

Exponent®
Engineering & Scientific Consulting

Nicole Keller, Ph.D.

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Professional Profile

Dr. Keller specializes in human cognition and emotion to analyze the role of human factors in a variety of accident scenarios. She has expertise in assessing how human learning, memory, decision-making, attention, perception, vision, fear, and panic may impact behavior. Dr. Keller applies her expertise across a broad range of matters, including automotive and pedestrian accidents, trip-and-fall incidents, risk communication, industrial and occupational accidents, and warning compliance.

Prior to joining Exponent, Dr. Keller received her Ph.D. in Neuroscience from the University of Texas at Austin. Her research focused on fear and reward learning and memory in humans. Specifically, she developed a novel neurobehavioral conditioning paradigm and used psychophysiology and neuroimaging methods (fMRI) to investigate how rewards enhance the efficacy of fear extinction and prevent fear relapse. Her work in graduate school was used to advance scientific discovery toward more effective treatment options for pathological fear and anxiety.

Dr. Keller has over six years of experience designing, implementing, and leading rigorous and novel scientific research, a proven track record of scientific writing and public speaking, extensive neuroimaging and psychophysiology analysis training, and is bilingual in Spanish and English.

Academic Credentials & Professional Honors

Ph.D., Neuroscience, University of Texas, Austin, 2022

B.Sc., Neuroscience, University of Texas, Austin, 2016

Fred M. Jones & Homer L. Bruce Endowed Graduate Fellowship, 06/2020 – 12/2022.

NIMH Diversity Research Supplement, 06/2018-05/2020.

GPA-based Honors, Fall 2012, Spring 2013, Fall 2013, Spring 2015, Fall 2015, Spring 2016.

Professional Affiliations

Human Factors and Ergonomics Society (HFES)

Languages

Spanish

English

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Publications

Keller, N. E., Salvi, C., Leiker, E. K., Gruber, M. J., & Dunsmoor, J. E. (2024). States of epistemic curiosity interfere with memory for incidental scholastic facts. npj Science of Learning, 9(1), 22.

Salvi, C., **Keller, N. E.**, Cooper, S. E., Leiker, E., & Dunsmoor, J. (2024). Aha! and D'oh! experiences enhance learning for incidental information—new evidence supports the insight memory advantage. Cognitive, Affective, & Behavioral Neuroscience, 24(3), 505-516.

Keller, N. E., Cooper, S. E., McClay, M., & Dunsmoor, J. E. (2023). Counterconditioning reduces contextual renewal in a novel context but not in the acquisition context. Neurobiology of learning and memory, 201, 107749.

Keller, N. E., Hennings, A. C., Leiker, E. K., Lewis-Peacock, J. A., & Dunsmoor, J. E. (2022). Rewarded extinction increases amygdalar connectivity and stabilizes long-term memory traces in the vmPFC. Journal of Neuroscience, 42(29), 5717-5729.

Keller, N. E., Hennings, A. C., & Dunsmoor, J. E. (2020). Behavioral and neural processes in counterconditioning: Past and future directions. Behaviour Research and Therapy, 125, 103532.

Keller, N. E., & Dunsmoor, J. E. (2020). The effects of aversive-to-appetitive counterconditioning on implicit and explicit fear memory. Learning & Memory, 27(1), 12-19.

Monfils, M. H., Lee, H. J., **Keller, N. E.**, Roquet, R. F., Quevedo, S., Agee, L., Cofresi, R., & Shumake, J. (2019). Predicting extinction phenotype to optimize fear reduction. Psychopharmacology, 236(1), 99-110.

Presentations

Keller N.E., Hennings A.C., Leiker E., Lewis-Peacock J.A. & Dunsmoor, J.E. (2022). The Neurobehavioral Effects of Reward on Short- and Long-Term Fear Extinction Memory Retrieval. Poster presented at the Society of Biological Psychiatry, New Orleans, LA.

The Contextual Renewal Effects of Counterconditioning in a Causal Learning Task. (2022). Talk presented at the Dallas & Austin Area Memory Meeting, Virtual Meeting.

Keller N.E., Leiker E., McClay M., Hennings A.C., Lewis-Peacock J.A., Dunsmoor, J.E. (2021). The Neural Correlates of Rewarded Extinction. Poster presented at the European Meeting of Human Fear Conditioning, Virtual Meeting.

The Neurobehavioral Effects of Augmented Fear Extinction. (2021). Talk presented at the Institute for Neuroscience Dialogue Seminar Series, Virtual Meeting.

Keller N.E., Leiker E., McClay M., Hennings A.C., Lewis-Peacock J.A., Dunsmoor, J.E. (2020). The Neural Correlates of Aversive to Appetitive Counterconditioning. Poster presented at the Cognitive Neuroscience Meeting, Virtual Meeting.

Counterconditioning's Effects on Fearful Learning and Memory. (2019). Talk presented at the Cognitive Neuroscience and Imaging Research Center Seminar, Austin, TX.

Can Reward Diminish Fear Memory Recovery? (2019). Talk presented at the Dallas & Austin Area Memory Meeting, Dallas, TX.

Keller N.E., Dunsmoor, J.E. (2019). The Effects of Rewarded Extinction on Implicit and Explicit Threat Memories. Poster presented at the European Meeting of Human Fear Conditioning, Wurzburg, Germany.

Keller N.E., Dunsmoor, J.E. (2019). Can Reward Effectively Mitigate Fear? Poster presented at

NIMH/NIDA/NIAAA Diversity Fellowship Workshop, Bethesda, MD.

Does Counterconditioning Diminish Enhancement of Episodic Fear Memory? Talk presented at the Dallas & Austin Area Memory Meeting, Waco, TX. (2018)

Keller N.E., Dunsmoor, J.E. (2018). Rewarded extinction diminishes the enhancement of episodic fear memory. Poster presented at the Cognitive Neuroscience Meeting, Boston, MA.

Peer Reviews

Journal of Behavior Therapy and Experimental Psychiatry