

Assessment of the Emotional State of Preschool Children Using the Lüscher Test

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Abstract. This article examines the features of assessing the emotional-volitional state of children in preschool educational organizations using the Lüscher test. The study was conducted among 228 children attending two types of preschools: those built from prefabricated metal structures and those of a traditional type. According to the results, children in the main group (prefabricated structures) more frequently chose auxiliary colors (gray, black, purple), placing them in the top positions. This indicates a prevalence of internal tension, anxiety, and defensive reactions. In the traditional group, the predominance of primary colors (blue, green, yellow) in the top choices demonstrated a higher level of positive emotional state, activity, and social adaptation among the children. The differences between the groups were found to be statistically significant ($p \leq 0.001$).

Keywords: children, emotional state, anxiety level, self-esteem, communication skills, Lüscher test.

Introduction. The Lüscher Color Test is a widely used psychodiagnostic tool that reflects unconscious psychological processes and makes it possible to assess an individual's emotional state and personality traits based on their color choices. When interpreting color preferences, special attention is paid to their connection to the subjects' personality traits and emotional state (2). In the context of the modernization of the preschool education system, the preservation of children's mental health and the formation of their personalities are going through a sensitive period, which gives particular importance to the timely diagnosis of their emotional state. Emotional disturbances can lead to communication difficulties, decreased cognitive activity, and problems adapting to the educational environment (1). The results of studies conducted by researchers show that color selection in the Lüscher test reflects not only the emotional state of preschool children but also their personality traits, such as anxiety levels, self-esteem, and communication skills (3).

The M. Lüscher test consists of 8 colors and helps to study and evaluate a child's psycho-emotional state at a given moment. It is composed of 4 primary and 4 auxiliary colors.

Primary colors: 1) blue — a symbol of calmness and contentment; 2) green — expresses a sense of confidence, decisiveness, and sometimes stubbornness; 3) red — signifies willpower, aggressiveness, assertive tendencies, and arousal; 4) yellow — indicates activity, a desire for social interaction, expansiveness, and cheerfulness. In an optimal state, in the absence of conflict, the primary colors should predominantly

occupy the first five positions. Additional colors: 5) violet; 6) brown, 7) black, 8) gray (0). These colors reflect negative tendencies: anxiety, stress, fear, and distress. The significance of these colors (as well as the primary ones) largely depends on their relative placement and distribution across positions (5).

Research Methodology and Materials. The study involved children from preschool educational organizations (PEOs): PEO No. 441, located in the Almazar district of Tashkent, and PEO No. 27, located in the village of Sangardak, Sariosiyo District, Surkhandarya Region. The study included PEOs of both traditional types (made of reinforced concrete and brick) and those built from prefabricated metal structures. The total number of children was 228. For the purposes of the study, the PEOs built from prefabricated metal structures were designated as the experimental group, while the traditional-type PEOs were designated as the control group. The Lüscher color test was used in the course of the research.

The data obtained were statistically analyzed using Microsoft Excel 2016. The questionnaire data were processed using a variational-statistical method by calculating the arithmetic means (M), standard deviations ($\pm\sigma$), and standard errors ($\pm m$). The significance of the differences between the arithmetic mean values was determined by the corresponding indicators ($p \leq 0.001$).

Results. According to the results of the Lüscher test, conducted among the preschool children who participated in the study, the sequence of color selection reflects a person's emotional state, internal needs, anxiety level, self-esteem, degree of communicative skill development, and current condition.

The children participating in the study were required to choose colors based solely on their own perception. The colors are selected in descending order of preference, forming eight positions: the 1st and 2nd positions indicate a strong preference (denoted as "++"); the 3rd and 4th positions indicate preference (denoted as "xx"); the 5th and 6th positions indicate indifference to the color (denoted as "=="); and the 7th and 8th positions indicate antipathy toward the color (denoted as "--") (4). 3rd and 4th positions - preference (indicated as "xx"); 5th and 6th positions - indifference to color (indicated as "==");

In the course of the study, based on the results of sequential color selection, children in the main group, compared to those in the control group, chose purple (22.8%) and brown (20%) as their most preferred colors in the first position. This indicates the presence of negative tendencies in the children, namely: emotional vulnerability, a need for emotional attachment, and, in some cases, internal conflicts. While the choice of blue and green at a moderate level (11–14%) reflects a desire for psychological stability, in the second position, a high proportion of gray indicates a desire for protection from emotional fatigue and external influences, and a high percentage of yellow indicates activity, a desire for communication, expansiveness,

and cheerfulness. In the third position, gray accounted for almost 38%, which points to strong emotional tension and probable internal stress in the children. The predominance of yellow (25.32%) and blue (23.85%) in the fourth position simultaneously signifies both emotional calmness and satisfaction, as well as a positive attitude. In the fifth, sixth, and seventh positions, gray and brown were primarily chosen, reflecting the children's attempts to maintain internal stability but also indicating a certain degree of fatigue, passive defensive reactions, internal emotional discomfort, and subjective dissatisfaction. In the analysis of the eighth position, a high percentage (31.7%) for black indicates the manifestation of maladaptive tendencies in the children. The results of the Lüscher test are presented in Table 1.

Table 1

Results of pupils at preschools built with traditional vs. prefabricated metal structures, %

Position	Prefabricated metal structures (main group)	%	Traditional (control group)	%
1st position ++	Purple	22.8	Green	20.0
	Brown	17.7	Yellow	14.6
	Blue	11.4	Gray	14.6
	Green	11.4	Purple	13.1
	Gray	10.3	Blue	12.3
	Red	8.9	Brown	10.0
	Yellow	8.9	Black	8.5
	Black	8.9	Red	6.9
2nd position ++	Gray	17.7	Yellow	20.0
	Green	16.5	Green	16.9
	Blue	15.2	Blue	15.4
	Brown	12.7	Red	13.1
	Purple	11.4	Gray	11.5
	Yellow	10.3	Purple	9.2
	Black	8.9	Black	8.5
	Red	7.6	Brown	5.4
3rd position xx	Gray	38	Red	19.2
	Purple	17.7	Blue	18.5
	Green	11.4	Green	13.9
	Yellow	8.9	Yellow	13.9
	Red	7.6	Purple	13.1
	Black	7.6	Black	8.5
	Blue	6.3	Gray	8.5
	Brown	2.5	Brown	4.6
4th position xx	Yellow	25.3	Blue	23.9
	Blue	16.5	Red	16.2
	Green	16.5	Yellow	15.4
	Red	15.2	Green	14.6
	Purple	8.9	Purple	10.8

	Black	8.9	Black	7.7
	Brown	6.3	Gray	6.9
	Gray	2.5	Brown	4.6
5th position ==	Gray	17.7	Yellow	20.0
	Yellow	15.2	Green	16.9
	Green	12.7	Brown	12.3
	Blue	11.4	Black	11.5
	Brown	11.4	Red	10.8
	Black	11.4	Blue	10.8
	Red	10.1	Gray	8.5
	Purple	10.1	Purple	8.5
	Gray	17.7	Green	23.1
	Green	15.2	Red	16.2
6th position ==	Brown	13.9	Brown	15.4
	Yellow	12.7	Purple	13.9
	Black	11.4	Black	12.3
	Blue	11.4	Blue	6.9
	Red	8.9	Gray	6.9
	Purple	8.9	Yellow	5.4
	Brown	22.8	Red	16.9
	Purple	19.0	Green	16.2
7th position --	Green	12.7	Brown	16.2
	Black	11.4	Purple	14.6
	Blue	11.4	Black	12.3
	Yellow	11.4	Gray	10.0
	Gray	7.6	Blue	6.9
	Red	3.8	Yellow	5.4
	Black	31.7	Blue	30.8
	Gray	19.0	Yellow	17.7
8th position --	Brown	12.7	Brown	14.6
	Purple	12.7	Purple	13.1
	Red	7.6	Red	13.1
	Yellow	7.6	Black	3.9
	Blue	5.1	Gray	3.9
	Green	3.8	Green	3.1

The results show that children attending preschools made of prefabricated metal structures exhibit tendencies toward passivity, defensiveness, and sensitivity in their emotional choices, as reflected by the high ranking of gray, purple, and black. In contrast, the traditional group shows a prevalence of activity, social adaptation, and an optimistic emotional state, characterized by a more frequent high-ranking selection of green, yellow, and red.

The mean values ($M \pm m$) of the Lüscher color test results were calculated for the 8 positions and compared between the groups (from preschools with prefabricated metal structures and traditional preschools). According to the results, children attending preschools made of prefabricated metal structures primarily ranked gray (4.7 ± 0.20 vs. 3.6 ± 0.20) and black (5.5 ± 0.20 vs. 3.4 ± 0.20) in the top positions, followed by colors such as blue, purple, brown, and yellow. It was found that the

number of children in the control group who chose primary colors was 1.3 times greater than in the experimental group, while for the selection of complementary colors, this figure was 1.4 times lower; the significance level was $p \leq 0.001$ (Table 2).

Table 2

Comparison of color indicators across groups

Colors	Prefabricated metal structure (main group)		Traditional (control group)		p
	M	$\pm m$	M	$\pm m$	
blue	4.4	0.20	5.4	0.20	<0.001
green	4.4	0.23	5.9	0.16	0.001
red	3.9	0.21	4.3	0.22	-
yellow	3.8	0.20	5.7	0.19	0.001
purple	4.7	0.21	4.2	0.21	-
brown	4.6	0.23	3.4	0.17	0.001
gray	4.7	0.20	3.6	0.20	0.001
black	5.5	0.20	3.4	0.20	0.001

The results of the study show that colors reflecting a positive emotional state and social activity were predominant in the control group, whereas the emotional state of children in the main group more often manifested passivity, internal defense mechanisms, and elements of stress. This is confirmed by the selection of gray, black, and purple colors in the top positions. The identified differences are statistically significant ($p \leq 0.001$), and, in our opinion, children's psycho-emotional state can be influenced by factors such as the architecture and structure of the preschool educational organization, sanitary and hygienic conditions, microclimate parameters, illumination levels, and the educational environment. This indicates the need to develop preventive measures aimed at preserving and strengthening the mental health of children in the preschool education system.

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