Kimberly Lewis Meidenbauer

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Research Gate Profile | ENL website profile | OSF Profile | Twitter | Google Scholar

ACADEMIC APPOINTMENTS

2021 – present ***Postdoctoral Fellow***
University of Chicago, Department of Psychology
Environmental Neuroscience Lab, Director: Marc Berman

2020 – 2021 ***Postdoctoral Teaching Fellow in the Social Sciences***
University of Chicago, Department of Psychology
Environmental Neuroscience Lab, Director: Marc Berman

EDUCATION

2020 **The University of Chicago, Department of Psychology**
Ph.D. in Psychology (Integrative Neuroscience Program)
Dissertation: The Role of Preference in the Affective and Cognitive Benefits of Nature
Committee: Marc Berman, Alex Shaw, Ed Vogel, & Christine Larson

2016 **The University of Chicago, Department of Psychology**
M.A. in Psychology (Integrative Neuroscience Program)
Thesis: Distinct Components of Empathy and their Neurophysiological Markers
Committee: Jean Decety, Marc Berman, Jennifer Kubota

2012 **University of Wisconsin-Milwaukee**
B.A. in Psychology with Honors, *summa cum laude*
Senior Thesis: Does Attention Play a Mediating Role in Affective Empathy?
Advisor: Christine Larson

RESEARCH INTERESTS

My research spans the fields of ***environmental, social, and cognitive psychology***. I am broadly interested in how elements of the physical environment can influence our cognition, emotion, and social behaviors. I ***combine behavioral and neuroimaging methods*** (fNIRS, EEG, and fMRI) to study psychological processes at multiple levels. I'm also very interested in ***task development***, adapting existing methods for use in online experiments, and using ***multivariate approaches*** in statistical analysis.

PUBLICATIONS *(CONTRIBUTIONS LISTED ACCORDING TO CREDIT)*

PEER-REVIEWED ARTICLES

1. **Meidenbauer, K. L.**, Choe, K. W., Cardenas-Iniguez, C., Huppert, T.J., & Berman, M. G. (2021) Load-dependent relationships between frontal fNIRS activity and performance: A data-driven PLS approach. *NeuroImage. 117795.* https://doi.org/10.1016/j.neuroimage.2021.117795

Contributions: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Administration, Software, Supervision, Visualization, Writing - original draft, Writing – review & editing

2. **Meidenbauer, K. L.**, Stenfors, C. U. D., Bratman, G. N., Gross, J. J., Schertz, K. E., Choe, K. W., & Berman, M. G. (2020). The affective benefits of nature exposure: What's nature got to do with it? *Journal of Environmental Psychology, 72.* https://doi.org/10.1016/j.jenvp.2020.101498

Contributions: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Resources, Software, Visualization, Writing - original draft, Writing – review & editing

3. **Meidenbauer, K. L.**, Stenfors, C. U. D., Ingram, M. P., & Berman, M. G. (2019). A tablet-based task for assessing environmental preferences in children and adults. *MethodsX, 6*, 1901-1906. https://doi.org/10.1016/j.mex.2019.08.002

Contributions: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Admin, Resources, Software, Supervision, Visualization, Writing - original draft, Writing – review & editing

4. **Meidenbauer, K. L.,** Stenfors, C., Young, J., Layden, E. A., Schertz, K. E., Kardan, O., Decety, J., & Berman, M. G. (2019). The gradual development of the preference for natural environments. *Journal of Environmental Psychology, 65*. https://doi.org/10.1016/j.jenvp.2019.101328

Contributions: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Admin, Resources, Software, Supervision, Visualization, Writing - original draft, Writing – review & editing

5. **Meidenbauer, K. L.,** Cowell, J. M., & Decety, J. (2018). Children's neural processing of moral scenarios provides insight into the formation and reduction of in-group biases. *Developmental Science., e12676.* https://doi.org/10.1111/desc.12676

Contributions: Conceptualization, Formal Analysis, Investigation, Methodology, Project Admin, Resources, Software, Supervision, Visualization, Writing - original draft, Writing – review & editing

6. Decety, J., **Meidenbauer, K. L.,** & Cowell, J. M. (2017). The development of cognitive empathy and concern in preschool children: A behavioral neuroscience investigation. *Developmental Science, e12570.* https://doi.org/10.1111/desc.12570

Contributions: Formal Analysis, Methodology, Software, Visualization, Writing - original draft, Writing – review & editing

7. **Meidenbauer, K. L.**, Cowell, J. M., Killen, M., & Decety, J. (2016) A developmental neuroscience study of moral decision-making regarding resource allocation. *Child Development, 89,* 1177-1192. https://doi.org/10.1111/cdev.12698

Contributions: Conceptualization, Formal Analysis, Investigation, Methodology, Project Admin, Resources, Software, Supervision, Visualization, Writing - original draft, Writing – review & editing

8. Decety, J., **Lewis, K. L.**, & Cowell, J. M. (2015). Specific electrophysiological components distinguish affective sharing and empathic concern in psychopathy. *Journal of Neurophysiology, 114*(1), 493-504. https://doi.org/10.1152/jn.00253.2015

Contributions: Formal Analysis, Investigation, Methodology, Project Admin, Resources, Software, Supervision, Visualization, Writing - original draft, Writing – review & editing

9. **Lewis, K. L.**, Taubitz, L. E., Duke, M. W., Steuer, E. L., & Larson, C. L. (2015) State rumination enhances elaborative processing of negative material as evidenced by the late positive potential. *Emotion, 15*(6), 687-693. https://doi.org/10.1037/emo0000095

Contributions: Formal Analysis, Investigation, Methodology, Software, Visualization, Writing - original draft, Writing – review & editing

10. Humphries, C., Sabri, M., **Lewis, K.** & Liebenthal, E. (2014). Hierarchical organization of auditory cortex in speech perception. *Frontiers in Neuroscience, 8:*406. https://doi.org/10.3389/fnins.2014.00406

Contributions: Investigation, Methodology, Project Admin, Resources, Writing – review & editing

MANUSCRIPTS UNDER REVIEW

11. **Meidenbauer, K. L.,** Choe, K., Bakkour, A., Inzlicht, M., & Berman, M. G. (2021, March 22). Characterizing the role of impulsivity in costly, reactive aggression using a novel paradigm. https://psyarxiv.com/kw3by/

Contributions: Conceptualization, Data Curation, Formal Analysis, Funding Acquisition, Investigation, Methodology, Project Administration, Software, Supervision, Visualization, Writing - original draft, Writing – review & editing

12. **Meidenbauer, K. L.*,** Niu, T.*, Choe, K. W., Stier, A. J., & Berman, M. G. (2021, August 30). Mouse movements reflect personality traits and task attentiveness in online experiments. (*authors contributed equally) https://psyarxiv.com/eqhdw/

Contributions: Data Curation, Formal Analysis, Investigation, Software, Visualization, Writing - original draft, Writing – review & editing

13. Zhuang, C.*, **Meidenbauer, K. L.*,** Kardan, O., Stier, A. J., Choe, K. W., Cardenas-Iniguez, C., Huppert, T. J., & Berman, M. G. (2021, September 1). Scale Invariance in fNIRS as a Measurement of Cognitive Load. (*authors contributed equally) https://www.biorxiv.org/content/10.1101/2021.08.31.458427v1

Contributions: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Administration, Software, Supervision, Visualization, Writing - original draft, Writing – review & editing

BOOK CHAPTERS

14. Schertz, K. E.*, **Meidenbauer, K. L.*,** & Berman, M. G. (2021) Understanding the Affective Benefits of Interacting with Nature. In E. Brymer, M. Rogerson, & J. Barton (Ed.) *Nature, Physical Activity and Health.* London, UK: Routledge. DOI: 10.4324/9781003154419-2 [*Authors contributed equally]

15. Berman, M. G., Cardenas-Iniguez, C., & **Meidenbauer, K. L.** (2021) *An Environmental Neuroscience Perspective on the Benefits of Nature.* Proceedings from the 67th Nebraska Symposium on Motivation--Nature and Psychology. https://link.springer.com/chapter/10.1007%2F978-3-030-69020-5_4

GRANTS & FELLOWSHIPS

UNIVERSITY OF CHICAGO

Center for Health Administration Studies (CHAS) Seed Grant July 2020 – 2022
Project title: "Prioritizing Urban Green Infrastructure (UGI) to Reduce Heat, Improve Human Self-control and Reduce Crime."
Grant PI: Dr. Marc Berman
Amount Awarded: $10,000
Role: Co-Investigator

William Rainey Harper Dissertation Year Fellowship 2019 – 2020
Highly competitive fellowship (1 awarded for all applicants in Social Sciences Division) providing full tuition and stipend for additional year of PhD work

Norman Anderson Award Spring 2020
Research Funding, Amount: $1000

Norman Anderson Award Winter 2017
Conference Travel Funding, $800

Norman Anderson Award Fall 2015
Conference Travel Funding, $400

PRESENTATIONS

INVITED TALKS

1. *Is nature only good for us because we like it?* Elmhurst College Psychology Club Research Talk, Feb 27, 2020, Elmhurst, IL.
2. *Children's environmental preferences.* 3rd annual Wolf Lake Watershed Advisory Committee Meeting, Nov 1, 2019, Whiting, IN.

POSTERS & PRESENTATIONS

1. Letourneau-Freiberg, L. R., **Meidenbauer, K. L.,** Denson, A. M., Tian, P., Choe, K. W., Berman, M. G., Greely, S. A. W. (2020). Use of Functional Near-infrared Spectroscopy (fNIRS) To Assess Cognitive Effort In KATP-Related Neonatal Diabetes (KATP-NDM). Presented at the *American Diabetes Association 80th Scientific Session,* June 2020.
2. **Meidenbauer, K. L.,** Choe, K. W., Cardenas-Iniguez, C., Huppert, T.J., & Berman, M. G. (2020). Frontal fNIRS Activity Predicts Performance Differently Across Levels of

Cognitive Load. *Poster presented at the Association for Psychological Science Annual Meeting Virtual Poster Showcase,* June 2020*.*

3. **Meidenbauer, K. L.** (2019) *Task-evoked fNIRS activity during an n-back task.* Talk given at the winter meeting of the University of Chicago fNIRS User Interest Group, Jan 2020.
4. **Meidenbauer, K. L.** (2019) *Using fNIRS activation as a neural index of cognitive effort.* Talk given at the University of Chicago Cognition Workshop, May 2019.
5. **Meidenbauer, K. L.** (2019) *Fundamentals of Functional Near-Infrared Spectroscopy.* Talk given at the first meeting of the University of Chicago fNIRS User Interest Group, February 2019.
6. **Meidenbauer, K. L.** (2018) *The Gradual Development of Nature Preferences.* Talk given at the University of Chicago Cognition Workshop, November 2018.
7. Young, J., **Meidenbauer, K.L.,** Choe, KW., Berman, M.G. (2018*). Functional Near-Infrared Spectroscopy Imaging of Auditory and Visual Cortex.* Presented at the Annual University of Chicago Neuroscience Retreat, New Buffalo, MI, September 2018.
8. **Meidenbauer, K. L.,** Cowell, J. M. & Decety, J. (2017). *Neurophysiological Indices of Conflicting Group Attitudes and Incongruent Moral Behaviors.* Presented at Biennial Meeting of the Society for Research in Child Development, Austin, April 2017.
9. **Meidenbauer, K. L.,** Cowell, J. M., & Decety, J. (2017). *Developmental Changes in the Neural Processing of Equity and Equality in Resource Allocation.* Presented at the Biennial Meeting of the Society for Research in Child Development, Austin, April 2017.
10. **Lewis, K. L.**, Cowell, J. M., & Decety, J. (2015). *Neural Correlates of Contextualized Moral Decision Making in Children and Adolescents*. Presented at Society for Social Neuroscience Annual Meeting, Chicago, October 2015.
11. **Lewis, K. L.**, Cowell, J. M., & Decety, J. (2015). *Electrophysiological Signatures of Distinct Facets of Empathy and Their Relation to Trait Empathy and Psychopathy*. Presented at Society for Neuroscience Annual Meeting, Chicago, October 2015.
12. Sabri, M., **Lewis, K.**, Humphries, C. J., & Liebenthal, E. (2014). *Differential neural adaptation of spectral transition and steady-state features in speech and nonspeech*. Presented at Society for Neuroscience Annual Meeting, Washington D.C., November 2014.
13. Humphries, C., Sabri, M., Heugel, N., **Lewis, K.** & Liebenthal, E. (2013). *Pattern Specific Adaptation to Speech and Nonspeech Sounds in Human Auditory Cortex*. Presented at the Society for Neuroscience Annual Meeting, San Diego, November 2013.
14. **Lewis, K. L.**, Robinson, J.S., & Larson, C. L. (2012). *ERPs during Emotion Regulation Task Affected by Symptoms of Dissociation in PTSD Patients.* Presented at the Society for Psychophysiological Research Conference, New Orleans, September 2012 and the International Neuropsychology Society (INS) Conference, Montreal, Canada, February 2012.

15. Taubitz, L. E., **Lewis, K. L**, & Larson, C. L. (2012). *Emotion Modulation of the P2 ERP Component in Dysphoric and Non-Dysphoric Subjects and its Modification by SSRI Treatment*. Presented at the Society of Biological Psychiatry Annual Scientific Convention & Program, Philadelphia, May 2012.

16. Taubitz, L. E., **Lewis, K. L.**, & Larson, C. L. (2011). *Elaborating the Time Course of Attentional Bias in Dysphoria: Combining Event-Related Potential and Behavioral Measures*. Presented at the Society for Psychophysiological Research Conference, Boston, September 2011.

17. **Lewis, K. L.**, Steuer, E. L., Duke, M. W., Taubitz, L. E., Belleau, E. L., & Larson, C. L. (2011). *Frontal Late Positive Potential Predicts Subsequent Memory for Pleasant Pictures.* Presented at the Society for Psychophysiological Research Conference, Boston, September 2011, Midwestern Psychological Association Conference, Chicago, May 2011, and the UW-Milwaukee Undergraduate Research Symposium, Milwaukee, April 2011.

COMMITMENT TO OPEN SCIENCE PRACTICES

- Open Science Framework (OSF) Profile
- Member of University of Chicago chapter of ReproducibiliTea (OSF site) (Twitter)

Shared Datasets:

- Reactive aggression and impulsivity experiment data (MTurk) data from Meidenbauer et al. (*psyarxiv,* 2021) https://osf.io/796rs/
- Mouse movements & personality data in Meidenbauer, Niu, et al., (*psyarxiv*, 2021): https://osf.io/fr74q/
- fNIRS and behavior data (N-back task) in Meidenbauer et al. (*NeuroImage*, 2021): https://osf.io/sh2bf/ and scale-invariance data in Zhuang, Meidenbauer et al. (*biorxiv*, , 2021): https://osf.io/kt5cx/
- Nature exposure, aesthetic preferences, and affect change (MTurk) data from Meidenbauer et al. (*J. Environmental Psychology*, 2020): https://osf.io/ehtk9/

Shared Study Materials

- Nature and Urban picture stimuli from Meidenbauer et al. (*J. Environmental Psychology*, 2019) and Meidenbauer et al., (*MethodsX*, 2019): https://osf.io/xj3pk/
- Picture stimuli with ratings of preference and naturalness from Meidenbauer et al. (*J. Environmental Psychology,* 2020): https://osf.io/ehtk9/

Shared Task Code

- N-back PsychoPy experiment from Meidenbauer et al. (*NeuroImage,* 2021): https://osf.io/m6brz/

- Tablet-based image rating task used to evaluate child nature preferences from Meidenbauer et al. (*J Environmental Psychology, 2019*) and Meidenbauer et al. (*MethodsX*, 2019): https://osf.io/hc2ne/

Neuroimaging and Statistical Analysis Code

- Matlab code for fNIRS data Analysis using Brain AnalyzIR toolbox + Running Behavioral PLS in fNIRS and R code for behavior analysis (from Meidenbauer et al., *NeuroImage,* 2021): https://osf.io/sh2bf/
- Matlab code for preprocessing and running PLS analysis on fNIRS scale-invariance (Hurst exponent) data: https://osf.io/kt5cx/
- R code for statistical analysis of reactive aggression study in Meidenbauer, Choe, et al. (*psyarxiv*, 2021): https://osf.io/czn43
- Matlab & R code for running PLS on mousetracking and personality data in Meidenbauer, Niu, et al. (*psyarxiv*, 2021): https://osf.io/fr74q/

Preregistrations

- Preregistration for confirmatory study of reactive aggression and impulsivity study in Meidenbauer, Choe et al. (*psyarxiv*, 2021): https://osf.io/czn43
- Preregistrations for effects of nature and preference on affect change in Meidenbauer et al. (*J. Environmental Psychology*, 2020): https://osf.io/u5r4c, https://osf.io/u2e6n

RESEARCH POSITIONS

Environmental Neuroscience Lab (Dr. Marc G. Berman) 2017 – present
Graduate Research Assistant & Post-doctoral Fellow
University of Chicago

- Demonstrated the importance of considering aesthetic preferences for natural environments in the affective and cognitive impacts of nature exposure
- Conducted first empirical investigation on the development of nature preferences
- First researcher at U of C to develop an acquisition and analysis protocol for fNIRS technique & trained other researchers on how to utilize this neuroimaging modality
- Co-developed a novel, lab-based measure of impulsive aggression
- Contributed to grant proposals examining the impact of heat stress on aggressive behaviors

Social Cognitive Neuroscience Lab & Child Neurosuite (Dr. Jean Decety) 2014 – 2016
Graduate Research Assistant
University of Chicago

- Designed, ran, analyzed, and published ERP studies examining children's development of moral decision making, empathy, and intergroup moral evaluation
- Conducted research on specific empathy deficits in psychopathy and how this can be identified using EEG biomarkers

Affective Neuroscience Lab (Dr. Christine L. Larson) 2010 – 2014
Undergraduate Researcher & Post-Baccalaureate Research Technician
University of Wisconsin-Milwaukee

- Conducted independent research study on empathy and attention using eyetracking and behavioral measures
- Assisted on EEG studies of emotion regulation, rumination, and affective processing, analyzed the data, and presented findings at conferences
- Analyzed ERP asymmetry in rumination, and published results in academic journal

Speech Perception Lab (Dr. Merav Sabri & Dr. Einat Liebenthal) 2012 – 2014
Lab Manager
Medical College of Wisconsin

- Collected and analyzed multimodal neuroimaging data (simultaneous and parallel fMRI-EEG, EEG-MEG) examining the neural substrates of speech comprehension in healthy and clinical populations

Brain Injury Research Lab (Dr. Michael McCrea) 2012
Research Technician
Medical College of Wisconsin

- Ran participants through a battery of concussion testing procedures for baseline and post-injury athletes

Inquiries in Affective Science Lab (Dr. Nakia Gordon) 2012
Research Technician
Marquette University

- Helped design studies testing the affective evaluation of violence towards out-groups
- Programmed EEG study on emotion processing in children with autism
- Learned and mentored undergraduates in analysis of heart-rate variability data

F.E.A.R. Lab (Dr. Shawn Cahill) 2010
Undergraduate Research Assistant
University of Wisconsin-Milwaukee

- Assisted with experiments on anxiety-induced changes in social cooperation and trust

TEACHING EXPERIENCE

Teaching Fellow at University of Chicago

Social Psychology	Fall 2020
Mind-I (Social Sciences Core class)	Fall 2020
Mind-II	Winter 2021
Mind-III	Spring 2021

Graduate Student Instructor at University of Chicago Summer 2019
Cognitive Psychology

Graduate Teaching Assistant at University of Chicago

Cognitive Psychology	Spring 2018, Spring 2019
Intro to Developmental Psychology	Spring 2017
Violence in the Early Years (Public Policy Course)	Winter 2017, Winter 2018
Social Psychology	Fall 2016, Fall 2017

Teaching Intern at UW-Milwaukee

Introduction to Psychology	Fall 2010

WORKSHOPS & PROFESSIONAL DEVELOPMENT

RepliCATS (Collaborative Assessment for Trustworthy Science) June 22 – 25, 2021
Society for the Improvement of Psychological Science (SIPS)
Virtual Pre-Conference Workshop, Hosted through University of Melbourne

Array of Things Workshop August 29 – 30, 2018
Argonne National Laboratory, Chicago

Advanced fNIRS Data Analysis Workshop May 24 – 25, 2018
University of Pittsburgh, Course led by Ted Huppert, PhD

SERVICE

Ad-Hoc Manuscript Review (Publons Profile) 2017 – present

Scientific Reports
Child Development
Biological Psychology
Journal of Environmental Psychology
Society & Natural Resources
Applied Psychology: Health and Well-Being
Applied Science
International Journal of Environmental Research and Public Health
Psychophysiology

U Chicago fNIRS User Interest Group 2019 – present

- Co-organized monthly meeting/workshop for University of Chicago labs interested in using fNIRS

Psychology Graduate Student Organization (U Chicago PGSO) Service

- Health & Wellness Committee Founder and Chair 2017 – 2020
- PGSO President 2016 – 2017
- Graduate Student Mentorship Coordinator 2015 – 2016
- Social Committee Member 2014 – 2016

MENTORSHIP

- Gray Fischer (UChicago Environmental Health Sciences Trainee, Summer 2021) Mentored research project on perceptions of air quality and crime in Chicago cities.
- Annie Li (MAPSS Student, 2020-2021). Mentored M.A. thesis on development of online, bonus-based Stop Signal Task.
- Selina Liu (MACSS Student, 2019-2021). Co-mentored M.A. thesis on Mouse Movement and Personality, and assisted with turning thesis into a manuscript.
- Nak Won Rim (MACSS Student, 2019-2021). Co-mentored M.A. thesis on Eyetracking Point of Interest Analysis and assisted with PhD program applications. Nak Won will be joining the U of Chicago Psychology PhD program in Sept 2021.
- Siyi Fan (MACSS Student, 2018-2020). Co-mentored M.A. thesis on Reliable Preference Rating Through Multiple Image Presentation.
- Chu Zhuang (MAPSS Student, 2019-2020). Mentored M.A. Thesis on Scale Invariance in fNIRS as a Measurement of Cognitive Effort. Supervised and co-wrote Chu's first-author manuscript based on her thesis.
- Jillian Bowman (Undergraduate RA, 2017-2020). Provided mentorship and data analysis assistance on B.A. thesis project, assisted with professional development. Jillian was accepted to medical school in 2020.
- Tanvi Lahktakia (Undergraduate RA, 2017-2020). Provided mentorship and data analysis assistance on B.A. thesis project, mentored on research job and PhD application process.
- Jaime Young (Post-MA Research Assistant, 2017-2019). Mentored on research projects and PhD program applications. Jaime was accepted into a PhD program in psychology in 2019.

MEDIA COVERAGE

Children's environmental preferences:

- UChicago News: *Children don't like nature as much as adults—but preferences change with age.* https://news.uchicago.edu/story/children-dont-nature-much-adults-preferences-change-age
- Research also covered by the Times, London and Talk Radio London.

TECHNICAL SKILLS

- **Statistical Analysis** using R (Frequentist & Bayesian statistics) and Matlab (multivariate PCA and PLS analysis)
- **Neuroimaging** expertise in multiple modalities (EEG, fNIRS, fMRI), designing, collecting, and analyzing data
- **Experimental design** and programming (E-prime, Qualtrics, JavaScript, PsychoPy)

PROFESSIONAL AFFILIATIONS & ACADEMIC MEMBERSHIPS

- Association for Psychological Science (APS)
- American Psychological Association of Graduate Students (APAGS)
- American Psychological Association (APA): Student Affiliate
- Society for Psychophysiological Research (SPR): Student Member
- Society for Neuroscience (SfN): Student Member
- Society for Research in Child Development (SRCD): Student Member
- Psi Chi (National Honor Society in Psychology)
- Golden Key (International Academic Honor Society)
- Phi Beta Kappa (National Academic Honor Society)
- Phi Kappa Phi (National Academic Honor Society)