

PSY 355

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Color and its Effects on Emotion

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ABSTRACT

- Our study was based on the idea that different colors have an effect on emotions.
- The study was a within subject repeated measures design.
- Thirteen participants (both men and women) who were all at least 18 years of age were recruited to participate in this study
- The participants were asked to take a pretest to evaluate their current levels of happiness and irritation, allowing experimenters to get a baseline. They then were randomly assigned three passages to read. The three passages were the same, with the only change being the color of the text (yellow, black, or red).
- Immediately after reading each passage participants were asked to re-rate their feelings.
- There were four levels of the IV (pre-test, black, yellow, and red)
- The DV was the rating of mood on a Likert-scale
- The effects were determined by analysis of the self-reports participants gave after each passage.
- Our hypothesis was that the color red would provoke irritation, black would be neutral, and yellow would be associated with happiness.
- Using the Greenhouse-Geisser test in SPSS we found that irritation had a significant effect.
- The color red caused the most irritation. Yellow was shown to provoke irritation, but this may have been caused by the study in general. Black showed lower levels of irritation than red and yellow.

INTRODUCTION

- Our goal was to explore the potential effects of color on emotion
- This could help with things like advertising, clothes, food and beverage products, etc.
- It could also be helpful with learning association

CHILDREN'S EMOTIONAL ASSOCIATIONS WITH COLORS

- 60 children
 - 30 boys and 30 girls
 - Two age groups
 - 4-5 years
 - 6-7 years
 - All children 5-6.5 years of age were enrolled in some sort of preschool to first grade education
 - Nine different colors each presented on a piece of paper
 - Pink, red, black, gray, yellow, purple, blue, green, and brown
 - All children were tested individually
 - Children were shown their favorite color first, then were randomly assigned the remaining colors
 - girls more often chose pink and purple as their favorite colors
 - boys chose blue and red and their favorites most frequently
 - After seeing each color they were asked how they felt based on the color and why they felt that way
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CHILDREN'S EMOTIONAL ASSOCIATIONS WITH COLORS

- The results showed that all children expressed some verbal form of emotion to all colors as well as emotional associations with colors (Boyatzis & Varghese, 1994)
- Brightness of colors influenced emotional reactions
 - The brighter colors received higher positive reactions compared to darker colors
 - Males, however, were shown to have a more positive reaction compared to girls in respect to darker colors
- In respect to all colors there was more a more frequently positive emotional reaction to all colors
 - Some feelings expressed were: happiness, excitement, and strength (Boyatzis & Varghese, 1994)
- The data supported the hypothesis that certain colors consistently showed certain emotional responses (Boyatzis & Varghese, 1994)

JOINT EFFECTS OF EMOTION AND COLOR ON MEMORY

- 48 undergrad students at a German University participated
 - 42 females
 - Mean age= 22.6 & Standard deviation= 4.2
- All participants individually tested
- Not red-green colorblind
- Participants were asked to read 30 lists of German nouns that were five to six letters and then recall successively (Kuhbandner & Pekrun, 2013)
 - 27 of the lists contained 11 words that were black in font, one red, one green, and one blue
 - The colored words were randomly presented throughout the lists and were made to differ in emotional valence
 - 9 negative, 9 positive, 9 neutral
 - The assignment of colors to words were counterbalance across participants, black was used to get a baseline
 - 3 lists were all black font to create a control

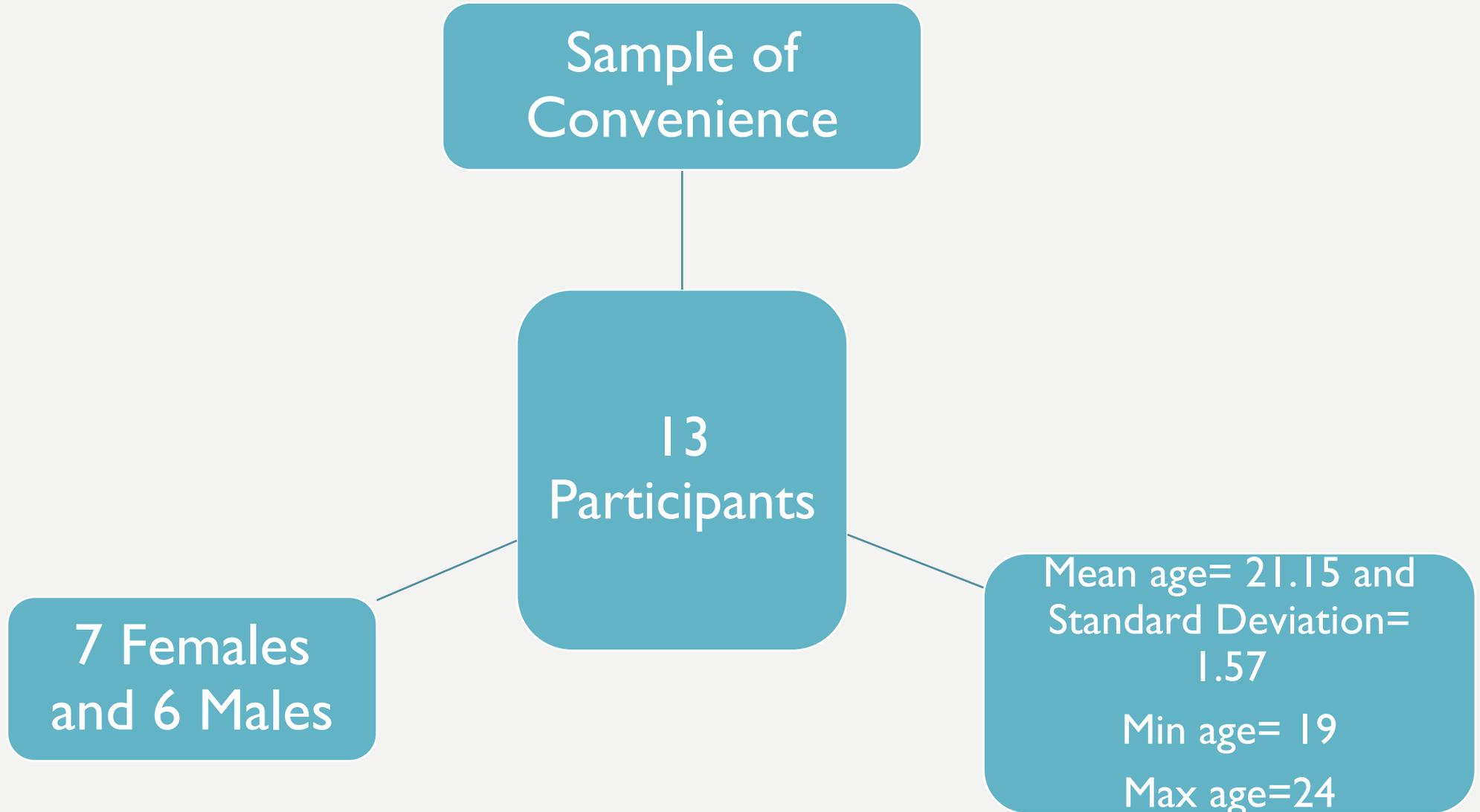
JOINT EFFECTS OF EMOTION AND COLOR ON MEMORY

- All words were shown for 1.5s each, then once all words were presented the participants were asked to immediately recall the words they remembered from the list for 45 seconds
- After 10 of the lists were done the participant would get a one minute break
- Once the experiment was completed participants were asked to look at the words again all in black colored font, then rate their valence on a scale ranging from 1 (very unpleasant) to 5 (very pleasant)
- Experimenters also asked 8 other students in that same demographic to rate the words on valence

JOINT EFFECTS OF EMOTION AND COLOR ON MEMORY

- The results found that the three types of colored emotional words varied significantly in their ratings (Kuhbandner & Pekrun, 2013)
 - Compared to the neutral words, the negative words had much more frequent ratings of being unpleasant, and positive words much more pleasant
 - The independent judges had results that would suggest that positive and negative words were seen to be more arousing compared to neutral words.
 - There was no significant difference seen between positive and negative words in respect to arousal
- Red and green words were remembered more often than words written in blue
- Negative and positive words were remembered more than neutral words
- There was an interaction effect between color and emotional valence
- The amount of neutral words that were remembered was not influenced by color
- More participants recalled negative words that were red compared to negative words that were green or blue
- More positive words that were green were recalled by participants compared to positive words that were red or blue
- Emotion-induced memory can be influenced by color (Kuhbandner & Pekrun, 2013)

METHODS: PARTICIPANTS



METHODS: MATERIALS

- The following prompt was given to each participant three times in a black colored font, red colored font, and yellow colored font
 - **It's 11:00 am on a Monday and you are walking down Chancellors to grab some food before class. It is very busy with other students heading in different directions. You see some clubs tabling for events on campus. You are handed a flyer as you pass by and asked to attend an upcoming event. A skateboarder flies past you as you pass by Cameron, and you can smell the BBQ food truck that is parked on campus. You finally arrive outside of Hawks. A club is spray painting the rock outside. Once inside you see Hawks is packed because it is lunchtime. The line for Chick fil a is backed up to Subway, so you decide to grab food from Jole Mole. Once your food is done, you try to find a table to sit at. You notice some friends eating across the room. You pull up a chair and eat with them. Your class starts at 12:30, giving you 15 minutes to walk there. You leave Hawks and head to Leutze for Uni class. You take your normal seat with a few minutes to spare before class starts.**

METHODS: PROCEDURE & DESIGN

Pretest

Participants initially rated their current feelings of happiness and irritation
This was used to get a baseline

Random Assignment

Random assignment of colors was used to reduce any risk of order effects

Procedure

Participants would read each passage, then would again rate their current feelings of happiness and irritation
Once all prompts were read and emotions were rated participants were thanked and debriefed

LIKERT-SCALE USED

•Rate your current mood:

I am happy

Does not describe my current feelings	Does not fully describe my current feelings	Somewhat describes my current feelings	Mostly describes my current feelings	Describes my current feelings
0	1	2	3	4

I am irritated

Does not describe my current feelings	Does not fully describe my current feelings	Somewhat describes my current feelings	Mostly describes my current feelings	Describes my current feelings
0	1	2	3	4

**METHODS:
PROCEDURE &
DESIGN**

Within Subject Repeated
Measures Design

IV had 4 levels: pretest, black,
yellow, and red

DV: emotion rating
operationalized by the Likert
scale

RESULTS

The Greenhouse-Geisser Analysis found no significant effect for the pre-test and happy emotion ratings; $F(2.22, 12.0) = 2.44, p > .05$

The Greenhouse-Geisser Analysis found no significant differences in relation to happiness between colors; $F(1.9, 12.0) = 1.3, p > .05$.

RESULTS

- The Greenhouse-Geisser Analysis was significant for the pre-test and irritation emotion ratings between colors; $F(2.51, 12.0) = 9.0, p < .05$.
- The Greenhouse-Geisser Analysis found there was a significant difference in relation to irritation between colors; $F(1.79, 12.0) = 5.0, p = .02$
 - For irritation:
 - yellow text had a mean of 1.54 (SD=.88).
 - red text had a mean of 1.62 (SD=.87).
 - black text had a mean of 1.00 (SD=.91).
 - Yellow text showed more irritation compared to black text, but red text showed more irritation overall.

DISCUSSION

Hypotheses supported

- After reading the black passage, there would show no significant change in mood rating in comparison to the pre-test
- After reading the red passage, there would be a significant different in irritation in comparison to the pre-test

After doing the analyses, after reading the red passages, there was a significant increase in irritation ratings in comparison to the pre-test

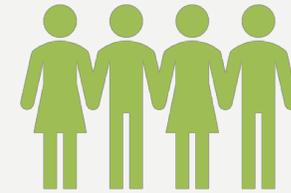
- Could be originally implied that red caused the increase in irritation
- However, after reading the yellow passages, there had been an increase in irritation scores compared to the pre-test
- It can be concluded that the entire study itself caused the increase rather than only red causing irritation and yellow causing happiness

LIMITATIONS OF OUR STUDY



Time limit

If given more time, we believe we would have been able to create a more detailed and (hopefully) successful study



Small number of participants

Maybe there would be a different result if we had more participants

FUTURE RESEARCH

- Instead of changing the color of the ink (because it was harder to read), highlighting black words may be easier to read and cause the effect that's being tested
 - Changing passages slightly to related to the emotion that is wanted
 - Ex: using more angry tone and words/phrasing with the red paragraph to elicit anger; using happier tones and words/phrasing with the yellow paragraph to elicit happiness
 - Trying different colors and emotions
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REFERENCES

Boyatzis, C. J., & Varghese, R. (1994). Children's emotional associations with colors. *The Journal of Genetic Psychology: Research and Theory on Human Development*, *155*(1), 77–85.

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TABLE 1

Descriptive Statistics of Emotion Ratings				
		Mean		Standard Deviation
Pre-Test Happiness		2.54		.97
Pre-Test Irritation		.69		.75
Black Happiness		2.31		1.03
Black Irritation		1.0		.91
Red Happiness		2.0		.82
Red Irritation		1.62		.87
Yellow Happiness		2.31		.86
Yellow Irritation		1.46		.52

FIGURE 1

