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## The Color Liking and Object Color Preferences of 48-84 Month-old Children According to the Gender

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### Abstract

This study used a descriptive approach to determine the color liking and object color preferences of 48–84-month-old children. A total of 359 children participated, including 137 kindergarteners and 212 first graders. The information was gathered through the participants' verbal responses to questions on their three favorite and three least favorite colors: t-shirt, trousers, bag, ball, school, house, hair, and tree. According to the study, young children preferred bright, warm colors like pink, red, and blue over darker colors like black and neutral shades of brown and gray. Pink was the color that boys participants detested the most. Girls and boys differed in their rankings of preferred clothing colors for items like T-shirts (pink, blue, and yellow) and trousers (pink, blue, black, and red), for example. Pink, red, blue, white, and yellow were the colors that young children preferred for settings like home and school. Consequently, the study's implications suggest that the design of educational environments, attention-capturing instructional materials, textbooks, and child-specific consumer products should all consider the color preferences of children.

### Key Words

Color  
Gender  
Color preferences  
Early childhood  
Children

### About Article

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## Introduction

Interest in children's color preferences is not new. One theory is that this global interest in color choice, which began at the turn of the 20th century, is based on a knowledge of childhood, which influences the color schemes used in children's clothing and young adult literature under pressure from the manufacturing industry (Katz & Breed, 1922). The research on children's and young people's object color preferences and nomenclature broadened in the years that followed, and it was also looked into how these preferences and nomenclature varied between cultures. It can be argued that this interest persisted during those years (Al-Raheed, 2015; Walsh, Toma, Tuveson & Sondhi, 1990; Zentner, 2001). One of the topics studied is the preferences for colors of adults as well as children and teenagers (Dittmar, 2001). Understanding children's color preferences for various items is essential, particularly considering the rapid pace of global change and development. Turkish children's color preferences, however, have been very limited studied. The favorite and least favorite colors of Turkish children between the ages of 48 and 84 months, as well as the preferred colors of numerous objects, were identified in this study, and an attempt was made to compile these findings.

### *Colors in Children's World*

Colors are also important elements in children's world. They can influence children's preferences for toys (Weisgram et al., 2014), food (Walsh et al, 2012), clothing (Kilinc, 2011), space (Gyu Park, 2014; Nourmusavi Nasab et al., 2020; Read & Upington, 2009), etc. Similarly, colors are one of the factors that have the potential to affect student behavior, mood (Morton, 1998), focused attention level (Engelbrecht, 2003; Imhof, 2004), and performance (Engelbrecht, 2003) in learning environments. For example, interior color can affect academic performance positively or negatively by creating a change in emotions and mood (Kuller et al., 2009). For this reason, colors should be taken into account in the functional design of learning environments/classrooms, children's color preferences should be determined and these colors should be used in classroom environments (Gaines & Curry, 2011). For instance, white walls in the classroom create a good level of stimulation - vibrancy, and excitement (Barrett et al., 2015). The specific reason why children like certain colors more or less is not yet known. In a recent study (Palmen & Scholoss, 2009), as a result of a detailed theoretical discussion and application, the authors found that in the literature, color preferences are tried to be explained psychophysically; however, they provided a causal explanation that people like colors that are strongly associated with objects they like more and dislike colors that are strongly associated with objects they dislike. Similarly to adults, it can be thought that children may prefer colors that are associated with objects they like more.

### *Children's Color Preferences*

For a long time, scholars have been interested in the question of "Do people's color choices alter depending on age and gender? Children's color preferences were also discussed through various theoretical opinions. One of these theories is Gender Schema Theory. The Gender Schema Theory contends that after coming to terms with their gender identity, children start to look for information about gender in their environment and absorb it into their gender schemas. As a result, they consider what is and is not gender-appropriate behavior. It can be argued that kids choose colors based on the knowledge they have about gender. Children are inundated with information from an early age, such as that blue is a boy's color and pink is a girl's color, and this influences the children's color choices (Martin & Halverson, 1981; Yeung & Wong, 2018). Despite its limitations, some study has been done to determine whether or not culture shapes children's gender-based color choices. The majority of these studies come from the west, but there are also research from China, Japan, and Indonesia. These research did not provide conclusive evidence that culture affects gender-based color preferences. When studies on cone contrast sensitivity, an innate condition, are examined, it is discovered that cone contrast sensitivity differs in boys and girls due to some tasks like picking fruit or going hunting during the early human period. It is stressed that this difference in cone contrast sensitivity is the cause of the gender differences in color preferences (Alexander, 2003; Chattopadyyay et al., 2010; Hurlbert & Ling, 2007).

There are studies showing that the color preferences of young children differ according to gender. However, this issue is controversial. In a study on the early years of early childhood, it was found that two-and-a-half-year-old girls preferred pink more than boys (LoBue & Deloache, 2011).

Gendered preferences for pink and blue begin when children turn 2 years old and strengthen as they grow older (Jadva et al., 2010; Wong & Hines, 2015). In another study, the color preferences of three- and four-year-old toddlers were listed as red, pink, navy blue, yellow, bright green, bright blue, dark green, brown, and black, and there was no significant difference in color preferences in terms of gender (Zentner, 2001). The results of some of the studies showed that the most preferred colors of children were blue, yellow, and red (Meerum Terwogt & Hoeslma 1995). Black, brown, and dark brown are generally disliked colors (Baniani, 2022; Prankevičienė et al., 2009). According to Pitchford and Mullen (2005), gray is also significantly less preferred by children. In the same study, the authors suggested that color names such as brown and gray are also less common in children's speech; therefore, color preference may be linked to linguistic input and developing color cognition. The above explanations show that children's color preferences change with age. However, more evidence is needed to say that color preferences vary by gender.

Some of the other studies have also investigated the relationships between the color preferences of people aged seven years and adults (Baniani, 2022; Gyu Park, 2014; Mohebbi, 2013) and various variables. For example, Baniani's (2022) research results are interesting. The results showed that primary school students' least favorite color was pink. He found that male students preferred the color black in clothing. The reason why black color is preferred is that it does not show dirt. Some studies have focused on the clothing color preferences of 7-9-year-old children (Kilinc, 2011). Comprehensive studies on 48-84-month-old children's favorite-disliked colors and artificial-natural object and entity color preferences are limited. Only one study was found in which it was determined that the color preferences of Turkish children aged 7-9 years for five different types of clothing differed according to age and gender (Kilinc, 2011). Research on children's color preferences is not limited to color liking and textile products. For example, one study focused on toy preferences. The results revealed that girls were interested in masculine toys and pink toys (Weisgram et al., 2014). In another study, children's space color preferences were investigated. Read and Upigton (2009), in a study on the subject, found that the first color preferred by 3-5 year old children in interior color is red. In the same study, they found that girls preferred red and purple. The reason for this is thought to be that purple is one of the intermediate colors that may appeal more to the child due to its mixture of blue and red. In a study on space color preference, Gyu Park (2014) found that the saturation of color in interior room wall colors was associated with the preferences of 7-11 year old children in the red, green, blue, and purple-toned color family, and the lightness quality of color was associated with the preferences of 7-11 year old children in the yellow color family. In the same study, it was reported that girls preferred red and purple more than boys. However, the studies given above are aimed at children under the age of 5 or above the age of 7. When the studies given above are examined, it is seen that they focus on children under the age of 5 or over the age of 7. For example, Kılıç (2011) investigated the color preferences of children over the age of 7 for a limited number of dresses. Other studies have also focused on space color preferences. The least focused age group in the literature is children aged 48-84 months. In this study, only the color preferences of 48-84-month-old children were tried to be handled in a wider context (likes/dislikes colors, objects, living-inanimate objects, space, etc.)

The results of a study on hospital environments also showed that children prefer environments with colorful decorations (Nourmusavi Nasab et al., 2020). The results of a recent study showed that the hue, saturation, and value of colors for preschool indoor and outdoor playgrounds were influenced by the hue, saturation, and value of colors; five- to six-year-old children preferred cool colors with a saturation and value of 75 for indoor playgrounds and light colors with a saturation of 75 and value of 50 for outdoor playgrounds (Mousavi & Tabatabaei, 2022). As seen in the research results it is understood that young children prefer cooler colors and colored decorative materials in interior spaces and interior decorations.

Children's color liking may also be related to emotions. The results of Boyatzis and Varghese's (1994) study showing that children tend to respond positively towards bright colors (e.g. pink, blue, red) and negative feelings towards dark colors (e.g. brown, black, gray) are also evidence of the relationship between colors and emotions. In the same study, it was found that emotional reactions to bright colors became more positive with age and that girls in particular preferred brighter colors and disliked darker colors. The results of another study in which color and emotional preferences were determined showed that blue was preferable to red for seven-year-olds (Meerum Terwogt & Hoeslma, 1995). This result is

evaluated as a positive response to blue. The results of a study on the relationship between food type and color preferences of 5-9 year old children are quite interesting. It was found that children chose candies in red, green, yellow, and orange colors, respectively (Walsh et al., 2012).

As can be seen in the relevant literature, some of which is given above, there are studies in which the color preferences of children/young people of different ages and/or object preferences are associated with various variables (Baniani, 2022; Mohebbi, 2014; Xu et al., 2022). The color preferences of children aged 48-84 months is an area where less investment is made. Our knowledge about the color preferences of 48-84 month old children is limited. However, until now, there has not been enough research on the color preferences of different natural/artificial objects involving a large group of participants.

### ***Current Study***

In the present study, children's color preferences for their top three favorite and least favorite colors, as well as their color preferences for eight types of objects (four types of clothing, two places, one animate and one inanimate objects) were comprehensively examined with a large group of participants. Thus, more detailed data on the color liking and preferences of 48-84-month-old children were gathered compared to existing research. For the reasons explained above, it is thought that the study will contribute to the literature. Thorough understanding of children's color preferences for various objects is an important issue for educational psychology from a theoretical point of view, teaching material and environment design fields, interior and exterior design fields, and toy and clothing manufacturers for children. It is thought that the results of this research can contribute to the field of educational psychology, instructional material design, all sectors producing for children, and cultural pedagogy by determining children's color preferences. In line with the above-mentioned conceptual framework, The research problem addressed in this study is that the color preferences of Turkish children aged 48-84 months have not been extensively investigated.

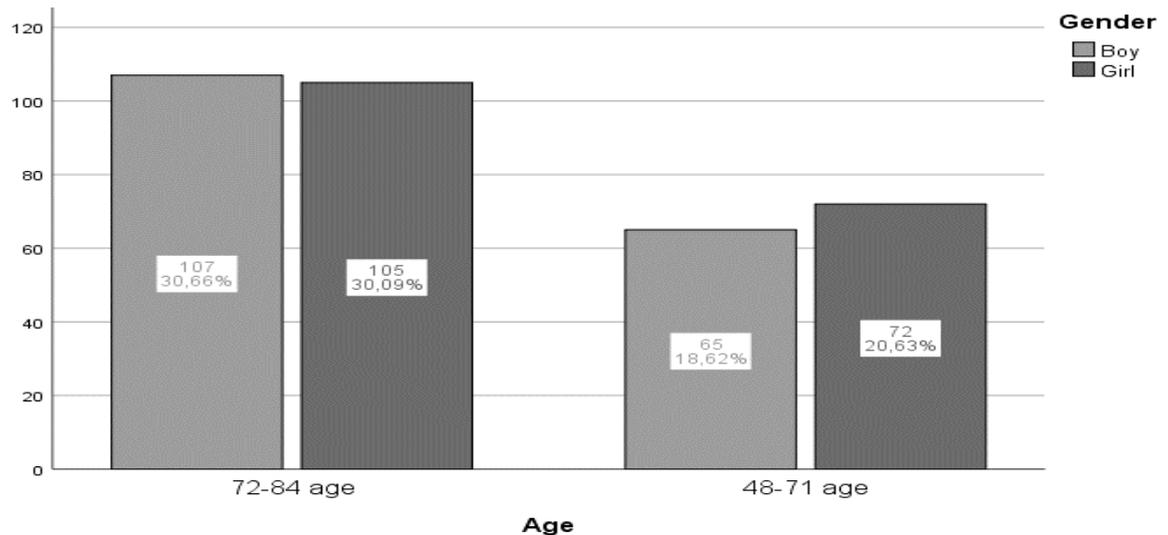
This study aims to determine the distribution of 48-84-month-old children's color preferences for their favorite/disliked three colors and eight types of objects according to gender and age levels. The following questions were sought to be answered in the study: (1) What are the three favorite colors of boys and girls aged 48-84 months? (2) Which colors do 48-84-month-old boys and girls prefer the most for artificial/natural objects such as balls, school, bags, houses, t-shirts, trousers, hair, and trees?

### **Method**

This is a descriptive study. The study model is a general survey model. In general survey models, to make an inference about the population, a survey is conducted based on the sample determined from the population (Creswell, 2012). In this study, the three favorite/disliked colors of 48-84-month-old children and their color preferences for objects and objects were described as they exist to make inferences about the population. For this reason, it can be said that the general survey model is suitable for the study.

### ***Study Group***

The study group consists of 48-84 months old children studying in Hendek district of Sakarya province. A total of 359 individuals participated in the study, who were determined by convenience sampling and whose parents' consent was obtained for voluntary participation, participated in the study. Demographic data for the participant students are given in Figure 1.



**Fig 1.** Demographic data for the participant

When Figure 1 are analyzed, 60.75% of the participants (212 people) were 72-84 months old and 39.25% were 48-61 (137 people) months old. Among the 72-84-month-old participants, 30.66% were boys (107 people) and 30.09% were girls (105 people). Among the participants aged 48-71 months, 18.62% were boys (76 people) and 21.47% were girls (82 people). A total of 359 people participated in the study. The data from three participants whose data were invalid were excluded from the data set.

#### ***Data Collection Process***

Data were collected through demographic information and two questionnaires. First, voluntary consent was obtained from the parents of the participants. Then, interviews were conducted with the participants in the places determined by the authorities in the schools. The colors of the children participating in the study were confirmed by their knowledge teachers. Interviews with participant children lasted 7-10 minutes on average. After the interviews were completed, the data set was created. For the first study, children's favorite/disliked color names were first extracted, and then each color was assigned a numerical code. If more than one color name was mentioned in response, it was coded as "number 25 is very colorful". Conditions in which the participant children did not want to indicate a second or third color preference were coded with the label "No color number 26", and colors that referred to sports team or person names (e.g. Fenerbahce color, Spiderman color, etc.) were coded as "number 27".

#### ***Data Collection Tool***

Two questionnaires were used to gather the data for this investigation. In both social sciences and educational sciences, questionnaires are the main methods of data collecting (Ekiz, 2009). The survey orientations linked to color preferences were established as the questionnaire forms were being created after a research of the literature. Three colors were typically requested in the studies, it was noted. The participants in this study were first verbally questioned about their three favorite and least favorite colors. Second, the items and objects that kids their age group regularly come into contact with in their daily lives and surroundings were identified. According to the literature research, questions about children's preferred colors for indoor and outdoor spaces as well as textile products were asked.

According to the current research, it was decided to interview kids about their preferred colors for outdoor areas like their homes and schools, as well as for clothing like t-shirts and trousers. However, it was decided to include questions on color preferences for objects like bags, balls, and objects like trees and hair to the survey questions to reveal information about the color preferences of manufactured and natural objects. This decision was made in accordance with expert advice. The primary goal of this research was to identify children's preferred and least preferred colors. For this reason, the questionnaire questions were presented verbally, and the kids were asked to list their three favorite and least favorite colors, respectively, before answering the questions. The next step was to ask the kids to identify the item and choose their preferred color. researchers recorded children's responses on the questionnaire

forms as they were provided. For the content validity of the questionnaire forms, expert advice was sought. Regarding the format of the questions to be posed to children for Study 1 and the quantity of objects for Study 2, the opinions of two field experts and one measurement and evaluation expert were obtained. In accordance with the recommendations of the subject matter experts, the number of objects was increased to 8. After evidence was collected about the scope and comprehensibility of the survey questions, the data were collected. Expert opinion was taken for the survey questions. In line with the feedback from the experts, natural and artificial assets were determined.

#### ***Data Analysis***

The data in the study were analyzed using cross-tabular analysis. The approach of percentage and frequency analysis is appropriate when the data are categorical variables (Pallant, 2020). On categorical variables, cross-tabulation was utilized to generate comprehensive data. However, participants' opinions on a variable topic like preference may also include extreme values. In fact, it was found in this study that a tiny proportion of children offered names of colors they like, including gray, dark navy blue, dark green, and light blue. However, a small number of color preferences were included in the data set as it is under the objective of the study as the objective of the study was to report the situation as it is. With the help of the SPSS 25.0 application, the data were examined.

#### **Findings**

In this study, the favorite/disliked colors of 48-84-month-old boys and girls and their color preferences for space, animate and inanimate objects were investigated. For this purpose, firstly, the three favorite/disliked colors of 48-84-month-old children were determined. In the second stage, children's color preferences for various places, animate and inanimate objects were determined.

#### ***Study 1***

For Study 1, the % findings obtained from the Cross Table analysis regarding the three colors that 48-84-month-old children like/dislike according to gender variable are presented in Table 1.

**Table 1.** The Three colors that 48-84-month-old children like according to gender and age variable

	Color	48-71 age		Total	72-84 age		Total
		Boy %	Girl %		Boy %	Girl %	
Favorite Color 1	White	4.6	2.8	3.6	2.8	1.9	2.4
	Yellow	13.8	5.6	9.5	17.8	6.7	12.3
	Orange	6.2	0	2.9	7.5	2.9	5.2
	Pink	4.6	47.2	27.0	0.9	42.9	21.7
	Red	23.1	18.1	20.4	19.6	12.4	16.0
	Purple	3.1	19.4	11.7	0	21.9	10.8
	Brown	1.5	1.4	1.5	0	0	0
	Green	4.6	0	2.2	3.7	2.9	3.3
	Blue	32.3	5.6	18.2	34.6	8.6	21.7
	Grey	0	0	0	1.9	0	0.9
	Dark	6.2	0	2.9	11.2	0	5.7
	Favorite Color 2	White	6.2	4.2	5.1	6.5	1.0
Yellow		9.2	15.3	12.4	18.7	6.7	12.7
Orange		7.7	2.8	5.1	12.1	2.9	7.5
Pink		7.7	29.2	19.0	3.7	22.9	13.2
Red		26.2	20.8	23.4	19.6	15.2	17.5
Purple		0	13.9	7.3	2.8	28.6	15.6
Brown		1.5	0	0.7	1.9	1.9	1.9
Green		20.0	5.6	12.4	12.1	7.6	9.9
Blue		15.4	8.3	11.7	15.9	9.5	12.7
Grey		0	0	0	0	0	0
Dark		6.2	0	2.9	6.5	3.8	5.2
Favorite Color 3		White	3.1	2.8	5.1	6.5	6.7
	Yellow	21.5	6.9	12.4	11.2	16.2	13.7
	Orange	12.3	11.1	5.1	6.5	5.7	6.1
	Pink	7.7	5.6	19.0	3.7	13.3	8.5
	Red	9.2	16.7	23.4	15.9	21.9	18.9
	Purple	3.1	15.3	7.3	7.5	9.5	8.5
	Brown	1.5	1.4	0.7	0	1.9	0.9
	Green	15.4	19.4	12.4	24.3	8.6	16.5
	Blue	15.4	13.9	11.7	17.8	10.5	14.2
	Grey	3.1	2.8	0	0.9	0	0.5
	Dark	6.2	4.2	5.1	5.6	5.7	5.7
	Very Colorful	1.5	0	0.7	0	0	0

As seen in Table 1, the first favorite color of 48-72-month-old girl participants was pink (47.2%), the second was pink (29.2%), and the third was green (19.4%). According to the results of all three applications, it can be said that the other colors most preferred by 48-72-month-old girls are red, purple, blue, and yellow. The first favorite color of 48-72-month-old boy participants was blue (32.3%), the second was red (20%), and the third was yellow (21.5%). Other colors that stand out among the preferences of 48-72-month-old boy participants are green and orange. The first favorite color of 72-84-month-old girl participants was pink (42.9%), the second favorite color was purple (28.9%), and the third favorite color was red (21.9%). The first favorite color of 72-84-month-old boys was blue (34.6%), the second favorite color was red (19.6%), and the third favorite color was green (24.3%). It can be said that the other favorite colors of 72-84-month-old girls are red and blue. While the color green is among the most preferred colors of the boy participants in this age group, it cannot be said that the girl participants prefer it very much. When all the data in the table are evaluated together, it is understood that pink and its shades are the most preferred colors for girls and blue for boys, red is among the leading favorite colors for all genders in both age groups, and yellow is among the other favorite colors of 48-84 month old girls and boys. In summary, children in this age group seem to like bright and warm colors more. The % findings obtained from the Cross Table analysis of 48-84-month-old children's three favorite/disliked color preferences according to gender variable are presented in Table 2.

**Table 2.** 48-84-Month-old children's three disliked color preferences according to gender and age variable

	Color	48-71 age		Total	72-84 age		Total
		Boy %	Girl %		Boy %	Girl %	
Dislike Color 1	White	4.6	2.8	3.6	4.7	6.7	5.7
	Light Yellow	3.1	2.8	2.9	2.8	0	1.4
	Light Orange	1.5	2.8	2.2	2.8	7.6	5.2
	Pink	13.8	1.4	7.3	27.1	4.8	16.0
	Red	0	4.2	2.2	4.7	1.9	3.3
	Purple	10.8	2.8	6.6	13.1	1.0	7.1
	Brown	9.2	11.1	10.2	5.6	11.4	8.5
	Dark Green	9.2	16.7	13.1	8.4	8.6	8.5
	Dark Blue	3.1	8.3	5.8	1.9	4.8	3.3
	Grey	9.2	6.9	8.0	3.7	5.7	4.7
	Black	35.4	38.9	37.2	25.2	47.6	36.3
	Very Colorful	0	1.4	0.7	0	0	0
	Dislike Color 2	White	4.6	5.6	5.1	5.6	10.5
Light Yellow		6.2	1.4	3.6	7.5	1.9	4.7
Light Orange		10.8	8.3	9.5	9.3	6.7	8.0
Pink		12.3	2.8	7.3	14.0	3.8	9.0
Red		6.2	4.2	5.1	4.7	5.7	5.2
Purple		4.6	1.4	2.9	18.7	3.8	11.3
Brown		21.5	22.2	21.9	8.4	19.0	13.7
Dark Green		16.9	25.0	21.2	6.5	9.5	8.0
Dark Blue		1.5	6.9	4.4	6.5	11.4	9.0
Grey		4.6	2.8	3.6	0	0	0
Black		10.8	16.7	13.9	11.2	15.2	13.2
Very Colorful		0	0	0	0.9	0.0	0.5
No color		0	2.8	1.5	1.9	1.9	1.9
Dislike Color 3	White	6.2	9.7	8.0	7.5	14.3	10.8
	Yellow	13.8	5.6	9.5	6.5	6.7	6.6
	Light Orange	10.8	12.5	11.7	7.5	2.9	5.2
	Pink	9.2	1.4	5.1	10.3	1.0	5.7
	Red	1.5	6.9	4.4	5.6	5.7	5.7
	Purple	6.2	2.8	4.4	9.3	1.0	5.2
	Brown	18.5	11.1	14.6	9.3	17.1	13.2
	Dark Green	13.8	13.9	13.9	20.6	16.2	18.4
	Blue	4.6	15.3	10.2	9.3	13.3	11.3
	Grey	6.2	9.7	8.0	6.5	14.3	10.4
	Black	7.7	11.1	9.5	6.5	7.6	7.1
	Very Colorful	1.5	0	0.7	0.9	0	0.5

Table 2 shows the findings regarding the least favorite colors of 48-84-month-old children according to gender and age variables. Accordingly, the most disliked color of 48-84-month-old children is black (37.2%). This is followed by brown (21.9%), green (21%), and light orange (11.7%). The first least favorite color for girls (38.9%) and boys (35.4%) aged 48-84 months is black. The second least favorite color for boys is brown (21.5%). The third least favorite color for boys was brown (18.5%). It can be said that the main colors that 48-71-month-old boy participants dislike the most are black, brown, pink, dark green, and light yellow. For girls, the second least favorite color was dark green (25%) and the third least favorite color was dark blue (15.3% N=28). The first color that 71-84 month old girl participants disliked the most was black (47.6%), the second color was black (15.2%) and the third color was brown (17.1%). Other colors that girls in this age group dislike the most are dark green and gray. For boy participants aged 72-84 months, the first color they disliked the most was black (25.2%), the second color was purple (18.7%), and the third color was dark green (20.6%). Another one of the most disliked colors by boys in this age group is pink. If the above table is evaluated as a whole, black is the most disliked color by the participants in all age groups. This is followed by brown. Another striking finding is that pink is among the most disliked colors, especially by boy participants. It can be thought that this may be a gender-related result.

### *Study 2*

In Study 2, participants' color preferences for eight types of objects in their immediate surroundings were determined and percentage values were calculated. The findings of Study 2 are presented in Table 3.

**Table 3.** Color preferences for objects

Objects	Age	Gender	White	Yellow	Orange	Pink	Red	Purple	Brown	Green	Blue	Grey	Dark	Very Colorful
Tshirt	4 8 - 7 1	Girl	6.9	11.1	6.9	22.2	12.5	6.9	1.4	0.0	16.7	1.4	9.7	2.8
		Boy	12.3	15.4	3.1	7.7	13.80	0.0	6.6	1.5	20.0	0.0	10.8	7.7
		Total	6.9	13.1	5.1	15.3	13.1	3.6	3.6	0.7	18.2	0.7	10.2	5.1
	7 2 - 8 4	Girl	13.3	8.6	5.7	25.7	2.9	14.3	1.0	4.8	10.5	3.8	6.7	2.9
		Boy	8.4	12.1	8.4	0.9	12.1	0.9	0.9	14.0	25.2	1.9	8.4	6.5
		Total	10.4	10.8	7.1	13.2	7.5	7.5	0.9	9.4	17.9	2.8	7.5	4.7
Trousers	4 8 - 7 1	Girl	9.7	6.9	5.6	12.5	11.2	4.2	2.8	5.6	25.0	4.2	9.7	2.8
		Boy	9.2	10.8	3.1	1.5	9.2	6.2	3.1	4.6	32.3	1.5	16.9	1.5
		Total	9.5	8.8	4.4	7.3	10.2	5.1	2.9	5.1	28.5	2.9	13.1	2.2
	7 2 - 8 4	Girl	6.7	6.7	4.8	16.2	13.3	7.6	2.9	5.7	12.4	5.7	18.1	0.0
		Boy	5.6	8.4	1.9	0.0	11.2	1.9	2.8	14.0	20.6	5.6	25.2	1.9
		Total	6.1	7.5	3.3	8.0	12.3	4.7	2.8	9.9	16.5	5.7	21.7	0.9
Bag	4 8 - 7 1	Girl	1.4	6.9	5.6	26.4	12.5	12.5	5.6	5.6	11.1	1.4	5.6	5.6
		Boy	3.1	6.2	4.6	4.6	26.2	0.0	0.0	9.2	20.0	0.0	12.3	10.8
		Total	2.2	6.6	5.1	16.1	19.0	6.6	2.9	7.3	15.3	0.7	8.8	8.0
	7 2 - 8 4	Girl	0.0	6.7	1.9	31.4	11.4	18.1	1.0	5.7	15.2	1.0	3.8	3.8
		Boy	2.8	10.3	4.7	3.7	16.8	1.9	0.0	4.7	28.0	4.7	15.9	6.5
		Total	1.4	8.5	3.3	17.5	14.2	9.9	0.5	5.2	21.7	2.8	9.9	5.2
Ball	4 8 - 7 1	Girl	4.2	4.2	0.0	29.2	18.1	15.3	0.0	4.2	24.6	0.0	1.5	7.7
		Boy	4.6	10.8	7.7	9.2	21.2	4.7	0.9	5.2	11.1	2.8	2.8	8.3
		Total	4.2	4.2	0.0	29.2	19.7	8.8	2.2	5.1	17.5	1.5	2.2	8.0
	7 2 - 8 4	Girl	3.8	5.7	4.8	28.6	22.9	8.6	1.0	4.8	11.4	0.0	3.8	4.8
		Boy	7.5	15.0	7.5	0.9	19.6	0.9	0.9	5.6	19.6	1.9	6.5	14.0
		Total	5.7	10.4	6.1	14.6	21.2	4.7	0.9	5.2	15.6	0.9	5.2	9.4
School	4 8 - 7 1	Girl	5.6	12.5	5.6	22.2	19.4	6.9	1.4	8.3	19.4	6.9	1.4	8.3
		Boy	12.5	6.2	7.7	7.7	15.4	1.5	4.6	10.8	15.4	1.5	4.6	10.8
		Total	8.8	9.5	6.6	15.3	17.5	4.4	2.9	9.5	17.5	4.4	2.9	9.5
	7 2 - 8 4	Girl	8.6	12.4	7.6	19.0	12.4	6.7	2.9	4.8	12.4	6.7	2.9	4.8
		Boy	10.3	14.0	11.2	2.8	10.3	1.9	2.8	9.3	10.3	1.9	2.8	9.3
		Total	9.4	13.2	9.4	10.8	11.3	4.2	2.8	7.1	12.4	6.7	2.9	4.8
House	4 8 - 7 1	Girl	6.9	9.7	16.7	19.4	9.2	1.5	3.1	4.6	8.3	0.0	1.4	2.8
		Boy	23.1	10.8	9.2	3.1	9.2	1.5	3.1	4.6	12.5	4.6	4.6	9.2
		Total	14.6	10.2	13.1	11.7	6.6	8.8	1.5	6.6	10.2	2.2	2.9	5.8
	7 2 - 8 4	Girl	9.5	9.5	5.7	12.4	11.4	12.4	4.8	8.6	8.6	2.9	3.8	1.0
		Boy	14.0	11.2	3.7	1.9	9.3	3.7	1.9	9.3	25.2	3.7	7.5	4.7
		Total	11.8	10.4	4.7	7.1	11.4	12.4	4.8	8.6	8.6	2.9	3.8	1.0

**Table 3.** Color preferences for objects (Continuation of the table)

Objects	Age	Gender	White	Yellow	Orange	Pink	Red	Purple	Brown	Green	Blue	Grey	Dark	Very Colorful
Hair	4 8 - 7 1	Girl	2.8	16.7	2.8	30.6	5.6	13.9	6.9	4.2	5.6	0.0	8.3	2.8
		Boy	3.1	7.7	6.2	1.5	6.2	1.5	10.8	7.7	23.1	3.1	27.7	1.5
		Total	2.9	12.4	4.4	16.8	5.8	8.0	8.8	5.8	13.9	1.5	17.5	2.2
	7 2 - 8 4	Girl	1.9	28.6	1.9	21.0	6.5	0.9	11.2	3.7	5.7	0	13.3	1.0
		Boy	6.5	13.1	1.9	0.0	9.5	13.3	3.8	0.0	17.8	0	38.3	0.0
		Total	4.2	20.8	1.9	10.4	8.0	7.1	7.5	1.9	11.8	0	25.9	0.5
Tree	4 8 - 7 1	Girl	4.2	2.8	2.8	6.9	8.3	8.3	6.9	44.4	1.4	1.4	5.6	6.9
		Boy	1.5	6.2	7.7	9.2	7.7	1.5	16.9	29.2	6.2	1.5	6.2	6.2
		Total	2.9	4.4	5.1	8.0	8.0	5.1	11.7	37.2	3.6	1.5	5.8	6.6
	7 2 - 8 4	Girl	1.0	3.8	4.8	12.4	2.9	1.9	6.7	57.1	1.9	1.0	3.8	2.9
		Boy	6.5	6.5	0.9	0.9	8.4	0.9	13.1	43.9	10.3	2.8	2.8	1.9
		Total	3.8	5.2	2.8	6.6	5.7	1.4	9.9	50.5	6.1	1.9	3.3	2.4

For the question "What color should your T-shirt be?", 48-71-month-old girl participants' preferences were pink (25.7%) and boy participants' preferences were blue (20.20%). 72-84-month-old girls preferred pink (25.7%) and boys preferred blue (25.2%) as their T-shirt color. Based on this finding, it can be said that girls prefer pink and boys prefer blue as t-shirt color. For the question "What color should your trousers be?", both girls (25.2%) and boys (32.4%) aged 48-71 months preferred blue. Similarly, both girl (18.1%) and boy (38.3%) participants aged 72-84 months preferred black as the color of their trousers. Based on this finding, it can be said that girls preferred pink and boys preferred blue as t-shirt color. In the question "What color should your bag be?", 48-71-month-old girl participants preferred pink (26.4%) and boy participants preferred blue (20%). 72-84-month-old girl participants preferred orange (31.4%) and boy participants preferred blue (28%) as bag color. Based on these findings, it can be said that girls in both age groups prefer pink and orange, while boys prefer colors identified with gender such as blue. In response to the question "What color would you like your ball to be?", 48-71-month-old girl participants answered pink (29.2%) and boy participants answered red (22.2%). Similarly, girls aged 72-84 months preferred pink (28.6%), while boys preferred red or blue (19.6%). In the multi-colored option, it was determined that the participants mostly mentioned the color of their favorite sports team. Based on these findings, it can be said that little children prefer colors such as red and blue, which are also related to gender, as well as colors related to a football team as ball colors. It is understood that 48-71-month-old girl participants answered pink (22.2%) and boy participants answered blue (15.4%) to the question "What color should your school be?". It can be said that the participants in this age group mostly preferred pink, blue, and red as school colors. Girl participants aged 72-84 months mostly preferred white-red and blue (12.4%), while boy participants preferred white-blue (10.3%) and orange (11.2%) as school colors. Based on these findings, it is understood that children prefer colors such as pink-red-blue as school colors, which have a high correlation with gender.

It is understood from Table 3 that 48-71-month-old girl participants answered pink (19.2) and boy participants answered white (23.11) to the question "What color should your house be?". 72-84-month-old girl participants stated that they preferred pink-purple (12.4%), while boy participants preferred white (14%) and yellow (11.2%) colors for their home objects. Based on this finding, it can be said that girl participants prefer the color pink, which is mostly used indoors, and boy participants prefer the color white, which is more commonly seen as an indoor and outdoor color for houses in real life. Children's color preferences related to home seem to carry more traces of real life. To the question "What color do you want your hair to be?", 48-71-month-old girls answered pink (30.6%) and yellow (16.7%); boys answered black (27.1%) and blue (23.1%). Table 3 shows that 72-84-month-old girls preferred yellow (28.6%), black (13.3%), and orange (21%) as hair colors, while boys preferred black (38.3%), blue (17.8%) and yellow (13.1%). Another prominent hair color for both boy and girl participants is brown. Based on this finding, it can be said that young children mostly prefer black, brown, and yellow as hair colors in the realistic period. However, it was observed that some of the girls, albeit in small numbers, preferred unusual colors such as pink, red, purple, dark green, and green, while boys preferred blue. It can be thought that children with such unusual hair color preferences exhibit more creative attitudes, emulate the hair colors of dolls and fairy tale heroes, or that gender-related color preferences may be dominant. However, no correlational data were collected in this direction in the study. Table 3 shows that both boy and girl participants in all age groups answered brown in the question "What color should the tree be?". Girl participants aged 48-71 months preferred brown (44.4%), purple (8.3%), and pink (6.9%) as tree colors, while boy participants preferred brown (29.2%), green (16.9%), and pink (9.2%). Girl participants aged 72-84 months preferred brown (57.1%) and pink (12.4%) as tree colors; boy participants preferred brown (43.9%), green (13.1%), and red (8.4%). Based on these findings, it is understood that the participants of the study mostly preferred brown as the color of the tree, or pink-purple-red, which refers to the flowers of the trees, and green, which refers to the leaves.

### **Discussion, Conclusion and Suggestions**

The following findings were attained from this study undertaken to identify the preferred and least preferred colors of 48–84 month old boys and girls, as well as their color preferences for various objects. Pink was the participants' preferred choice among the other colors, which included red, purple, blue, and yellow, for girls aged 48 to 71 months. In our study, girls were more likely than boys to list purple as their top favorite color. For 48-71-month-old boy participants, the first favorite color was blue

and the other color was red. Green and orange are two more colors that stand out among the preferences of the 48-71-month-old boy participants. In conclusion, kids of this age seem to prefer bright and warm colors more. Children between the ages of 48 and 84 months dislike black, brown, green, and light orange the most. Black and brown are the most disliked colors by both girls and boys. It may be said that black, brown, pink, dark green, and light yellow are the primary colors that the 48–71 month old boy participants despise the most. Blue and dark shades of green are the second and third least popular colors for girls. Black is the color that participants who were 71-84 month old boys and girls dislike the most. The startling finding is that pink is one of the least favored colors, particularly among the boy participants. One can speculate that this is a gender-related outcome. According to Baniani (2022), the reason pink is disliked by boys is because it is thought of as a girl's color. It can be noted that our study's findings are consistent with those found in the literature on children's favorite and least favorite colors (Baniani, 2022; Meerum Terwogt & Hoeslma 1995; Mullen, 2005; Pranckevičienė et al., 2009). According to this survey, youngsters loved the colors blue, yellow, and red, while they disliked the colors black, brown, dark brown, and gray the most. This situation may also be related to emotions.

The predominance of the colors they like is also observed in children's color preferences for objects and objects in their immediate environment. For example, children mostly preferred red, blue, pink, and yellow colors for objects such as balls and t-shirts. It can be said that the percentages of the color preferences of these objects vary according to gender. For clothing items such as trousers, 72-84-month-old boys preferred black color more than the blue color, while this was the opposite for 48-84-month-old boys. Younger boys preferred blue color more than black color for trousers. Although black is also the most preferred color for older girls, the most preferred trouser colors for both younger and older girls are blue and pink. It can be said that children's color preferences for clothing items partially overlap with the results of Pranckevičienė et al. (2009), who found that girls prefer bright colors (pink, yellow, sky blue, spring green, orange) and boys prefer darker shades (blue, green, brown, black) in their clothing habits. The results of this study are similar to the results of Baniani's (2022) study that the most preferred colors of primary school students' clothing are red, blue, and black, and the color preferred more by boys is black. However, it was observed that the clothing color preferences of young children differed from each other in terms of black, pink, and white colors for trousers and t-shirts. For this reason, it may be suggested that clothing color preferences should be addressed specifically for each clothing item and the reasons should be questioned instead of generalizing.

It was concluded that 48-71-month-old children's color preferences for places such as home were orange and pink, while their school preferences were pink, red, and blue. The home color preference of boy participants in the same age group was white, while the school color preference was red and blue. Children's color preferences for places such as home may be more influenced by the colors they like or the colors of the houses they live in. The reasons for these preferences are also worth investigating. Studies on the colors of facilities for young children indicate that although bright colors are used, most of the walls are white and gray (Read, 2003). The most preferred colors for interiors such as bedrooms are white and blue (Baniani, 2022). In a study conducted by Read and Upington (2009) on interior color preferences, they found that girls prefer warm colors such as red and cool colors such as purple, while girls prefer colors such as yellow and orange in lower ranks. For this reason, they suggested limiting the use of yellow and orange colors in interiors. However, in our study, it is interesting that orange is among the first preferred colors in the color preferences of girls for a place like home. This result suggests that cultural context may also be effective in home color preference. However, it is recommended that young children take part in the color design of spaces for children (Maxwell, 2000). It has been determined by research that children take ownership of the environments- classrooms they design (Maxwell & Chmielewski, 2008). When all these results are evaluated together, it can be said that including children's color preferences in environments such as schools and homes can increase their sense of ownership of the space.

It is quite striking that the color preferences for an object such as hair, which is directly related to the child, are mostly realistic colors such as black and yellow. With the effect of the realist period, it was determined that the hair color preferences of especially older boys and girls were also close to reality. In addition, it was also found that unusual colors such as pink, red, and blue were preferred as hair colors, especially by younger boys and girls. However, blue is also one of the second favorite hair colors of older boys. This may be thought to be due to the cartoons that children watch, the heroes in

the fairy tales they read, the colors in their toys, or the overgeneralization of the usage area of gender-specific color.

The fact that children's color preferences for an entity such as a tree focus on colors such as green and brown can also be seen as a manifestation of the influence of the realistic period on color preferences. Similarly, it was determined that children imagined the spring-summer period in the color of the tree, and since trees bloom in colors such as pink-red-white during this period, some children said the appropriate color name for the flowers of the tree. Young children's preferences for object and entity colors seem to overlap with their favorite colors. Again, the most popular colors are red, pink, purple, blue, and yellow, which are correctly conceptualized at an early age. As a result, it can be said that children's color preferences reflect gender color attribution towards object colors, traces of the realistic period might influence preferences for object-entity colors, and especially color preferences for objects such as clothes may be identical to the most admired object. It is thought that children's liking may also affect their hair color preferences. For example, a child with black hair may emulate yellow hair color.

In this study, the children's responses regarding favorite and least favorite colors, as well as preferences for various objects and entities were determined. The children ranged in age from 48 to 84 months. Favorite color preferences in children primarily highlight gender. It may be advised to perform investigations on the association between gender and color preference in future study since a similar pattern might apply for the color preferences of items and assets. Future studies could investigate children's color preferences for spatial environments and the colors employed in their immediate surroundings. With the aid of the observation technique, it is possible to examine whether a child's preferred color schemes are similar to those of natural objects and entities like hair and trees. The creation of goods and materials for children can use children's preferred colors for things and people in children's picture books, course materials designed to concentrate students' attention, or in the process of classroom instruction.

#### **Ethical Considerations**

The studies involved human subjects, and all procedures performed were in accordance with the ethical standards of the institutional and/or national research committee. Permit of the ethics committee was obtained by the university ethics committee by the decision dated 14.12.2022 with no. 13. Each participant in study completed the informed consent process.

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