

Individual Differences in the Acquisition of Strategies in a Complex Task

Edward Cranford

Mississippi State University

Aaron Wong

Mississippi State University

Jaymes Durriseau

Mississippi State University

Kevin Barnes

Mississippi State University

Winston Jones

Mississippi State University

Gary Bradshaw

Mississippi State University

Jarrold Moss

Mississippi State University

Abstract: A multi-session experiment explored the relationship between individual differences and the development of strategies in a complex task environment. In the first session, participants completed measures of working memory and adaptivity. Participants then performed 4.5 hours of a multitasking activity that involved prioritizing, selecting, and sorting objects into bins under time pressure. The analyses reported here focus on how participants prioritized objects in a queue of objects and selected objects from that queue for sorting. Priority selection strategies were automatically extracted using machine learning methods. Differences in strategy use were related to measures of working memory and adaptivity. Strategy use and strategy change mediated the relationship between task performance and individual differences. A hierarchical clustering analysis revealed patterns of strategy shifts that distinguished between participants who improved and those who did not. These results provide a basis for examining strategy training geared toward individuals' cognitive abilities.