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Reaching a consensus on the cognitive effects of PTSD in the workplace: Methodological issues and unexplored territory in psychophysiological research

Existing Research underway by Riedy and Leitner utilizes an Evoked Response Potential Method to measure Cognitive Load – how hard or easy a task is for an individual - utilizing Electroencephalography, or EEG, in a non-clinical population. Building on this research, Leitner aims to measure cognitive load in a population of individuals with post-traumatic stress disorder versus a control group, utilizing EEG and the electrocardiogram, or EKG. Leitner plans to determine the power in each frequency band and the Heart Rate Variability for easy and hard trials as well as correct and incorrect trials. This will enable Leitner to measure differences between those with Post Traumatic Stress Disorder (PTSD) and normal subjects.

While Cognitive Load related to attention, working memory and stress, Cognitive Load appears to be highly correlated with working memory since Cognition and working memory are highly correlated (Gazzaniga, 2014, p. 514). Researchers such as Pannu Hayes, LaBar Petty, McCarthy and Moreya (2009) demonstrate attentional differences in a Visual Search task, and thus look at an important of Cognitive Load. However, no researcher has looked at the overall construct of cognitive load in a task in which task difficulty varies throughout. Using an ERP methodology, this experiment will derive neural signatures depending on trial type - high or low difficulty - as well as variables such as trial performance (i.e., correct or incorrect response and speed of the trial response).

Thus, while existing research looks at the effects on the brain of Post-Traumatic Stress disorder (PTSD), and thus at the neural mechanisms underlying PTSD, few studies look specifically at PTSD's effects on task performance. While a few studies, such as by Sinski (2012) provide guidelines for classroom teaching of those with PTSD, little specific psychophysiological data is included in these recommendations. Instead guidelines were based solely on psychological and educational theory. Thus, in order to generate these guidelines, specific psychophysiological testing is required.