REPPERGER RESEARCH INTERN PROGRAM

RESEARCH PROJECT #: AFRL-RHW-23-05

Individualizing Cognitive Models

PROJECT DESCRIPTION: As technology continues to advance, Warfighters are working in increasingly difficult operational environments across the Air Force and Space Force that result in factors that affect their health and performance. These factors can include vigilance decrements from time on task, fatigue from loss of sleep and circadian disruption throughout missions, and increases in workload from multitasking within the environment. Assessment and prediction of these factors is critical to be able to manage and mitigate associated risks. Mathematical and computational modeling has shown promise in assessing and predicting these factors. However, these models have historically ignored the effects of individual differences, commonly producing assessments and predictions for an 'average' operator that might not reflect reality. Incorporating individual differences can increase the effectiveness of these models, leading to more individualized assessments and predictions for individual Warfighters. The student will be involved in a project incorporating individual differences into models of vigilance, fatigue, or workload. Project activities may include learning and coding computational cognitive models, learning various EEG data analysis approaches, developing literature reviews, hypothesis formation, experiment/study design, data collection, model development, data analysis, and manuscript preparation.

ACADEMIC LEVEL: Bachelor's, Master's, PhD

DISCIPLINE NEEDED:
- Cognitive Science
- Neural Science
- Psychology

RESEARCH LOCATION: Virtual or In-Person at Wright-Patterson Air Force Base, Dayton, Ohio

RESEARCH MENTOR: Megan Morris, PhD
Human Factors and Industrial/Organizational Psychology, Wright State University, 2014

Dr. Megan Morris is a Research Psychologist and the Cognitive Models Core Research Area Lead in the Air Force Research Laboratory, Cognitive Models Branch. Within the branch, she is a member of the Multiscale Models for Cognitive Performance Team which focuses on developing integrated capabilities that provide real-time, individualized, behavior-specific predictions of mission readiness based on operational stressors. Her work focuses on advancing cognitive modeling research for fatigue, vigilance, and workload assessment and prediction. *Photo courtesy of the U.S. Air Force Research Laboratory.*