Massachusetts Amherst* — Lineup researchers continue to develop and test novel lineup procedures. In particular, researchers are interested in the benefit of procedures which always get some response to the suspect. This project seeks to compare two procedures that are designed to get additional information about the suspect in order to gain a better understanding of what types of additional responses are most beneficial to a novel lineup procedure. We use analyses based in information-theory and signal detection theory to draw conclusions about these non-standard lineups and assess their efficacy at gathering evidence of suspect guilt or innocence.

Email: Michael Tuttle, mtuttle@umass.edu

7:45-9:15 PM (7132)

Behind the Scenes of Denial-Induced Forgetting: Strong ROC Curve Evidence for Effects on Memory for Denial-Driven Discussions.

CHARLOTTE A. BUECKEN, *Leuven Institute of Criminology, Faculty of Law and Criminology, KU Leuven*, PAUL RIESTHUIS, *KU Leuven*, IVAN MANGIULLI, *University of Bari Aldo Moro*, HENRY OTGAAR, *Maastricht University* — Victims, perpetrators, and witnesses all sometimes deny negative experiences. We examined how false denials affect memory reports for a trauma analogue event and previous discussions regarding it, differentiating memory strength (d') from response bias (c), and via Receiver Operating Characteristic curve analysis. Participants ($N=108$) watched a trauma analogue video. Next, half falsely denied seeing details in this video, and half were honest in a conversation with the experimenter. After one week, participants completed a source memory test, examining memory for the conversation and event. Our analyses, showed very clear evidence for denial-induced forgetting of discussed details; participants who falsely denied later remembered on average 3.6 details fewer from the conversation than honest participants, exceeding our smallest effect size of interest of 1 detail difference and meeting statistical significance. Moreover, equivalence testing showed that effects of denials on (true and false) memory for the event were equivalent to no difference. Our results imply that conversational testimony might be negatively affected by denials, but that memory for the denied event itself likely is not affected in a practically meaningful way.

7:45-9:15 PM (7133)

Do Lineups with Disguises that Match the Culprit's Facilitate Eyewitness Identification?
RACHEL O'DONNELL, *Iowa State University*, JASON C. K. CHAN, *Iowa State University*, MIKO M. WILFORD, *Iowa State University*, DAHWI AHN, *University of Waterloo*, KEELY M. BURNS, *Iowa State University* — Criminals often wear disguises, like masks, when committing crimes. Some research has demonstrated that identification of a masked perpetrator is improved when participants were presented with a masked lineup compared to an unmasked lineup (masked-lineup superiority effect or MLSE; Manley, 2019; 2022). However, this research was conducted only for culprits who wore a ski mask, and other research has demonstrated mixed results regarding identification accuracy for other disguises (e.g., Carlaw et al., 2022; Carragher & Hancock, 2020; Palu et al., 2023; Thorley et al., 2022). We investigated eyewitness identification accuracy for three different types of disguises—a surgical face mask (Experiment 1), a surgical face mask

and baseball hat (Experiment 2), and a ski mask (Experiment 3). Participants viewed mock theft videos and made identification decisions on either a matching disguised or undisguised lineup. Results indicated no MLSE in Experiment 1 (surgical mask). We found a MLSE effect in hits (when the culprit was present), but at the expense of an increase in filler identifications (when the culprit was absent) in Experiment 2 (surgical mask and baseball hat). Data collection for Experiment 3 is ongoing.

Email: Rachel O'Donnell, rachelod@iastate.edu

7:45-9:15 PM (7134)

The Influence of Personality Traits on Engagement in Lifelong Learning. JESSICA K. LJUNGBERG, *Luleå University of Technology*, DANIEL ERIKSSON SORMAN, *Umeå University*, ELISABETH ASTROM, *Umeå University*, MIKAEL AHLSTROM, *Sprout Park & Luleå University of Technology*, ROLF ADOLFSSON, *Umeå University* — Today, adult individuals must continuously learn and adapt to rapid societal changes. However, little is known about the personality traits that make adults more likely to engage in learning activities. Few studies have longitudinally and objectively investigated the influence of personality on lifelong learning throughout working age. This study used 15 years of longitudinal data to examine which personality traits predicted the level and long-term changes in learning activities among 1,329 Swedish adults aged 30-60. Results from growth curve modelling showed that novelty seeking and self-transcendence were positively related to overall engagement in learning activities but not to the rate of change. Regarding specific activities, novelty seeking was related to higher levels of engagement in attending courses, taking on new education, and making occupational changes, while harm avoidance was negatively related to the likelihood of changing occupation. The results underscore the importance of considering personality in relation to lifelong learning. Insights from this study can potentially increase the likelihood of finding methods to promote lifelong learning, beneficial for educators, policymakers, and companies.

Email: Jessica Ljungberg, jessica.korning-ljungberg@ltu.se

7:45-9:15 PM (7135)

Looking Inward: Does Pupil Size Track Encoding Effort? A Meta-Analytic Approach.

DURNA ALAKBAROVA , *The University of Texas at Arlington*, HUNTER BALL, *The University of Texas at Arlington* — Understanding the mechanisms of successful encoding of information enables us to design strategies to help people improve their retention of knowledge. One way to examine these processes is to look at the amount of cognitive effort people engage in during encoding and retrieval of material. Task-evoked pupillary responses (TEPRs) have been shown to be a reliable indicator of cognitive effort and provide real-time measurements of this process. TEPRs have been found to distinguish between later remembered and forgotten items. However, this subsequent memory effect is not reliably found across studies. To disentangle conflicting findings of the effect, we conducted a meta-analysis on 29 effect sizes across 22 studies. A random effects model revealed that a) the effect was not overall present in cued-recall and recognition tests, but was present in free-recall tests, b) TEPRs tracked subsequent memory in studies utilizing intentional encoding instructions, but not with incidental encoding instructions, and c) the subsequent memory effect did not depend on the number of items participant had to learn. These findings have important implications for researchers' decisions to use pupillometry as a tool to track encoding success.

Email: Durna Alakbarova, durna.alakbarova@mavs.uta.edu

7:45-9:15 PM (7136)

Broccoli & Garlic: When Item-Typicality Can Inform Us of Subtle Memory (Mal)functions: An EEG Spectral Analysis.

JOANA COSTA DO CARMO, *Lusófona University*, C. SOUZA, *ISCTE–Instituto Universitário de Lisboa*, A-K BECK, *University of Kaiserslautern-Landau*, M. V. GARRIDO, *ISCTE–Instituto Universitário de Lisboa*, J. B. BARAHONA-CORREA, *Fundação Champalimaud*, T. LACHMANN, *University of Kaiserslautern-Landau* — Since the works of F. Bartlett, a (congruency) schema effect has been known. Paradoxically, we have shown a selective incongruity effect for different memory storage formats. In this, items with less fit to a schema (i.e., atypical items) were better recognized and led to more episodic traces while typical items produced more semantic memories, likely by-passing novelty

processing. In this EEG study, with both autistic and neurotypical adults, we manipulate, during memory encoding, item-typicality as well as schematic encoding. We focus on spectral analysis, particularly in the activity of both theta and upper-alpha bands, known markers of the neocortical semantic system and the hippocampal episodic system, respectively. Our data clarifies the engagement of the episodic system in the two memory systems' dynamics when faced with inconsistent information and the proposed by-passing in the case of consistent information. Furthermore, the evidence of episodic-related anomalies in autism is subtly characterized.

Email: Joana Costa do Carmo, joanacostadocarmo@gmail.com

7:45-9:15 PM (7137)

Learning Environments Gone Virtual: VR as an Inclusive Learning Tool for Individuals with Increased ADHD Symptoms.

DANTE DEL ROSARIO, *California State University, Northridge*, MARIAH DURAN, *California State University, Northridge*, PENYLOPI ZABZDYR, *California State University, Northridge*, STEFANIE A. DREW, *California State University, Northridge* — Historically, those with ADHD have been found to maintain less visual attention compared to their typically developing (TD) peers in a classroom setting (Kofler et al., 2008). Studies claimed that deficits in ADHD could be partially explained by the field of vision shifts while using VR (Mangalmurti et al., 2020). Moreover, individuals with ADHD have been found to have poorer working memory (Mohammadhasani et al., 2020). We hypothesized that (1) individuals with higher ADHD symptoms would learn less than TD individuals, shown through knowledge check test scores and that (2) those with higher ADHD symptoms would have a greater number of fixations but have shorter fixation durations compared to TD individuals. We found no significant difference in the comparison of high and low ADHD symptom groups ($p=.259$) for test performance, average fixation duration in AOI ($p=.130$), and fixation number in AOI ($p=.498$). However, we did find that those with high ADHD symptoms had significantly longer dwell time in AOI ($p=.047$). This implies that VR could facilitate as a learning tool to aid those with high ADHD symptoms in a classroom setting.

Email: Dante del Rosario, dante.delrosario.962@my.csun.edu

7:45-9:15 PM (7138)

The Future of Our Versus Your Country: A Case of American and Chinese Collective Future

Thoughts. NAZIKE MERT, *Cornell University*, QI WANG, *Cornell University* — The present research examines collective future thinking in American and Chinese individuals for their own and each other's countries and the cultural differences. It leverages the distinct sociocultural values, political systems, and economic structures of the United States and China—often depicted as rivals—to understand collective future thoughts. American and Chinese adults (Study 1) and college students (Study 2) imagined what might happen in their own and the other country in the future. It was expected that participants in both cultures would imagine more positive events in their own country's than the other country's future, although this tendency would be greater among Chinese than Americans. We further explore whether the cultural difference would be related to national identity, collective narcissism, and news consumption. The findings will offer insights into cross-cultural perceptions and expectations, contributing to the understanding of intergroup relations in a global context.

Email: Nazike Mert, nm625@cornell.edu

7:45-9:15 PM (7139)

Does Reliance on Inaccurate Information Differ Across Presentation Modalities? A Text vs. Video Comparison.

JOSIE A. HOLOHAN, *Northwestern University*, ANDRES MARTELL, *Northwestern University*, DAVID N. RAPP, *Northwestern University* — A substantial body of work has consistently shown that reading inaccurate information, including falsehoods that are likely known to be wrong, can influence people's subsequent decisions and behaviors. But little work has explored whether these effects generalize across presentation formats. The current experiment used experimentally-produced video content, and texts, to compare the influence of inaccurate information across modalities. Participants watched brief videos or read texts conveying the same content, both including potentially inaccurate assertions (e.g., "Epilepsy is contagious"). After viewing the videos or reading the texts, participants judged the validity of statements related to the previously conveyed assertions. Overall, participants made more judgment errors after exposures to inaccurate as compared to accurate content, replicating previous work. This pattern was similarly observed

whether participants watched videos or read texts. The deleterious effects of exposures to inaccuracies therefore emerged across presentation modalities. Whether this means interventions shown to be effective with texts are also useful for video experiences remains an open question.

Email: Josie Holohan, josieholohan2026@u.northwestern.edu

7:45-9:15 PM (7140)

Feedback Effects on Temporal and Spatial

Perceptual Learning. JIAXUAN TENG, *University of Arizona*, EVE A. ISHAM, *University of Arizona* — The perception of time is fundamental to all that we do. Previous research indicates that, unlike other magnitudes, perceptual learning in the temporal domain may not benefit from explicit feedback, suggesting a unique process distinct from other non-temporal domains. In the current study, we examined the effects of feedback on temporal and spatial production tasks. Participants were trained to produce intervals of 2.8-second intervals and lengths of 2.8-centimeters in the training blocks and tested using the same target (specificity phase) and three different magnitudes (0.9, 1.4, and 3.6 units) in the transferability phase. Results showed that spatial accuracy improved with feedback in the training block, whereas temporal accuracy did not, supporting the notion that spatial, but not temporal, learning benefits from explicit feedback. In addition, a main effect of magnitude was observed across the four units (0.9, 1.4, 3.6, and 2.8), such that magnitudes of 0.9 and 1.4 units were overproduced than 3.6 and 2.8 in both temporal and spatial tasks. No significant difference was observed between the 3.6 and 2.8 units. This suggests that the trained magnitude could only be transferred to the test magnitudes of the same scales.

Email: Jiaxuan Teng, jteng@arizona.edu

7:45-9:15 PM (7141)

Individual Differences and Effects of Pattern Complexity on Sequence Learning.

MARIAH S. LEES, *Villanova University*, NIKOLE GIOVANNONE, *Villanova University*, JOSEPH C. TOSCANO, *Villanova University* — The ability to learn and make predictions about patterns is central to many aspects of cognition, including language processing and motor learning. This study investigates factors that influence performance on the serial reaction time (SRT) task, a commonly used paradigm for studying sequence learning. First, we assess

individual differences in performance on the SRT task, linking performance to underlying mechanisms using a simple recurrent network simulation. We find that differences in the model's learning rate predict participants' performance on the task, suggesting a potential mechanistic link. Second, we investigate how properties of the pattern influence task performance. Participants were presented with patterns varying in complexity, from constant values to arbitrary sequences, with several patterns representing sequences of moderate complexity (e.g., linear growth, nonlinear growth, cyclic changes). We find that pattern complexity had a significant effect on performance, with poorer performance for more complex patterns. The results provide insights into factors affecting performance on the SRT task and suggest avenues for future research investigating how complex patterns that unfold over time are learned.

Email: Mariah Lees, mariahlees@gmail.com

7:45-9:15 PM (7142)

Learning in the Context of Partial Information.

NICOLE KING, *The Ohio State University*, BRANDON TURNER, *The Ohio State University*, VLADIMIR SLOUTSKY, *The Ohio State University*, QIANQIAN WAN, LAYLA UNGER, *University of York*, ROBERT RALSTON — In our everyday lives, there are often more aspects of the environment than we can reasonably attend. As a consequence, we selectively attend to some aspects of the environment—usually those aspects which are most relevant to our goals—and ignore aspects that are deemed irrelevant. It follows then, that using selective attention can limit a learner's impression of an environment, because the information that is stored in memory is only a biased sample or partially encoded version of that environment. However, previous theories assume perfect and consistent access to all available dimensions, regardless of how attention is distributed. Here, we build upon existing models of categorization to illustrate how partial encoding can account for differences in learning. We use three benchmark datasets to demonstrate how the model can flexibly capture different learning strategies within the same task by creating a map of the corresponding representation. Most importantly, models equipped with partial encoding readily account for unique behavioral profiles suggesting failure of selective attention to relevant dimensions.

Email: Nicole King, nckmeh@gmail.com

7:45-9:15 PM (7143)

Semantic Learning as a New Tool That Creates Semantic Networks in Long-Term Memory.

YAEL SCHEMS MAIMON, *Tel Aviv University*, ROY LURIA, *Tel Aviv University* — In this study, we introduce semantic learning and demonstrate its effectiveness in creating accessible long-term representations. We taught two groups of participants about novel objects from unfamiliar categories using semantic learning—a method that enables the formation of new long-term memory (LTM) representations by integrating various bits of information about the studied material. Through this process, which reflects natural and everyday learning, a detailed semantic network was formed in LTM for each learned category connecting all learned objects. The formation and integrity of semantic networks were assessed through two tasks: 1.) a semantic rating task, in which participants rated the semantic proximity of word pairs that included the studied objects and concepts from prior existing knowledge and 2.) a task of writing a short story in natural language about the learned concepts. Participants' proximity ratings correlated with the natural language they used, providing evidence that this natural learning leads to LTM representations interconnected by their meanings and relationships. As a result of being structured within semantic networks, these representations can be effectively retrieved and utilized by the participants.

Email: Yael Schems Maimon, yael.schems@gmail.com

7:45-9:15 PM (7144)

The Effects of Emotion and Working Memory Load on Temporal Distance Memory.

GAHYUN KIM, *University of Toronto*, QUN YE, *Zhejiang Normal University*, SEPHERA CHOU, *University of Toronto Scarborough*, ELISA PHILIP, *University of Toronto Scarborough*, ANDY C.H. LEE, *University of Toronto* — Our temporal memory is often susceptible to distortion and influenced by multiple factors, such as emotion and working memory load. However, the relationship between them has not yet been fully uncovered. To address these questions, the present study investigated the simultaneous impact of emotion and working memory load on temporal distance memory within a sequence of events. Participants completed an n-back task involving the presentation of emotional images, followed by a temporal distance rating task in which they reported how far apart a pair of images were presented during the n-back task. The results revealed that

negative-high arousal images and low working memory load led to overestimated temporal distance compared to positive-low arousal and high working memory load, respectively. However, there was no significant interaction between these factors. Negative-high arousal images or low working memory load may enhance the reinstatement of item information and greater event segmentation, leading to the overestimation of subjective temporal distance, but these factors may involve different underlying mechanisms. This study provides novel insights into how emotion and working memory affect our temporal memories.

Email: Gahyun Kim, gh.kim@mail.utoronto.ca

7:45-9:15 PM (7145)

Untangling Myths: Memory, Secondary Trauma and Criminal Justice Professionals as Witnesses.

KRIS-ANN S. ANDERSON, *John Jay College of Criminal Justice & CUNY Graduate Center*, KIMBERLEY D. WILLIAMS, *John Jay College of Criminal Justice*, MELANIE K. T. TAKARANGI, *Flinders University*, DERYN STRANGE, *John Jay College of Criminal Justice & CUNY Graduate Center* — The public's belief that criminal justice professionals (CJPs) have superior memory persists despite research showing no uniform advantage. Why? Our research explored secondary trauma as a potential explanation. We hypothesized that people's belief that CJPs have better memory may be linked to another myth: that trauma memory is special. Our previous study revealed the public thinks CJPs have high levels of secondary trauma and that a perceived benefit of that trauma is better memory for traumatic events. We predicted that CJPs would be considered more credible witnesses in traumatic situations than laypeople. Participants reviewed mock grand jury transcripts of two witnesses (a CJP and a non-CJP) to a fatal accident and selected which witness prosecutors should present first. The results indicated that CJPs are perceived as more credible and less prone to memory distortion. Our results suggest people see secondary trauma as protection when witnessing traumatic events, which may contribute to their belief in a memory advantage.

Email: Kris-Ann Anderson, kris.andsn@gmail.com

7:45-9:15 PM (7146)

Who Gave You This Bad Advice? A Multinomial Processing Tree Modeling Approach to the Role

of Source Memory in Advice Taking. JOHANNA M. HÖHS, *University of Tübingen*, TOBIAS R. REBHOLZ, *University of Tübingen*, MANDY HÜTTER, *University of Tübingen* — This research investigates the role of source memory in advice taking. In two experiments ($N_{total}=867$), participants received 48 pieces of advice for 24 different topics concerning the job of a doctor. For each topic, two pieces of advice were presented sequentially from two different advice sources. In Experiment 1 ($N=619$), one piece of advice was provided by a doctor (i.e., an expert) and one by a lawyer (i.e., a layperson). In Experiment 2 ($N=248$), one piece of advice was provided by a high-performing advisor (i.e., a valid source) and one by a low-performing advisor (i.e., an invalid source). Following the advice presentation, participants provided their own estimates and completed a classic source monitoring task in which they indicated the source of the advice. We apply multinomial processing tree modeling to measure source memory using a hierarchical latent-trait modeling approach and combine this measurement with the mixed effects regression weight of advice to investigate the role of source memory for adaptive advice weighting. By relying on a multinomial modeling approach, the presented research draws a nuanced picture of the role of advice sources and source memory in advice taking.

Email: Johanna M. Höhs, johanna.hochs@uni-tuebingen.de

7:45-9:15 PM (7147)

Perceptual and Semantic Novelty Do Not Enhance the Effects of Repetition on Belief.

RAUNAK PILLAI, *New York University*, LISA FAZIO, *Vanderbilt University* — Repeated statements seem true than new ones, likely because repeated information feels more familiar, and people infer that familiar information is more likely true. Recent work shows that initial repetitions increase belief more than later repetitions. One potential explanation for this pattern invokes the novelty-sensitive encoding hypothesis: the more novel a statement seems when encountered, the more greatly it is encoded into memory, and the greater the increase in belief resulting from that exposure. Here, we directly test this hypothesis by manipulating the novelty of the context in which statements are seen. In three experiments ($N = 739$ US MTurk/Connect workers), participants rated the truth of new statements and those seen three times before. Critically, repeated statements were shown in different contexts (font color, location on screen, initial rating task) or the same context each time,

making successive encounters more or less novel, respectively. Contrary to our predictions, these novelty manipulations did not affect belief in repeated statements. These results challenge the novelty-sensitive encoding hypothesis and raise questions about the memory processes linking repetition and belief.

Email: Raunak Pillai, raunak.m.pillai@vanderbilt.edu

7:45-9:15 PM (7148)

The Role of Serial Positioning in Nocebo Effects from Multiple Social Models. SAOIRSE A.

CONNOR DESAI, *The University of Sydney*, BEN COLAGIURI, *The University of Sydney*, WINSTON TAN, *The University of Sydney*, ALEXANDER BURCHETT, *The University of Sydney*, KIRSTEN BARNES, *University of New South Wales* — A growing body of research has shown that seeing someone else experience side effects (i.e., social modelling) can increase negative expectations and subsequent nocebo effects. We investigated how the serial positioning of multiple models' experiences influences socially induced nocebo effects. Participants (N=168) engaged in a novel virtual reality paradigm, observing five pre-recorded confederates displaying varying levels of cybersickness. Severity of modelled symptoms was manipulated across the sequence, with four models showing mild symptoms and one exhibiting extreme cybersickness symptoms (i.e., nausea and dizziness). We varied the positioning of the extreme model within the sequence: first, third, or last. Results revealed higher cybersickness levels after observing symptomatic models compared to neutral ones. Although no serial position effects were observed, there was an effect of social modelling. The social modelling effect was mediated by cybersickness expectancy. These findings highlight the interplay of social observation and expectancy in nocebo effects, with potential implications for understanding gender differences in socially-induced nocebo effects.

Email: Saoirse Connor Desai, saoirse.c.d@gmail.com

7:45-9:15 PM (7149)

When the Curtain Falls and...Splashes? Evaluating Memory for Expectation-Violating Object Properties. OMER DAGLAR TANRIKULU, *University of New Hampshire*, GIZEM TANSELI-KASPAR, *University of Iceland*, SERENA O'CONNELL, *University of New Hampshire*, KIMELE PERSAUD, *Rutgers University-Newark* — Humans have

strong prior expectations for the mechanical properties of objects and how they behave under force. We expect teacups to shatter, liquid to splash, and chairs to remain rigid upon falling. Past research suggests that we leverage these expectations to guide perception, allowing us to optimally interface with objects in the world. Yet, it remains unclear how these expectations influence episodic memory. Previous work on this is mostly based on either experimentally derived artificial expectations or schema-based expectations. Here, we used short video clips adopted from a perceptual task (Alley et al., 2020), where object behaviors can violate our well-entrenched intuitive physics. We asked participants to rate how expected or unexpected the deforming objects appeared. Then we assessed their memory for the deformed object states. Our results suggest that despite the surprise associated with expectation-violating objects, observers better remember objects (and their state changes) that behave in expectation-consistent ways relative to expectation-violating objects. These findings have important implications for understanding complex ways in which prior expectations guide interactions between surprise and episodic memory.

Email: Omer Daglar Tanrikulu, ot1031@unh.edu

7:45-9:15 PM (7150)

Hints and Promises: Influencing Decisions to Engage in Repeated Testing to Learn. PATTI SIMONE, *Santa Clara University*, LISA WHITFIELD, *Santa Clara University*, JOVANNA SOLOMON, *Santa Clara University* — Previous studies found that retrieval with hints is better than restudying, and multiple retrievals are best. To date no one has examined if a commitment to engage in multiple retrievals influences repeated testing. We examined whether a commitment to test and type of retrieval led to persistence in self-testing. Participants were randomly assigned to commit to testing or not, and to one of three retrieval conditions: 0-letter hint (Hill-__), 4-letter hint (Hill -Ch_rs), or restudying (Hill-Chairs). After the first learning phase of 20 word pairs, they were given the option to repeat the session or end testing. Participants were given a cued recall test immediately and four days later. Three main findings emerged: 1) both full retrieval and retrieval with hints led to more persistence during learning, 2) the option to commit to the number of learning trials in advance did not influence persistence, and 3) those who persisted to test remembered more word pairs both immediately and at a delay. We conclude that both full retrieval and

retrieval with hints promote persistence in testing more than studying; people who persist in testing remember more, regardless of whether they have been asked to commit to a testing goal in advance.

Email: Patti Simone, psimone@scu.edu

7:45-9:15 PM (7151)

The Role of Semantic Relatedness in Pretesting Effects. JIAAN SHANG, *Purdue University*, JEFFREY D. KARPICKE, *Purdue University* — When people attempt retrieval prior to studying a word pair (e.g., attempting tide – ? before studying tide – beach), retention is enhanced relative to studying the pair. This pretesting effect occurs when the cue and target words are semantically related (tide – beach) but does not occur for unrelated items (e.g., tide – leaf), suggesting that semantic relatedness is necessary for the effect. In the present experiments, subjects learned unrelated items in the context of sentences. In a pretest condition, subjects attempted to generate items in sentences (e.g., attempting the tide carried a ___ toward the shore) before studying items (tide – leaf). In study conditions, subjects studied the items in sentences. There was no pretesting effect when unrelated items were learned as word pairs, but there was a large pretesting effect when the items were learned in the context of sentence frames. The results challenge accounts of the pretesting effect that are based on semantic relatedness or activation of semantic candidates.

Email: Jiaan Shang, shang40@purdue.edu

7:45-9:15 PM (7152)

Using SAFMEDS to Study: Evidence from Supply Chain Management Courses. ANGELA M. CANDA, *John Carroll University*, MARIA R. HELTON, *John Carroll University*, SEBASTIAN BROCKHAUS, *Cleveland State University*, CELINE AKOURI, *John Carroll University*, STEVEN SILBERHORN, *John Carroll University* — In two classroom-based studies, we investigated a variation of the SAFMEDS (say-all-fast-minute-every-day-shuffle) procedure, commonly used in the applied behavior analysis literature (Quigley et al., 2017). Intended to increase fluency, SAFMEDS is similar to successive relearning but less time-consuming. Rather than a set criterion, there is a set retrieval practice time (RPT). In both studies, students enrolled in supply chain management courses were given flashcards and either received SAFMEDS instructions on how to use

them (Study 1 RPT: 1 minute 3x per week; Study 2 RPT: 3 minutes 3x per week) or no instructions. Study 1 included course vocabulary; Study 2 included computational procedures. After three weeks, students were tested. Across both studies, SAFMEDS flashcard instructions produced better learning than flashcards with no instruction. With instruction to study 3-9 minutes per week, students were better able to recall course terms and apply computational procedures to solve applied story problems.

Email: Angela Canda, acanda@jcu.edu

7:45-9:15 PM (7153)

Mnemonic Similarity and Difficulty During Retrieval Practice. J. IMANI BUNN, *Emory University*, BENNETT R. LEVINE, *Emory University*, FIONA TRAN, *Emory University*, HANS ZHANG, *Emory University*, JOSEPH R. MANNS, *Emory University* — The retrieval practice effect is well established, but debate continues as to why interim memory testing improves subsequent retention. Some studies have found that the difficulty of interim tests predicts later retention, offering support to the idea that retrieval practice represents a "desirable difficulty." However, what makes a retrieval practice test difficult, and thus potentially desirable, is underspecified. The current study operationalized difficulty as mnemonic similarity, the extent to which a lure image resembled a target image during an interim forced-choice recognition memory test. A repeated-measures ANOVA of final memory performance split by interim testing conditions identified a main effect of retrieval practice versus restudy control conditions as well as a main effect of low mnemonic similarity versus high mnemonic similarity conditions. However, there was no evidence of an interaction, suggesting that difficulty operationalized as mnemonic similarity benefitted retrieval practice yet did so similarly for restudy opportunities.

Email: J. Imani Bunn, jibunn@emory.edu

7:45-9:15 PM (7154)

The Effect of Retrieval Practice on List Discrimination Performance. ANDY L. FORDYCE , *Purdue University*, THOMAS S. REDICK, *Purdue University* — Numerous studies have shown retrieval practice to be an effective strategy for improving memory. One account proposed to explain this benefit is the episodic context account (Karpicke, Lehman, & Aue,

2014), which proposes that contextual information is reinstated and updated when an item is retrieved. The current study examined memory for temporal-contextual information; specifically, memory for which list a word occurred in. Additionally, we used free recall as the retrieval practice task, because we hypothesized it would involve more reinstatement of list-specific temporal-contextual information compared to cued recall.

Participants studied multiple lists of words and either (a) engaged in a free recall task, (b) restudied the words, or (c) completed math problems. We found no difference in performance between the retrieval practice and restudy groups when assessed on a final list discrimination test. However, performance was better for the retrieval practice and restudy groups relative to the no-study math control group.

Email: Andy Fordyce, afordyc@purdue.edu

7:45-9:15 PM (7155)

Direct and Indirect Effects of Retrieval Practice in Lecture Learning. SHAUN BOUSTANI,

University College London — Testing memory using retrieval practice is an effective gauge of learning and a method for consolidating learning. Research on the testing effect has indicated that learning of educationally relevant materials benefits from retrieval practice to a greater extent than from other methods such as restudy. However, there is less research examining whether retrieval practice also enhances learning of subsequently presented new materials, when those materials are complex (e.g., texts). To address this gap and explore whether testing potentiates new learning of educational materials, we conducted two experiments using unrelated lecture materials, and compared new learning following retrieval to tasks which did not initiate retrieval processes. The results indicated that retrieval can potentiate new learning of complex materials and, importantly, that this is not solely due to stronger original learning, suggesting a role for retrieval-specific mechanisms. The results pose a challenge for the "activation facilitation" theory of retrieval practice effects with semantically rich materials.

Email: Shaun Boustani, s.boustani@ucl.ac.uk

7:45-9:15 PM (7156)

Impacts of Task Label and Test Anxiety on Retrieval Practice. ALISON ROBEY, SUNY Empire State University — It is well known that active retrieval

leads to better memory performance than passive restudy. Within the literature, there has been a shift away from referring to this phenomenon as the testing effect towards calling it retrieval practice. It is unknown whether the label presented to the learner impacts the magnitude of the effect. The task label ("test" vs. "retrieval practice") and instructions were manipulated between subjects. Measures of cognitive test anxiety were also collected. The present study has three primary aims: (1) determine if the label of the retrieval activity impacts the magnitude of the testing effect, (2) determine whether cognitive test anxiety is an individual difference that influences the testing effect, and (3) explore potential interactions between the task label and test anxiety (i.e., do students with high test anxiety experience less benefit from retrieval when it is specifically labeled as a test as opposed to retrieval practice?). Learners' perceptions of learning and pressures from restudy versus retrieval were also examined.

Email: Alison Robey, alison.robey@SunyEmpire.edu

7:45-9:15 PM (7157)

The Influence of a Retrieval Practice

Intervention on Self-Testing Rates. KALIF VAUGHN, Northern Kentucky University, NATE KORNELL, Williams College — Although retrieval

practice has been identified as an effective learning strategy, there is conflicting evidence regarding how often students will naturally self-test when given the opportunity. Furthermore, minimal research has investigated whether students will self-test more often if told about the benefits of retrieval. I had participants learn Eskimo-English word pairs as they wished in a self-regulated learning environment: they could study, test, or drop items. I told a random subset of participants about the benefits of retrieval practice and encouraged them to self-test. Learners exhibited a testing bias in all experiments regardless of whether they were told about the benefits of retrieval practice. Additionally, rates of self-testing tended to be higher when learners believed testing was more beneficial than studying. Despite higher test versus study rates, learners did not engage in repeated retrieval practice and often dropped items after one successful recall.

Email: Kalif Vaughn, vaughnk1@nku.edu

7:45-9:15 PM (7158)

Balancing Learning and Well-Being: The Impact of Cognitive and Affective Goals on Learners'

Regulation of Retrieval Practice. LAN ANH DO, *Tufts University*, AYANNA K. THOMAS, *Tufts University* — Retrieval practice improves long-term retention of studied material but also elicits negative emotions. The present study investigated how the goals of emotional well-being and successful learning sometimes compete and influence the use of retrieval practice. Following exposure to both retrieval and study practice in a word learning task, participants read a scenario about a hypothetical student tasked with learning a series of word pairs. Participants then determined how much time the student should spend engaging in retrieval and study practice. Results showed that prioritizing learning led to more time allocated to retrieval practice compared to prioritizing emotional well-being. Additionally, most participants believed that while retrieval practice was more effective, it was also more likely to induce anxiety and frustration. These findings contribute to our understanding of how cognitive and affective goals shape self-regulated learning.

Email: Lan Anh Do, Lan.Anh.Do@tufts.edu

7:45-9:15 PM (7159)

No Evidence for Spatial-Positional Associations in Children's Working Memory Using Repeated Sequences. SAMANTHA HURTADO

WOENCKHAUS, *Université Côte d'Azur*, MORGANE FTAÏTA, *Basque Center on Cognition, Brain & Language (BCBL)*, CNRS, & *Université Côte d'Azur*, ALESSANDRO GUIDA, *Université Rennes 2*, LP3C, FABIEN MATHY, *Université Côte d'Azur* — The Spatial Positional Association of Response Codes (SPoARC) corresponds to a phenomenon where items of a to-be-remembered sequence are immediately associated to a spatial position on a mental line. The effect has usually been evidenced by asymmetrical response times from the two hands at recognition using random sequences in children and adults. The SPoARC has also been observed in adults when a unique sequence was being consolidated before the effect faded away, thus suggesting that chunk formation aligns with spatialization. Based on the same Hebb-like repetition paradigm, we tested whether chunk formation would follow a similar path in children aged 10 to 11 years. Children were presented with a unique to-be-remembered sequence of four items followed by a test probe repeated throughout the task. Children were asked to respond using lateralized buttons, switching hands halfway through the experiment. Our findings diverged

from those on adults, as we did not detect any significant spatialization in children (contrary to some control data using random sequences). We discuss how serial order is spatially processed in children versus adults, especially when sequences are possibly chunked into larger units.

Email: Samantha Hurtado Woenckhaus, samantha.hurtado-woenckhaus@etu.univ-cotedazur.fr

7:45-9:15 PM (7160)

Turning Sternberg Slopes On/Off: When Do Response Times Increase with Larger Set Sizes?

EVIE VERGAUWE, *University of Geneva*, CARO HAUTEKIET, *University of Zurich* — One classic finding in working memory is that response times increase with larger set sizes (Sternberg, 1966). However, recent studies from our lab did not observe this relation (e.g., Uittenhove & Vergauwe, 2019; Valentini & Vergauwe, in prep.). A detailed comparison revealed methodological differences that could explain these divergent results. Here, we aimed to identify which variables affect the search slope in Sternberg's item recognition task. First, we replicated Sternberg's original study and one of our recent studies, replicating a search slope of about 50 ms and a flat search slope, respectively. Next, we grouped the methodological differences into theoretically related packages and gradually morphed the flat-slope paradigm into the original Sternberg paradigm. Our findings showed that requiring serial recall after item recognition did not produce a positive slope, whereas introducing the exact same timings of the original study did. Other variables, such as using the same set sizes and feedback types, did not further influence the results. Thus, we demonstrate that the positive search slope is not as general as previously thought and can be turned on or off by manipulating time parameters of the paradigm.

Email: Evie Vergauwe, evie.vergauwe@unige.ch

7:45-9:15 PM (7161)

Working Memory Predicts Processing for Temporal, Spatial, and Item Memory. MICHAEL DOUGHERTY, *University of Maryland*, JESSICA MILLER, *University of Maryland*, MARISSA HARTWIG, *University of Maryland*, ANDREW MORREALE, *University of Maryland*, BELINDA LIN, *University of Maryland*, XIAODI HU, *University of Maryland* — We examined the relationship between individual differences in working memory and performance on a novel task that measures temporal,

spatial, and item recognition memory. Using drift-diffusion modeling, we show that drift rates are greater for recognition and spatial trials relative to temporal trials. However, we also observe that drift rates for all three trial types are positively correlated with individual differences in working memory.

Email: Michael Dougherty, mdougher@umd.edu

7:45-9:15 PM (7162)

Obligatory Working Memory Updating as a By-Product of Response Selection. NOGA

ROTSSTEIN, Ben-Gurion University of the Negev, YOAV KESSLER, Ben-Gurion University of the Negev — Working memory (WM) updating is considered a time-consuming and effortful process. This research challenges that notion by demonstrating that updating may result from attending to goal-relevant information as part of response selection. Participants were presented with stimuli surrounded by red or blue frames. They needed to respond to the stimuli and remember those within red frames for later recall. In Experiment 1, a choice reaction time (RT) task (categorizing the stimulus) was compared to a simple RT task (detecting the stimulus). Although RTs for updating were slower than for not updating in the simple RT task, they did not differ in the choice task. Experiment 2 showed an updating benefit when the recall requirement matched the relevant dimension for categorization but an updating cost when the two differed. These results imply that WM is obligatorily updated with the most recent attended goal-relevant information.

Email: Noga Rotshtein, nogarot@post.bgu.ac.il

7:45-9:15 PM (7163)

Time for Consolidation or Strategy Implementation? Free Time and Elaboration Improve Visual Working Memory and Long-Term Memory. NUNO D. SOBRINHO, University of Porto, SÃO LUÍS CASTRO, University of Porto, ALESSANDRA S. SOUZA, University of Porto — Previous research found that consolidation starts later, proceeds more slowly, and yields lower precision in long-term memory (LTM) than in working memory (WM). Here, we assessed whether elaboration—a strategy previously found to benefit LTM but not WM—contributes to their differential consolidation rate. Participants (N=374) studied colored objects and reproduced their colors in WM (3 items) and LTM (20

items) tests. They were divided into four groups with different strategy instructions: sentence elaboration (i.e., creating sentences connecting objects and colors), color labeling, object labeling, and no instruction (control). They completed four sessions with different time available for consolidation: 300, 1050, 5050, and 8050 ms. The study replicated the slower rate of LTM consolidation. Elaboration use required time yet produced better performance than other strategies (which did not differ) in both memory tests, but the effect was larger for LTM. This benefit was due to a higher probability of retaining the colored objects in mind. Elaboration may not explain the differences between WM and LTM consolidation rates but is more beneficial when participants need to retain supra-span lists and have more time to elaborate.

Email: Nuno Sobrinho, nunosobrinho@fpce.up.pt

7:45-9:15 PM (7164)

Transfer of Learning via Hebb Repetition.

KRZYSZTOF PIĄTKOWSKI , SWPS University, KATARZYNA ZAWADZKA , Adam Mickiewicz University, MACIEJ HANCZAKOWSKI, Adam Mickiewicz University — Recalling the same sequence repeatedly leads to increased performance (a phenomenon known as the Hebb repetition effect), which has been attributed to establishing long-term memory representations of the list. However, to date such learning has been observed only for exact repetitions of item identities. In the present project we investigated whether it is possible to establish flexible representations that facilitate memory performance when varying—instead of repeated—memoranda are to be recalled. In three experiments, using serial reconstruction and serial recall, we found that when repeated lists consisted always of different items but the internal structure of the list—the order of the categories from which the items were drawn—was maintained throughout the procedure, a benefit of repeated over non-repeated lists was observed. We interpret our results as evidence for establishing long-term schemas that support transfer of learning.

Email: Krzysztof Piątkowski, kpiatkowski1@swps.edu.pl

7:45-9:15 PM (7165)

Which Information Is Retrieved During Different Maintenance Strategies? Evidence from Eye Movements. RUHI BHANAP, University of Zurich, LEA M. BARTSCH, University of Zurich,

AGNES ROSNER, *Leibniz University Hannover* — People engage in strategies like rehearsal and visual imagery to aid future recall. Baddeley (1996) proposed that rehearsal and imagery engage the phonological loop and the visuo-spatial sketchpad of working memory (WM) respectively. Thereby, location is activated for imagery but not for rehearsal. To test this, we measured the degree to which people look back at locations of auditorily presented memory probes during retrieval—a marker called looking at nothing (LAN). According to two opposing hypotheses, we predicted LAN occurs only for imagery (imagery hypothesis) or for all strategies but modulated by memory strength (memory strength hypothesis). In a WM phase, participants encoded word pairs while instructed to either engage in a strategy (rehearsal, imagery, articulatory suppression) or not (baseline). In a LTM phase they were tested on the same word pairs again, after a filled delay. LAN was observed for both imagery and rehearsal, indicating that location is activated for both these strategies. Memory performance and LAN was highest for imagery in WM, which can be explained by strengthening of LTM traces or LAN being separately driven by internal shifts of attention. We will investigate these alternatives in Experiment 2.

Email: Ruhi Bhanap, rushi.bhanap@psychologie.uzh.ch

7:45-9:15 PM (7166)

Active Maintenance of Information and the Levels-of-Processing Effect. NIKOLAY R. RACHEV, *Sofia University St. Kliment Ohridski*, SABINA DOBREVA, *Sofia University St. Kliment Ohridski* — In the levels-of-processing (LoP) effect, words that are encoded more deeply (e.g., semantically) are better retrieved than words encoded at a more superficial level (e.g. by attending to the color of a written word). The effect is usually found in long-term memory (LTM) tests but not in working memory (WM) tests. In three preregistered studies using a Bulgarian version of the LoP Span task (Rose et al., 2010), we did not find robust evidence for the effect in either immediate or delayed recall. Study 1 ($N=253$) did not find support for the prediction that disrupting rehearsal of memoranda would lead to a LoP effect in WM (Loaiza & Camos, 2016; Rose & Craik, 2012). Study 2 ($N=39$) replicated this null finding and also failed to find a LoP effect in LTM, contrary to Rose et al. (2014, 2015). In a direct replication of Loaiza and Camos (2016), Study 3 ($N=48$) found an LoP effect in neither WM nor LTM. We

discuss the methodological and theoretical implications of our findings.

Email: Nikolay Rachev, nrrachev@phls.uni-sofia.bg

7:45-9:15 PM (7167)

Cooking Span: A Complex Span Task focused on Cognitive Abilities in Daily Living. KAREN HEBERT, *University of South Dakota*, TIMOTHY J. RICKER, *University of South Dakota* — Working memory experiments typically involve tasks that don't reflect the way cognitive resources are used in daily life and models of memory often fail to generalize across tasks. This raises concern that working memory theories are models of artificial tasks and not theories of human ability. In the present work we develop a Cooking Span Task, combining the rigor and structure of a complex span task with an activity commonly used in daily life. We then test whether prominent theories of working memory or our new Memory Enrichment Theory (MET) predict the pattern of results observed. MET argues that high dual-task demands result in reduced memory performance because of strategically reduced memory consolidation and not due to forgetting. Participants were verbally presented with 5-item word lists following a Complex Span or Brown-Peterson procedure while performing cooking tasks of varying complexity. Overall memory accuracy was better in the Complex Span. Task complexity affected memory performance during Complex Span but not the Brown-Peterson task. Results support MET and suggest that performance during complex daily activities can be used to test cognitive theory.

Email: Karen Hebert, karen.hebert@usd.edu

7:45-9:15 PM (7168)

Detecting Psychometric Changes in the Structure of Working Memory, Processing Speed, and Task-Switching as a Function of Computerized Cognitive Training: Evidence from Network Analysis. KEVIN P. ROSALES, *California State University, San Bernardino*, LISA LOONEY, *California State University, San Bernardino*, JASMIN ESCALANTE, *California State University, San Bernardino*, DEVEN I. LANDEROS, *California State University, San Bernardino*, EUGENE H. WONG, *California State University, San Bernardino* — Extant research supports the efficacy of computerized cognitive training (CCT) in improving cognitive abilities in

children with learning differences. Working memory, task-switching (TS), and processing speed (PS) are all central in theories of cognition. As such, these have all been targets of CCT. Unfortunately, much of this work has been investigated via experimental designs which leaves notable gaps in the literature regarding how CCT may be impacting the psychometric structure of cognitive abilities. With this in mind, and using a combined experimental-correlational approach, the goal of the current project was two-fold: (1) to determine whether completing 12 hours of two adaptive game-based CCT interventions led to improvements in WM, PS, and TS and (2) to assess the psychometric changes in the structure of these abilities from pre- to posttest using network analysis. Results showed significant pre-post improvements (Cohen's d values up to 4.44). Network analyses of pre/post changes revealed strengthened edges for WM, PS, and TS. These findings illuminate the utility of network modeling to capture the efficacy of CCT and help bridge the gap between experimental and correlational approaches.

Email: Kevin Rosales, kevin.rosales@csusb.edu

7:45-9:15 PM (7170)

Prioritization of Items in Working Memory Based on Reward Value: The Role of Attentional Resources Allocation.

CHRISTOPHE FITAMEN, *University of Fribourg*, CHANTAL MARTIN SÖLCH, *University of Fribourg*, VALERIE CAMOS, *University of Fribourg* — People tend to better retain items associated with high reward than low reward. While it has been assumed that attentional resources favor high-value items, this assumption remains untested. Our study investigated attentional resources allocation based on reward value and cognitive load in working memory. Cognitive load refers to the attentional time occupied by processing; reduced processing time increases the load, diverting attentional resources from memorization. Increased cognitive load would widen the recall gap between high- and low-value items. When processing demands higher attention, subjects would prioritize high-value items over low-value ones. In a complex span task with articulatory suppression, 30 young adults memorized series of 4 letters. One letter had higher reward points. The serial position of reward values varied across trials, and we manipulated the cognitive load (high vs low) by adjusting available time (respectively: 4 vs 8 seconds) for judging 4 spatial figures (spatial fit task) between letters. Results revealed

main effects of reward and load, without interaction. Future studies are necessary to more clearly determine whether the sharing of attentional resources plays a role in prioritization.

Email: Christophe Fitamen, christophe.fitamen@unifr.ch

7:45-9:15 PM (7171)

Proactive Interference in Working Memory:

Effect of Retrieval. REBECCA M. REEDER, *The Pennsylvania State University Altoona*, LINDSEY LILIENTHAL, *The Pennsylvania State University Altoona* — Proactive interference (PI) occurs when old information interferes with the ability to learn and remember new information. Previous research has demonstrated that when trials of a working memory (WM) task are made more distinct from one another, PI is reduced and memory performance improves. In long-term memory, the act of retrieval has been shown to produce a similar effect, and the current study investigated whether retrieval might reduce PI in WM tasks in a similar way. Participants performed a visuospatial complex span task during which they were only asked to recall on two of three trials. The results indicated that participants' memory performance was significantly better on trials that followed a recall trial compared to those that followed a no-recall trial. In addition, this difference was significantly more pronounced for participants with low WM spans, consistent with previous findings that low-span individuals are more susceptible to PI than those with higher WM spans.

Email: Rebecca Reeder, [rnr5891@psu.edu](mailto:rmr5891@psu.edu)

7:45-9:15 PM (7172)

Revisiting the Retro-Cue Benefit: New Insights

Beyond Perceptual Interference. CARO HAUTEKIET, *University of Zurich*, KLAUS OBERAUER, *University of Zurich* — Many studies have attempted to unravel the mysteries behind the typically observed retro-cue benefit in working memory. Still, the literature has not yet reached a consensus. One plausible explanation is that the cued item is protected from perceptual interference. However, a recent study demonstrated retro-cue benefits in the absence of perceptual interference using verbal materials (Jeanneret et al., 2024). To get a better understanding of the origin of the retro-cue benefit in the absence of interference, we replicated and extended Jeanneret et al.'s results. Our

findings showed that when the time of retrieval of the target is equated (retro-cue vs. immediate recall), there is no retro-cue benefit. In contrast, when the time of the total retention interval is equated (retro-cue vs. delayed recall), we did observe a retro-cue benefit. These results demonstrate that a retro-cue benefit can be observed in the absence of interference, but only when comparing the cue trials to a delayed recall baseline. This suggests that the protection from interference hypothesis alone is not sufficient to explain the effect in all task situations and that different factors might be of importance depending on which type of baseline is used.

Email: Caro Hautekiet, Caro.Hautekiet@uzh.ch

7:45-9:15 PM (7173)

Storage of Integrated Versus Segregated Audio-Visual Features in Working Memory.

LAURA-ISABELLE KLATT, *Leibniz Research Centre for Working Environment and Human Factors*, CEREN

ARSLAN, *Leibniz Research Centre for Working Environment and Human Factors*, STEPHAN

GETZMANN, *Leibniz Research Centre for Working Environment and Human Factors*, DANIEL

SCHNEIDER, *Leibniz Research Centre for Working Environment and Human Factors* — The

multicomponent model of working memory assumes separate storage modules for auditory and visual features, and an episodic buffer that allows to combine features across domains. But is information only linked via the episodic buffer at recall, or is it stored as integrated objects during maintenance? Here, we present two EEG experiments, adopting an audiovisual delayed match-to-sample task. In the first experiment, analyses revealed domain-specific modulations of alpha-band power during encoding and maintenance, whereas attentional resources related to the linking of features across modalities emerged during recall. In experiment 2, drawing on principles of multisensory integration, we promote encoding in an integrated vs. separated fashion. Preliminary behavioral data suggests that when conjunctions between auditory and visual features are relevant, partial repetition costs increase when encoding promotes integration (vs. segregation). When attending to only one modality, however, this pattern reverses. Ongoing EEG analyses will elucidate the representational structure of integrated vs. segregated audiovisual objects. Overall, our results provide an important step towards a better understanding of audiovisual object storage.

Email: Laura-Isabelle Klatt, klatt@ifado.de

7:45-9:15 PM (7174)

Multiverse Analysis of the Congruency Sequence

Effect: a Simulation Study.

MIKLOS BOGNAR, *Eötvös Loránd University*, BALAZS ACZEL, *Eötvös Loránd University* — The congruency sequence effect (CSE) is a crucial phenomenon in cognitive control research, widely recognized as a flexible measure of adaptive control. Over the past two decades, numerous theories on cognitive mechanisms have been grounded in behavioral CSE analyses. Although the fundamentals of measuring this phenomenon are well-established, significant variability exists in data processing and statistical analysis approaches among researchers and laboratories. A growing body of evidence indicates that researchers' degrees of freedom can substantially impact results, particularly when the investigated effects are weak. In this study, we employed drift-diffusion modeling and predefined CSE patterns to simulate datasets of varying sizes and quality. Using a multiverse analysis approach, we examined multiple pathways in data preprocessing and statistical analysis, applying them to a large number of simulated datasets to compare the most common analytical methods.

Email: Miklos Bognar, miklos.bognar92@gmail.com

7:45-9:15 PM (7175)

Order-Constrained Analyses of Eyewitness

Memory Accuracy.

ANDREA YAOYUN CUI, *University of Illinois Urbana-Champaign*, MEICHAI

CHEN, *University of Illinois Urbana-Champaign*, MICHEL REGENWETTER, *University of Illinois*

Urbana-Champaign — In psychological research, there are commonly reported patterns: a negative correlation between target-lure similarity and accuracy, a positive correlation between confidence and accuracy, and a negative correlation between response time and accuracy. We test these regularities using data from Horry and Brewer (2016), where participants performed a 2AFC task (Experiment 1) or a 4AFC task (Experiment 2). We employed order-constrained inference with QTEST software (Regenwetter et al., 2014; Zwilling et al., 2019), which translates verbal hypotheses into testable statistical ones without introducing unnecessary assumptions. At the individual level, we quantified evidence in favor or against each hypothesis using Bayes factors (against an unconstrained baseline). The Bayes factors indicated “decisive” evidence supporting the

hypotheses in Experiment 1 and “strong” to “very strong” evidence against them in Experiment 2, with notable individual variations. The lack of support in Experiment 2 might not be a flaw of the hypotheses themselves but could stem from the stimulus design not effectively reflecting the intended manipulation. This highlights the need for careful testing of stimulus design in visual attention research.

Email: Andrea Yaoyun Cui, azurechoiv@gmail.com

7:45-9:15 PM (7176)

Testing the Latent Structure of Cognitive Constructs: Generalized Bayesian Hierarchical Structural Equation Modeling. NIEK

STEVENSON, *University of Amsterdam*, DYLAN MOLENAAR, *University of Amsterdam*, ANDREW HEATHCOTE, *University of Newcastle*, BIRTE FORSTMANN, *University of Amsterdam*, DORA MATZKE, *University of Amsterdam* — Structural equation models (SEMs) are popular tools for investigating relationships among latent psychological constructs. Conventionally, SEMs are estimated on aggregate scores across multiple measurements per individual, ignoring the hierarchical structure of the data and assuming that the individual-level data are normally distributed. This approach suffers from two shortcomings. First, aggregate scores do not account for measurement error in the individual-level data, leading to attenuated estimates of the structural relationships due to unaccounted for variability. Second, the assumption of normality is implausible in many applications and lacks a substantive psychological account of the underlying processes. We propose a Bayesian hierarchical SEM (HSEM) framework that addresses both limitations. Our approach allows researchers to flexibly model the individual-level data, ranging from the traditional normal distribution to generative cognitive models, such as evidence-accumulation or reinforcement learning models. We showcase how HSEM can be used to test the latent structure of cognitive constructs assessed via evidence-accumulation model parameters estimated from a set of cognitive-control tasks.

Email: Niek Stevenson, niek.stevenson@gmail.com

7:45-9:15 PM (7177)

The Role of Self-Efficacy and Cognitive Flexibility in Statistics Anxiety. JORDANA ZWERLING, *St. John's University*, SHANNON E.

GASPARRO, *St. John's University*, EMILIE PAUL, *St. John's University*, GABRIEL J. SANCHEZ, *St. John's University*, SAMUEL T. JACKSON, *St. John's University*, ERNEST V.E. HODGES, *St. John's University*, MELISSA K. PECKINS, *St. John's University* — Statistics anxiety is a common stressor for social sciences students and when it persists, can lead to poor grades and limit mastery of the material. Self-efficacy, or an individual’s confidence in oneself and their ability, is negatively related to statistics anxiety but little is known about how they covary across a statistics course. Cognitive flexibility, or the ability to adapt one’s thoughts and behaviors, may also play a role in statistics anxiety. In this study, we tested whether self-efficacy and cognitive flexibility were associated with statistics anxiety trajectories (examination, asking for help, interpretation) over four waves across a semester in 214 undergraduate and graduate students enrolled in a psychology statistics course. Examination anxiety followed a U-shaped curve, whereas asking for help and interpretation anxiety were stable across the semester. Self-efficacy increased across the semester and predicted lower levels of statistics anxiety at the beginning of the semester but did not predict change in statistics anxiety across the semester. The role of cognitive flexibility in understanding the link between self-efficacy and statistics anxiety will also be discussed.

Email: Jordana Zwerling, jordana.zwerling21@my.stjohns.edu

7:45-9:15 PM (7178)

A Demonstration of Why You Can't Trust Data Collected on MTurk (at Least Without a Considerable Amount of Screening). CAMERON S. KAY, *Union College* — Over the last several years, a number of studies have used advanced statistical and methodological techniques to demonstrate that there is an issue with the quality of data that can be collected on Amazon’s Mechanical Turk (MTurk). The current preregistered study aims to provide an accessible demonstration of this issue using a face-valid indicator of data quality: Do items that assess clearly contradictory content show positive correlations on the platform? I administered 27 semantic antonyms—pairs of items that assess incompatible beliefs or behaviours (e.g., “I am an extrovert” and “I am an introvert”)—to a sample of MTurk participants ($N = 400$). Over 96% of the semantic antonyms were positively correlated in the sample. This finding provides clear evidence that data collected on

MTurk cannot be trusted, at least without a considerable amount of screening.

Email: Cameron Kay, cameronstuartkay@gmail.com

7:45-9:15 PM (7179)

A General Method For Estimating Internal Consistency Reliability Using Bayesian Computational Models.

GIACOMO BIGNARDI,

University of Cambridge — Reliability is an important attribute of psychological measures. However, estimating reliability when using complex behavioral models can be challenging without retesting the same subjects. Most current methods for assessing reliability with a single test administration (internal consistency) are designed for fixed-item questionnaires or involve splitting the data. We introduce a novel procedure for estimating internal consistency using Bayesian computational modelling. We demonstrate analytically and via simulation that this method yields acceptable reliability estimates and 95% credible intervals across linear factor, signal detection and reinforcement learning models. Our approach yields reliability estimates similar to existing methods (e.g., coefficient alpha) for linear factor models, but it can be generally applied to more bespoke behavioural models. This method offers a general solution for estimating internal consistency reliability, leveraging the modelling flexibility of Bayesian statistical software.

Email: Giacomo Bignardi, bignardig@outlook.com

7:45-9:15 PM (7180)

Collaborative AI for Learning and Analysis: Establishing an Approach to Leverage LLMs for Analysis of Data Generated in Learning

Contexts. GRACE C. LIN, *Massachusetts Institute of Technology*, BRANDON HANKS, *Massachusetts Institute of Technology*, EMMA ANDERSON, *Massachusetts Institute of Technology*, MIC FENECH, *Massachusetts Institute of Technology*, AMELIA FARID, *Massachusetts Institute of Technology* — Meaning making from text-based data generated from research methods such as interviews has traditionally been done through qualitative analyses such as thematic coding. These approaches can be time consuming and may alienate positivist researchers due to divergent epistemologies. Consequently, fields like psychology have comparatively limited use of potentially rich data sources from conversations. Text analyses methods (e.g., topic modeling) have started to bridge this gap. In this

paper, we present CAIL (Collaborative AI for Learning) to help quantitatively oriented researchers analyze (“CAILyze,” if you will) text-based data both inductively and deductively. CAILyzing data helps extract underlying themes pertaining to the research question and provides supporting quotes and rationale. We are in the process of deriving quantitative metrics to further enable researchers to evaluate the outputs. We walk through an example analysis of student conversations in a science workshop, demonstrating our approaches and steps to establish trustworthiness of our results. CAIL can be an invaluable tool for accessible and rigorous analysis of conversational data from learning contexts, opening up diverse ways to study student learning.

Email: Grace Lin, gcl@mit.edu

7:45-9:15 PM (7181)

Item Selection for Psycholinguistic Experiments via Distributional Matching.

KEVIN BROWN, *Oregon State University*, JAY G. RUECKL, *University of Connecticut*, ARTURO HERNANDEZ, *University of Houston* — When designing experiments, selecting good items is essential. It can also be excruciatingly difficult to do by hand. For factorial designs, one often wants two lists of items (words) that differ on a categorical property, but which are matched on a set of nuisance variables. Conversely, experimenters would often like a single set of items (words) which are as different as possible on a set of lexical variables, since collinearity in regressions can be problematic. We develop a tool to solve these problems via two cost functions that assess word list quality by the distance between the probability distributions of the nuisance/lexical variables. In the first case, we want this distance to be small, in the second, large. A simple greedy search algorithm can rapidly find word lists that are much better matched (or orthogonalized) than random selection. Finally, via reanalysis of existing data, we show that stimulus selection via our method improves regression outcomes.

Email: Kevin Brown, kevin.brown@oregonstate.edu

7:45-9:15 PM (7182)

Leveraging Large Vision Models to Automatically Extract Object AOIs from Mobile Eye Tracking Data.

RUSSELL COHEN HOFFING, *US Army Combat Capabilities Development Command (DEVCOM) Soldier Center*, PRANAV PARNERKAR, *University of Southern California* — To extract useful



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eye tracking data, eye trackers are calibrated with reference to a world environment (i.e., computer screen). For mobile eye trackers this is done by calibrating the eye detection cameras with an outward facing world camera. To analyze mobile eye tracking data, pre-processing consists of manually annotating the world camera footage to designate areas of interest (AOI) because visual stimulus presentation is dictated by the participant. Tools to manually annotate AOIs in the world camera frame by frame are typically either proprietary or entail a laborious process. Here we present an open-source LLM-based pipeline that ingests eye gaze and world camera data to detect object AOIs via the use of a natural language prompt, circumventing the need for frame-by-frame manual annotation. To validate this method, we had subjects fixate virtual 3D objects and compared detection accuracy across various large visual models against a manually annotated ground truth. We report results characterizing performance of the pipeline and discuss benefits and limitations. This toolbox is intended to support human-machine interaction research.

Email: Russell Cohen Hoffing, russell.a.cohenhoffing.civ@army.mil

7:45-9:15 PM (7183)

Multi-Dimensional Similarity Spaces for the FACETS Database: Faces Across Cameras, Emotions, Time, and Settings. DAWN R. WEATHERFORD, *Texas A&M University, San Antonio*, ROMAN M. PARDO, *Texas A&M University, San Antonio*, NATHAN H. WIETERS, *Texas A&M University-San Antonio*, EBEN DAGGETT, *New Mexico State University*, BRYAN WHITE, *New Mexico State University*, MICHAEL C. HOUT, *New Mexico State University* — Researchers and practitioners require facial image sets with both between-person variability (e.g., skin tone, features) and within-person variability (e.g., age, expression) to generate ecologically-valid empirical findings. To meet this need, we created the FACETS database with over 300 identity sets captured from an ethnically diverse sample. Each identity set includes ambient images (selfies), ID photos, and high-quality images and videos with different lighting, poses, and emotional expressions. An independent group of 260 participants provided similarity data for a subset (i.e., 5 images) of each female identity. Participants viewed a set of 24 faces, initially arranged in four columns, two each to either side of a central arena. Participants used a mouse to arrange faces in the arena, such that distance between each pair represented the participant's perceived

similarity (i.e., closer denoting greater similarity). The resulting Euclidean distances were subjected to analysis via multi-dimensional scaling. Our aggregate similarity spaces will allow researchers and practitioners to create instruments (e.g., face matching tests) and stimulus sets (e.g., lineups) that should generalize to their intended contexts and populations.

Email: Dawn Weatherford, Dawn.weatherford@tamusa.edu

7:45-9:15 PM (7184)

Qualitative Individual Differences: Bridging the Gap Between Model Comparison and Classification. MARTIN SCHNUERCH, *University of Mannheim*, JEFFREY ROUDER, *University of California, Irvine* — Experimental phenomena are typically described in terms of average effects across individuals. Whether this average is meaningful hinges on whether individual effects are qualitatively consistent: Does everybody have a true effect in the same direction? Recent advances in Bayesian hierarchical modeling have provided powerful tools to test if individuals differ qualitatively. A limitation of these tools, however, is that classes and individual class membership, while theoretically important, are not explicitly modeled. We argue that classification of individuals is a crucial step in understanding why qualitative differences occur. Therefore, we develop a hierarchical latent-mixture approach that simultaneously allows for model comparison to test whether qualitative differences exist at a global level and for classification at the individual level. We demonstrate the excellent properties of the proposed approach in a synthetic data example and showcase its usefulness in two real-data applications from cognitive psychology. We believe that the developed methodology will further advance the study of qualitative vs. quantitative individual differences in experimental tasks.

Email: Martin Schnuerch, martin.schnuerch@uni-mannheim.de

7:45-9:15 PM (7185)

Using Embeddings to Automate Jingle-Jangle Detection and Tackle Taxonomic

Incommensurability. DIRK U. WULFF, *Max Planck Institute for Human Development, RUI MATA, University of Basel* — Taxonomic incommensurability denotes the difficulty in comparing scientific theories due to incompatible use of concepts and operationalizations. We show that item, scale, and label embeddings—representations of psychometric items, scales, and construct labels in a vector space obtained from language models—can help tackle this problem in psychology. We analyze different data sets (e.g., International Personality Item Pool) spanning thousands of items and hundreds of scales and constructs to show that embeddings can be used to predict empirical relations between measures, perform automated detection of jingle-jangle fallacies, and suggest more parsimonious taxonomies that eliminate a number of extant psychological constructs. All in all, our work suggests that embeddings offer a useful tool to tackle taxonomic incommensurability in the sciences.

Email: Dirk Wulff, dirk.wulff@gmail.com

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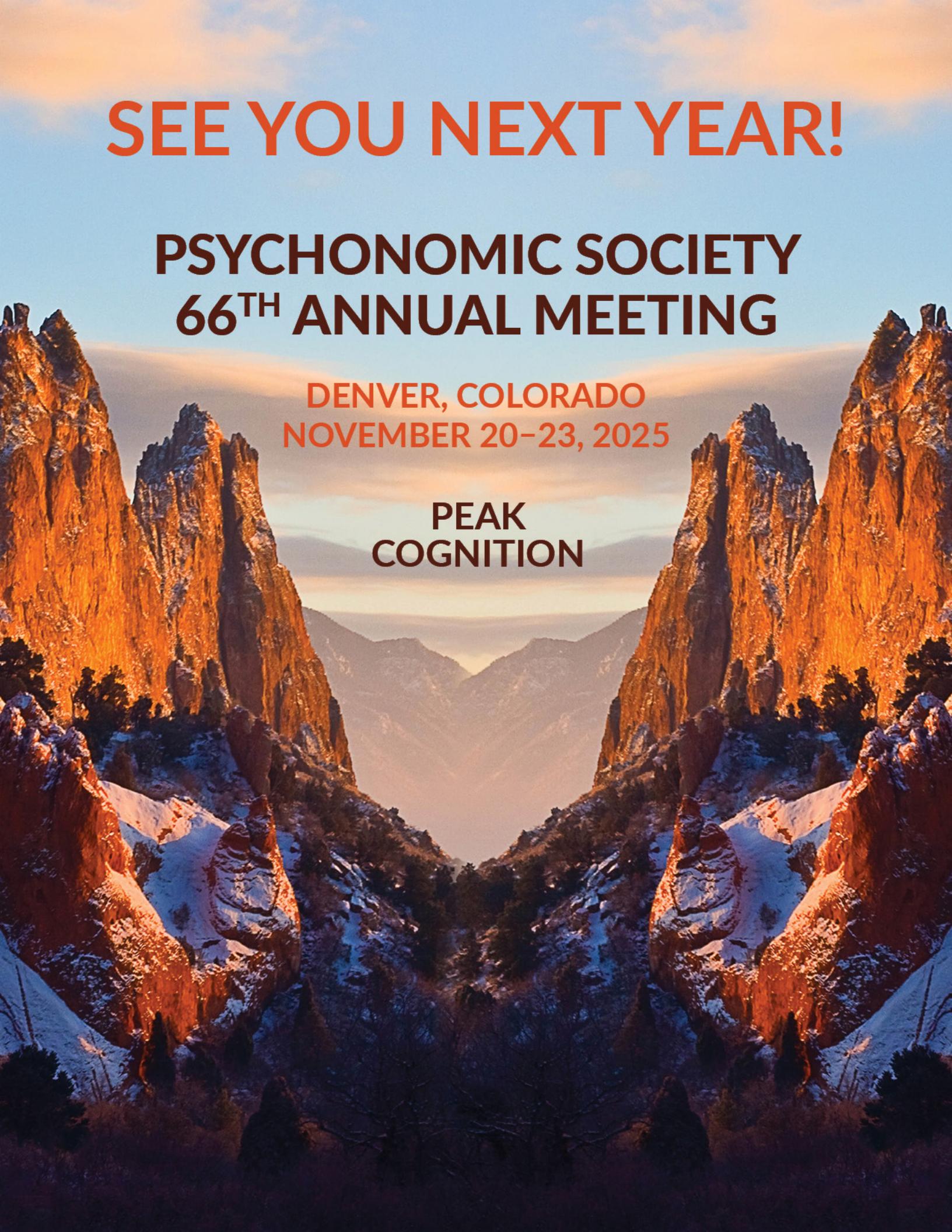


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The background of the poster features a wide-angle photograph of a mountain range. The peaks in the foreground are sharp and rocky, with patches of snow clinging to their ledges. The lighting suggests either sunrise or sunset, casting a warm orange glow on the exposed rock faces. In the distance, more mountain ranges are visible under a clear, pale blue sky.

SEE YOU NEXT YEAR!

**PSYCHONOMIC SOCIETY
66TH ANNUAL MEETING**

DENVER, COLORADO
NOVEMBER 20–23, 2025

**PEAK
COGNITION**