THE STUDY OF VISUAL MEMORY IN PRESCHOOL CHILDREN

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Abstract: The aim of the present study is to conduct a systematic analysis of the development of visual memory in preschool-aged children using Pavlova and Rudenko's "8 Objects" methodology. Visual memory constitutes a crucial component of cognitive development and plays a key role in processes such as learning, pattern recognition, spatial orientation, and the formation of intellectual skills. Understanding the dynamics of visual memory during early childhood is essential for the development of effective pedagogical strategies and the enhancement of cognitive abilities.

The study involved 20 children aged 4 to 5 years attending kindergarten, with the group evenly composed of 10 girls and 10 boys. All participants demonstrated typical cognitive development, with no observed impairments or difficulties in cognitive functioning. Pavlova and Rudenko's "8 Objects" methodology allows for both quantitative and qualitative assessment of visual memory through the memorization and reproduction of a set of objects, providing reliable data regarding the level of cognitive functioning.

The results indicate that preschool children predominantly exhibit an average level of visual memory development, corresponding to the age-specific characteristics of the 4–5-year-old group. This periodic activation of memory processes highlights the significance of the preschool period as a critical stage for the formation of cognitive skills. Furthermore, the data show that girls outperform boys in visual memory tasks. These gender differences may be explained by the complex interaction of cognitive, social, and play-related factors that stimulate memory and attention development. Moreover, the findings emphasize the need for systematic monitoring and targeted pedagogical interventions to support the development of visual memory in early childhood. It is recommended to incorporate educational and play-based activities that encourage the active use of visual memory to foster overall cognitive development.

The practical significance of the study lies in the possibility of adapting pedagogical approaches to the individual needs of children and identifying early signs of potential difficulties. The results can inform the more effective planning of early intervention programs aimed at developing attention, observation, and memorization skills. Systematic stimulation of visual memory contributes to the foundation for more complex cognitive processes in later stages, such as logical thinking and analytical reasoning.

The study provides empirical data that may serve as a basis for future research on the influence of social, play-related, and educational factors on the development of cognitive functions. In conclusion, the findings underscore the necessity of an integrated approach to preschool education, incorporating observation, assessment, and targeted stimulating activities.

Keywords: visual memory, preschool children, development, cognitive skills.

1. INTRODUCTION

Memory is a fundamental cognitive process that enables the perception, storage, and retrieval of information and plays a key role in the child's overall psychological development. During the preschool period, memory undergoes intensive development, as it is closely related to the formation of thinking, speech, attention, and learning (Cowan, 2014).

Classical cognitive models conceptualize memory as a system of interconnected components—sensory memory, short-term (working) memory, and long-term memory. Visual memory occupies a particularly important position within this structure, as it provides the mechanism through which visual images and visual symbols are processed and temporarily retained in consciousness (Pickering et al., 2022; Bobrowicz et al., 2024). At this stage, memory is predominantly spontaneous and automatic, while the capacity for deliberate memorization and recall develops gradually (Peneva, 2025).

Visual memory in preschool-aged children is characterized by the following features: the predominance of imagery-based over verbal memorization; a strong dependence on the emotional salience of the stimulus; higher efficiency when the material is meaningfully organized; limited capacity combined with rapidly increasing stability (Alloway, 2011). Contemporary theories emphasize not only memory capacity but also the encoding strategies, attentional processes, and semantic context that children use when memorizing information. For example, more salient or familiar visual content is remembered more effectively because it is linked to existing knowledge stored in long-term memory (Suda et al., 2024; Chung et al., 2024).

Research indicates that the development of visual working memory in preschool children is characterized by an increasing ability to retain larger amounts of visual information and to employ more complex memorization strategies (Heyes et al., 2012; Simmering, 2012). By the age of four, children develop visual sensitivity to image memory that is comparable to that of adults (Guo et al., 2024). This development is accompanied not only by a quantitative increase in the number of items that can be retained, but also by an improvement in the precision of visual representations, that is, the level of detail and accuracy of what children remember (Ferrara et al., 2017).

In addition to natural developmental processes, targeted interventions and stimulating activities—such as working with visual images, colorful materials, and play-based tasks including shape sorting and remembering object locations—can support the development of visual memory. Such approaches are particularly recommended in the context of preschool education, where visual tasks promote the integrated development of memory, attention, and language (Fitamen et al., 2024; Chen Lo & Wang, 2024).

The present study aims to determine the level of visual memory in children aged 4 to 5 years through the application of the "Eight Objects" method developed by Pavlova and Rudenko. The main objective is to provide an objective assessment of the characteristics and degree of development of visual memory in preschool age.

In accordance with this objective, the following research tasks were formulated: first, to assess the level of visual memory in preschool children; second, to conduct a comparative analysis of the obtained results between girls and boys; and third, to identify possible factors influencing the development of visual memory, such as interest in the task, concentration of attention, and individual visual abilities.

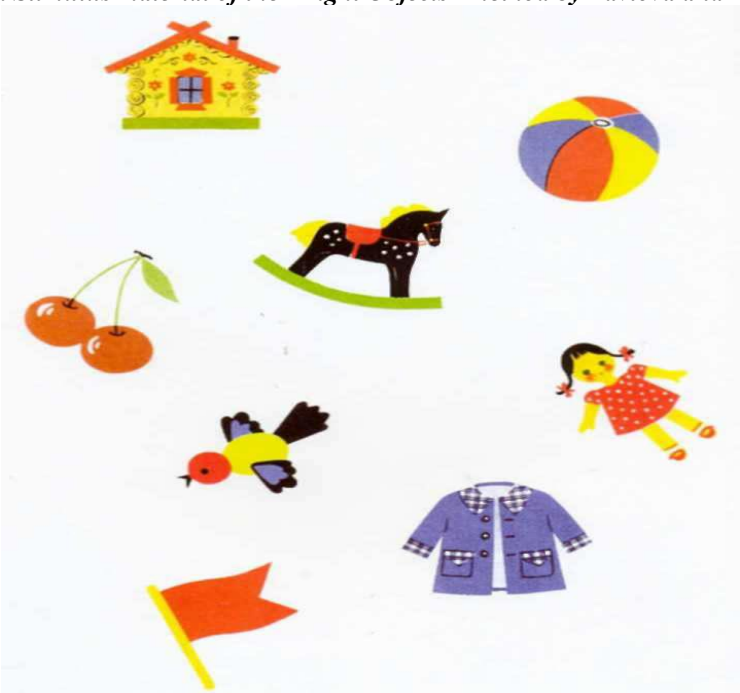
The object of the study is cognitive processes in preschool age, while the subject of the study is visual memory in children aged 4–5 years.

The empirical study was conducted with a sample of 20 kindergarten children, including 10 girls and 10 boys aged between 4 and 5 years. All participants demonstrated typical psychological development.

2. MATERIALS AND METHODS

To assess the capacity and accuracy of visual memory, the "Eight Objects" method developed by Pavlova and Rudenko (Pavlova & Rudenko, 2008) was used. The child is presented with an image containing eight objects (Fig. 1) for a fixed period of time—30–60 seconds. After the image is concealed, the child is required to name or recognize the objects. The evaluation criteria include the number of correctly reproduced objects and the level of visual memory, which is determined as follows: high level—at least five objects; medium level—three to four objects; and low level—fewer than three objects.

Figure 1. Stimulus material of the "Eight Objects" method by Pavlova and Rudenko.



Source: Pavlova, N. N., & Rudenko, L. G. (2008).

The study was conducted individually in a calm setting within an environment familiar to the children. Each child was given the same instructions. The results were recorded in a protocol.

3. RESULTS

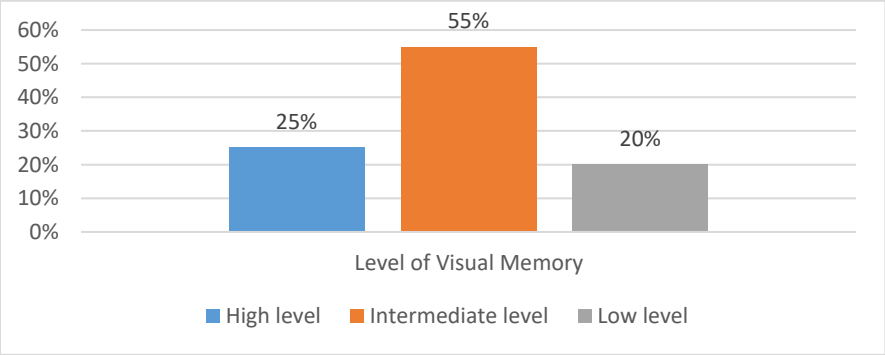
Table 1. presents the mean values of visual memory levels in children aged 4–5 years. The percentage distribution of the corresponding results is illustrated in Figure 2**.**

Table 1. Mean values of visual memory levels in the sampled children.

Level of Visual Memory	Mean (M)	Standard Deviation (SD)
High level	3,4545	3,98406
Intermediate level	5,0909	,83121
Low level	2,0000	,81650

Source: Author's own survey data (2026)

Figure 2. Percentage distribution of visual memory levels among the children studied.



Source: Author's own survey data (2026)

The data analysis indicates that 55% of the children exhibit an average level of visual memory, with a mean (M) of 5.09 and a standard deviation (SD) of 0.83. A high level of visual memory was observed in 25% of the children, with a mean of M = 3.45 and SD = 3.98. The remaining 20% of the children demonstrated a low level of visual memory, with a mean of M = 2.0 and a standard deviation of SD = 0.81.

Table 2 presents the mean values obtained from the analysis of differences in performance between boys and girls in the sample.

Table 2. Mean values in the sample for girls and boys.

Sex	Mean (M)	Standard Deviation (SD)
Girls	6,5	0,8
Boys	5,2	1,0

Source: Author's own survey data (2026)

Among girls, the mean score on the measure was 6.5 with a standard deviation of 0.8, whereas among boys, the mean score was 5.2 with a standard deviation of 1.0. The results indicate that girls demonstrate higher performance in this aspect of cognitive development. These differences may be explained by the complex interplay of cognitive, social, and play-related factors.

4. DISCUSSIONS

The obtained results indicate that the largest proportion of the children examined (55%) exhibit an average level of visual memory development. This corresponds to the characteristic features of the 4–5-year age group, during which memory processes are in an active stage of formation. A high level of visual memory was observed in 25% of the children, which may be explained by better-developed attention, richer experience, and a stimulating environment. A low level of visual memory was recorded in 20% of the participants, likely due to weaker concentration, fatigue, or individual developmental characteristics.

Gender-based analysis shows that girls, on average, remember more items compared to boys. At this age, girls often demonstrate greater attention to detail, which develops through participation in activities requiring observation and

memorization of visual elements, such as doll play or constructive tasks. Moreover, girls exhibit higher motivation for successful task completion, particularly in educational or play settings. In boys, higher motor activity may reduce concentration during the performance of static tasks.

5. CONCLUSIONS

The empirical study establishes that visual memory in children aged 4–5 years is predominantly characterized by a medium level of development. The analysis indicates the presence of gender differences in the preschool period, with girls demonstrating a higher number of correctly recalled items compared to boys. Pavlova and Rudenko's "8 Objects" methodology is confirmed as an adequate tool for assessing visual memory in preschool children. The obtained results provide a basis for the targeted planning of developmental games and exercises aimed at stimulating and enhancing visual memory during the preschool years.

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