

Color-emotion associations: Past experience and personal preference

Naz KAYA and Helen H. EPPS
Department of Textiles, Merchandising, and Interiors
The University of Georgia

ABSTRACT

This study examined color-emotion associations and the reasons for emotional reactions given to colors. Ten fully saturated chromatic colors were chosen from the Munsell color system: red, yellow, green, blue, purple, yellow-red, green-yellow, blue-green, purple-blue, and red-purple. Apart from these ten hue groups, three achromatic colors (white, black and gray) were also used. The sample consisted of 98 volunteered college students at a public institution in the southeast region of the US. Results revealed that the principle hues comprised the highest number of positive emotional responses, followed by the intermediate hues and the achromatic colors. Color symbolism seems to be apparent in how individuals associate colors with things, objects or physical space. Red-purple, for instance, was associated with the color of red wine, plum, bridesmaid dress, or the color of a bedroom. Overall, a color-related emotion was highly dependent on personal preference and one's past experience with that particular color.

1. INTRODUCTION

Colors can relate to our emotions and feelings. For instance, the color blue is associated with comfort and security, orange is perceived as distressing and upsetting, yellow as cheerful, purple as dignified (Ballast 2002, Mahnke 1996). The color red has both positive and negative impressions such as active, strong, and passionate, but on the other hand aggressive, bloody, raging and intense. The color green has a retiring and relaxing effect. It too has both positive and negative impressions such as quietness, naturalness, and conversely tiredness and guilt (Davey 1998, Linton 1999).

In a study examining color-emotion associations, Boyatzis and Varghese (1994) found that light colors (e.g., yellow, blue) are associated with positive emotions (e.g., happy, strong) and dark colors (e.g., black, gray) with negative emotions (e.g., sad, angry). Hemphill (1996) also found that bright colors elicited mainly positive emotional associations, while dark colors elicited negative emotional associations, confirming the results obtained by Boyatzis and Varghese (1994). However, Saito (1996) found that the color black elicited both negative and positive responses among Japanese subjects, and that black was often a preferred color among young people.

Although the impact of color on our emotions has been examined considerably, many studies have failed to use color samples from a standardized system of color notation (Boyatzis and Varghese 1994, Hemphill 1996), while others elicited individuals' responses to verbal labels of color (e.g., "red", "blue") instead of using actual color stimuli. Furthermore, several studies have used color-emotion matching tasks; matching colors (e.g., red, blue) to a certain number of emotions (e.g., happiness, sadness), which results in limited assessments of reactions to colors.

The purpose of this study was to examine college students' color-emotion associations, referencing color samples from the standardized Munsell color system and to investigate the reasons for students' emotional reactions to each color.

2. METHOD

Ninety-eight volunteered college students (44 men and 54 women) participated in the study. They were asked to indicate their emotional responses to five principle hues (i.e., red, yellow, green, blue, purple), five intermediate hues (i.e., yellow-red, green-yellow, blue-green, purple-blue, and red-purple), and three achromatic colors (white, gray, and black) and the reasons for their choices. The Munsell notations are shown in Table 1.

Table 1. Munsell notations.

Color	Munsell
Red	5R 5/14
Yellow	7.5Y 9/10
Green	2.5G 5/10
Blue	10B 6/10
Purple	5P 5/10
Yellow-red	5YR 7/12
Green-yellow	2.5GY 8/10
Blue-green	5BG 7/8
Purple-blue	7.5PB 5/12
Red-purple	10RP 4/12
White	N/9
Gray	N/5
Black	N/1

The color samples were prepared by using Freehand 10.0 software, in which Munsell color notations were available in that computer program. Each color sample (10 cm × 12 cm) was displayed in the middle of the computer screen one at a time. Order of presentation of the color samples was randomized across participants. Students were allowed to state only one emotional response for each color. Each experimental session lasted for about ten minutes.

3. RESULTS

Based on the results obtained from the students' responses, the color green attained the highest number of positive emotions (95.9%), including the feelings of relaxation, followed by happiness, comfort, peace, and hope. Green was associated with nature and trees, and thus creating feelings of comfort and soothing emotions. The color yellow was generally seen to be energetic and elicited positive emotions (93.9%) including happiness and excitement because it was associated with the sun and summer time. The next highest number of positive response was given for the color blue (79.6%), followed by red and purple (64.3% each). Blue was associated with the ocean or the sky and thus inducing relaxing and calming effect. The color red was associated not only with love and romance, but with evil and blood. One respondent said that the color red reminded her of Valentine's Day and the shape of heart. Another said that the color reminds her of red lingerie. The positive aspects of purple are tended to be

mainly associated with children and laughing, while reasons given for negative responses to purple consistently showed that purple was not a favorite color.

Among the intermediate hues, the blue-green elicited the highest number of positive responses (81.6%), followed by red-purple (76.5%), yellow-red (75.4%), and purple-blue (65.3%). On the contrary, the color green-yellow elicited the highest number (71.4%) of negative emotional responses because it elicited the feelings of sickness and disgust.

For the achromatic colors, white attained a large number of positive responses (61.2%), compared with only 19.4% and 7.1% positive responses for the colors black and gray, respectively. White was associated with the feelings of innocence, peace, and hope because it reminded some respondents of bride, snow, dove, and cotton. Reasons given for negative emotional responses to white showed that white elicited the feelings of loneliness and boredom. The color black was also evoked negative emotions such as depression, fear, and anger because it was associated with mourning and tragic events. The positive aspects of black were richness, wealth, and power. It also reminded some respondents of tuxedos and formal gowns. Reasons given for negative emotional responses to gray showed that the color gray tends to refer to bad weather and brings out the feelings of sadness, depression, and boredom.

4. DISCUSSION

Color symbolism can be apparent in how individuals associate colors with things, objects or physical space. For instance, in the present study, the color yellow-red was associated with the color of autumn or Halloween. One respondent said that yellow-red made her happy because it reminded her of school buses and her childhood. Furthermore, the color blue-green was associated not only with the ocean and the sky, but also reminded some respondents of cool mints and toothpaste. Some associated black with “power,” and said it reminded them of nice sport cars. Black made some respondents feel sophisticated and reminded them of “fashion and clothing”. Yet, another respondent said the color black made him sad and reminded him of “funerals where people wear black”. Therefore, a color-related emotion is highly dependent on personal preference and one’s past experience with that particular color. A replication of this study at different institutions could give us a more comprehensive understanding of the issues raised here. Cross-site studies could be conducted to identify similar or different patterns in students’ emotional associations to colors.

Moreover, color conventions differ from one society to another. A well-known example is with the two achromatic colors; black and white. Death and mourning are associated with the color black in Western traditions, whereas in China the color of death is white. In the present study, the color black was associated not only with royalty, power, and wealth, but with death, mourning, and tragic events. Cross-cultural research could shed light on these issues by determining how cultural differences vary in color-emotion associations.

ACKNOWLEDGMENT

This study was supported by a research grant from the College of Family and Consumer Sciences at the University of Georgia.

REFERENCES

- Ballast, D. K. 2002. *Interior design reference manual*. Belmont, CA: Professional Pub.
- Boyatzis, C. J., and R. Varghese. 1994. Children's emotional associations with colors. *Journal of Genetic Psychology* 155: 77-85.
- Davey, P. 1998. True colors: The glorious polychromy of the past suggests a strong historical need for color, despite current reductive fashions. *The Architectural Review* 204: 34-36.
- Hemphill, M. 1996. A note on adults' color-emotion associations. *Journal of Genetic Psychology* 157: 275-281.
- Linton, H. 1999. *Color in architecture: Design methods for buildings, interiors and urban spaces*. New York: McGraw Hill.
- Mahnke, F. 1996. *Color, environment, human response*. New York: Van Nostrand Reinhold.
- Saito, M. 1996. Comparative studies on color preference in Japan and other Asian regions, with special emphasis on the preference for white. *Color Research and Application* 21 (1): 35-49.

*Address: Naz Kaya, Department of Textiles, Merchandising and Interiors
307 Dawson Hall, The University of Georgia, Athens GA 30602, USA
E-mails: nkaya@fcs.uga.edu, hepps@fcs.uga.edu*