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Do You Like a Gray Apple? The Interference of Color Consistency with Preference and Pleasure

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Several past studies have examined the influence of ink colors of a word on emotions and the effects of color consistency on Stroop interference. From the previous research, color inconsistency interferes with people's identification of target words (Schmidt, Cheeseman, & Besner, 2013). Humans seem to have certain color/shape and color/concept associations (Lakens, Semin, & Foroni, 2012; Moller, Elliot, & Maier, 2009; Spector & Maurer, 2011). Also, specific colors seem to elicit certain emotions (Maier, Barchfeld, Elliot, & Pekrun, 2009; Moller et al., 2009; Valdez & Mehrabian, 1994). Based on the theory, it is possible to assume that pleasure could be a key component of positive emotions. However, none of them have studied the learned associations of colors with words. The present research tested whether manipulating color/word associations to be consistent or inconsistent with learned associations affected liking and pleasure. By combining previous studies, it is possible to assume that people would feel positive feelings when they see consistent color/word associations because such associations match people's existing color/emotion associations. As a result, the current study hypothesized that people who were presented words in consistent colors would report higher liking for words and higher pleasure compared to people who were presented words in inconsistent colors and those who were presented words only in an auditory form. The results did not support this hypothesis. However, the results showed patterns that were consistent with the hypothesis.

Visual stimuli are one of the most used information sources that humans use in everyday life. People identify or recognize objects through perceptual information, such as shapes, sizes, and colors. However, when objects involve the semantic process, a unique association between visual information and human perception appears. For example, when people try to understand words, a color of a word and a meaning of a word start interacting with each other. Color congruency affects humans' lexical decision making process (Schmidt, Cheesman, & Besner, 2013). Regarding a speed of reading target words, the incongruence of color/meaning makes people slow down to read the ink color name. Color incongruity and color inconsistency mean that the printed color of a word is inconsistent with the word's typical image color or meaning. One example of color inconsistency would be that the word "apple" is printed in blue. Generally, apples tend to be associated with the color "red." Because the printed color does not match the word's typical image, this is considered color inconsistency.

Another term that needs to be identified is lexical decision. Lexical decision and lexical judgment are decisions about whether a word is an actual word. Color consistency influences such lexical judgment in terms of reading speeds. Color inconsistency interferes with people's identification of target words (reading aloud target words), whereas it facilitates humans' lexical judgment (Schmidt et al., 2013). Such color/word interference phenomenon is called "Stroop interference" in Stroop's (1935) landmark study.

Several factors contribute to Stroop interference. First, the way of processing differs based on a type of information. Color naming is processed consciously, whereas word reading is processed automatically (Lindsay & Jacoby, 1994; Logan, 1980). Second, the semantic similarity has an effect on Stroop interference. Stronger similarity between the printed color of a target word and the meaning of the target word causes more interference with participants' identification of the target words (Klopfer, 1996). Combining these past studies, it is possible to assume that Stroop interference is related to people's internal associations regarding colors and words. One of the possible causes for the occurrence of Stroop interference would be that certain colors are automatically associated with certain symbols or concepts, and this may interfere with people's reading abilities.

Several past studies support the idea that people have a natural tendency to associate specific colors to certain symbols or concepts (Lakens, Semin, & Foroni, 2012; Moller, Elliot, & Maier, 2009; Spector & Maurer, 2011). Such associations are activated automatically when people try to identify target words. For example, a negative word, such as hate, tends to be associated with a dark color, such as black, while the color pink generally tends to be associated with the concept lovely or cute. When the negative word is written in pink, readers might automatically activate the dark-color/negative and pink/cute associations. As a result, such contradicted associations may interfere with the process of color naming, and people might have more difficulty reading the ink color of a word.

There are several things that are associated with colors. In the absence of meanings, humans automatically associate specific colors to certain shapes. Spector et al.'s (2011) study shows that humans have natural associations of I and O/white, X and Z/black, and C/yellow. They also find that the angularity of letters may influence such natural color/letter associations. Their study supports the idea that people make natural associations of colors with letters based on perceptual factors, such as the angularity. Although their study is conducted to test humans' natural color/letter associations, their research does not consider semantic components because they used only individual letters. Compared to their study, other past studies show humans' color/concepts associations that include semantic components.

Other past studies support the idea that some specific colors automatically represent certain concepts. Lakens et al.'s (2012) study shows that black is always associated with negativity regardless of contextual factors. They also find that white is related to positivity only when it is in opposition to the negativity of black. The other past research shows that green is associated with positive words and success in the United States (Moller et al., 2009). Although black may have absolute effects despite contexts, these studies indicate that context matters regarding the certain color preference process. Although the semantic components are important, people still automatically associate colors with not only symbols or concepts but also with emotions.

Specific colors elicit certain emotions. This means that people respond to specific colors in certain ways regardless of their personal experiences or current inner states. There are several factors that contribute to the occurrence of emotions. Valdez and

Mehrabian (1994) find that brighter colors elicit more pleasure feelings. Moreover, there is a negative relationship between color saturation and arousal. The researchers also find that saturation is positively correlated with dominance, and brightness is negatively correlated with dominance. This old study establishes the assumption that perceptual components influence humans' emotions through certain colors in some ways.

Some color/emotion associations were already established through the evolutionary process (Maier, Barchfeld, Elliot, & Pekrun, 2009; Moller et al., 2009). One example would be the color red. Red tends to represent or be associated with fire or blood. These red/fire or red/blood associations may have been automatically established in order for humans' ancestors to survive. The past study finds that people more quickly categorize failure and negative words when those words are written in red (Moller et al., 2009). The researchers suggest that the red/negativity associations might have been established because red has been related to danger, such as fire, and humans' ancestors learned this red/danger relationship.

Another past study shows that infants prefer red in a hospital setting and do not prefer red in a hostile setting (Maier et al., 2009). Since infants have not understood semantic connections yet, this study seems to succeed in supporting the idea of primitive associations between red and positivity in a hospital setting. However, because these past research findings are inconsistent, there should be other factors that influence people's color/emotion associations. Thus, these two past studies show that external factors, such as environment or culture, may also contribute to the development of color preference. These past researchers failed to consider semantic components in the automatic process of color perception.

Certain components related to an automatic process affect humans' color preference decision making. First, the strength of each process has an effect on the automatic process. There are two pathways involving the identification of a target word: semantic process and perceptual process. Semantic process has a stronger effect on color preference compared to perceptual process. The classic study finds that people depend upon stored color knowledge to identify objects when surface color is not available as a clue (Joseph & Proffitt, 1996). This study indicates that contextual components (i.e., stored color knowledge) become more efficient when perceptual components (i.e., surface color) cannot be used as information source. From this finding, it is possible to assume that people may depend upon semantic components, such as meanings, when they make a decision regarding the color preference because perceptual components, such as printed colors, are irrelevant to the presented words.

The other past study finds that semantic knowledge about the meaning of symbols affects the establishment of the symbols' affective valence (Biggs, Kreager, Gibson, Villano, & Crowell, 2012). The more recent study shows that context-specific information about art works facilitates people's understanding of art works and aesthetic appreciation (Swami, 2013). These past studies indicate that semantic components have more influence than perceptual components in terms of the automatic process like color preference decision making.

Second, the type of stimuli influences humans' color preference decision making. Luo's (1999) study finds that visual stimuli are processed differently based on their types, such as pictorial or verbal. According to the study, pictorial stimuli activate the semantic system that activates the verbal-lexical system in order to be named. Compared to pictorial stimuli, verbal stimuli are processed through the verbal-lexical system that activates the semantic system. This past study indicates that whether the stimulus is verbal or pictorial affects how people make judgments about the visual stimuli. By combining all of the past articles, these past studies led to the following hypothesis.

Three assumptions were drawn from the past studies. The first assumption is that contexts and meanings matter regarding Stroop interference. The second assumption is that humans have natural color/emotion associations. By combining these two assumptions, it is assumed that color/meaning consistency would elicit certain emotions. Third, it is expected that pleasure could be a key component of positive feelings based on the past studies (Mehrabian, 1978; Russell & Mehrabian, 1977). In addition to those three assumptions, it is possible to assume that people might feel more positive feelings when colors match words' typical image colors because such consistent color/word associations may match people's existing color/emotion associations. Thus, the hypothesis is that people who were presented words in consistent colors would report higher liking for the word and higher pleasure compared to those who were presented words in inconsistent colors and those who were presented words only in an auditory form. The present study examined whether college students reported higher scores on the liking scale and higher pleasure on the pleasure scale when the presented word was consistent with its typical image color. The present study would provide support for whether there are any distinctive associations between ink colors and printed words.

Method

Design

This study used a between-subjects design. The independent variable was the existence of color consistency. Participants were randomly assigned to one of three conditions: the consistent color/word condition, the inconsistent color/word condition, and the sound/word control condition. The dependent variables were scores on the liking scale and the pleasure scale. The ratio of each color used in slides was equal throughout both the consistent color/word condition and the inconsistent color/word condition. As a result, each participant in each two condition saw each of eight colors twice in one session.

Participants

Participants were 60 undergraduate students of Minnesota State University Moorhead. Twenty participants were assigned to each of three conditions. The study had 23 male participants (eight were in the consistent color/word condition, 10 were in the inconsistent color/word condition, and five were in the sound/word control condition) and 37 female participants (12 were in the consistent color/word condition, 10 were in the inconsistent color/word condition, and 15 were in the sound/word control condition). Forty-two participants (13 were in the consistent color/word condition, 13 were in the inconsistent color/word condition, and 16 were in the sound/word control condition) speak English as a native language and 18 participants (seven were in the consistent color/word condition, seven were in the inconsistent color/word condition, and four were in the sound/word control condition) were not native English speakers. The participants could earn extra credit by participating in the study. They were recruited by signing up on a sign-up sheet posted on the bulletin board in front of the psychology department.

Materials

The stimuli were 16 words that were written in one of eight colors or were presented in an auditory form. These words and colors were chosen based on Joseph et al. (1996). The 16 words referred to objects that exist in nature, such as fruits and animals. The word frequencies of the 16 words were obtained from *The American Heritage Word Frequency Book* (Carroll, Davies, & Richman, 1971). These 16 words were presented in random order (see Appendix A for a list of the words and their characteristics). The words were presented in 96-point Times New Roman font in the consistent color/word and in the inconsistent color/word groups. To equal colors' frequency in both the consistent color/word and the inconsistent color/word groups, two words' inconsistent colors were changed from the previous study (Joseph et al., 1996). The changed words are listed here in a form of, Word (Consistent color, Inconsistent color, Word frequency). Two words were Eggplant (Purple, Yellow, 1) and Cow (Brown, Purple, 46). In addition, two more words were created for this present study to equal colors' frequency. Two original words were Raisin (Purple, Brown, 10) and Lemon (Yellow, Purple, 44).

The experimenter set the same saturation and lightness degrees for colors as many as possible through PowerPoint since color hue, saturation, and lightness might affect the results of the present study. The eight ink colors are alphabetically listed here in a form of, color name (hue degree, saturation degree, lightness degree): brown (21°, 255°, 51°), gray (170°, 0°, 127°), green (104°, 255°, 128°), orange (32°, 255°, 128°), purple (194°, 255°, 128°), red (0°, 255°, 128°), white (170°, 0°, 255°), and yellow (42°, 255°, 128°). White was bordered with black lines (170°, 0°, 0°) because the background was also white.

The auditory stimuli were a pronunciation of each word. The experimenter pronounced each word and recorded it via a microphone. Then the experimenter put those sounds into the slide show. Because this study tested the interaction of color consistency and words' meanings on humans' perception, the sound/word control group should be presented words without colors. Therefore, the 16 words were presented in an auditory form in order to present the words without colors in the sound/word control group and to remove a confound. These 16 words were presented one by one to the participants written in one of eight colors through power point slides and/or in an auditory form. Both the consistent color/word and the inconsistent color/word groups heard the pronunciations of 16 words simultaneously while they were viewing the word on the slides. The sound/word control group only heard the word without the visual presentation.

A computer was used in this study. Microsoft PowerPoint 2010 was employed to show the slides that contained words with a white background. Color lightness and saturation can be controlled by using the computer because these factors may become confounds, such as stimuli's presented angles. By pressing Enter key, participants could go to the next slide when they finished rating the liking for the current slide. The pronunciations of the 16 words were recorded before the study and played in the slide show simultaneously while the participants were viewing the slide show. In other words, the participants were listening to the sounds simultaneously while they were viewing the word visually in the slide show. The sound/word control group was presented only auditory words without viewing the slide show.

The response sheets consisted of a 16-item self-report liking scale and a 1-item self-report pleasure scale. The response sheets included the assigned numbers that showed which groups the participants were in. For example, A referred to the consistent color/word group, B meant the inconsistent color/word group, and C was the sound/word control group. The participants were not aware of which group they were in.

The 16-item self-report liking scale assessed how much the participants liked the slides or the sounds of words on the same 9-point Likert-type scale as the previous research (Biggs et al., 2012). As the past researchers indicate, the score of 7 or above was considered “preferred,” the score of between 4 to 6 was considered “neutral,” and the score of 3 or below was considered “disliked.” The self-report liking scale is attached in Appendix B.

The 1-item self-report pleasure scale was originally designed for this present study. The basic structure of the survey was based on Mehrabian’s (1978) Pleasure-displeasure, Arousal-nonarousal, and Dominance-submissiveness (PAD) model. This part asked the participants to rate their current levels of pleasure. They rated on a 9-point Likert-type scale ranging from -4 (*Displeasure*) to +4 (*Pleasure*). Higher positive numbers indicated higher levels of pleasure, and higher negative numbers indicated lower levels of pleasure. Zero indicated “neutral.” The self-report pleasure scale is attached in Appendix C.

The demographic questionnaire asked the participants’ genders, ages, and native languages. The reason why the demographic survey was employed is because such information would help the experimenter to test whether there were gender, age, and cultural differences. The information about the age would help the experimenter to examine whether the different life experiences would affect differently the establishment of color/word associations. Finally, the information about the native language would help the experimenter to examine whether different cultural backgrounds would influence the formation of color/word associations. People from different culture may establish the different color/word associations compared to the typical White Americans. The questionnaire is attached in Appendix D.

Procedure

After the participants entered the laboratory, they read and signed the informed consent. The researcher explained the study as the test of examining whether humans have the learned word associations through experience. Therefore, this study did not involve any forms of deception. The participants were tested individually. The participants were randomly assigned to one of three groups: the consistent color/word group, the inconsistent color/word group, and the sound/word control group.

After the participants in the consistent color/word and the inconsistent color/word groups sit on in front of the computer, the 16-item self-report liking scale and the 1-item self-report pleasure scale were provided through paper and pencil. The participants were instructed to rate their liking for each presented word and advance to the next sound/word at their own pace. The participants were also instructed to report their overall level of pleasure on the pleasure scale after they finished rating liking for all 16 words. The pronunciations of each word were provided simultaneously while the participants were viewing each word on the slide.

The participants in the sound/word control group were assigned to a chair in which they were not able to see the computer screen. After they were placed, the 16-item self-report liking scale and the 1-item self-report pleasure scale were provided through paper and pencil. The participants were instructed to rate their liking for the presented auditory word on the liking scale and to report their overall level of pleasure on the pleasure scale after they finished rating liking for all 16 auditory words.

After the participants completed the 16-item self-report liking scale and the 1-item self-report pleasure scale, the demographic questionnaire was provided through paper and pencil. The participants then completed the demographic questionnaire. Also, the participants were instructed to put all three questionnaires into an envelope after they completed. Then they were completely debriefed, awarded a card for extra credit, and thanked for their participation in the study. This study took approximately 15 minutes to complete.

Results

Average liking scores and pleasure scores were obtained as a measure of effectiveness for each of the color consistency conditions. The researcher calculated each participant's average liking score by adding up the liking scores and then dividing by the number of questions. Table 1 shows means and standard deviations for each of the different color consistency conditions. Two between-subjects ANOVAs were conducted to examine whether people have learned color/word associations, and two 2x3 factorial ANOVAs were conducted to test whether gender differences and cultural differences were significant. After conducting two 2x3 factorial ANOVAs, the results showed that there were no significant gender differences and cultural differences. Since gender differences and cultural differences were not significant, the present study focuses on color consistency condition variables across both the average liking scores and the pleasure scores.

Each participant's average liking score was measured to examine whether humans have learned color/word associations. The means and standard deviations of the average liking scores across three conditions are displayed in Table 1. The first between-subjects ANOVA indicated that there was no significant difference in the average liking scores across three color consistency conditions, F (2,57) = .435, p = .649, η^2 = 0.015 (see Figure 1). However, as Figure 1 shows, the mean of the average liking scores in the consistent color/word condition was the highest compared to the inconsistent color/word condition and the sound/word control condition. Despite the data that shows no significant results, this pattern of the average liking scores seems to be consistent with the hypothesis.

Each participant's pleasure score was measured to test whether there is a learned color/word associations. To conduct the second between-subjects ANOVA, the range of the pleasure scale was changed. Scores on the pleasure scale were changed to 9-point scale ranging from 1 to 9 in the second between-subjects ANOVA. For example, the pleasure score of -4 was changed to "1" and the pleasure score of 2 was changed to "7" when conducting the second ANOVA. The means and standard deviations of the pleasure scores are also displayed in Table 1. The between-subjects ANOVA indicated that there was no significant difference in the pleasure scores across three color consistency conditions, F (2,57) = .375, p = .689, η^2 = 0.013 (see Figure 2). However, as Figure 2 shows, the mean of the pleasure scores in the consistent color/word condition was the highest compared to the inconsistent color/word condition and the sound/word control condition. Although no significant effects of color consistency were observed, this pattern of the pleasure scores seems to be consistent with the hypothesis.

Discussion

The present research was designed to test whether humans have learned color/word associations. From the past research studies, it is possible to assume that people would feel positive feelings when the ink color matches the words' typical image colors. Therefore, the researcher expected that people who were presented words in consistent colors would report higher liking for the word and higher pleasure compared to those who were presented words in inconsistent colors and those who were presented words only in an auditory form. The present research shows that people do not necessarily like words and do not feel positive feelings when ink colors are consistent with words' connoted colors. Therefore, it seems that people do not have certain learned color/word associations. Moreover, the present research indicates that there are no gender differences and cultural differences. However, the mean of the average liking scores and the mean of the pleasure scores in the consistent color/word condition were the highest compared to the inconsistent color/word condition and the sound/word control condition.

Stroop effect may provide an explanation why such patterns were observed. Stroop found that people named ink colors faster when ink colors were consistent with the meanings of words (1935). His findings imply that people need less cognitive effort when viewing a consistent color/word pair. For example, people might feel it is easier to recognize each ink color when printed colors and words are consistent. Thus, it is possible to assume that people might feel more positive feelings when they see consistent color/word pairs. The present data appears to provide consistent patterns with Stroop effect. The present data has shown patterns, which the means of the average liking score and the pleasure score in the consistent color/word condition were the highest compared to the inconsistent color/word condition and the sound/word control condition. Such observed patterns imply that people might feel more positive feelings when they use less mental efforts. Therefore, the observed patterns seem to be supported by Stroop effect.

Also, Spector et al. (2011) previously found that humans naturally associated I and O to white and X and Z to black. However, the researchers used single letters instead of employing words. The past researchers did not consider the semantic components because they employed single letters. The present study allows researchers to test how semantic factors interact with humans' color/emotion associations because the present study included words instead of single letters. The current results indicate that the means of the average liking score and the pleasure score were the highest in the consistent color/word condition. This explains that people would feel more positive feelings toward presented words when colors match words' connoted colors. The current results show weak evidence that semantic components affect people's feelings toward presented words.

It is interesting to assume possible reasons why there was no significant cultural difference in this study. One possible explanation would be that people have universal associations of specific colors and specific words. Specifically, they may have universal color/word associations when words are natural-category words (e.g. blue/the ocean). In this study, the researchers employed only natural-category words, such as apple, rose, and cow. Although associations or images of natural products are different in each culture, specific color/natural-category-word associations might have been established through evolutionary processes as the previous researchers assume (Maier et al., 2009; Moller et al., 2009). Moller et al. (2009) mention that some color/word associations were established as learned associations through the evolutionary process. Since humans have lived with nature for a long time, they might have established specific color/natural-category-word associations despite their cultures.

Regarding the current study, two 2x3 factorial ANOVAs indicated that there was no significant gender and cultural differences. The current results indicate that color consistency would influence participants despite their cultural backgrounds. For example, the Americans might feel the same level of liking toward the red/rose association as the Japanese may feel. Also, the current results indicate that specific color/word associations would elicit the same emotions from people despite their cultures. For instance, the yellow/banana association may elicit the same level of pleasure from the Europeans as from the Africans. Specific color/natural-category-word associations through evolutionary processes may explain these results.

The present study has several strengths. First, it collected data from various ethnic groups in order to examine the universality of the color perception. Second, the data was collected from both males and females in order to examine the gender differences of the color perception. Finally, employing natural-category words allows for the assessment of the interaction between colors and semantic components.

The study was limited because the researcher employed a small number of participants. Although the expected patterns were not statistically significant, collecting data from a larger number of participants would allow for future researchers to test the accuracy of the observed patterns. In addition, the study was limited because the researcher employed only eight colors. Since there are more colors that may have the specific associations with words (e.g. peach/pink and raven/black), using more various colors may allow for deeper understandings regarding humans' learned color/word associations.

The current study has several implications for marketing, which is especially related to advertisements or product developments. The present study would be the first experiment that examined how color consistency affects one's evaluation of visual stimuli. If humans have learned color/word associations and advertisements or products include inconsistent color/word presentations, then consumers might feel negative feelings about the advertisements or the products. As a result, such ignorance of color/word relationships may negatively affect the sales of the products. It is important to consider how colors are related to the meanings of words when planning advertisements and developing products. Therefore, more research studies are needed to examine humans' learned color/word associations.

The results of this study suggest a number of future recommendations for research, which studies the relationships between colors and words. In particular, future research should employ non-English words to test the accuracy of color/word associations. The present study employed only English words. However, as Spector et al. (2011) suggest, the angularity of each letter may affect people's color/word associations. For example, the English word "apple" has more non-jagged shapes compared to the word "□□," which also means "apple" in Japanese. Since the English word "apple" may have a less proportion of shaded surfaces compared to the Japanese word "□□," people may react differently when presenting words in English or in other languages. Therefore, future research will help explore deeper understandings about the interaction of color/word associations on humans' evaluation of visual stimuli.

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Table 1
Mean and Standard Deviation for across Average Liking and Pleasure Scores and Color Consistency Conditions.

	Consistent*	Inconsistent*	Sound*
Average Liking Score	*M* = 6.15 *SD* = .99	*M* = 5.86 *SD* = .97	*M* = 5.98 *SD* = 1.02
Pleasure Score	*M* = 7.20 *SD* = 1.28	*M* = 6.95 *SD* = 1.10	*M* = 6.85 *SD* = 1.53

**Color Consistency Condition (Consistent = consistent color/word pair; Inconsistent = inconsistent color/word pair; Sound = sound/word pair)*

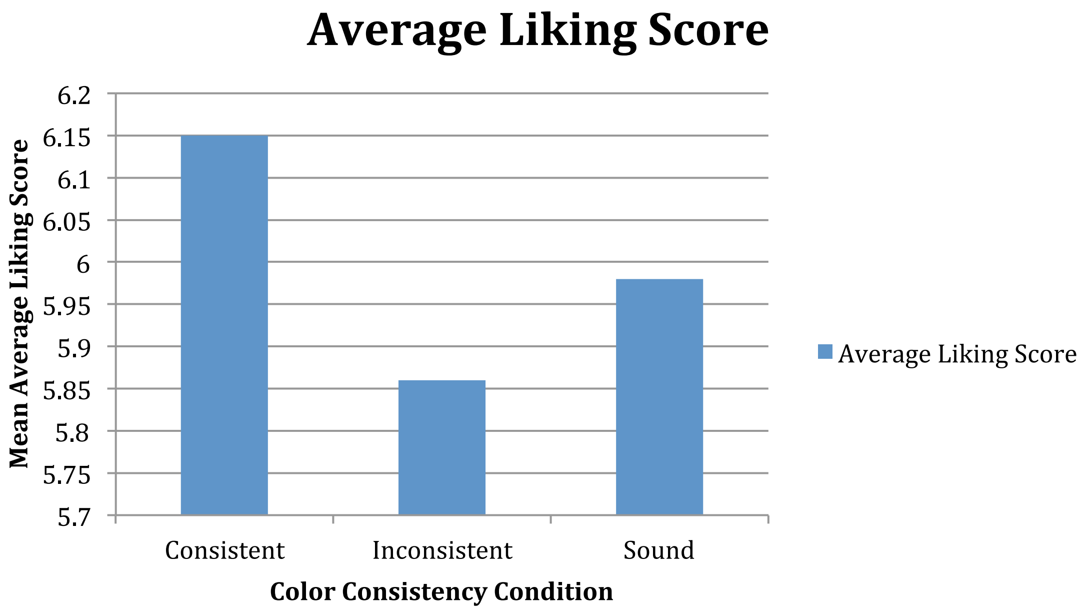

Figure 1. This graph shows the average liking scores for each participant's average liking score across three color consistency conditions.

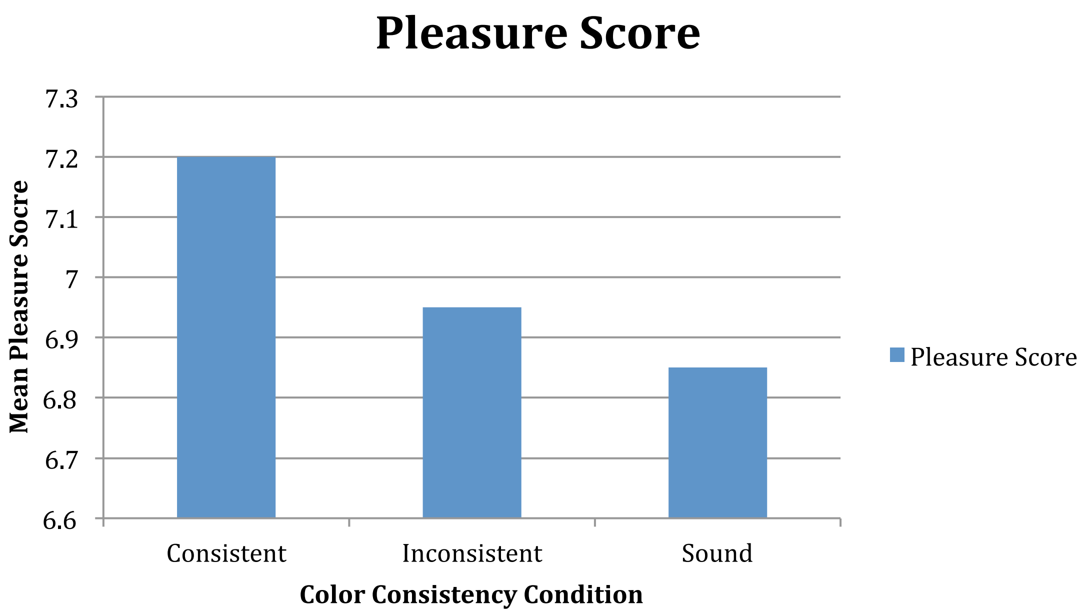

Figure 2. This graph shows the average pleasure scores across three color consistency conditions.

Appendix A

List of 16 Words with Consistent Colors, Inconsistent Colors, and Word Frequency

Note. [a]Estimated word frequency per million tokens based on Carroll, et al. (1971). [b]Changed from the original study. [c]Created for the present study.

Word	**Consistent Color**	**Inconsistent Color**	**Word Frequency[a]**
Apple	Red	Gray	53
Banana	Yellow	White	9
Bear	White	Orange	96
Carrot	Orange	Green	7
Duck	White	Red	36
Elephant	Gray	Yellow	33
Frog	Green	Red	26
Horse	Brown	Green	208
Leaf	Green	White	36
Pumpkin	Orange	Gray	10
Rat	Gray	Orange	13
Rose	Red	Brown	79
Eggplant	Purple	Yellow[b]	1
Cow	Brown	Purple[b]	46
Raisin[c]	Purple[c]	Brown[c]	10
Lemon[c]	Yellow[c]	Purple[c]	44

Appendix B

The Self Report Liking Scale

The Self Report Liking Scale

Instruction: Circle the corresponding number that represents how much you like the presented word.

1. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
2. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
3. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
4. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
5. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
6. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
7. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
8. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
9. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
10. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
11. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
12. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
13. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
14. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
15. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)
16. (Dislike) 1 2 3 4 5 6 7 8 9 (Like)

Appendix C

The Self Report Pleasure Scale

The Self Report Pleasure Scale

Instruction: Circle the corresponding number that represents how you feel right now.

(Displeasure) -4 -3 -2 -1 0 +1 +2 +3 +4 (Pleasure)

Appendix D

Demographic Questionnaire

Demographic Information

Gender: Male Female

Age:

Native Language: