



NANCY GRUGLE, PH.D., CHFP
Human Factors Expert

Distracted Driving, Drowsy Driving, Autonomous Driving, Looming, Driver Behavior, Perception-Reaction Time, Sleep Deprivation and Shift Work, Product User-Interface Design, Work Zone Safety, Premises Safety

PROFESSIONAL EXPERIENCE

2020 to present Exigent Group Limited
Human Factors Expert

Conduct human factors investigations and analysis, provide reports and testimony for purposes of litigation involving distracted driving, drowsy driving, autonomous driving, looming, driver behavior, perception-reaction time, sleep deprivation, fatigue and shift work, product user-interface design, work zone safety, and premises safety.

2013 to 2020 Robson Forensic, Inc.
Associate

- Provided technical investigations, analysis, reports, and testimony toward the resolution of commercial and personal injury litigation involving human factors/ ergonomics
- Product and equipment user interface design
- Driver performance, distracted driving, drowsy driving, and work zone safety
- Sleep deprivation, fatigue, and shift work
- Premises safety
- Warning and instructional material design

2007 to 2013 Lockheed Martin, Colorado Springs, CO
Staff Human Factors Engineer

- Designed and evaluated software user interfaces; conducted usability experiments, evaluated statistical results, and presented findings
- Conducted ergonomic and human factors evaluations of military products and equipment
- Investigated human factors aspects of critical safety and operations incidents including the effects of sleep deprivation and shift work
- Developed and implemented human factors engineering training sessions for software developers and systems engineers

2005 to 2007 Cleveland State University, Cleveland, OH
Assistant Professor, Industrial and Manufacturing Engineering

- Directed the University Transportation Center Driving Simulator Laboratory Researched the effects of distracted driving in work zones
- Designed experiments for work zone safety research projects, analyzed large data samples and published results
- Taught human factors engineering, experimental design/research methods, probability and statistics, and work design courses

- 2003 to 2005 Walter Reed Army Institute of Research, Silver Spring, MD
Co-Principal Investigator/Study Manager
- Researched the effects of sleep deprivation on human performance, situation awareness and cognitive function
 - Prepared weekly experimental study runs to include the following: configuring equipment, preparing testing materials, and downloading data
 - Recruited, screened, and scheduled study participants
 - Trained student staff on experimental procedures and cognitive test administration
- 2001 to 2002 Lockheed Martin Systems Integration, Owego, NY
Human Factors Engineer
- Assessed situation awareness and workload for pilots operating unmanned vehicles (drones)
 - Designed graphical user interface for drone software
 - Conducted usability experiments for U.S. Navy helicopter
 - Performed aircraft maintainability analysis U.S. Air Force aircraft
- 2000 Army Research Laboratory, Aberdeen Proving Ground, MD
Research Engineer
- Performed usability evaluation of vehicle
 - Modeled human performance
 - Conducted research on team performance measurement methodologies

LEADERSHIP EXPERIENCE

Cleveland State University, Cleveland, OH

Faculty Advisor, Institute of Industrial Engineers

- Coordinated professional speakers
- Assisted in planning Institute of Industrial Engineers activities and fundraisers
- Oversaw budget preparation, submission, and expenditures

Presidential Appointee, Patent Committee

- Evaluated merit of patent protection applications at Cleveland State University
- Made recommendations for provisional protection of patent applications

Member, University Transportation Center Research Selection Committee

- Developed research selection policies and procedures for the University Transportation Center
- Presented research in progress at University Transportation Center Advisory Board meeting
- Assisted in soliciting funds for research to be conducted under the University Transportation Center

Human Factors and Ergonomics Society, Denver, CO

Secretary, Rocky Mountain Chapter

EDUCATION

Ph.D., Industrial and Systems Engineering (Human Factors), Virginia Polytechnic Institute and State University, 2005

M.S., Industrial and Systems Engineering (Human Factors), Virginia Polytechnic Institute and State University, 2001

B.S., Industrial and Systems Engineering, Ohio University, 1999

PROFESSIONAL CREDENTIALS

Certified Human Factors Professional (CHFP), Board of Certification in Professional Ergonomics, 2016

PUBLICATIONS and PRESENTATIONS

Grugle, N. (2019). Human Factors in Autonomous Vehicles. Tortsource, In Fall 2019: Autonomous Vehicles, 22(1).

Grugle, N. (2019). "Looming." Presentation given at Ohio Association of Justice Winter Convention, Cleveland, OH.

Grugle, N. (2019). "The Myth of Human Error." Presentation given at Rocky Mountain Paralegal Association, Denver, CO.

Grugle, N. (2019). "Looming." Presentation given at American Association of Justice (AAJ) Jazz Fest Seminar: Auto and Truck Litigation, New Orleans, LA.

Grugle, N. (2019). "Distracted Driving," Presentation given at American Bar Association Transportation Megaconference, New Orleans, LA.

Grugle, N. and Boesger, J. (2019). "Asleep at the Wheel: Sleep Deprivation and Fatigue in Commercial Truck Driving. Presentation given at 360 Advocacy: How to Win Trucking Cases Conference, Las Vegas, NV.

Grugle, N. (2018). "Distracted Driving in Trucking Cases." Presentation given at Ohio Association for Justice, Columbus, OH.

Grugle, N. (2018). "Distracted Driving." Presentation given at Washington State Association for Justice Annual Meeting and Convention, Seattle, WA.

Grugle, N. (2017). "Human Factors in Distracted Driving Crashes." Presentation given at Southern Arizona Traffic Investigators Seminar, Tucson, AZ.

Grugle, N. (2017). "The Epidemic of Distracted Driving." Presentation given at Michigan Association of Justice (MAJ) No-Fault Institute XIV, Dearborn, MI.

Grugle, N. (2016). "The Epidemic of Distracted Driving." Presentation given at New Jersey Association of Justice Meadowlands Seminar, East Rutherford, NJ.

- Grugle, N. (2016). "The Myth of Human Error: Applying Human Factors to your Cases." Presentation given at Palm Beach County Justice Association SCOPE X Attorney Seminar, West Palm Beach, FL.
- Grugle, N. (2016). "The Epidemic of Distracted Driving." Presentation given at Philadelphia Bar Association Bench-Bar, Atlantic City, NJ
- Grugle, N. (2016). "The Epidemic of Distracted Driving." Presentation given at New Jersey Association of Justice, Meadowlands, NJ
- Grugle, N. (2016). "The Myth of Human Error: Applying Human Factors to your Cases." Presentation given at Western Trial Lawyers Association, Steamboat Springs, CO
- Grugle, N., Schaible, R. (2015). PS Asks about Sleep Deprivation: Nancy Grugle and Ron Schaible. Professional Safety, June, 34-39
- Grugle, N.L. and Rugemer, B. (2014). "Asleep at the Wheel: Sleep Deprivation and Fatigue in Commercial Truck Driving." Presentation given at The Association of Plaintiff Interstate Trucking Lawyers of America Conference Super Summit III, St. Louis, MO
- Grugle, N.L. (2014). "Human Factors of Distracted Driving." Presentation given at Western Trial Lawyers Association, Lake Tahoe, CA and Florida Justice Association, Park City, UT
- Grugle, N.L. (2013). "I Didn't See Him: The Human Factors of Failure-to-Yield Motorcycle Crashes." Presentation given at Florida Justice Association, Tampa, FL
- Grugle, N.L., Kleiner, B.M. (2007). Effects of chemical protective equipment on team process performance in small unit rescue operations. Applied Ergonomics, 38(5), 591-600
- Grugle, N.L. (2006). "Using Driving Simulators for Highway Safety Research." Presentation given at the Ohio Transportation Engineering Conference, Columbus, OH
- Grugle, N.L. (2005). Understanding the Effects of Sleep Deprivation on Executive Function, Complex Task Performance and Situation Awareness. Doctoral Dissertation
- Grugle, N.L., Kleiner, B.M., Wesensten, N.J. and Balkin, T.J. (2004). Refining the Walter Reed Sleep Management System: An Exemplar for Systems Improvement Using a Macroergonomic Approach. Proceedings of the Human Factors and Ergonomics Society 48th Annual Meeting, New Orleans, LA, 1620-24
- Grugle, N.L. (2001). An Investigation into the Effects of Chemical Protective Equipment on Team Process Performance during Small Unit Rescue Operations. Master's Thesis
- Killgore, W.D., Grugle, N.L., Balkin, T.J. (2012). Gambling when sleep deprived: don't bet on stimulants. Chronobiology International, 29(1), 43-54

- Killgore, W.D., Grugle, N.L., Killgore, D.B., Balkin, T.J. (2010). Sex differences in self-reported risk-taking propensity on the Evaluation of Risks scale. *Psychological Reports*, 106(3), 693-700
- Killgore, W.D., Killgore, D.B., Grugle, N.L., Balkin, T.J. (2010). Odor identification ability predicts executive function deficits following sleep deprivation. *International Journal of Neuroscience*, 120(5), 328-34
- Killgore, W.D., Grugle, N.L., Reichardt, R.M., Killgore, D.B., Balkin, T.J. (2009). Executive functions and the ability to sustain vigilance during sleep loss. *Aviation Space and Environmental Medicine*, 80(2), 81-7
- Killgore, W.D., Kahn-Greene, E.T., Grugle, N.L., Killgore, D.B., Balkin, T.J. (2009). Sustaining executive functions during sleep deprivation: A comparison of caffeine, dextroamphetamine, and modafinil. *Sleep*, 32(2), 205-16
- Killgore, W.D., Lipizzi, E.L., Grugle, N.L., Killgore, D.B., Balkin, T.J. (2009). Handedness correlates with actigraphically measured sleep in a controlled environment. *Perceptual Motor Skills*, 109(2), 395-400
- Killgore, W.D., Grugle, N.L., Killgore, D.B., Leavitt, B.P., Watlington, G.I., McNair, S., Balkin, T.J. (2008). Restoration of risk-propensity during sleep deprivation: caffeine, dextroamphetamine, and modafinil. *Aviation Space and Environmental Medicine*, 79(9), 867-74
- Killgore, W.D., Muckle, A.E., Grugle, N.L., Killgore, D.B., Balkin, T.J. (2008). Sex differences in cognitive estimation during sleep deprivation: effects of stimulant countermeasures. *International Journal of Neuroscience*, 118(11), 1547-57
- Killgore, W.D., Rupp, T.L., Grugle, N.L., Reichardt, R.M., Lipizzi, E.L., Balkin, T.J. (2008). Effects of dextroamphetamine, caffeine and modafinil on psychomotor vigilance test performance after 44 h of continuous wakefulness. *Journal of Sleep Research*, 17(3), 309-21
- Huck, N.O., McBride, S.A., Kendall, A.P., Grugle, N.L., Killgore, W.D. (2008). The effects of modafinil, caffeine, and dextroamphetamine on judgments of simple versus complex emotional expressions following sleep deprivation. *International Journal of Neuroscience*, 118(4), 487-502

PANEL PARTICIPATION

Educational Session Panel. "This isn't NASCAR: Driving through orange barrels in Ohio." Ohio Safety Congress & Exposition. March 2007

Work Zone Safety Panel. Ohio Contractors Association Winter Conference. December 2006