Title:RESOLVING THE CONFLICT BETWEEN THE DISCRETE-SLOTS AND DISTRIBUTED-RESOURCES MODELS OF WORKING-MEMORY CAPACITY

The small set of information that we are currently consciously aware of is we call Working Memory. It is widely accepted that the capacity of Working Memory is limited, but the nature of this limit remains controversial. Of the models used to describe this limitation, two competing models are of particular interest: the "Discrete-Slots" and "Distributed-Resources" models. In the Discrete-Slots model, working memory is considered to consist of slots into which items are placed, much like computer memory. In the Distributed-Resrouces model, working memory is more finely distributed across all items, much like how sand can be separated into arbitrarily many piles. Interestingly, current literature in Working Memory provides support for both models. So, the purpose of this research is to resolve this debate by determining which description of the capacity of Working Memory is more accurate.

In my research, I conducted six simple experiments designed to test these assumptions. In each experiment, participants were asked to remember arrays of a few items and, immediately afterward, recall one of those items. Additional modifications were added to individual experiments in order to test the predictions of the above theoretical accounts in different settings. I then produced ten different mathematical models that incorporated the assumptions of the two theoretical models above and fit the data to the models in order to determine which theoretical account was more accurate. Overall, the research I have conducted provides greater support for a Discrete-Slots account of Working-Memory capacity.

This research is important to providing a better understanding of human behavior. A resolution to the above debate would help to provide a better understanding of human perception and behaviors related to perception. This could have applications in any field where important decisions have to be made quickly and with a small amount of visual information, such as law enforcement and air traffic control. It could also help improve teaching methods that are largely visual in focus, and may be of use in developing new computer interfaces that take advantage of the characteristics of human behavior.