

The Color of Memory: Do Color Contrasts Impact Visual Short Term Memory?

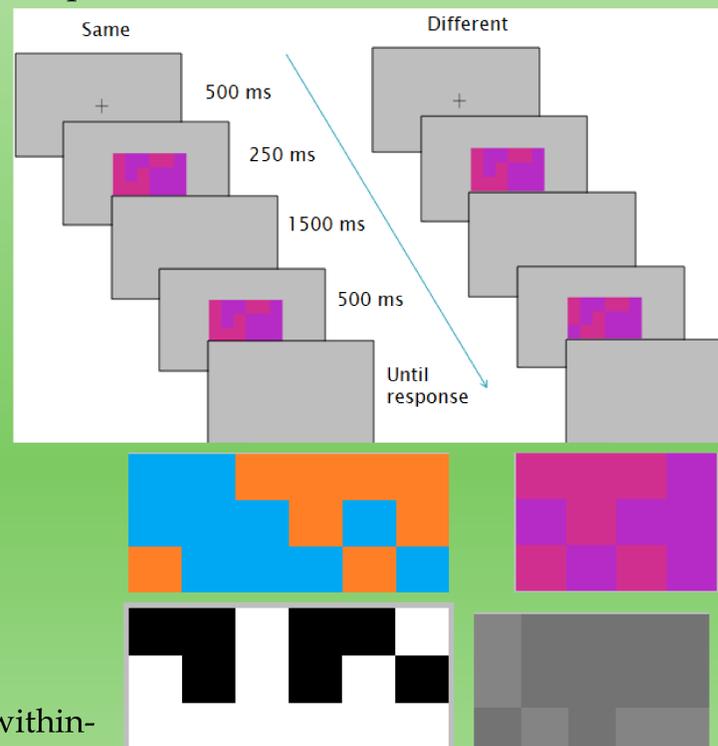
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Abstract

Color is a large part of any visual perception since just about all objects have a color. It adds meaning and importance to objects, such as red lights in traffic indicating a stop, and is often used to help describe items of interest to others. Although color is such an important part of daily life, there seems to be less research about the actual impacts of colors themselves on cognitive processes. Since there are many elements to both color and cognitive processes, this study is looking specifically at the contrast of colors and how this impacts visual short-term memory, which is constantly being used throughout the day. Short-term memory holds a limited amount of information for a short period of time. Previous work by Sanocki and Sulman (2011) have looked into connections between color and visual working memory through the use of harmonious colors. The current study is based on the 2011 study and investigates whether color arrays with high vs. low contrasts have an impact on how accurate people are during a change-detection based memory task.

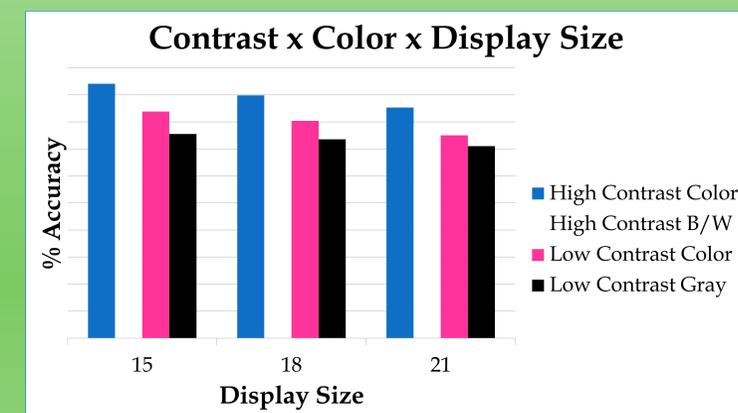
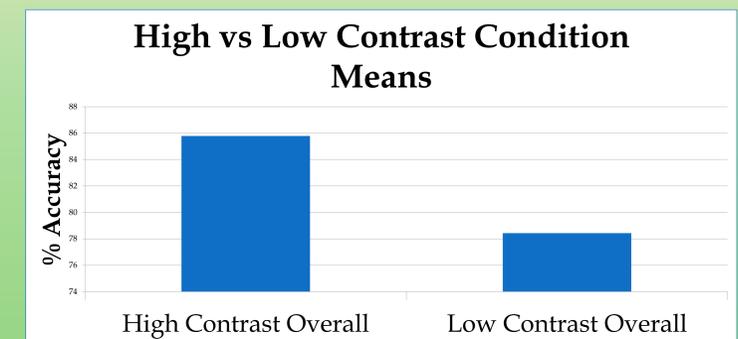
Method

Based on Sanocki and Sulman's (2011) study, a change-detection based method was used. An array with a randomized pattern comprised of two colors is presented briefly (250ms) then there is a 1500ms ISI before the next array appears. Participants respond to indicate if the second array is the same or different than the first array. The dependent variable of interest is the percent accuracy of the responses.



Hypotheses

- 1) High contrast conditions will have a higher percent accuracy compared to the low contrast conditions.
- 2) The color conditions will have higher percent accuracy compared to the low contrast conditions.
- 3) As display sizes increase, the overall percent accuracy will decrease.



Design

2 (Contrast) x 2 (Color) x 3 (Display size) x 2 (Similarity) within-subjects factorial design

High Contrast											
Achromatic-Black/White (cond 0)						Chromatic- Blue/Orange (cond 1)					
12		15		18		12		15		18	
Same	Dff	Same	Dff	Same	Dff	Same	Dff	Same	Dff	Same	Dff

Low Contrast											
Achromatic- grays (cond 2)						Chromatic- Pink/purple (cond 3)					
12		15		18		12		15		18	
Same	Dff	Same	Dff	Same	Dff	Same	Dff	Same	Dff	Same	Dff

Future Research & Applications

Color is part of our daily lives and must interact with our cognitive processes as well. This study lays a foundation for further investigations of color. Future studies will look at more specific colors and also expand from hue contrasts to brightness contrasts as well. Understanding the relationship color, color combinations, and memory can have implications for educational purposes, marketing, product design and advertisements and much more.

References

Sanocki, T., & Sulman, N. (2011). Color Harmony and Spatial Relations Increase the Capacity of Visual Short Term Memory. *Perception*, 40, 635-648. doi:10.1037/a0023000