



Exponent[®]
Engineering & Scientific Consulting

Rachel L. Kelly, Ph.D.

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Professional Profile

Dr. Rachel Kelly's focus is primarily on physiological, cognitive, and perceptual issues relating to human behavior. Her areas of expertise include human cognition involving attention and distraction, driver behavior, training, and behavioral response to risk communication. Dr. Kelly's work experience and skillset enable her to understand human behavior in a range of accident contexts involving motor vehicles, recreational activities and equipment, pedestrians, occupational accidents, and slip-and-fall accidents. She also analyzes human factors and human performance issues in a wide range of contexts including safety information and use of consumer products.

Prior to joining Exponent, Dr. Kelly was a Graduate Research Assistant in the Cognitive Motor Control Laboratory at Georgia Institute of Technology where she completed National Institutes of Health Fellowship for Prosthetics and Orthotics Research Training. Her dissertation work evaluated the neurophysiology behind the motor planning process of movement in humans. Specifically, her focus was on developing improved models of the interaction of cognitive and motor systems for performance of skillful motor tasks, and how handedness influences cortical localization of neural networks. Dr. Kelly also served as a Graduate Teaching Assistant at Georgia Tech for courses in Human Performance Science. After graduate school, Dr. Kelly accepted academic appointments at Georgia State University and Duke TIP where she taught courses in cognitive neuroscience, neuroendocrine and endocrine mechanisms, anatomy and physiology, drugs and behavior, and medical ethics.

Academic Credentials & Professional Honors

Ph.D., Applied Physiology, Georgia Institute of Technology (Georgia Tech), 2015

B.S., Psychology, Georgia Institute of Technology (Georgia Tech), 2009

NIH Fellow for Prosthetics and Orthotics Research Training, 2012-2015

Georgia Institute of Technology Presidential Scholarship, 2010-2014

Georgia Tech (GTRIC) Travel Award, 2011

Academic Appointments

Visiting Professor, Georgia State University, 2015

Program Instructor, Anatomy, Physiology, and Medical Ethics, Duke TIP, 2015

Professional Affiliations

Human Factors and Ergonomics Society

Society for Neuroscience

Society of Cognitive Neuroscience

American Psychological Association

Publications

Mizelle JC, Kelly RL, Wheaton LA. Ventral encoding of functional affordances: A neural pathway for identifying errors in action. *Brain Cogn* 2013; 82:274-282.

Kelly RL, Wheaton LA. Differential mechanisms of action understanding in left and right-handed subjects: the role of perspective and handedness. *Front Psychol* 2013; 4:957.

Kelly RL, Mizelle JC, Wheaton LA. Distinctive laterality of neural networks supporting action understanding in left- and right-handed individuals: an EEG coherence study. *Neuropsychologia* 2015; 75:20-29.

Presentations and Published Abstracts

Kelly R. Understanding the neurophysiology of action interpretation in right and left-handed individuals. Presented at the School of Applied Physiology on March 13, 2015. Dissertation defense.

Kelly R. Cortico-muscular network dependent on hand seen during action recognition. Presented at the School of Applied Physiology Brown Bag meeting on November 05, 2014.

Kelly R. Understanding the action encoding system: Towards a neurophysiological model of the motor simulation process. Presented at the School of Applied Physiology on March 05, 2014. Proposal presentation.

Kelly R. Handedness and perspective on action recognition: towards a neurophysiological model. Presented at the School of Applied Physiology Brown Bag meeting on December 2013.

Kelly R. Perspective and handedness on action recognition: towards a neurophysiological model of action simulation. Presented at the School of Applied Physiology Brown Bag meeting on February 27, 2013.

Kelly R. The progression of learning tool function through action recognition. Presented at the School of Applied Physiology Brown Bag meeting in March 2012.

Kelly R., Wheaton LA. Cortico-muscular network dependent on handedness and perspective during action recognition: Towards a neurophysiological model of action simulation. The Society for Neuroscience Annual Meeting in Washington, DC, November 15-19, 2014.

Kelly R, Mizelle JC, Wheaton LA. Effects of handedness and perspective during action recognition: towards a neurophysiological model of action simulation. GTRIC poster competition in Atlanta, GA, March 18, 2014.

Kelly R, Wheaton LA. Handedness and perspective during action recognition: towards a neurophysiological model of action simulation. The Society for Neuroscience Annual Meeting in San Diego, CA, October 12-17, 2013.

Mizelle JC, Kelly, R., Wheaton LA. A role for ventral stream brain areas in understanding errors in tool manipulation. The Society for Neuroscience Annual Meeting in San Diego, CA, October 12-17, 2013.

Kelly R, Wheaton LA. Looking at understanding the influence of perspective on handedness in action recognition in right handed subjects. The Cognitive Neuroscience Society meeting poster competition in San Francisco, CA, April, 2013.

Kelly R, Wheaton LA. Understanding the influence of perspective on handedness in action recognition. GTRIC poster competition in Atlanta, GA, February 12, 2013.

Kelly R, Wheaton LA. The Influence of perspective on handedness in action recognition. The Society for Neuroscience Annual Meeting in New Orleans, LA, October 12-17, 2012

Kelly R, Wheaton LA. The role of perspective and handedness in action recognition. GTRIC poster competition, Atlanta, GA, February 7, 2012.

Kelly R, Mizelle JC, Wheaton LA. Neuroimaging analysis of the functional understanding of tools. The Society for Neuroscience Annual Meeting in Washington D.C., November 16-20, 2011.