

**Public Abstract**

First Name:Kyle

Middle Name:Owen

Last Name:Hardman

Adviser's First Name:Nelson

Adviser's Last Name:Cowan

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:SP 2017

Department:Psychology

Degree:PhD

**Title:REASONING AND MEMORY: MULTIPLE SIMPLE RESPONSE STRATEGIES ARE USED IN VISUAL WORKING MEMORY FOR COLOR-ORIENTATION BINDING**

Working memory is the term for the system that holds small amounts of information for short periods of time, which allows people to think and reason about that information. Without working memory, it would be difficult to carry out basic tasks, like forming a complex sentence or doing long division. Working memory stores information and other mental abilities, like reasoning, are responsible for working with the information in working memory. This dissertation is focused on examining both how much information people can hold in working memory and how well they can deductively reason about that information. We used a task in which people tried to remember triangles that had a color and that pointed in a direction. When tested, people had to say which of two directions was originally paired with one color, or vice versa. In this task, it is possible for people to use deductive reasoning to work out that one of the directions could not have gone with the color if they remember that the direction went with a different color originally. We found evidence that people can do this kind of deductive reasoning about half of the time in this kind of task. We know, however, that people can use deductive reasoning most of the time when they do not have to remember anything. This dissertation examined some possible reasons why using deductive reasoning is harder when memory is required. We were not able to fully support any of the hypotheses, so it remains an open question why deductive reasoning is harder when memory is required.