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Genevieve M. Heckman, Ph.D.
Managing Scientist

Professional Profile

Dr. Genevieve Heckman is a Managing Scientist in Exponent's Human Factors practice. Dr. Heckman has specialized expertise in human perception and cognition, reaction time, and decision-making, as well as lighting and illumination, inattention and distraction, and the effects of training and experience on performance. Dr. Heckman uses her knowledge of fundamental human sensory, motor, and cognitive processes to evaluate human factors and human performance issues in a wide variety of scenarios including trips, slips, and falls; motor vehicle and pedestrian accidents; occupational and industrial accidents; on-product warnings and safety information; child safety and hazards; and the use and misuse of consumer and industrial products. Her experience includes conducting visibility and conspicuity analyses; evaluating optical radiation hazards and auditory warning signals in industrial settings; and assessing the factors influencing driver and pedestrian behavior, reaction time, performance in sports and recreation, and compliance with warnings and instructions. In her work, Dr. Heckman uses a variety of analysis methods, including human subjects testing, survey questionnaires and focus groups, quantitative injury and risk analyses, and image-processing techniques to quantify visibility, conspicuity, and discriminability under diverse viewing conditions.

Prior to joining Exponent, Dr. Heckman completed a Ph.D. in psychology, with specialization in cognitive neuroscience, at the University of California, Los Angeles. Her work during that time used a combination of behavioral, neuroimaging, and mathematical techniques to study human perception of color and lighting, the effects of experience on perceptual capabilities, and optimal experimental design in fMRI experiments. Her graduate work was supported by awards from the University of California, the National Institutes of Health, and the National Science Foundation.

Academic Credentials and Professional Honors

Ph.D., Psychology/Cognitive Neuroscience, University of California, Los Angeles, 2007
M.A., Psychology/Cognitive Neuroscience, University of California, Los Angeles, 2004
B.A., Psychology, Wake Forest University, 2002

Hobson Dissertation Year Fellow, University of California, Los Angeles, 2006; National Science Foundation Graduate Research Fellow, University of California, Los Angeles, 2003–2006; Phi Beta Kappa Honor Society, Wake Forest University, 2002

Publications

Kim R, Rauschenberger R, Heckman G, Young D, Lange R. Efficacy and usage patterns for three types of rear-view camera displays during backing up. SAE 2012-01-0287, in press.

Todd J, Sala J, Heckman G, Krauss D. Validation of high dynamic range photography as a tool to accurately represent low-illumination scenes. SAE 2012-01-0078, in press.

Young D, Heckman G, Kim R. Human factors in sudden acceleration incidents. Proceedings, Human Factors and Ergonomics Society Annual Meeting 2011; 55:1938–1942.

Heckman GM, Kim RS, Khan FS, Bare C, Yamaguchi GT. Auditory localization of backup alarms: The effects of alarm mounting location. SAE 2011-01-0086, 2011.

Heckman GM, Harley EM, Scher IS, Young DE. Helmet use in sledding: Do users comply with manufacturer warnings? Proceedings of the Human Factors and Ergonomics Society Annual Meeting 2010; 54:733–737.

Heckman GM, Jackson GW, Keefer RE, Ray R, Harley EM, Young DE. Mechanisms of automatic transmission console shift selection and driver egress. SAE 2009-01-0094, 2009. Paper judged to be among the most outstanding SAE Technical Papers of 2009 and thus further published in the SAE International Journal of Engines 2009; 2:9–15.

Harley EM, Trachtman D, Heckman GM, Young DE. Driver gear-shifting behaviors and errors. Proceedings of the Human Factors and Ergonomics Society Annual Meeting 2008; 52:1898–1902.

Heckman GM, Bouvier SE, Carr VA, Harley EM, Cardinal KS, Engel SA. Nonlinearities in rapid event-related fMRI explained by stimulus scaling. Neuroimage 2007; 34:651–660.

Heckman GM, Muday JA, Schirillo JA. Chromatic shadow compatibility and cone-excitation ratios. Journal of the Optical Society of America A 2005; 22:401–415.

Presentations and Published Abstracts

Heckman G, Rauschenberger R, Kim R, Young D, Lange R. A comparative evaluation of rearview camera display locations: Collision avoidance outcomes and use patterns. Invited talk given at the Society of Automotive Engineers Government/Industry Meeting, Washington, DC, January 2012.

Heckman GM. Slips, trips and falls: Investigation, evaluation and prevention. Invited talk given at the ORC Networks Western Occupational Safety & Health Meeting, Monterey, CA, March 2011.

Heckman GM. Mechanisms of learning in a color detection task. Invited talk given at the Smith-Kettlewell Eye Research Institute Colloquim Series, San Francisco, CA, November 2006.

Heckman GM, Engel SA. Perceptual learning of contrast detection is color selective. Poster session presented at the annual meeting of the Vision Sciences Society, Sarasota, FL, May 2006.

Harley EM, Bouvier SE, Heckman GM, Engel SA. Figure-ground effects in V1 measured with functional MRI. Poster session presented at the annual meeting of the Vision Sciences Society, Sarasota, FL, May 2006.

Heckman GM, Cardinal KS, Harley EM, Bouvier SE, Carr VA, Engel SA. Characterizing contrast response functions measured with rapid event-related fMRI. Poster session presented at the annual meeting of the Vision Sciences Society, Sarasota, FL, May 2005.

Cardinal KS, Harley EM, Heckman GM, Bouvier SE, Carr VA, Engel SA. Comparison of contrast response functions measured with rapid and spaced event-related fMRI. Poster session presented at the annual meeting of the Society for Neuroscience, San Diego, CA, October 2004.

Heckman GM, Engel SA. Spatial frequency modulates color selectivity of adaptation to contrast patterns. Poster session presented at the annual meeting of the Vision Sciences Society, Sarasota, FL, May 2003.

Schirillo JA, Heckman GM, Barra T. A chromatic test of shadow compatibility and equal cone excitation ratios. Poster session presented at the annual meeting for the Vision Sciences Society, Sarasota, FL, May 2003.

Peer Reviewer

- Human Factors and Ergonomics Society

Professional Affiliations

- Human Factors and Ergonomics Society
- Vision Sciences Society