Exponent
Failure Analysis Associates®

Exponent
17000 Science Drive
Suite 200
Bowie, Maryland 20715

telephone 301-291-2500
facsimile 301-291-2599
www.exponent.com

Lindsay O'Hara Long, Ph.D.
Senior Scientist

Professional Profile

Dr. Long's specializations include visual and haptic perception, user-centered product design, multisensory display technologies, and specialized skill acquisition. Her research has focused on understanding the capabilities and limitations of perception as humans interact with their environments, even when they are located remotely, and on enhancing human performance through the use of multisensory displays and perceptual training. She has extensive experience evaluating human performance, perceptual communications, and learning in the context of unmanned robotic devices, interfaces for military applications, and minimally invasive surgery. In addition, she has assessed behavioral and psychophysiological responses in virtual and simulated training environments under both civilian and defense-related research efforts.

Her expertise in understanding how humans perceive and utilize sensory information directly applies to the detection of warnings and hazards, the integration of information while driving and operating machinery, and the perception of obstacles and pedestrians under darkness and limited visibility conditions. Dr. Long also has experience conducting usability and user-experience research, and applying the findings to the development of instructional materials, consumer products, and interface applications. Furthermore, she has extensive experience organizing, analyzing, and interpreting findings of field and laboratory empirical studies utilizing human subjects under a variety of situational contexts.

During her graduate studies at Clemson University, Dr. Long also worked for the National Transportation Safety Board, where she was involved with research studies addressing human factors contributors to accidents within the surface and aviation industries. She also worked for an engineering research and development firm, where she was involved in numerous military-related research efforts. Prior to joining Exponent, Dr. Long also worked as a User Experience Researcher for a large interactive marketing company, where she evaluated user behavior with various media platforms assessing usability and brand perception, ultimately making recommendations to improve efficiency and consumer interactions.

Academic Credentials and Professional Honors

Ph.D., Human Factors, Clemson University, 2013
M.S., Applied Psychology, Clemson University, 2011
B.S., Psychology, Armstrong Atlantic State University (*magna cum laude*), 2007

Licenses and Certifications

PADI Certified Open Water SCUBA Diver
Hunter Safety Education Certification, South Carolina Department of Natural Resources

Publications

Long LO. Feeling for failure: Haptic force perception of soft tissue constraints in a simulated minimally invasive surgery task. Ph.D. Dissertation, Clemson University, 2013.

Skinner A, Long L, Vice J, Blitch J, Fidopiastis C, Berka C. Augmented interaction: Applying the principles of augmented cognition to human-technology and human-computer interactions. Foundations of Augmented Cognition 2013; 764–773.

Long LO, Singapogu RB, Arcese G, Smith DE, Burg TC, Pagano CC, Burg KJL. A haptic simulator to increase laparoscopic force application sensitivity. Studies in Health Technologies and Informatics 2012; 184:273–275.

Singapogu RB, DuBose S, Long LO, Smith DE, Burg TC, Pagano CC, Burg KJL. Salient haptic skills trainer: Initial validation of a novel simulator for training force-based laparoscopic surgical skills. Surgical Endoscopy 2013; 27:1653–1661.

Long L, Singapogu J, DuBose S, Arcese G, Altenhoff B, Burg T, Pagano C. A haptic simulator for training force skill in laparoscopic surgery. Proceedings, 2012 Interservice/Industry Training, Simulation, and Education (IITSEC) Conference, Orlando, FL, December 3–6, 2012.

Singapogu RB, Smith DE, Long LO, Burg TC, Burg KJL, Pagano CC. Objective differentiation of force-based laparoscopic skills using a novel haptic simulator. Journal of Surgical Education 2012; 69(6):766–773.

Braver ER, Dodd RS, Cheung I, Long LO. Safety challenges and oversight in the motorcoach industry: Attitudes and perceptions of drivers, roadside inspectors, and federal investigators. Annals of Advances in Automotive Medicine 2012; 56:57–67.

Altenhoff BM, Napieralski PE, Long LO, Bertrand JW, Pagano CC, Babus SV, Davis TA. Effects of calibration to visual and haptic feedback on near-field depth perception in an immersive virtual environment. Proceedings, 2012 ACM Symposium on Applied Perception 2012; 71–78.

Singapogu RB, Smith DE, Altenhoff BM, Long LO, Prabhu VV, Pagano CC, et al. Assessing surgeon and novice force skill on a haptic stiffness simulator for laparoscopic surgery. Studies in Health Technologies and Informatics 2012; 173:269–474.

Singapogu RB, Smith DE, Altenhoff BM, Long LO, Bontreger R, Pagano CC, et al. Haptic tasks for physical laparoscopic ("Box") trainers to differentiate surgeon skill. Studies in Health Technologies and Informatics 2012; 173.

Long LO, Gomer JA, Wong JT, Pagano CC. Visual spatial abilities in uninhabited ground vehicle task performance during teleoperation and direct line of sight. Presence 2011; 20(5):466–479.

Long, L.O. Investigating the usability of a vibrotactile torso display for improving simulated teleoperation obstacle avoidance. M.S. Thesis, Clemson University, 2011.

Napieralski PE, Altenhoff BM, Bertrand JW, Long LO, Babu SV, Pagano CC, Kern J, TA. Near-field distance perception in real and virtual environments using both verbal and action responses. ACM Transactions on Applied Perception 2011; 8(3).

Skinner A, Berka C, Long L, Sebrechts M. Impact of virtual environment fidelity on behavioral and neurophysiological response. Proceedings, 2010 Interservice/Industry Training, Simulation, and Education (IITSEC) Conference, Orlando, FL, 2010.

Long LO, Gomer J, Moore K, Pagano C. Investigating the relationship between visual spatial abilities and robot operation during direct line of sight and teleoperation. Proceedings, Human Factors and Ergonomics Society Annual Meeting, 2009; 53(18):1437–1441.

Presentations and Published Abstracts

Singapogu R, Long L, Burg T, Pagano C, Smith D, Kwartowitz D, Burg K. Examining the learning curve on a novel haptic simulator for laparoscopic surgical skills. International Journal for Computer Assisted Radiology and Surgery (IJCARS) 2013; 8(1), S379–380.

Long LO, Webb SJ, Awong-Taylor J, Taylor S, Roberts J. CfoI polymorphisms in a nicotinic receptor subunit gene (CHRNA4) and mental rotation task performance. Poster, Association of Southeastern Biologists, Columbia, SC, 2008.

Long LO. CHRNA4 and cognition: A cholinergic gene polymorphism affects mental rotation task performance. Talk given to Armstrong Atlantic State University to Honor's Committee and Psychology Department, Savannah, GA, 2007.

Long LO, Hinton KN, Brietenbach SO, Roberts JE. Relations among finger length ratios, mental rotation task performance, and self-perceived masculinity/femininity. Poster, Association for Psychological Science, Washington, D.C., 2007.

Long LO, Scott V. Development of a non-specific course attitude measure for evaluative and educational research purposes. Poster, Association for Psychological Science, STP Teaching Institute, Washington, D.C., 2007.

Scott V, Long LO. Facilitation of inquiry based learning in an upper-level measurement course. Poster, Association for Psychological Science, STP Teaching Institute, Washington, D.C., 2007.

Long LO. Maternal temperament: The role of pregnancy in novelty seeking and harm avoidance behaviors in the rat. Talk given at the Annual Carolina's Psychology Conference, Raleigh, NC, 2007.

Prior Experience

- Human Factors Engineer, AnthroTronix, Inc., 2009–2013
- Safety Analyst Intern, National Transportation Safety Board, 2011
- Associate User Experience Researcher, Engauge Digital, 2008

Professional Affiliations

- Human Factors and Ergonomics Society