



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Neurocognitive Function and Psychological Health Psychophysiological Response to Virtual Reality and Subthreshold Posttraumatic Stress Disorder Symptoms in Recently Deployed Military

Subthreshold PTSD has garnered recent attention because of the significant distress and functional impairment associated with symptoms, as well as the increased risk of progression to full PTSD. However, the clinical presentation of subthreshold PTSD can vary widely and therefore is not clearly defined, nor is there an evidence-based treatment approach. Research performed and sponsored by CNRM at USUHS aims to further the understanding of subthreshold PTSD symptoms by studying the utility of a virtual combat environment in eliciting distinctive psychophysiological responses associated with PTSD symptoms. In a novel procedure to assess subthreshold symptoms, heart rate (HR), skin conductance, electromyography (startle), respiratory rate, and blood pressure (BP) were monitored during three unique combat-related VR scenarios in a sample of 78 recently deployed US Service Members with subthreshold PTSD. The Clinician-Administered PTSD Scale was administered to assess PTSD symptoms, and linear regression analyses were used to investigate the relationship between symptom clusters and physiological variables. Of the range of psychophysiological measures studied, HR was most strongly associated with three Clinician-Administered PTSD Scale-based measures: hyperarousal, re-experiencing, and global PTSD symptoms. This study concludes that a VR environment can successfully elicit physiological responses associated with subthreshold PTSD symptoms, suggesting that the use of VR environments may prove useful in future experiments in the field.