

ISCKMC 2022**International Scientific Congress «KNOWLEDGE, MAN AND CIVILIZATION»****FEATURES OF SPATIAL REPRESENTATIONS IN PRESCHOOL CHILDREN WITH GENERAL SPEECH UNDERDEVELOPMENT**

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khovanskayao@mail.ru**Abstract**

The paper presents the results of the research of the state of spatial representations in preschool children with general speech underdevelopment (GSU) and proposes the approach to the directions of correctional work based on innovative methods. Firstly, the relevance of this study is in the fact that understanding of spatial relationships and connections is an important component of the mental development of children. Secondly, children with general underdevelopment of speech often experience difficulties in mastering space. Thirdly, correctional and speech therapy work on the formation of spatial representations in children with GSU is one of the aspects of the prevention of specific manifestations of dyslexia, dysgraphia, etc. at school age. Finally, this topic is relevant due to the lack of attention to this issue. The paper defines the stages of the study of the features of spatial functions in elder preschoolers with general speech underdevelopment: 1) preliminary stage – the choice of the experimental group and examination methods and preparation of material; 2) the main stage – experimental study of the state of spatial representations in preschoolers with general speech underdevelopment, processing of the obtained data; 3) planning directions of correctional work with children in accordance with innovative forms of work in correctional and developmental classes, outside classes, in other types of activities (animation, virtual excursions, music and physical education classes, fine arts, in classes for the formation of elementary mathematical representations, etc.).

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Keywords: Preschoolers with GSU, psychological and pedagogical experiment, spatial representations

1. Introduction

Spatial abilities are an important condition for a social life of a person. They develop from the first months of life and include an idea of the size, shape, orientation and location of objects. The general development of a preschooler and his preparedness for educational activities (correct, expressive, fluent and conscious reading, calligraphically and graphically correct writing, drawing, etc.) depend on the adequate development of spatial representations. The level of spatial functions in children with GSU significantly lags behind the level of formation of these functions in children with normal speech development. All this in general creates additional psychological problems for a child: “speech disorders determine the specifics in the development of children who find themselves in conditions of social deprivation, which makes it difficult to assimilate social experience” (Artishcheva, 2019, p. 11). As psychologists note, children with GSU have a specific formation of the cognitive sphere, including spatial representations (Akhutina, 2018; Filicheva, 2003; Lalaeva, 2006). For the formation and development of spatial representations in children with GSU, it is advisable to create a correctional and developmental environment, including the integration of various types of activities (development of speech, elementary mathematical representations, physical education, fine arts, music, etc.).

2. Problem Statement

In modern psychological and pedagogical literature, there is the increase in the number of preschoolers with GSU, including those with problems of spatial orientation. Many scientists have studied the development of spatial representations of older preschoolers with GSU (Ananiev, 1964; Filicheva, 2003; Lalaeva, 2006; Semenovich, 2002; Semago, 2011). The formation of spatial representations is directly related to the processes of thinking and speech. Therefore, the violations of this process will affect both the child's speech and his thinking. All this will create additional difficulties and become an obstacle to the further development of higher mental functions in children, which implies their unwillingness to be included in educational activities. Space orientation is the basis of human cognitive activity; therefore, the identification of this problem is especially relevant at preschool age: “with the acceleration of changes in society, significant changes occur in the psychophysiological and personal formation of children” (Ivanova et al., 2016, p. 89).

3. Research Questions

The paper presents the results of the study of the state of spatial representations in preschool children with GSU.

The research tasks are as follows: to select diagnostic methods and test their use with the children of the experimental group; to process the obtained data by quantitative analysis; to carry out a qualitative analysis and determine the levels of development of spatial representations in preschoolers with GSU; to propose the directions for corrective work, taking into account modern requirements. The research was performed in "Kindergarten No. 52", Taganrog, Rostov Region. The experimental group included 10 preschoolers aged 5.5–6 years with GSU of the third level.

4. Purpose of the Study

The purpose of the paper is to organize an experimental study of the state of spatial representations in preschoolers with general speech underdevelopment (GSU).

5. Research Methods

The research methods were as follows: children watching; documentation; psychological and pedagogical experiment; the methods of quantitative and qualitative analysis; the use of speech and picture material; the data interpretation and corrective work.

For the diagnostics of space orientation, the method by Inshakova, Kolesnikova, who used tasks based on practical developments offered by Sadovnikova and Tsvetkova (Inshakova, 2006). The survey methodology included tasks in pictures on the spatial thinking of children and use of pictures depicting objects, etc.

The child's performance of each diagnostic task was assessed in points and percentages and recorded in an individual document. When completing the task, we noted not only the quantitative result, but also the quality of its implementation. Preschoolers watching in the process of completing the task allowed identifying the level of formation of spatial representations in children with GSU.

The experiment had been performed from September to December, 2021.

6. Findings

In this part we present the results of the state of spatial representations in preschoolers with GSU and the direction of correctional work, taking into account innovative methods of work.

We used five blocks of tasks.

The 1st block was "Understanding prepositions from the picture."

The purpose was to study the understanding of prepositions, revealing in children the level of development of orientation skills in space.

The material was a picture depicting spatial objects. The children were given the instruction: "Show what you see above, below, on the tree...".

The analysis showed that children with GSU did not understand enough prepositions with spatial meaning and did not know how to establish spatial relationships of objects. They also did not know well the meaning of prepositions denoting spatial relations. They had the greatest difficulty answering questions like "Who was watching from behind the tree? Who crawled out from under the tree? Thus, the average level was in 6 children (60 %) and low – in 4 (40 %), high level was not found.

The 2nd block was the use of prepositions.

The purpose was to examine the understanding of the use of prepositions, revealing in children the ability to independently name spatial prepositions.

The material was a picture depicting spatial objects. The children were instructed: "Say...". They had to say where the squirrel was sitting, where the cat was going, and so on.

As a result of the analysis, it was found that, in contrast to the understanding of spatial prepositions, their use was formed much worse. A high level was not noted at all, only 2 children (20 %) showed an average level and 8 people (80 %) showed a low level. Most of the children did not complete the task independently, they poorly understood the meanings of spatial prepositions and there were difficulties in the use of prepositions with spatial meanings.

The 3rd block was "Orientation in the scheme of your own body".

The purpose was to study orientation in the "scheme of one's own body", revealing in children the level of mastering the space of their own body.

According to the verbal instruction of the teacher, the children were asked to first show the corresponding parts of the body, for example, the left arm or right leg and perform more complex tasks.

Summing up the results of the third block of tasks, it is necessary to note that for children of senior preschool age with GSU, the task of showing their left arm, right leg, left eye and left ear caused difficulties. Some of the children completed the task only by means of clarifications ("Is this right one?", "Which left one should I show?", "Right?", etc.). Sometimes stimulating help was required: leading questions ("Look carefully where your right leg is?", "Which hand do you eat with?"). Other children performed actions using explanations ("This is left hand, and this is right leg, etc.", "I always draw with my left hand", "Left hand is on the left"). Some children performed the task in reverse: instead of showing their right foot, they showed their left foot. It is important to note that if children with GSU made a mistake in differentiating left arm and right leg, then a similar mistake spread to other parts of the body – an eye, an ear. It was not easy for the children to complete the task: "Raise your left hand up, and stretch your right hand to the side." During its implementation, some preschoolers articulated with their lips, trying to remember the instructions they were said.

Thus, summing up the results of the tasks of the third block, it can be noted that 5 children (50 %) showed an average level of mastering of their own body space and 5 others (50 %) showed a low level.

The 4th block was "Orientation on a sheet of paper."

The purpose was to study the orientation on a sheet of paper, identifying in children the level of development of orientation skills on a sheet of paper.

The material was a sheet of paper, lined into 9 squares. A cross was drawn in the center of the sheet. Children had to perform appropriate actions on a piece of paper, they also had to verbalize them.

Analyzing the results of the 4th block of tasks, we found out that 4 children (40 %) showed an average level of development of orientation skills on a sheet of paper, the remaining 6 people (60 %) showed a low level. These tasks also caused difficulties for preschoolers, especially when they had to verbalize actions. To the teacher's question: "Tell me, in which corner did you draw a cross?" the children answered: "in the corner", "in the lower corner" or "in the right corner", "on the sidelines". Children had to repeat the instruction several times. They experienced difficulties in its perception, especially when full instruction was given.

The 5th block "Orientation on a sheet of paper rotated by 180 degrees".

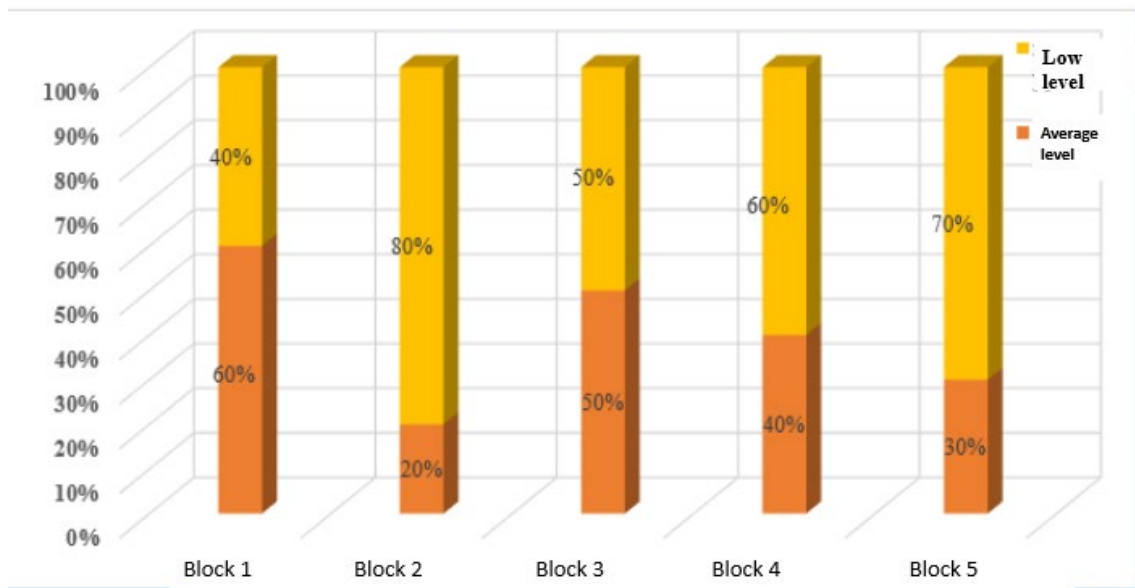
The purpose was to study orientation on a sheet of paper rotated by 180°.

The children were invited to take an imaginary walk in the park. For example, they had to determine on which side of them a bench of some color and other objects stood.

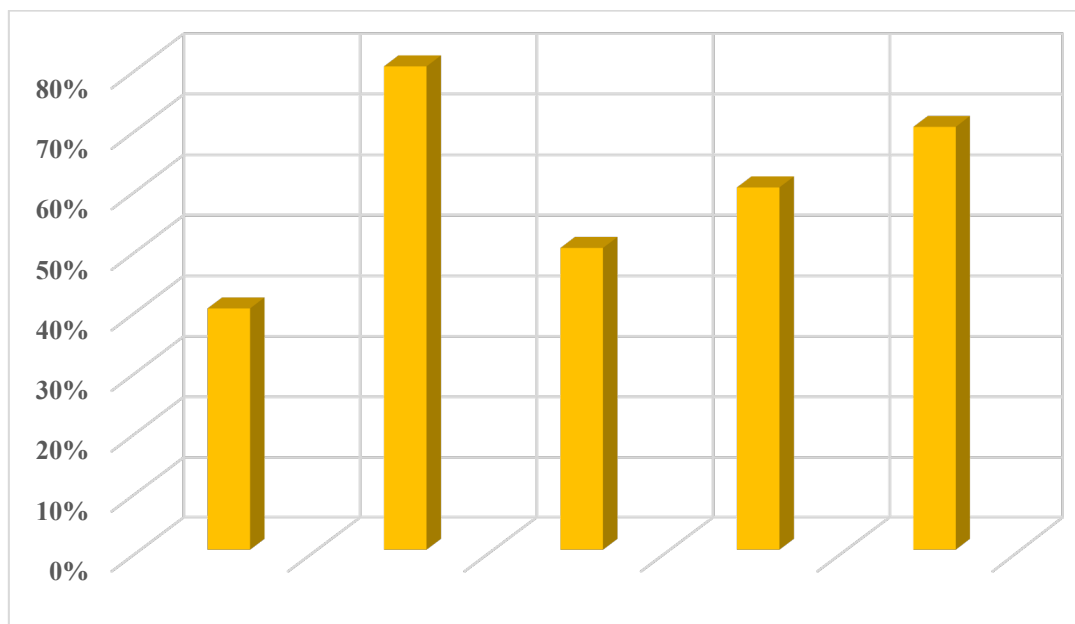
The analysis of the ability to navigate on a sheet of paper rotated by 180° revealed that 3 people (30 %) have an average level, and 7 people (70 %) have a low level. The children did the tasks incorrectly even with the help of leading questions, i.e. stimulating help: they found it difficult, gesticulated animatedly, got lost, turned on their own, turned a sheet of paper, looked for auxiliary landmarks, etc.

Thus, the results of the study of space orientation showed that children with GSU find it difficult to orient themselves when determining space directions. Many of them were characterized by a low level of formation of spatial representations. They also had difficulties using spatial prepositions.

Based on the results of the study of the level of formation of spatial representations for all five blocks, it was found that children with a low level of spatial representations prevailed in the group (60 % of the total number of children). The rest were the children with an average level (40 %). There were no children with a high level of formation of spatial representations. The results of the analysis were shown in the diagram (Figure 1).



(a)



(b)

Figure 1. Final results of the study of the level of formation of spatial representations in five blocks

The full mastering of spatial representations by preschoolers requires a phased, systematically organized process through the use of entertaining material and play activities. This is possible only with the targeted guidance of a speech therapist, parents, educators and various specialists of preschool educational institutions (physical education, artistic and aesthetic development, speech development classes, etc.) and through systematic training in various integrative classes. As it is noted by Zagrevskaya et al. (2018):

The individual manifestations of the properties of the nervous system and characteristics of perception in the training and upbringing of a child allows creating comfortable conditions for his development and also allows differentiating the methods and ways of interacting with him, which in the end will contribute to the most successful adaptation and integration into society. (p. 16)

Modern experience in the use of correctional techniques in speech development classes (Anisimova, 2014) makes it possible to plan correctional and developmental work with children on the formation of spatial representations with the development of plot and didactic games. The work consists in the formation in children of a sense of internal space and the interaction of children with external space. It is also important to use entertaining material in addition to the development of speech such as mathematics: logical and mathematical games and exercises that differ from template games in the unusual problem setting (find, guess, determine, count, solve), the unexpectedness of their presentation on behalf of cartoon characters, literary characters from fairy tales and stories. It is necessary to engage children in visual activity focused on the spatial arrangement of objects. Also there are some interesting methods such as “The nonverbal task was the odd-one-out test” (Henry, 2001; Henry et al., 2012), “Three

Boxes Task” (Diamond & Taylor, 1996), “The Automated Working Memory Assessment” (Alloway, 2007).

Taking into account new structure of speech therapy classes, we propose the use of a new type of activity – virtual tours available to children of this age (multimedia presentations, video tours) using various computer programs (Scype, PowerPoint, etc.), which is an innovative form of work. Let's give examples of fascinating topics of virtual excursions for children: “Road alphabet”, “What is inside the volcano?”, “What is a sign?”, “Where did the object disappear?” and others, after which there is an active discussion of the material, which not only develops the cognitive activity of children, their vocabulary, curiosity, but also spatial functions, i.e. mental cognitive processes (Lavrentieva, 2012).

One of the aspects of the work is the demonstration of cartoons like “One morning” in order to analyze different types of ball movements: right, left, up, down, in a circle etc. During the lesson, a teacher can use any episode of the animated film related to any trajectory of the ball's movements, and fix prepositions like “out of, under, from under, on, etc.”. This can also be done when watching other cartoons available to children of this age. Due to the combination of education and entertainment, not only the children speech and their thinking develop, but also an interest in understanding the world is formed.

7. Conclusion

Thus, the children with GSU, due to the peculiarities of their development, has a specificity in the formation of ideas about space. In this regard, timely corrective work is needed to develop spatial perception among preschoolers with GSU, taking into account innovative methods of work. This research can be continued in the direction of the development of new methods and techniques of work and a final experiment after the correctional and speech therapy work.

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