



**Exponent<sup>®</sup>**  
Engineering & Scientific Consulting

**Ben Lester, Ph.D.**

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## Professional Profile

Dr. Lester is a cognitive psychologist with expertise in memory, perception, visibility, attention, and information processing. He applies this knowledge to analyses of accidents and injuries, safety, and consumer decision-making.

Dr. Lester has unique expertise in the domain of aging and its influence on information processing and behavior, including the impact of aging on sensation and perception, attention, memory, and decision-making. His knowledge and experience have been applied to investigations of human performance issues with respect to transportation, vehicle safety technologies, medical devices, and various consumer products—including food and beverage, and automobiles. Dr. Lester's consulting in product liability has focused on a human factors approach to class action litigation, in which consumer decision-making processes are examined through the cognitive mechanisms that drive consumers to make purchase decisions in the marketplace.

In addition, Dr. Lester performs quantitative injury and risk analyses using large-scale incident and injury data from various sources, including the Consumer Product Safety Commission's (CPSC) National Electronic Injury Surveillance System (NEISS), and FDA's Manufacturer and User Facility Device Experience (MAUDE).

Dr. Lester conducts and oversees human-subject testing to assess product use and to gather user opinions for various products in an automotive environment. He incorporates elements of experimental design, cutting-edge data acquisition and analysis techniques, psychophysics, questionnaires, and observational techniques to conduct comprehensive evaluations of automotive environments and vehicle technologies. As part of this work, Dr. Lester has conducted research on Advanced Driver Assistance Systems (ADAS) in passenger vehicles. He also has unique consulting experience on collision mitigation systems (CMS) in commercial trucking applications.

Prior to joining Exponent, Dr. Lester completed his Ph.D. at the University of Oregon, where he studied visual perception, attention, and spatial processing. Following graduate school, he completed post-doctoral training at the University of Iowa Hospitals and Clinics, in the Division of Neuroergonomics in the Department of Neurology, where he studied aging, vision and attention, and driver behavior in simulated and naturalistic environments.

## Academic Credentials & Professional Honors

Ph.D., Psychology, University of Oregon, 2013

M.S., Psychology, University of Oregon, 2009

B.A., Psychology, University of Iowa, 2007

Post-doctoral Research Scholar, Department of Neurology, University of Iowa Hospitals & Clinics, 2013-2015

Graduate Fellowship, Institute of Neuroscience: Systems Physiology Training Program #5 (T32 GM007257-33), National Institutes of Health, 2009-2010

## Licenses and Certifications

Certified English XL Tribometrist (CXLT)

## Professional Affiliations

Human Factors and Ergonomics Society

The Psychonomic Society

## Publications

Monk, C., Sall, R., Lester, B. D., Higgins, J. S. (2023). Visual and cognitive demands of manual and Voice-based driving mode implementations on smartphones. *Accident Analysis & Prevention*, 187, 107033.

Lester, B., Larson, R., Dosch, I., Fowler, G., & Rauschenberger, R. (2020, July). Perception of Terrain Slope in Real and Virtual Environments. In *International Conference on Applied Human Factors and Ergonomics* (pp. 197-203). Springer, Cham.

Krake, A., Jonas, R., Hoyos, C., Crump, C., Lester, B., Cades, D., & Harrington, R. (2020). Effects of Training on Learning and Use of an Adaptive Cruise Control System (No. 2020-01-1033). SAE Technical Paper.

Hoyos C, Lester BD, Crump C, Cades DM, Young, D. 2018. Consumer perceptions, understanding, and expectations of Advanced Driver Assistance Systems (ADAS) and vehicle automation. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting 2018 Sept*; 62(1):1888-1892, Sage CA: Los Angeles, CA: SAGE Publications.

Lester BD, Vatterott DB, Vecera SP. Attention and Processing Speed. *The Wiley Handbook on the Aging Mind and Brain* 2018; 337-361.

Lester BD, Vecera SP. Active Listening delays attentional disengagement and saccadic eye movements. *Psychonomic Bulletin & Review* 2017; 1-7.

Hashish R, Toney-Bolger ME, Sharpe SS, Lester BD, Mulliken A. Texting during stair negotiation and implications for fall risk. *Gait & Posture* 2017; 58:409-414.

Cades DM, Crump C, Lester BD, Young D. Driver distraction and advanced vehicle assistive systems (ADAS): Investigating effects on driver behavior. 7th International Conference on Applied Human Factors and Ergonomics (AHFE 2016) and Affiliated Conferences; 4th International Conference on Human Factors in Transportation. 2016.

Moorman HG, Niles A, Crump C, Krake A, Lester BD, Milan L, Cloninger C, Cades DM, Young D. Lane-keeping behavior and cognitive load with use of lane departure warning. SAE Technical Paper 2017-01-

1407, 2017, doi:10.4271/2017-01-1407.

Crump C, Krake A, Lester BD, Moorman HG, Cades DM, Young D. Driver behavior with passive and active vehicle safety system. Proceedings of the Transportation Review Board 2017 Annual Meeting.

Cades DM, Crump C, Lester BD, Reed S, Barakat B, Milan L, Young D. Differing perceptions of advanced driver assistance systems (ADAS). Proceedings of the Human Factors and Ergonomics Society Annual Meeting 2016 Sept; 58(1):265-269.

Kim R, Lester BD, Schwark J, Cades D, Hashish R, Moorman H, Young D. Gaze behavior during curb approach: the effect of mobile device use while walking. Human Factors & Ergonomics Society, 2016.

Lester BD, Hashish R, Kim R, Moorman H, Hildebrand E, Schwark J, Rauschenberger R, Young D. Mobile device usage influences gaze patterns to obstacles during locomotion. The Industrial & Systems Engineering Research Conference, 2016.

Lester BD, Sager LN, Dawson J, Hacker SD, Aksan N, Rizzo M, Kitazaki S. Pilot results on forward collision warning system effectiveness in older drivers. 8th International Driving Symposium on Human Factors in Driving Assessment, Training and Vehicle Design, 2015.

Lester BD, Hacker SD, Vecera S, Rizzo M. Serialization of behavior during car following in aging drivers. 8th International Driving Symposium on Human Factors in Driving Assessment, Training and Vehicle Design, 2015.

Aksan N, Sager L, Lester BD, Hacker S, Dawson J, Anderson SW, Rizzo M. Effectiveness of a heads-up adaptive lane deviation warning system for middle-aged and older adults. 8th International Driving Symposium on Human Factors in Driving Assessment, Training and Vehicle Design, 2015.

Dassonville P, Lester BD, Reed SA. An allocentric exception confirms an egocentric rule: A comment on Taghizadeh and Gail (2014). *Frontiers in Human Neuroscience* 2014; 8:942. doi: 10.3389/fnhum.2014.000942.

Lester BD, Dassonville P. The role of the right superior parietal lobule in processing visual context for the establishment of the egocentric reference frame. *Journal of Cognitive Neuroscience* 2014; 26:2201-2209. doi: 10.1162/jocn\_a\_00636.

Lester BD, Dassonville P. Shifts of visuospatial attention do not cause the spatial distortions of the Roelofs effect. *Journal of Vision* 2013; 13:1-15. doi: 10.1167/13.12.4.

Lester BD, Dassonville P. Attentional control settings modulate susceptibility to the induced Roelofs effect. *Attention, Perception & Psychophysics* 2011; 73:1398-1406. doi: 10.3758/s13414-011-0123-9.

Lester BD, Vecera S. Visual prior entry for foreground figures. *Psychonomic Bulletin & Review* 2009; 16:654-659. doi: 10.3758/PBR16.4.654.

## **Presentations**

Lester BD. Defining the role of the driver with increasing vehicle autonomy. Autonomous Vehicle Safety Regulation World Congress, Novi, MI, 2016.

Hashish R, Lester BD, Koehring J, Mulliken AD, Perlmutter S, Young D. Texting affects gait metrics associated with slips, trips, and falls. The Industrial & Systems Engineering Research Conference, 2016.

Lester BD, Vecera S, Rizzo M. Brain aging increases the "stickiness" of attention. Annual Meeting of the American Neurological Association, 2014.

Lester BD, Vecera S. Attentional disengagement becomes "sticky" during active listening. Object Perception, Attention, and Memory, 2014.

Lester BD, Vecera S, Rizzo M. Executive functioning can mediate age-related changes in oculomotor attentional disengagement. Vision Sciences Society Annual Meeting, 2014.

Lester BD, Reed S, Dassonville P. Susceptibility to surround suppression is modulated by a single factor the systemizing trait of autism. Vision Science Society Annual Meeting, 2012.

Lester BD, Hacker SD, Vecera S, Rizzo M. Increasing attentional adhesion - occupying executive working memory delays visuospatial attentional disengagement. Object Perception, Attention, and Memory, 2013.

Lester BD, Dassonville P. TMS reveals a right parietal role in processing visuospatial contextual information in a perceptual illusion. Cognitive Science Association for Interdisciplinary Learning, 2011.

Lester BD, Dassonville P. The modulation of illusion susceptibility by TMS in right SPL demonstrates its role in the processing of global, but not local, contextual information. Vision Science Society Annual Meeting, 2011.

Lester BD, Dassonville. TMS reveals a right parietal role in processing visuospatial contextual information in a perceptual illusion. University of Oregon Graduate Research Forum, 2011.

Lester BD, Drew T, Vogel EK. Electrophysiological evidence of suppression of irrelevant information in visual working memory. Vision Science Society Annual Meeting, 2010.

Lester BD, Dassonville P. TMS reveals a right parietal role in processing visuospatial contextual information in a perceptual illusion. Society for Neuroscience Annual Meeting, 2010.

Lester BD, Dassonville P. Asymmetric visual displays cause the induced Roelofs illusion, not spatial shifts of attention. Cognitive Science Association for Interactive Learning Annual Meeting 2009.

Lester BD, Dassonville P. Attentional filtering modulates the induced Roelofs effect, but shifts of attention do not cause it. Vision Science Society Annual Meeting, 2009.

Lester BD, Dassonville P. Attentional capture modulates the induced Roelofs effect. Cognitive Science Association for Interactive Learning Annual Meeting, 2008.

Lester BD, Hecht LN, Vecera SP. Visual prior entry for foreground figures. Object Perception, Attention, and Memory, 2007.

### **Invited Presentations**

Lester BD, Rauschenberger R. Human Factors of Advanced Driver Assistance Systems (ADAS). Arizona ITE/IMSA, Phoenix, AZ, 2016.

Lecture on Consumer Purchase Behavior: A Human Factors Perspective, 2020.

### **Project Experience**

U.S. DOT project examining driver monitoring assistance technologies in passenger vehicles

Evaluated driver behavior and understanding of several Advanced Driver Assistance Systems (ADAS) using naturalistic on-road testing.

Examined the impact of mobile device use, inattention and distraction, on human gait, locomotion, and eye movements.

Assessed consumer understanding and perceptions of vehicle automation and in-vehicle safety systems.

## Peer Reviews

Attention, Perception & Psychophysics

Psychological Science

Consciousness & Cognition

Journal of Clinical and Experimental Neuropsychology

Neuroscience Letters

Journal of Alzheimer's Disease

Traffic Injury Prevention