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Color preferences in children's drawings

Abstract:

Color is among components that are important for analysis and consideration when studying children's drawings. This article discusses children's psychological representations in drawing, its indication and significance in telling children's concerns and the color preferences in childhood, of both normal and challenged children. The authors analyze and synthesize a huge number of experimental studies of over half a century focusing on drawing and color choices of children to show their tendency of color use to express their attitude and emotional state.

Keywords: drawing, color preferences, childhood, emotional associations, self-image

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Children's drawings should be regarded as children's words.
Vygotsky, 1978
Their pictures can be a thousand words if you let them tell their stories.
Soundy, 2012

Drawing as children's pivotal psychological representation

As one of the most ancient activities [4], drawing in particular and visual arts in general can be employed for educational reasons and offer opportunities for learning while the engagement with visual arts is a pleasant and creative activity, popular in all ages, groups and environments [60]. In the majority of curriculums, engagement with visual arts is basic from a very early age stage, even from the birth of a child, in primary education. More specifically, drawing seems to be the most popular activity among those activities children choose to spend their time with in preschool settings [51; 52].

According to Vygotsky [66], observing the children during tasks/activities gives the preschool teachers important insight and effective way to understand how the child is thinking in order to accomplish a task. This view explains why a drawing can be seen as a scale of children's cognitive, psychological and emotional development [27], and why children's drawings have been interpreted developmentally, holistically, culturally and socio-culturally, have been considered to be a "fundamental childhood activity" [27; 3], and have attracted a lot of interest from psychologists, practitioners, artists and other experts [3]. Representations of children's unique ideas and individual thoughts can be actualized through the open-ended resources offered by drawing [70].

The established research into the inquiry of children's drawing or art places its beginnings at the end of the 19th century [32; 35; 47; 23; 61]. Various reports state that it originated in England [18], Italy [54], and France [45]. Whilst expressive language ability has associations with emotional understanding, other measures of creativity, such as drawing, have also been used as measures of social and emotional adaptation [40]. Drawing is an enjoyable, natural activity which can be used as a means of expressing emotion and feeling [7; 17; 37] and art therapy techniques are increasingly used by practitioners to explore children's perceptions of events, particularly those suffering from physical and mental health problems [39].

Color indication and significance in children's drawings

It has been suggested that there is a reciprocal interaction between color and emotion, with particular feelings being associated with color, and the combination of cognition that affect all bringing memories, feelings, and emotions to the forefront [42].

Apart from size and spatial disposition, the use of color may be also related to expression of affect [13]. Indeed, color was regarded as the language of feelings [e.g. 1; 34; as cited in 13]. It was maintained that one's feelings, conflicts and difficulties could be expressed by a process of coloring. Although research on the use of color was rare, there was some evidence to show that color might be an indication of nature of one's emotional life. Color is a possible resource, which is potentially available to children for expressing their feelings about the topic being drawn. It has frequently been argued in the literature that the child's choice of color is affected by the feelings which he or she holds towards the drawn topic [e.g. 1; 2; 5; 10; 31; 34; 69]. These claims have often been voiced by clinicians and art therapists [21; 34; 43; 50; 67] in relation to the observation and interpretation of color use in patients' artwork as part of assessment and therapy. In fact, children start to "feel" choose the colors by their mood and outlook very early. Luscher [46] concluded that the choice of color reflects the psychological qualities of the author and his health.

Color can have an important role within the mental health setting in enabling both therapeutic interpretations of emotional state and also as an intervention aid to facilitate exploration of emotion [53]. An analysis of children's drawings with a life-threatening illness found significant differences in their choice of color in comparison with that of "healthy" children [42], with their negative situation being reflected in the extensive use of "black". In the same way, pictures drawn by children receiving therapy for trauma have also tended to show a lack of bright color and an extensive use of black [33].

The colors of toys, drawing and coloring behaviors, and the language used within the environment may all contribute towards a child's emotional literacy and understanding [56]. "Red" has been found to convey considerable ambivalent emotional association, as it can be associated positively with warmth, love, and happiness or negatively to represent danger, anger, and sadness [9; 25]. There is often a lack of knowledge of the artist's preferences towards individual colors [13] and context and environment have not been taken into account when presenting the color sample [68].

Color is a salient presence in children's lives [9]. As well as having physical and aesthetic qualities, color is charged with emotional meaning [24; 30; 64]. For many years clinical psychologists have offered assumptions about the emotional significance of color. Goldstein [29] claimed that specific colors elicit specific emotional responses. The way that color is used within drawings can reflect and emphasize particular emotional states or qualities of the artist [13] with children using color in their artwork as a means of expressing their underlying emotional status. Generally, it is believed that bright colors emphasize positive qualities and dark colors emphasize negative qualities [20; 42]. 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. 8; 59].

Several studies had investigated children's emotional associations with colors [9]. Lawler and Lawler [41] found that preschoolers colored with a yellow crayon after hearing a happy story and with a brown crayon after hearing a sad story.

Boyatzis and Varghese [9] concluded by postulating that in early childhood, children began to form color-emotion concepts or schemas. 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.

The color blue is associated with comfort and security, orange is perceived as distressing and upsetting, yellow as cheerful, purple as dignified [6]. 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 [22; 44].

In a study examining color-emotion associations, Boyatzis and Varghese [9] 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 [36] 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 [9]. However, Saito [57] 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.

Color preferences in children's drawings

Studies have used color to infer the emotional experience of pain during hospitalization [e.g. 63] and the quality of parent-child attachment [e.g. 28]. The research by Burkitt and colleagues has provided the best experimentally controlled evidence that the use of colors in drawings is not arbitrary, but instead reflects emotional associations and preferences. In their studies, children were invited to color in pictures that they had either drawn themselves [14] or were predrawn [13] of different subjects (e.g. a man, a tree) characterized as positive, negative or neutral. In addition, the children completed a task to assess their color preferences. Results showed that children used their favorite colors for positive-related characters, their least favorite ones for negative-related characters, and colors with medium preference for neutral characters [see also 11; 16].

Human beings have the need and the ability to externalize and express their shared experience to other persons of the social group they belong to [66] and at the same time, they express a way of "self-discovery" [55, p. 7]. Regarding early childhood education, there has been a lot of research that has proven the connection between a child's drawings and the expression of its emotions and knowledge through the drawings [12]. For the young children "the art has great meaning" [62, p. 271] and their artworks reveal the lives of the children and are considered by them as "an extension of his or her human being" [62, p. 271] and projections of themselves [58]. Zentner [71] states that the preference of colors in early childhood education can be considered as a way of understanding children's emotions and spiritual mood. Zentner's research [71] about the relationship between the choice of color and emotions, showed that yellow (bright

color) was the main choice for the majority of children aged three and four, representing happiness; black was representing sadness and red was representing anger.

In their study of emotional understanding and color-emotion associations in children aged 7-8 years, Pope and colleagues [53] found in 40 children from two classes within a mainstream primary school in the North East of UK a tendency of using preferred colors to describe happy or unhappy states. The findings showed that blue was boys' choice to express a happy state, while purple is girls' choice. For indicating unhappy feelings, boys tended to choose purple and girls picked brown.

Table 1.

Percentage of children according to their color preference for describing happy and unhappy states

	Red	Orange	Yellow	Green	Blue	Purple	Pink	White	Brown	Black
Happy										
Boys	45.0	31.6	37.5	35.0	73.7	8.3	12.5	13.6	27.8	28.6
Girls	8.3	57.1	50.0	27.3	72.7	91.7	84.6	23.1	0.0	13.3
Unhappy										
Boys	55.0	68.4	62.5	65.0	26.3	91.7	87.5	86.4	72.2	71.4
Girls	91.7	42.9	50.0	72.7	27.3	8.3	15.4	76.9	100.0	86.7
N = 40 children (15 girls and 25 boys) aged between 7 and 8 years old (M=7.38, SD=0.49, age range 7.10–8.30) from two classes within a mainstream primary school in the North East of UK.										

The use of colors and the details on children's drawing may vary, due to the emotions they have about the specific topic, figure or item they choose to depict [71; 13; 12; 11]. Burkitt's et al.'s research [13] in United Kingdom has proved that children tend to use their "more preferred color" for the positive figures/items and the "less preferred color" for the negative figure/items [13, p. 445]. In addition, black has been the most commonly used color for the figures that generate negative emotions or have not been considered positive by the children [13].

Table 2 consolidated the results of the studies on **color preferences in childhood**, making it possible to identify the leading trend in the color preferences of children surveyed. 12 experimental works were used to compile the table: Uffelman (1881), Binet (1890), Shinn (1905), Gabbini (1893), Mardsen (1903), Myers (1908), Wooley (1909), Brazhas (1911), Prayer (1912), Valentine (1914), and Steplz (1932).

Given that various studies used different amounts of color stimuli, the data in the table includes the preferences of those colors that were mentioned at least in five experimental works. For easier understanding the number of color positions was limited by eight.

Table 2.

Color preferences in childhood

Color	Position of colors in color preferences (from high to low)								Average rank
	1	2	3	4	5	6	7	8	
Red	8	2	1	1					1.58
Yellow	3	4	1	1		1		1	2.00
Light / Dark blue	1	1	4	1	2			1	3.70
Brown		1		1	3				4.20

Green		3	1	1			1	2	4.75
Orange			2	1			2		4.80
Purple				2		2		1	5.60

As shown in table 2, findings of 8 studies showed that red color was ranked first in the list of children's color preferences, and in other cases it does not fall below the 4th position. This result gives us the right to consider red a "favorite" color in childhood, considering the fact that the all the experimental works used above, from the very first till the latest were carried out over half a century and in different countries.

Following red should be yellow used in 11 studies. In 9 of them, yellow also does not fall below the 4th position of preferences, and although yellow is less "popular" than red, children's positive attitude toward it considerably prevails over negative. Red and yellow – the colors of the "active side" are most adored in young children than any other color, as is evident from table 2 (compare the average of their ranks).

Short-wave colors of the spectrum – blue and green – are lower than red and yellow in children's preferences ranking. Besides, it would be strange to look at the low place in the preferences ranking of orange color: it was used by children in only five studies, but colors mentioned above, were used no less than eight.

Children's love of colors of the "active side" is found in their drawings. Mukhina's works [80] have shown that children of preschool and primary school age usually use "bright", "light", "clean" colors in their drawings. Their preference was so expressive to such an extent that children tend to use these colors when painting as often as possible, which in turn leads to the adult observer's point of view, that the images drawn by children are unrealistic (in terminology of Mukhina – "not imitative color"). So there are red and yellow houses, airplanes, people, trees, etc. Dark, cold, gloomy colors are used by children (especially under 5 years old) only in cases when adults ask children to draw something unloved and unpleasant for themselves. In these cases children could call the drawings and colors "black – dirty – not beautiful".
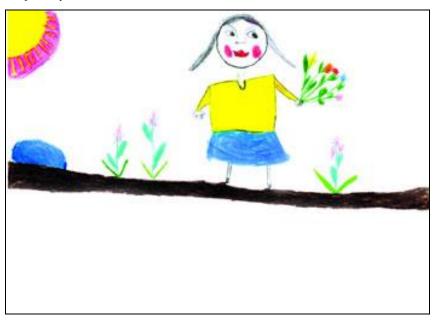
As shown in this study, to complete the task of drawing something "beautiful", "pleasant", "good" children 3 to 4 years often used bright and vivid colors – yellow, red, orange, blue, emerald green. As pointed out by Mukhina, "The beautiful color scheme for children of all countries is similar: the colors in most cases are warm and must be local and clean" [80]. The comparative analysis of the use of "not imitative" colors of children from different countries has shown remarkable consistency in the choice of colors for beautiful and not beautiful drawings. Children decided which drawings are beautiful and not beautiful according to the colors their peers from other countries had used in their drawings.

Therefore, despite differences in methodological approaches and techniques in the studies mentioned above, the tendency of preference of bright and light colors has manifested itself constantly. Besides, sex differences in color preferences in childhood are not significant, until 10 years of age [82].

Peter, boy, 6 years old. Drawing of the family.

It is a bright, intense, energetic, well-organized drawing. It corresponds to the age of the artist. There are adult and children groups distinctively in the structure of the family. Peter's younger brother and sister tend to be emotionally and physically closer to him. The relationship in the family might be psychologically close and equal. Mother appears to be the most vivid and emotional figure: Peter selects bright colors to draw his mother and even draws her first. Peter portrays himself as an adult. Peter's hands are shortened in comparison with other people's hands in the drawing. Usually this occurs in the drawings of children who consider themselves to be not skillful enough and doubt of their abilities. The sun and flowers are very common in children's drawings. But it's important to learn whether their appearance is unduly, for example, the sun appears inside the room. In this situation we can talk about the need for warmer relationships in the family. In Peter's drawing these details probably show a positive relationship in the family [81].

Polina, girl, 7 years old. Drawing of a human figure.

The figure of the girl is located at the top of the sheet, large and bright. Based on the colors the child uses, we can talk about the child's positive self-esteem, activeness and emotionality. Probably, Polina has high self-control, advanced intelligence and sociability. But she lacks stability (note the accented ground line and her little legs). From the psychological point of view, we are talking about self-unconfidence. Usually it happens in a family where a child is brought up: adults pay too much attention to the child, supervise and direct them every step. Thus, the child is deprived of possibility to show independence. Slowly getting used to this situation, the child is afraid to make a wrong move and waits for "valuable suggestions".

In the study of Bazyma [74] of color preferences of preschool children (5-6 years old) and primary school age with an 8-color test of Luscher, and in an unpublished paper by Kizilova and Belyaeva the above trend was also confirmed. Regardless of the sex of children, they often preferred purple (which shifted more towards the red color in Luscher's 8-color test), red and yellow, and rejected black, gray and brown.

To justify their choice of color children do not rely on the subject associations of color, but on the impression on them caused by color stimuli. Bright colors attract and please children, and by this way the child's view is reached out to these colors. Moreover, it should be noted that the impact of red, yellow and other bright colors does not irritate young children, but even soothes, enables children to feel comfortable. Rudolf Steiner, the founder of the Waldorf school, advised teachers to use red color for soothing children of three or four years old.

Such facts give reason to believe that the nervous system of a healthy child objectively needs energy impact of long-wave part of the spectrum (mostly): bright, vivid colors influence the central nervous system, without which it cannot function normally. Colors can be compared with the vitamins necessary for children's growth and development, and by analogy with the phenomenon of avitaminosis, it makes sense to speak of "color deprivation", which can lead to delays and distortions in normal neuro-psychic development of the child. In this regard, we can assume that the so-called "night fears" of primary school children at which a child cannot sleep in a dark room because of the fear of blackness, and requires open the door or turn on the light, connected to, inter alia, with the "color (light) deprivation". The fear of the child, thus, reflects the frustration, perhaps, of the heightened demand in the color impact on the central nervous system.

Color preference of challenged children

The research of Vander [65] showed that normal children use all colors except black and white, when neurotic and depressive children avoid yellow and red and use considerable black and some white. The author cited a case in which a child changed his color scale to black and brown during a period of depression. Psychotic children often have a definite fear of color or of certain colors, while dull children are generally apathetic to color.

Besides, children's negative self-image may be depicted by them using their least preferred color. According to Burkitt and his colleagues' study, children's color choices were affected by their feelings toward the topic drawn [13; 14; 15; 16]. Their research showed that children would use their least preferred colors for depicting the figure they disliked, preferred colors for the figure they liked [13; 14; 15; 16]. It implied that selecting the color for depiction might be a way for children to express themselves. From this perspective, children with emotional and behavioral disorders (EBD) may selectively use least preferred color for their human figure drawings (represented their self-portraits) due to their low self-esteem. In fact, it is well recognized that children with EBD tended to have negative self-image [e.g. 19; 38; 49] and

negative sense of self-worth [26]. Thus, it may be possible that their negative self-image may be depicted through the use of their least preferred color on their human figure drawings.

Conclusion

Normally developed children tend to use their favorite colors for positive-related characters and least favorite ones for negative-related characters, as well as red and yellow mostly in their drawings. Precisely how children come to associate different colors with positive or negative topics is an issue which needs to be addressed by further research. One possibility is that children acquire these associations from cultural conventions which they have seen and used in coloring books and other interactive media. This explanation has been suggested as a possible mechanism influencing children's associations of particular colors with facial expressions of emotions [71], and it may also help to explain the differential use of color when drawing emotion-eliciting topics.

Color in drawing is among the most important sources for understanding children's psychological wellbeing. It tells us about the child's attitude towards the drawn topic, as well as their mental health and emotional state. Although analyzing children's drawings is not such a difficult task, professional skills and experience are required to complete this task successfully, as there are a lot of nuances, interaction and relationship of separate symptoms and characteristics to be understood right. In addition, the person who analyzes the drawing tends to see it through their prism of personal experience and emotional state at the given time.

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