

## Children's Emotional Associations With Colors

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**ABSTRACT.** In this study children's emotional associations with colors were investigated. Sixty children (30 girls, 30 boys), equally divided into groups of 5-year-olds and 6½-year-olds, were asked their favorite color and were then shown nine different colors, one at a time and in a random order. For each color, children were asked, "How does (the color) make you feel?" All children were able to verbally express an emotional response to each color, and 69% of children's emotional responses were positive (e.g., happiness, excitement). Responses also demonstrated distinct color-emotion associations. Children had positive reactions to bright colors (e.g., pink, blue, red) and negative emotions for dark colors (e.g., brown, black, gray). Children's emotional reactions to bright colors became increasingly positive with age, and girls in particular showed a preference for brighter colors and a dislike for darker colors. Boys were more likely than girls were to have positive emotional associations with dark colors. Potential sources for children's color-emotion concepts, such as gender-related and idiosyncratic experiences, are discussed.

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**COLOR IS A SALIENT PRESENCE** in children's lives. In their clothes, toys, sports paraphernalia, home accessories, and lunch boxes, children's environments convey many psychological messages through color. One function of color is carrying gender-related information, often reflecting traditional gender stereotypes. The adage "pink is for girls, blue is for boys" is reflected in parents' use of colors to distinguish sons' and daughters' early environments and objects (e.g., Pomerlau, Bolduc, Malcuit, & Cossette, 1990). Perhaps as a consequence of early gen-

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der socialization, young children rely on colors to make judgments about sex stereotypes (Picariello, Greenberg, & Pillemer, 1990).

For many years clinical psychologists have offered assumptions about the emotional significance of color. Decades ago, Goldstein (1939) claimed that specific colors elicit specific emotional responses. Clinicians have asserted that children's use of color in art, for example, is a manifestation of their underlying emotional status. The color red is associated with anger, aggression, excitation; green with quietness, withdrawal; black and other dark colors with depression or anxiety (see, e.g., Birren, 1978; Sharpe, 1974). Although clinicians presume to know the emotional significance of color for children, how do children themselves feel about color?

Several studies have investigated children's emotional associations with colors. In one study (Cimbalo, Beck, & Sendziak, 1978), second and third graders were presented with pictures of scenes that judges had previously rated as happy or sad. While the children were looking at each picture, they were asked to color in a shape with a color of their choice. Their choices reflected strong color-emotion associations. When viewing happy scenes, children used orange, yellow, green, and blue, whereas when viewing sad scenes children tended to use brown, black, and red. An earlier study (Lawler & Lawler, 1965) found that preschoolers colored with a yellow crayon after hearing a happy story and with a brown crayon after hearing a sad story. In a more recent study (Buckalew & Bell, 1985), however, eighteen 4- to 6-year-olds were shown drawings of male and female human figures with clothing that was colored blue, green, red, yellow, white, black, or brown. The children were asked to draw faces on each figure, and the researchers then assessed each drawing's facial expression as either happy, sad, or indifferent. The researchers found that children did not base specific emotions on the figures' clothing colors. Children tended to draw happy faces regardless of the color of a character's clothing. There were no sex differences in the emotions linked to colors.

Further investigation of children's emotional associations with color is warranted given the rather small number of studies, some with very small samples, and because the studies overall have yielded equivocal results. The exploratory study presented here investigated color-emotion associations in 5- and 6½-year-olds.

## Method

### *Subjects*

The subjects were 60 children (30 girls, 30 boys) equally divided into two age groups, 4- to 5-year-olds and 6- to 7-year-olds. The mean age of the 4- to 5-year-olds was 5 years with a range of 4 years 6 months to 5 years 6 months. The mean

age of the 6- to 7-year-olds was 6 years 6 months and the range was 6 years 1 month to 7 years. All of the 5-year-olds were enrolled in a preschool or kindergarten, and the 6½-year-olds were enrolled in a kindergarten or first-grade class. The children in the sample were predominantly White and middle class.

### *Materials*

Materials used in the color-emotion task consisted of nine different colors, each presented on an 8 1/2" × 11" paper. The colors were pink, red, yellow, black, gray, green, blue, purple, and brown.

### *Procedure*

Children were tested individually in a quiet section of their classroom. Children were asked what their favorite color was and were shown that color first. Children were then shown the other eight colors, one at a time and in a random order. For each color children were asked, "When you look at this color, how does (the color) make you feel?" Children were allowed to state more than one emotional response for each color, although children were not explicitly encouraged to do so. After stating their emotional response, children were asked why they felt that way about the color.

## **Results**

All children verbally expressed an emotional reaction to each color. In addition, children displayed distinct emotional associations with colors. These color-emotion associations were mostly (69%) positive (see Table 1). Emotional reactions varied, however, depending on the brightness of the colors. All groups of children expressed a higher percentage of positive emotional responses for bright colors than for dark colors, and virtually all groups of children showed more negative feelings for dark colors than would be expected by chance. Boys were more likely than girls to have positive emotional reactions to dark colors; the girls' emotions for dark colors were mostly negative.

Because 60 children reacted to nine colors, the minimum number of emotional responses to the colors was 540. The actual number of emotional reactions to the colors was 829. Thus, children offered an average of 1.50 emotions per color. The row totals in Table 1 show the number of emotions by each color. The color red elicited the highest number of emotional responses (101, or 1.68 per child) and pink the lowest (82, or 1.36 per child).

Because of low frequencies in several cells, to make data analysis more meaningful we collapsed the emotion and color categories in the following way.

**TABLE 1**  
**Children's Associations of Colors and Emotions**

Color	Emotional association						Total
	Happy	Strong	Excited	Sad	Angry	Boring	
Pink							
<i>n</i>	36	6	15	8	3	14	82
%	44	7	18	10	4	17	10
Red							
<i>n</i>	36	19	25	6	9	6	101
%	35	19	25	6	9	6	12
Yellow							
<i>n</i>	31	15	24	6	7	7	90
%	34	17	26	7	8	8	11
Blue							
<i>n</i>	32	22	19	5	9	6	93
%	35	24	20	5	10	6	11
Purple							
<i>n</i>	37	17	16	4	11	10	95
%	39	18	17	4	11	11	11
Green							
<i>n</i>	30	22	23	7	8	8	98
%	31	22	23	7	8	8	12
Brown							
<i>n</i>	18	20	15	13	10	13	89
%	20	22	17	15	11	15	11
Black							
<i>n</i>	19	14	15	15	23	9	95
%	20	15	16	16	24	9	11
Gray							
<i>n</i>	19	9	16	18	13	11	86
%	22	10	19	21	15	13	10
Total							
<i>n</i>	258	144	168	82	93	84	829
%	31	17	20	10	11	10	99

Colors were coded as dark or bright; bright colors were pink, red, yellow, green, purple, or blue, and dark colors were black, brown, and gray. We coded emotions as either positive or negative; positive emotions children mentioned were happiness, strength, and excitement, and negative emotions children mentioned were sadness, anger, and boredom (see Table 2). Chi-square analyses were used to determine if children expressed positive or negative emotional associations for dark and bright colors more often than would be expected by chance.

The value from the chi-square analysis of the entire sample's color-emotion associations was significant,  $\chi^2(9, N = 60) = 28.64, p < .001$ . The greatest differences between observed and expected frequencies occurred in 5-year-old girls'

positive emotions for bright colors and negative emotions for dark colors; in both cases, the girls showed more responses in each of those cells than we expected. To better understand how age and sex are related to children's color-emotion associations, we conducted additional chi-square analyses.

Nearly half (46%) of the 5-year-olds' emotions for dark colors were negative, but less than one third (29%) of emotions for bright colors were negative. In a chi-square analysis of 5-year-olds' positive and negative emotions for bright and dark colors, the largest difference between observed and expected values was in negative emotions for dark colors, which occurred more often than expected,  $\chi^2(1, N = 30) = 14.06, p < .001$ . Like the 5-year-olds, 6½-year-olds had significantly more negative emotions associated with dark colors than was expected, and they also had fewer negative emotions associated with bright colors than was expected,  $\chi^2(1, N = 30) = 32.83, p < .001$ . Nearly half (46%) of 6½-year-olds' responses to dark colors were negative, whereas only 17% of their emotions for bright colors were negative.

Analysis by sex showed that girls were especially positive toward bright colors and negative toward dark colors. A majority (58%) of girls' reactions to dark colors were negative, whereas only 21% of their emotions for bright colors were negative. The cells yielding the largest differences between observed and expected frequencies were those indicating negative emotions for dark colors, which occurred more often than expected,  $\chi^2(1, N = 30) = 51.10, p < .001$ . Boys were

**TABLE 2**  
**Children's Color-Emotion Associations by Age and Sex**

Group	Bright		Dark	
	Positive	Negative	Positive	Negative
<b>Girls</b>				
5-year-olds				
<i>n</i>	100	40	27	42
%	71	29	39	61
6½-year-olds				
<i>n</i>	100	16	25	32
%	86	14	44	56
<b>Boys</b>				
5-year-olds				
<i>n</i>	118	51	56	31
%	70	30	64	36
6½-year-olds				
<i>n</i>	107	27	37	20
%	80	20	65	35

*Note.* Percentage totals are for each row within a color (bright, dark). Hence, row totals equal 100% for each group within bright and within dark colors.

similar to girls in that the majority (69%) of their associations with bright colors were positive, but they differed from girls by expressing mostly positive reactions (64%) to dark colors. Nevertheless, in the chi-square analysis, the greatest difference between observed and expected values showed that boys associated a greater number of negative emotions with dark colors than was expected,  $\chi^2(1, N = 30) = 4.45, p < .03$ .

The majority of 5-year-old girls' emotions for dark colors were negative, but only 29% of their emotions for bright colors were negative (see Table 2). The largest differences between observed and expected values showed that 5-year-old girls associated negative emotions with dark colors more often than was expected and positive emotions with dark colors less often than was expected,  $\chi^2(1, N = 15) = 20.30, p < .001$ . In 6½-year-old girls, 86% of their expressed emotions for bright colors were positive, but 56% of emotions expressed for dark colors were negative. These responses occurred more often than was expected,  $\chi^2(1, N = 14) = 34.10, p < .001$ ; only 13% of reactions to bright colors were negative.

Five-year-old boys had mostly positive emotions for bright and dark colors (see Table 2). Nonetheless, 5-year-old boys' responses showed no significant differences between observed and expected values,  $\chi^2(1, N = 14) = .77$ . Boys aged 6½ years associated negative emotions with dark colors more often than was expected,  $\chi^2(1, N = 15) = 4.78, p < .01$ . In fact, 35% of 6½-year-old boys' emotions for dark colors were negative, whereas only 20% of their emotions for bright colors were negative. It is interesting that both age groups of boys had near-identical percentages in their color-emotion associations for dark colors.

When asked to name their favorite color, boys (26%) cited blue, followed by red, and girls (50%) preferred pink, followed by purple. None of the children chose yellow, brown, or gray as their favorite color.

### Discussion

Across all colors, children's emotional associations were predominantly positive. In fact, in nearly three quarters of their responses children cited the positive feelings of happiness, excitement, and strength, whereas the negative emotions of sadness, anger, and boredom were much less common. Another major finding was that children revealed distinct emotional reactions to particular colors, confirming earlier work (e.g., Cimbalo et al., 1978). All groups of children expressed more positive responses for bright colors than for dark colors, and virtually all groups showed more negative feelings for dark colors than was expected. An interesting relationship appeared between children's sex and color-emotion associations, as boys were more likely than girls to have positive emotional reactions to dark colors; girls' emotional responses to dark colors were mostly negative.

The results here also suggest interesting age-related trends in emotional responses to color. Already at 5 years of age children had a tendency to express positive emotions for bright colors, but with age this preference increased. This growing affinity for bright colors was especially true for girls; this affinity was most likely due to the prominence of bright colors as a means for marking gender-appropriate materials for girls (e.g., Picariello et al., 1990). Given that boys linked negative emotions with dark colors less than expected, it is probable that boys, like girls, are influenced by gender-related images about color that are expressed in cultural artifacts, including toys, home accessories, sports paraphernalia, and lunch boxes (see, e.g., Pomerlau et al., 1990). Such messages lead boys to associate positive feelings with dark colors and girls to associate negative feelings with those colors.

A specific way that the children deviated from common color-emotion associations was with the color red. Despite claims to the contrary by other researchers (e.g., Birren, 1978; Cimbalo et al., 1978; Sharpe, 1974), children in this study did not associate red with anger or sadness but rather most often with excitement and happiness. These findings suggest that psychologists might revise their assertions about the emotional significance of the color red, especially because clinicians report little empirical data on their subjects' color-emotion associations. Our findings on the color black lead us to similar conclusions. Although black (tied with brown) elicited the fewest positive emotions (see Table 1), black nevertheless evoked positive emotions in fully half of the children's responses. This finding refutes clinicians' claims about the predominantly negative significance of black and supports our contention that clinicians' assertions about color-emotion associations need to be tempered.

Children's explanations for their emotional reactions are helpful for understanding their color-emotion associations. One child said yellow made her feel "a happy sort of bright," although one said yellow made her sad because "my Mommy told me yellow doesn't look good on me." One child associated blue with "peace," and the color green reminded some children of images such as trees and apples. Green made another feel "cool inside, like a breeze against me." One girl remarked that pink made her happy because "my bed covers are pink and I have a lot of pink dresses," but a boy claimed that pink made him angry because "I get tired of pink." One 5-year-old said that red made her sad because the color reminds her "of Jesus on the cross with blood all over the place." Children's comments about dark colors helped explain why they typically evoked negative emotions. For example, the color black made some children think of death and fighting. Several boys, however, said black made them feel "excited or a good kind of angry" because they wear black in karate lessons, which they enjoyed. Gray made other children feel tired and sleepy, and another said it made her feel "slimy."

Based on children's comments, it seems clear that, as Goldstein (1939) argued, specific colors do elicit particular images and emotions for children. The

particular emotions that colors evoke, however, are not in any way universal. Our study suggests that whether a color-related emotion is positive or negative depends on the child's personal experience with that color. There are at least several sources of such color experience, one of which is gender socialization. Illustrations of this include the girl who cited her pink bed covers as a reason for her happiness with pink; another example is from the girl who explained bluntly why brown made her sad: "Girls don't wear brown." In addition to gender, another category of experiences that lead to color-emotion associations may be more idiosyncratic. Examples of this include the girl who felt sad about yellow because her mother said the color did not look good on her. Finally, children's culture and race are possible sources of children's color-emotion associations. Our sample was predominantly White, which may have been related to the negative associations with dark colors. Future research should explore this potentially causal relationship between children's personal experience with a color and their emotional response to it.

We conclude by postulating that in early childhood, children begin to form color-emotion concepts or schemas. At the ages studied here, these concepts are fairly global and simplistic, as is indicated in part by the fact that the children in our study offered fewer than two emotional reactions per color. Other evidence includes children's comments revealing that their color-emotion associations arose from a single, concrete experience with a color. Examples of this include the children whose rationale for their color-emotion associations consisted of specific events or images (e.g., "Mom said yellow doesn't look good on me"; "Jesus on the cross with blood"). With increasing age, it is likely that children's color-emotion schemes become increasingly differentiated and complex. The increasing sophistication of the color-emotion concept might arise from greater social experience over time, which creates opportunities for more associations, both positive and negative, with a particular color. The development of the color-emotion concept may also result from cognitive development; that is, such development would facilitate increasingly complex conceptualizations of color-emotion associations. Research addressing these possibilities would increase our understanding of children's emotional experience with the colors that surround them.

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