

Education

CARNEGIE MELLON UNIVERSITY

AUGUST 2021 - PRESENT

Ph.D. in Cognitive Psychology

Advisors: Paulo Carvalho, Ken Koedinger

UNIVERSITY OF ILLINOIS, URBANA - CHAMPAIGN

AUGUST 2018 - DECEMBER 2020

B.S. in Brain and Cognitive Science with Distinction, Minor in Linguistics

Advisors: Simona Buetti, Alejandro Lleras (thesis), Jon Willits (research)

Research Experience

OAK LAB OF CARNEGIE MELLON UNIVERSITY

JANUARY 2024 - PRESENT

Graduate Researcher

- ❖ Developed novel task paradigm to assess the effect of relational task complexity, presentation effects, and various metacognitive measures on discovery-based math learning
- ❖ Collected data across 6+ studies consisting of 200+ participant cohorts
- ❖ Assessed task performance using frequentist and bayesian mixed-effects models and logistic regression, with attention to individual differences of overlapping task-relevant skills
- ❖ Analysed verbal responses to assess rule discovery strategies over the course of rule-learning tasks

CAOs LAB OF CARNEGIE MELLON UNIVERSITY

AUGUST 2021 - DECEMBER 2023

Graduate Researcher

- ❖ Employed operant conditioning techniques to conduct behavioral experiments with rhesus macaques
- ❖ Analyzed the performance of non-human primates on matching tasks for comparison with humans
- ❖ Conducted in-person experimental sessions with children aged 3-5 years
- ❖ Developed applications through R studio to facilitate routine analyses and production of daily logs
- ❖ Maintained electronic hardware and soldered circuitry for Arduino interface

VISION LAB OF THE UNIVERSITY OF ILLINOIS

SEPTEMBER 2018 - MAY 2021

Undergraduate Researcher

- ❖ Independently developed five 2D and two VR experiments to model human attention and visual search in Python and JavaScript
- ❖ Processed data for ongoing experiments to monitor surfacing trends and resolve errors in participant-side task workflow in R and Excel
- ❖ Trained and coordinated Research Assistants in the administering of experiments to test subjects
- ❖ Recorded necessary media for ongoing projects including 360° video for virtual reality importation
- ❖ Redesigned the Vision Lab website and conserved data during the move to a new site and structure

LEARNING & LANGUAGE LAB OF THE UNIVERSITY OF ILLINOIS

AUGUST 2020 - AUGUST 2021

Software Developer

- ❖ Designed and implemented User Interface in a 3D neural network sandbox powered by Unity
- ❖ Directed team-members in the use of Object-Oriented Programming and optimization in C#

- ❖ Documented preexisting code for Project Humans and ensured consistent maintenance of conventions
- ❖ Worked in a team of four in cooperative writing and merging of branched directories using Git

Publications

- ❖ **Conti, J.**, Koedinger, K., Carvalho, P (under review). "Confidence in Context: How Self-Beliefs Shape Discovery"
- ❖ **Conti, J.**, Koedinger, K., Carvalho, P (in prep). "What's going on? Surprising difficulties in complex relational rule discovery"
- ❖ Ozaydin, T., **Conti, J.**, Cantlon, J.. (under review). "Persistent Concrete Bias in Monkey Reasoning"
- ❖ Cantlon, J., Li, W., Boni, I., DeLong, C., **Conti, J.**, Henderson, M., Bisk, Y., Piantadosi, S. (under review). "Uniquely Human Abstractions Emerge with Expanded Information Capacity in Neural Networks"
- ❖ Cantlon, J., Piantadosi, S., **Conti, J.**, Boni, I., Ozaydin, T., Bonn, C. (under review). "Universal foundation and plasticity of abstract reasoning across culture, age, and species"
- ❖ Kaicher, C. M., **Conti, J. J.**, Dedhe, A. M., Aulet, L. S., & Cantlon, J. F. (2024). Is core knowledge a natural subdivision of infant cognition?. *Behavioral and Brain Sciences*, 47, e133.

Posters

- ❖ Conti, J., Koedinger, K., Carvalho, P. (2025). "It's all shapes to me: Blocking aids discovery of complex relational structures" Psychonomics Society 2025
- ❖ Conti, J., Koedinger, K., Carvalho, P. (2025). "What's going on? Surprising difficulties in complex relational rule discovery" Cognitive Science Society 2025
- ❖ Conti, J., Koedinger, K., Carvalho, P. (2024). "Rethinking relations: Limitations of pretraining in relational rule learning" Psychonomics Society 2024
- ❖ Conti, J., Bryer, M , Piantadosi, S. , Cantlon, J. (2022). "Learning Capacity Across Species and Age to Identify Origins of Human Uniqueness" Cognitive Developmental Society 2022
- ❖ Conti, J., Buetti, S., Lleras, A. (2020). "Evaluating the contribution of visual feature heterogeneity in conjunction search performance" Vision Sciences Society 2020

Teaching Experience

TEACHING ASSISTANT AT CARNEGIE MELLON UNIVERSITY

SEPTEMBER 2022 – PRESENT

Child Development (with Sharon Carver)

Fall 2024

- ❖ Served as student-instructor liaison for a class of approx. 30 undergraduate students
- ❖ Delivered multiple lectures on content including information processing and conceptual development
- ❖ Graded written work c reflections of development in context and across different generations

Human Information Processing and Artificial Intelligence (with John Anderson)

Fall 2022 & 2025

- ❖ Served as student-instructor liaison for classes of approx. 30 undergraduate students
- ❖ Supervised the introduction of Generative AI usage in the classroom and assigned coursework
- ❖ Delivered multiple lectures on content including generative AI, reasoning, and decision making
- ❖ Held weekly office hours to workshop student assignments written in Python
- ❖ Graded written and coding assignments and provided individual feedback

INDEPENDENT TUTOR

SEPTEMBER 2019 – DECEMBER 2020

Basic German, Intermediate Spanish, General Psychology, Composition

- ❖ Guided high-school, graduate, and postgraduate students in keeping pace with sudden online adaptation

- ❖ Priority placed on individual needs by adapting necessary content and internalization through discourse
- ❖ Developed high proficiency in editorial work and discussion of relevant corrections

Skills

COMPUTATIONAL

- ❖ **Python**, using Anaconda and PyCharm IDEs for statistical analysis and PsychoPy experimentation
- ❖ **C#**, using VSCode for the development of scripts for Unity 3D, used in VR and 2D gameplay
- ❖ **C++**, using Ubuntu and tested through Catch and Valgrind for data structure education
- ❖ **JavaScript**, using WebStorm IDE for online experiments through Pavlovia and JSON for data management
- ❖ **Java**, experienced with the IntelliJ IDE and Android App Development
- ❖ **HTML** web design, for the development of personal and professional websites
- ❖ **R**, using Rstan for MCMC Bayesian modeling and basic R packages for general statistical analysis
- ❖ Other software-oriented skills include Git project management, Microsoft Office, and Adobe Photoshop

SPOKEN LANGUAGES

- ❖ Native Language – English
- ❖ Advanced Italian and Spanish
- ❖ Elementary German and Japanese

Awards

PSYCHONOMICS SOCIETY J. FRANK YATES STUDENT TRAVEL AWARD

NOVEMBER 2025

GRADUATE CONFERENCE TRAVEL GRANT

FALL 2024

DEAN'S LIST

SPRING 2020

UNDERGRADUATE RESEARCH SUPPORT GRANT

FALL 2019

Invited Talks

University of Wisconsin, Madison, Harlow Center for Biological Psychology

DECEMBER 2022

Other Projects

Conti, J., Buetti, S., Lleras, A. (Undergraduate thesis). "Evaluating the contribution of visual feature heterogeneity in conjunction search performance"

- ❖ Study accepted for poster presentation at Vision Sciences Society 2020
- ❖ Developed experiments in PsychoPy, which were also transcribed to JavaScript for online studies
- ❖ Conducted data processing and statistical analyses in R to model Target Contrast Signal Theory

Conti, J., Willits, J., Language Learning Lab at UIUC - Project Humans. A tool designed to allow for the testing of neural networks in a more authentic 3D environment

- ❖ Project allows for theories of semantics explored through neural networks to be applied to a virtual environment populated by NPCs humans and resources
- ❖ Used Unity to include more authentic representations of human vision and to easily observe and explore behavioral trends in real time

Outreach & Volunteering

COG SCI COFFEE AT CARNEGIE MELLON UNIVERSITY

JANUARY 2024 - PRESENT

Co-Founder

- ❖ Organized a space for post-doctoral researchers and graduate students across disciplines to meet other early academics maintaining interest in cognitive science
- ❖ Held bi-weekly discussion groups for historic and modern literature relevant to the field

GRADUATE PSYCHOLOGY OUTREACH PROGRAM AT CARNEGIE MELLON UNIVERSITY

AUGUST 2021 - PRESENT

Organizer

- ❖ Collaborated with fellow graduate students of the CMU Psychology Department on educational presentations for middle and high school students in the community
- ❖ Topics of presentation include college preparedness, lifelong growth, and career choices

TARTAN SALSA OF CARNEGIE MELLON UNIVERSITY

MAY 2023 - PRESENT

President

- ❖ Coordinated a club of 300 graduate and undergraduate members with the goal of cultural appreciation and community building through Latin dance
- ❖ Directed a team of 8 instructors in weekly classes covering multiple styles across three levels of proficiency
- ❖ Provided volunteer teaching services to groups including the Association of Latino Professionals for America and CMU's Peer Health Advocates, and the Spanish and Latin Student Association

CLIMBING CLUB AT THE UNIVERSITY OF ILLINOIS

APRIL 2019 - APRIL 2020

Philanthropy Chair

- ❖ Collaborated with a team of six to organize three annual fundraisers such as a Reel Rock viewing and raffle for a club of 150 students, allowing for \$2500 to be donated to the Access Fund
- ❖ Coordinator of ecological service projects such as biannual volunteer trail reconstruction of Jackson Falls