THE STUDY OF THE LEVELS OF COGNITIVE READINESS FOR LEARNING OF SENIOR PRESCHOOLERS WITH AUTISM SPECTRUM DISORDERS

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Summary

The article considers the levels of formation of cognitive readiness for learning of senior preschoolers with autism spectrum disorders. The theoretical and analytical work on studying the problem of formation of cognitive readiness for learning of senior preschoolers with autism spectrum disorders was based on the diagnostics of the levels of cognitive readiness for learning of children of this category and helped identify the components in its structure (memory, attention, imagination, thinking, perception). The criteria included auditory memory, voluntary attention, productive imagination, logical thinking, visual perception. The indicators included memorizing the list of words by ear, focusing on the task, correct construction of the whole based on parts of the image, description of the logical sequence of events on the plot, reproduction of the integrity of the image. Three levels of cognitive readiness formation were determined: high, medium, low.

The study of the levels of formation of cognitive readiness for learning of senior preschoolers with autism spectrum disorders of the experimental group was carried out according to the comparative principle by comparing their results with the indicators of senior preschoolers with autism spectrum disorders of the control group. A low level of formation of cognitive readiness for learning of senior preschoolers with autism spectrum disorders of the control group was empirically found out, which is caused by the insufficient level of formation of its structural components.

Keywords: autism, autism spectrum disorders, senior preschool age, cognitive readiness.

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1. Introduction

Recently, a number of works have appeared in special education, in which domestic scientists have tried to solve the problem of helping families raising children with autism spectrum disorders. However, the problem of developing special pedagogical conditions, correctional programs, methods that would take into account the peculiarities of mental and individual development of children with autism spectrum disorders of senior preschool age, adaptation of correctional technologies for the formation of cognitive readiness for learning, which are used in the educational practice of other countries, is still unsolved.

In the research of Ya. Bahrii & O. Bohdashyna the essence of autism is considered *(Tarasun, 2018)*. Researcher K. Ostrovska described the problems of providing psychological support for children with autism *(Ostrovs'ka & Kachmarik, 2013)*. Scientist L. Rybchenko studied the pedagogical conditions of teaching children with autism spectrum disorders *(Rybchenko, 2016)*. T. Skrypnyk investigated the issue of autism and designed a comprehensive program for the development of children with autism "Prosperity" *(Skrypnyk, 2019)*.

Researcher V. Tarasun described the concepts of development, learning and socialization of children with autism *(Tarasun, 2018)*. In scientific works on autism H. Khvorova described how to provide psychological and pedagogical support for children with autism spectrum disorders *(Tarasun & Hvorova, 2004)*. D. Shulzhenko studied the psychological correction of autistic disorders and formation of readiness of children with autism spectrum disorders to study at school *(Shul'zhenko, 2010)*.

Based on the above-mentioned studies, we can state that the problem of forming cognitive readiness for learning in senior preschoolers with autism spectrum disorders requires detailed research.

The aim of the article is to study the levels of formation of cognitive readiness for learning of senior preschoolers with autism spectrum disorders.

2. Materials and methods

To ensure the reliability of provisions, conclusions and solutions of the outlined tasks of the study a set of complementary methods was used: *theoretical:* comparison and systematization of the research material to determine cognitive readiness for learning of senior preschoolers with autism spectrum disorders; deductive – for a systematic description of the phenomenon under study; inductive – to establish laws, systematize the results of empirical research; *empirical:* a diagnostic set of tasks to identify the level of cognitive readiness for learning in senior preschoolers with autism spectrum disorders in the following components: memory: criterion: auditory memory; indicator: memorizing the list of words by ear (according to the adapted method of A. Luriia "Remember 10 words"); attention: criterion: voluntary attention; indicator: concentration of attention on the task (according to the adapted method of R. Niemov "Observation of fulfilling the proofreading of tables"); imagination: criterion: productive imagination; indicator: correct construction of the whole based on parts of the image (according to the adapted method of K. Torrance "What is missing?"); thinking: criterion: logical thinking; indicator: description of the logical sequence of events on the plot (according to the method of A. Bernstein "Sequence of events"); perception: criterion: visual perception; indicator: reproduction of the integrity of the image (according to the method of R. Niemov "Part-whole").

According to the results of theoretical analysis of the literature on the research problem, the content of the concept of "cognitive readiness" is defined as readiness that is formed and developed on the basis of cognitive needs in different activities, provides levels of psychological qualities that most contribute to normal entry into school life and is characterized by the existing cognitive orientation of senior preschoolers with autism spectrum disorders *(Pochkun, 2018 a)*.

Cognitive readiness for learning consists of many interrelated components of children's mental and speech development. The unity of the general level of development of mental processes (memory, attention, imagination, thinking, perception), cognitive interests; a wide range of conscious, systematized ideas and basic concepts about the world around; developed speech, elementary learning skills in children with autism spectrum disorders constitute cognitive readiness for school *(Pochkun, 2018 b)*.

The study of the levels of cognitive readiness for learning in senior preschoolers with autism spectrum disorders of the experimental group (*hereinafter* – EG) was carried out component by component, taking into account the comparative principle by comparing their results with indicators of preschool age children with autism spectrum disorders (*hereinafter* – ASD) of the control group (*hereinafter* – CG).

3. Research results

According the results of the empirical study of the auditory memory a high level showed children, who memorized the largest number of words (in the EG – 41.4 % of children, in the CG – 21.2 % of children). Children of senior preschool age with ASD, who partially memorized the material and had difficulties with concentration, showed a medium level (in the EG – 44.8 %, in the CG – 33.3 % of children). Low level showed children with ASD of senior preschool age who memorized 1-3 words and needed repeated instruction (in the EG – 13.8 % of children, in the CG – 45.5 %).

Table 1

Data on the levels of auditory memory formation in senior preschoolers with ASD (in %)

Levels	CG	EG	Difference
high	21,2	41,4	20,2
medium	33,3	44,8	11,5
low	45,5	13,8	31,7

The χ^2 criterion was used to test the hypotheses. According to calculations, we obtained $\chi^2_{\text{сп}}(7,63) > \chi^2_{\text{кр}}(5,99)$. Thus, the effectiveness of introducing in the EG of the pedagogical conditions for the formation of a component of cognitive readiness – auditory memory of children of senior preschool age with autism spectrum disorders – is confirmed.

An empirical study of the level of formation of voluntary attention of senior preschoolers with ASD involved the ability to focus on tasks. The survey revealed the following indicators: a high level was shown by children who made the least number of mistakes in performing the task (in the EG – 41.4 %, in the CG – 24.2 %). A medium level was shown by children with ASD, who made 5-8 mistakes in the task (in the EG – 41.4 %, in the CG – 27.3 %). Such children needed repeated instructions from an adult, constantly distracted. Children with ASD, who made the most errors and needed adult help and re-instruction, showed a low level (in the EG – 17.2 %, in the CG – 48.5 % of children).

Table 2

Data on the levels of voluntary attention formation in senior preschoolers with ASD (in %)

Levels	CG	EG	Difference
high	24,2	41,4	17,2
medium	27,3	41,4	14,1
low	48,5	17,2	31,3

By χ^2 criterion we obtained $\chi^2_{\text{сп}}(12,27) > \chi^2_{\text{кр}}(5,99)$. Thus, the effectiveness of introducing in the EG of the pedagogical conditions for the formation of the component of cognitive readiness – voluntary attention of children of senior preschool age with ASD – is confirmed.

An empirical study of the level of formation of productive imagination of senior preschoolers with ASD showed: a high level had senior preschoolers with ASD, who were able to fully reproduce the image (in the EG – 34.5%, in the CG –18.2 %). A medium level showed children, who partially depicted the integrity of the subject (in the EG – 44.8%, in the CG – 27.3 %). Children, who could not reproduce the image of objects, needed adult help, repeated

instructions, had difficulties with completing the task, showed a low level (in the EG – 20.7 %, in the CG – 54.5 %).

Table 3

Data on the levels of productive imagination formation in senior preschoolers with ASD (in %)

Levels	CG	EG	Difference
high	18,2	34,5	16,3
medium	27,3	44,8	17,5
low	54,5	20,7	33,8

By χ^2 criterion we obtained $\chi^2_{\text{сп}}(7,48) > \chi^2_{\text{кр}}(5,99)$. Thus, the effectiveness of introducing in the EG of the pedagogical conditions for the formation of the component of cognitive readiness – productive imagination of children of senior preschool age with ASD – is confirmed.

An empirical study of the level of the logical thinking formation in senior preschoolers with ASD showed that a high level had children who were able to determine the sequence of events (in the EG – 44.8 %, in the CG – 27.3 %). A medium level showed children with ASD who had difficulties with determining the sequence and verbal interpretation of their activities (in the EG – 37.9 %, in the CG – 30.3 %). A low level showed children with ASD, who could not explain the sequence of events on their own, needed re-instruction and help of an adult (in the EG – 17.3 %, in the CG – 42.4 %).

Table 4

Data on the levels of logical thinking formation in senior preschoolers with ASD (in %)

Levels	CG	EG	Difference
high	27,3	44,8	17,5
medium	30,3	37,9	7,6
low	42,4	17,3	25,1

By χ^2 we obtained $\chi^2_{\text{сп}}(13,15) > \chi^2_{\text{кр}}(5,99)$. Thus, the effectiveness of introducing in the EG of the pedagogical conditions for the formation of the component of cognitive readiness – logical thinking of children of senior preschool age with ASD – is confirmed.

An empirical study of the level of formation of visual perception of senior preschoolers with ASD showed that a high level had children, who named all the details of the missing subjects (in the EG – 41.4 %, in the CG – 30.3%); a medium level showed children who needed repeated instruction and named more than half of the missing details of the objects (in the EG – 37.9 %, in the CG – 27.3 %); low level showed children who needed help of an adult and named less than half of the missing parts of the objects (in the EG – 20.7 %, in the CG – 42.4 %).

Table 5

Data on the levels of visual perception formation in senior preschoolers with ASD (in %)

Levels	CG	EG	Difference
high	30,3	41,4	11,1
medium	27,3	37,9	10,6
low	42,4	20,7	21,7

By χ^2 we obtained $\chi^2_{\text{сп}}(8,23) > \chi^2_{\text{кр}}(5,99)$. Thus, the effectiveness of introducing in the EG of the pedagogical conditions for the formation of the component of cognitive readiness – visual perception of children of senior preschool age with ASD – is confirmed.

Taking into account the obtained indicators, we can generalize the levels of cognitive readiness for learning of senior preschoolers with ASD in the CG and EG using the arithmetic mean method. The results of the study of the levels of cognitive readiness for learning of senior preschoolers with autism spectrum disorders showed that a high level had 40.7 % (EG) and 24.2 % (CG) of children; a medium level –41.4 % (EG) and 29.1 % (CG) of children; a low level – 17.9 % (EG) and 46.7 % (CG) of children.

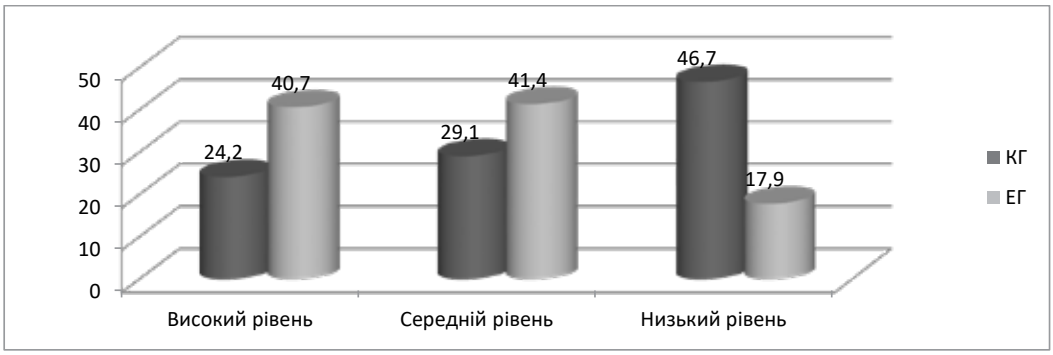

Fig. 1. Generalized levels of cognitive readiness formation in senior preschoolers with autism spectrum disorders

Thus, according to the results of empirical research an insufficient level of formation of cognitive readiness for learning of senior preschoolers with autism spectrum disorders in the control group was revealed, which makes it impossible to form this quality without a specially organized influence.

4. Conclusions

Thus, on the basis of comparative analysis of the data obtained in the process of empirical research, the specifics of the cognitive readiness formation in senior preschoolers with autism spectrum disorders in the CG was revealed, which is characterized by a low level of the structural components formation: auditory memory, voluntary attention, productive imagination, logical thinking, visual perception. The effectiveness of introducing pedagogical conditions and implementing the program "Piznaiko" showed a high level of cognitive readiness for learning of senior preschoolers with autism spectrum disorders in the EG. We see the prospect of further studies in a wider range of research on the levels of cognitive readiness for learning, taking into account the types of components of cognitive readiness, criteria, indicators; finding and adapting new methods to increase the levels of cognitive readiness for learning of senior preschoolers with ASD.

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