



David M. Wood
Class Standing: Senior
Major: Biology
Salt Lake City, Utah
E-mail:
David.Wood@m.cc.utah.edu



Faculty Mentor:
Charles P. Shimp
Department of Psychology
E-mail:
Charlie.Shimp@psych.utah.edu

Working Memory Modulates Facilitation Effects in Structured Versus Unstructured Lists

Serial reaction time (SRT) experiments designed to study memory and attention in humans showed that the average reaction time during a repeating structured sequence was facilitated when compared to the average reaction time during an unstructured sequence (Nissen & Bullemer, 1987).

In our SRT experiment we hypothesized that increasing the inter-stimulus interval (ISI), time between items in a sequence, would result in less facilitation of working memory for previous locations in a structured list and therefore would reduce the facilitation of structured lists over random lists.

Five pigeons (*Columba livia*) pecked individually illuminated left, center, and right keys for food reinforcement, according to a random ratio twenty schedule. We varied ISI over the intervals of 0.5 seconds, 1.0 second, 2.0 seconds, and 4.0 seconds. We ran structured conditions at all four intervals, with the following list: center, left, right, center, right, left, right, center, left. The sequence was repeated until there was a total of 750 trials. We then conducted random conditions, at ISI of 0.5 seconds and 2.0 seconds, with lists of locations that varied randomly.

ing that the average reaction time increased as ISI increased. This result supports the concept that longer ISI reduces memory for previous locations. Furthermore, the data indicate the magnitude of overall facilitation, in which reaction time is faster in structured than in unstructured, was less as ISI increased. We therefore tentatively conclude that working memory plays a critical role in avian serial reaction time tasks involving structured lists, and by hypothesis, plays a similar role in human serial reaction time performances.