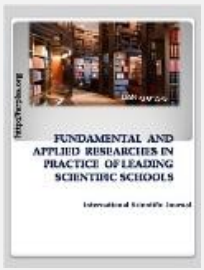

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Peculiarities of perception's formation of space of children in the contemporary information world

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Researches of psychological nature of perception of space in children have great practical importance as well as it is hard to name, at least, one field of human activity, where the ability to orientate in space wouldn't play such an essential role. This ability is necessary condition for overcoming egocentrism, successful cognition and an active transformation of reality. Free operation of spatial images appears as a fundamental skill that unites the various types of educational and labor activities.

To study the spatial experience of children at the age from 5 to 9 years, in the conditions, which demand certain spatial distinctions, we have conducted the research with the help of methodic named "Cats", built on the principle of bingo. We examined 158 children in Kyiv - pupils of kindergarten №303, pupils of 1st and 2nd grades of secondary school №228 and a grammar school of 1 level with in-depth study of foreign languages №327.

The task was to find among 6 squares with differently situated two cats on them one single square which would be identical to the sample.

As the findings of the study state, with age differences in the development of decentration between children who are too addicted to games in the virtual space and their peers, who are less involved in the world of computer games, are becoming increasingly tangible. Children who play a lot feel difficulties in finding the correlation of characteristics or attributes of objects with peculiarities from the observer's point of view, in understanding the possibility of different perspectives and points of view. It is also hard for them to focus on the position of other people, which differs from their own, namely, their development of decentration is being lingered.

Key words: spatial decentration; space perceiving; virtual games.

Introduction

Researches of psychological nature of perception of space in children have great practical importance as well as it is hard to name, at least, one field of human activity, where the ability to orientate in space wouldn't play such an essential role. This ability is necessary condition for overcoming egocentrism, successful cognition and an active transformation of reality. Free operation of spatial images appears as a fundamental skill that unites the various types of educational and labor activities.

An analysis of the literature on the problems of the formation of spatial perception in children shows that psychologists of different psychological schools (J. Piaget, G.Ebli, J. Smedslund, L.S Vigotsky, A. Leontyev, A. Luria, S.L.Rubinstein, A.V Zaporozhets, D.B El'konin, B.G Ananiev, L.F Obukhova, E.V Proskura, etc.) unanimously considered that necessary condition for the right formation of space perception in children is manipulating them with real objects in the real world.

From the very beginning child tries to get knowledge about properties of the object with practical actions with this object: it folds the pyramid, pushes the machine, then - rides a bicycle, runs with the ball, that is, as S.L. Rubinstein considered " the child gets to know space to such extent to which he seizes it" (Rubinshtein, 2015, p. 271). Enrichment of the practical experience of a child in productive activity is underlying the basis of development of spatial thinking and spatial decentration.

However, with the emergence of new information technologies living conditions of the modern children have changed dramatically. Computers, PSP players, game

consoles, and even mobile phones are increasingly pushing out of the lives of children's traditional games and communication with peers, thus, changing the conditions for the development of spatial perception.

The child gradually masters the ability to orientate in the surrounding space: at first, he/she practically masters space and his/her own body as a frame of reference, then he/she masters an orientation relative to another person, namely, he/she transfers the frame of reference from himself/herself to another, and only then does an orientation in space appear, independent of his/her own as well as the ability to change the reference points (Mukhina, 2009).

The development of spatial orientation and representation of space occur, tightly intertwined with formation of the sensation of the scheme of one's body, with enlargement of practical experience of children with a change in the structure of the object-game action associated with the further improvement of motor skills.

The forming spatial representations are reflected and further developed in the graphic, design, household and most importantly - in the gaming activities of children. Qualitative changes in the formation of spatial perception are associated with the development of speech in children, with the understanding and active use of verbal designations of spatial relations by them, as a rule, in the plot-role play (Zaporozhets, 2008).

In works of such famous psychologists as L.S. Vigotsky, A.R. Luria, A.V. Zaporozhets, L.A. Wenger and their colleagues it was found that the development of the perception of space is based on the formation in children of specific perceptual actions - actions aimed at examining objects and phenomena of the surrounding world.

Indeed, "... the child first learns the world with the mouth, then with the hands and then the vision lays the main bricks of that building of perceptions, which fully unfolds only at a much later age," A.R. Luria notes in a joint work with L.S. Vigotsky "Etudes from the history of behavior: Monkey. Primitive. Child " (Vygotsky, Luria, 1993, P.133).

In the process of mastering the space of the child generates the formation of such important property as decentration. From the personal reconceptualization of the world, its vision from the point of inner self, the child gradually proceeds to an analysis of what he/she sees and to an adequate display of this vision in his/her own drawings.

Analyzing the development of the perception of the preschooler's picture, Russian child psychologist V.S. Mukhina showed that the child gradually develops the ability to relate the drawing and reality correctly, ability to see exactly what is depicted on it; the understanding of its content improves in the process of activity of interpretation of the picture (Mukhina, 2009).

Foreign researchers (J. Piaget, R. Arnheim, P. Güllam) in the question of the peculiarities of children's perception, displayed in the picture, hold the opinion that at certain stages of ontogeny representations lie in the basis of the picture.

These authors are united with the understanding of children's perception as an active process which doesn't depict the reality exactly as it is but highlights certain structures and forms of it.

J. Piaget pays special attention to the consistent combination of parts in children's drawings, which is explained by syncretism, the undivided nature of visual images, which, in turn, has the characteristic features of the child's perception of actions, his/her egocentrism (Piaget, 1969).

Modern children, as a rule, are attached to the virtual world with not fully formed image thinking. Indeed, interaction in this world is carried out with the help of images, symbols, schemes, which affect the development of the perception of space. Replacement of the real experience of practical actions with symbolization and operations with familiar models impedes the full development of spatial decentration.

The process of spatial decentration, which is the one of the mechanisms of overcoming egocentrism, is the most dependent on environment, the change of which proceeds to a change of mechanisms of decentration, described by J.Piaget, J. Smedslund, M. Feffer.

Materials and Methods

To study the spatial experience of children at the age from 5 to 9 years, in the conditions, which demand certain spatial distinctions, we have conducted the research with the help of methodic named "Cats", built on the principle of bingo. We examined 158 children in Kyiv - pupils of kindergarten №303, pupils of 1st and 2nd grades of secondary school №228 and a grammar school of 1 level with in-depth study of foreign languages №327.

The task was to find among 6 squares with differently situated two cats on them one single square which would be identical to the sample (fig. 1).

Every of the 6 squares had the only one special distinctive characteristic – provision of cats relative to each other; other characteristics (number, color, form, size of cats) were the same in all squares.

This methodic was used for the first time almost 100 years ago by M. Basov (1931) and his student A. Neklyudova (1923) on Leningrad children whose parents were working (mostly workers of local factories) in the daytime and brought their children to so-called "ochag" - a precursor of the kindergarten, where children were only overseen – they were not taught (Neklyudova, 1924, p. 55-57).

Repeating this experiment with modern children, we, of course, expected significantly higher results than the one's of A.Neklyudova, because systematic studies conducted in modern kindergartens and schools (study design, conversations on pictures, consideration of illustrations in books, work with cubes of Koos and Rubik, drawing patterns from the sample, etc.), from our point of view, should develop in children a greater ability to correct the perception of even relatively complex images.

However, as it turned out, the results of our research almost coincided with the results of A.I.Neklyudova, despite the fact that children were brought up under different pedagogical influence. Comparative results are presented in Table 1 and in the Figure 1.

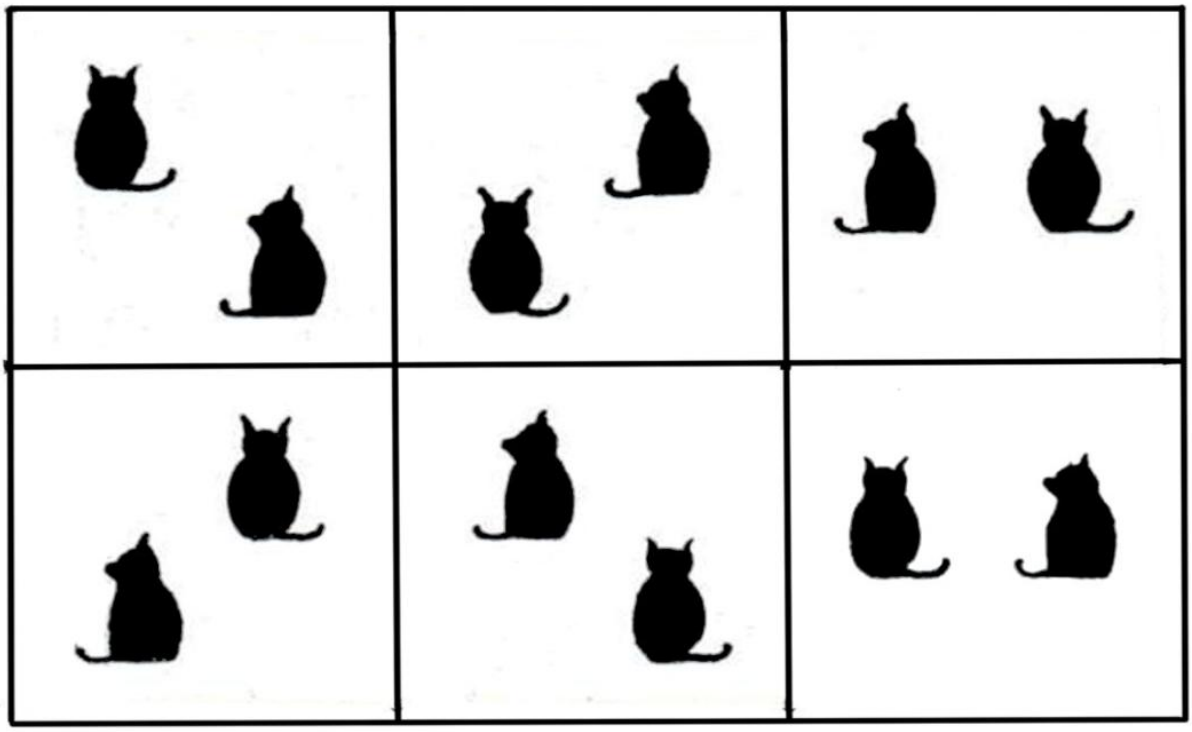

Fig. 1. Methodic of research of spatial experience in children"Cats"

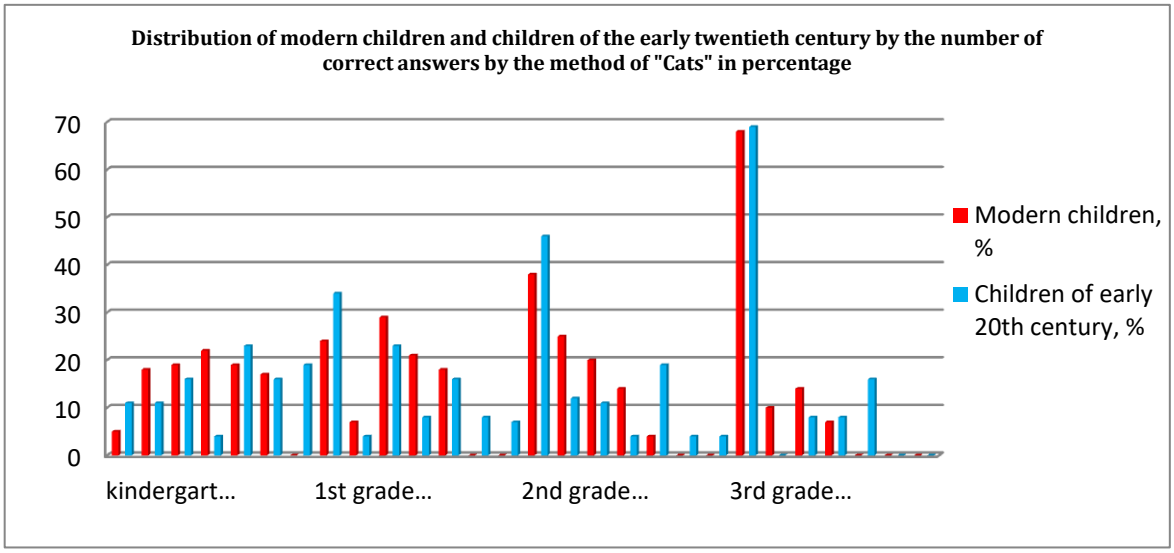

Fig.2. Distribution of modern children and children of the early twentieth century by the number of correct answers by the method of "Cats" in percentage

This table illustrates clearly that the maximum number - 6 correct answers by 5-6 year old modern children were given almost twice less than their peers in 1922, but the number of children who gave 5 and 4 correct answers is bigger among modern children. More than 4 correct answers gave 42% of current five-year pupils and 38% of five-year pupils of A.Neklyudova.

Responses of 6 year old children don't differ so much. Modern children coped with 6, 5 and 4th tasks in the amount of 24%, 7% and 29% in accordance to 34%, 4% and 23% of their peers in 1922.

A little more differ results of research of 8 year old children. The number of correct answers to all 6 tasks is 8% more in children early twentieth century - 46% to 38%, but with 5 and 4 tasks coped only 12% and 11% of 7 year old children compared with 25% and 20% of modern children. Thus, among modern children there was no one who would not give a single correct answer, but among their peers from the last century there were 4% of 7 year old, 7% - 6 year old and 19% - 5 year old children.

Very similar proved to be results of 9 year old children. With all 6 tasks coped 68% of modern children and 69% of their peers from the twentieth century; 5 and 4th tasks were dealt correctly by 10% and 14% of our pupils and only by 8% of surveyed pupils of A. Neklyudova.

The fact that over the past 100 years, the results have not changed significantly is a paradox, because children's lives nowadays is much more associated with working with planar images. In addition, we were a bit departed from the methodology applied by A.I.Neklyudova, which was held in the form of bingo, where children were asked to close all "gaming" the field large card (Fig. 2.3) with individual squares. In accordance, there may be increase in errors - putting a card number on the wrong area, child automatically doubles mistake because there remains a card that "must" be put incorrectly. Therefore, similar results may be indicative of deterioration analysis of planar images in modern children.

We decided to approach to this problem more differentially and conventionally, so we divided children into three groups: children who spend every day on the computer games a lot of time (group A), those who does not play (Group B) and those who play from time to time (group C) (Table. 2).

Based on data from Table 2 and diagram (Fig. 3) shows that among 5-6 year old children the largest number of correct answers to all 6 tasks was given by 9% children from group B and 6% by children from group A. Children from group C didn't solve tasks right, but with 5 goals coped correctly 46% of the non-playing children, 9% of children from group B and nobody from group A. Milestone of 4 correct answers overcame 32% of children from group B, 18% - from group C and 6% - from group A.

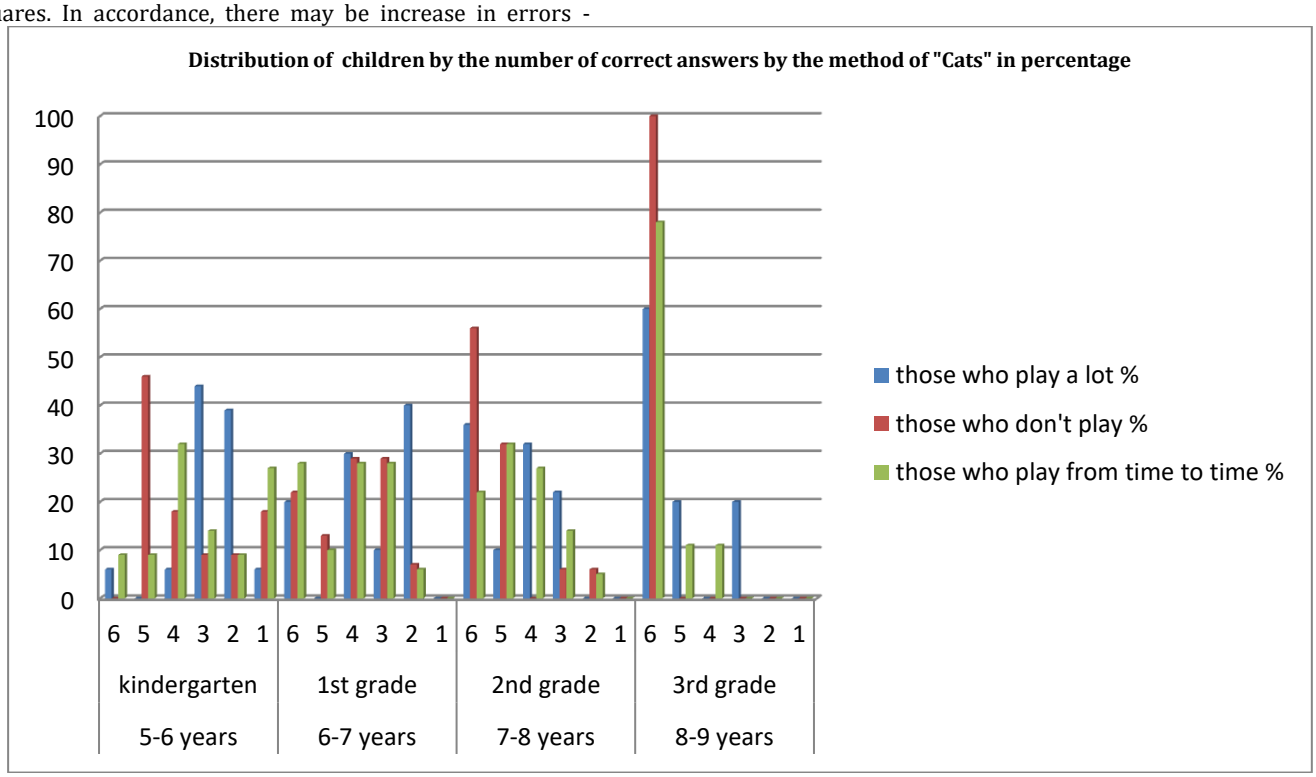

Fig. 3. Distribution of children by the number of correct answers by the method of "Cats" in percentage

More than with three tasks handled 64% of non-playing children, compared with 50% of children from group B and only 12% children from group A. Indeed, even in this age almost all children characterized by a high degree of self-centeredness, probably it is expressed the most in the behaviour of children who play computer games a lot.

Noticeably is leveled the position of children who play a lot aged 6-7 years. Number of students of grade 1 who gave correct answers to 6, 5 and 4 tasks among children who play a lot - 50%, and non-playing and those who play from time to time in accordance - 66% and 64%.Results of children who play a lot from the 2nd grade aged 7-8 with the correct answers to 6, 5 and 4 tasks make up 78% and yield to their non-playing peers by 10% and by 3% to their peers who play from time to time whose results are respectively 88% and 81%.

Even more notable differences can be observed between the results of children of group A and C in the third grade: 100% of non-playing children solved all 6 tasks correctly while only 22% of group B and 40%(!) of group A succeded

in this task. Correct answers to 6, 5 and 4th task were given again by 100% of non-playing children, 100% and 80% respectively - by children who play from time to time and children who play a lot.

We can assume that the wrong answers of children who play a lot were caused by admiration of games in a virtual environment, which lead to the identification of a picture with its inner perception. Children see what they want to see, because of the limited frames of their perception of virtual egocentric position. The process of decentration of these children compared to their non-playing peers slows down with age and these differences manifest themselves becoming stronger.

As the findings of the study state, with age differences in the development of decentration between children who are too addicted to games in the virtual space and their peers, who are less involved in the world of computer games, are becoming increasingly tangible. Children who play a lot feel difficulties in finding the correlation of characteristics or attributes of objects with peculiarities from the observer's point of view, in understanding the possibility of different perspectives and points of view. It is also hard for them to focus on the position of other people, which differs from their own, namely, their development of decentration is being lingered.

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Table 1

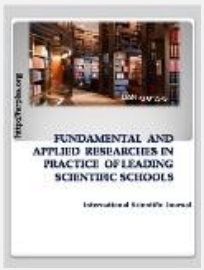
Distribution of modern children and children of the early twentieth century by the number of correct answers by the method of "Cats" in percentage

	5-6 years kindergarten							6-7 years 1st grade							7-8 years 2nd grade							8-9 years 3rd grade						
Number of correct answers	**6**	**5**	**4**	**3**	**2**	**1**	**0**	**6**	**5**	**4**	**3**	**2**	**1**	**0**	**6**	**5**	**4**	**3**	**2**	**1**	**0**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Modern children, %	5	18	19	22	19	17	0	24	7	29	21	18	0	0	38	25	20	14	4	**0**	**0**	68	10	14	7	0	0	0
Children of early 20th century, %	11	11	16	4	23	16	19	34	4	23	8	16	8	7	46	12	11	4	19	4	4	69	0	8	8	16	0	0

Table 2

Distribution of children by the number of correct answers by the method of "Cats" in percentage

		5-6years kindergarten						6-7 years 1st grade						7-8 years 2nd grade						8-9 years 3rd grade					
Number of correct answers		**6**	**5**	**4**	**3**	**2**	**1**	**6**	**5**	**4**	**3**	**2**	**1**	**6**	**5**	**4**	**3**	**2**	**1**	**6**	**5**	**4**	**3**	**2**	**1**
those who play a lot (group A)	*Amount of children*	*2*	*0*	*2*	*16*	*14*	*2*	*4*	*0*	*6*	*2*	*8*	*0*	*9*	*2*	*8*	*5*	*0*	*0*	*13*	*4*	*0*	*4*	*0*	*0*
	%	**6**	**0**	**6**	**44**	**39**	**6**	**20**	**0**	**30**	**10**	**40**	**0**	**36**	**10**	**32**	**22**	**0**	**0**	**60**	**20**	**0**	**20**	**0**	**0**
those who don't play (group B)	*Amount of children*	***0***	*10*	*4*	*2*	*2*	*4*	*6*	*4*	*8*	*8*	*2*	*0*	*10*	*6*	*0*	*1*	*1*	*0*	*18*	*0*	*0*	*0*	*0*	*0*
	%	**0**	**46**	**18**	**9**	**9**	**18**	**22**	**13**	**29**	**29**	**7**	**0**	**56**	**32**	**0**	**6**	**6**	**0**	**100**	**0**	**0**	**0**	**0**	**0**
those who play from time to time (group C)	*Amount of children*	*3*	*3*	*11*	*5*	*3*	*9*	*8*	*3*	*8*	*8*	*2*	*0*	*7*	*11*	*10*	*5*	*2*	*0*	*39*	*6*	*6*	*0*	*0*	*0*
	%	**9**	**9**	**32**	**14**	**9**	**27**	**28**	**10**	**28**	**28**	**6**	**0**	**22**	**32**	**27**	**14**	**5**	**0**	**78**	**11**	**11**	**0**	**0**	**0**



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