

# REPPERGER RESEARCH INTERN PROGRAM

RESEARCH PROJECT #: AFRL-RHW-21-03

## INSTRUCTIONAL AND BIG DATA APPROACHES ENABLING PERSONALIZED LEARNING IN MILITARY MEDICINE

**PROJECT DESCRIPTION:** This effort will identify and explore instructional and analytic approaches to achieve training effectiveness improvements within the Military Health System. Modernization within the Military Health System infrastructure will enable more robust data needed for assessment and visualization and to quantify readiness. As the Defense Health Agency streamlines modeling and simulation requirements and works to find new efficiencies in their use of simulation-based training, there are many challenges. Training audiences are complex, including multiple training audiences performing in varying care environments. The significant throughput pressure and the continued evolution and refresh of simulation tools places demands on instructors to revise their content delivery and timing. The availability of clinical experiences with live patients to maintain readiness levels is another significant challenge. The operational context continues to evolve, and time delays between skills training and performance vary widely.

Systematic approaches are necessary to ensure effectiveness when equipping military medical training audiences. Which features of these state-of-the-art systems affect skill acquisition and retention in ways that maximize training effectiveness? Deliberate research in this area relies on the use of objective measures of learning and performance, and this work is required for a move toward proficiency-based training. Empirical data are necessary to inform training strategies and the acquisition of simulation-based training tools for the Military Health System.

Air Force Research Laboratory <https://www.wpafb.af.mil/afrl/>.

This work is taking place under the Warfighter Interactions & Readiness Division (RHW).  
<https://www.afrl.af.mil/711HPW/RH/>.

**ACADEMIC LEVEL:** PhD

**DISCIPLINE NEEDED:** Industrial Organizational Psychology, Human Factors Psychology, or Experimental Psychology or related field

**RESEARCH LOCATION:** Wright-Patterson AFB Dayton, OH

**RESEARCH ADVISER:** Jennifer Winner  
Applied Psychology, Arizona State University

Ms. Jennifer Winner is a Research Psychologist at the Air Force Research Laboratory under the 711th Human Performance Wing's Airman Systems Directorate, in the Warfighter Interactions and Readiness Division. Ms. Winner supports the Division's Personalized Learning and Readiness Sciences research. Her current focus is on the assessment of realism, training fidelity, and team dynamics in the context of medical and simulation-based training. Her current research focuses on instructional approaches to maximize training effectiveness for the Military Health System. Current measurement interests include

the calibration between confidence and performance and challenges associated with connecting near-term training outcomes with patient outcomes. Previously, Ms. Winner had spearheaded and led the growth of a multidisciplinary team to infuse school districts within the State of Ohio with science, technology, engineering, and mathematics (STEM) curriculum and modeling and simulation technology. Ms. Winner received an M.S. in Applied Psychology from Arizona State University and an M.B.A. from Wright State University.