Modeling Visuo-Spatial Task Performance As Cognitive Load Increases

Daniel Cassenti
U.S. Army Research Laboratory
Aberdeen Proving Ground, MD

Cadet David Feltner and Cadet Anna Johnson
United States Military Academy
West Point, New York

ABSTRACT:

Due to the growing complexity of current technology, the Army is attempting to create a more accurate mental workload model, on IMPRINT software, in hopes of benefiting soldier-system relations. IMPRINT's current mental workload model is based on Christopher Wicken's Human Information Processing Model, which predicts a negative linear correlation between number of tasks and performance. In this study, participants monitored a scrolling array of letters, with a varying number of tasks, and identified a target stimulus. A negative cubic correlation was found to be the best fit model for the results of this study, showing that performance decreases as mental load increases. The implications of these findings are the improvement of the IMPRINT algorithm which could eventually benefit the effectiveness of Army technology.

KEYWORDS: mental workload model, IMPRINT, negative cubic correlation

CONTACT: Daniel Cassenti, U.S. Army Research Laboratory, AMSRD-ARL-WM-BC, Aberdeen Proving Ground, MD, Tel: (410) 278-7014, Email: dcassenti@army.mil

CDT David Feltner, United States Military Academy, West Point, NY, Tel: (845) 515-1004, Email: David.Feltner@usma.edu

CDT Anna Johnson, United States Military Academy, West Point, NY, Tel: (845) 515-4068, Email Anna.Johnson@usma.edu