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Елены Олеговны Смирновой

культурно-историческая ПСИХОЛОГИЯ

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ПСИХОЛОГО-ПЕДАГОГИЧЕСКИЙ УНИВЕРСИТЕТ
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cultural-historical PSYCHOLOGY

The issue is dedicated
to Elena Olegovna Smirnova's 75th anniversary

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Guest Editors: O.V. Rubtsova, T.V. Akhutina

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NEW SOCIO-CULTURAL CONTEXT OF THE CHILD'S PLAY: IN DIALOGUE WITH E.O. SMIRNOVA

НОВЫЙ СОЦИОКУЛЬТУРНЫЙ КОНТЕКСТ ДЕТСКОЙ ИГРЫ: В ДИАЛОГЕ С Е.О. СМИРНОВОЙ

Introduction to the Rubric "New Socio-Cultural Context of Child's Play: in Dialogue with E.O. Smirnova" (for the 75th anniversary)

The rubric is devoted to the perspectives of studying contemporary children's play in the framework of the Cultural-Historical Scientific School. The articles, presented in the rubric, discuss the evolution of the ideas about play and ways of its development in preschoolers. A brief overview of scientific approaches, based on the ideas of L.S. Vygotsky about children's play, is presented. A particular place among these approaches belongs to the concept, elaborated by Elena Smirnova, who studied the development of will and arbitrariness in early ontogenesis, as well as the role of the adults in the formation of these processes in children.

Elena Smirnova founded the first "Center for Psychological and Educational Expertise of Play and Toy", which is unique in Russia, and where under her guidance a method of psychological and educational expertise of play and toys was elaborated. Based on this unique method, a series of research works were conducted, focusing on the analysis of contemporary children's play, as well as on assessing the impact of play materials and surrounding environment on children's play. Today the Center, founded by Elena Smirnova, continues its work in the structure of the "Center for Interdisciplinary Research on Contemporary Childhood" of Moscow State University of Psychology and Education, which develops the scientific tradition of Elena Smirnova.

In the last years Elena Smirnova paid much attention to the problems of digitalization of play and to the transformation of children's play interactions under the influence of new technologies. Based on her ideas, the staff of the Center for Interdisciplinary Research on Contemporary Childhood have been recently elaborating a new direction of research, focusing on the peculiarities of digital play, in which the boundaries between online and offline modalities are blurred and where real and virtual objects co-exist and interact in real time mode. Some aspects of the conducted research are discussed in the articles published in the issue.

The rubric is prepared for the 75th anniversary of Elena Smirnova. The staff of the Center created a virtual page, where Elena Smirnova's works, published at different periods of her scientific career, are available. There page also offers a collection of video recordings, including her lectures and interviews: Смирнова Елена Олеговна — ЦМИСД (childresearch.ru). Readers and followers of Elena Smirnova keep enriching the collection by materials and photos, which they send via email. A commemorative lecture hall is expected to be opened in the University for preserving Elena Smirnova's scientific heritage and making it available for all those, who are interested in challenges of contemporary childhood.

Rubtsova Olga, PhD, Head of the Centre for Interdisciplinary Research on Contemporary Childhood

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Children's Play in Cultural-Historical Psychology: Substitution, Loss and Recreation of the Ideal Form of Activity in the Educational Space

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The article deals with the problem of children's play from the standpoint of the Cultural-Historical Psychology. The fact that developed forms of play are rather rare in the life of contemporary children is considered from the position of the absence in their life of the ideal form of the play, which inevitably leads to the impossibility of appropriating the corresponding activity. The distortion and loss of the ideal form of play has a long history and did not occur immediately. Based on the analysis of documentary sources (methodical letters, periodicals, scientific literature, etc.), it is shown how teachers' ideas about children's play changed, what forms of play were broadcast to children in educational organizations and what other channels of assigning play experience were at the disposal of children in different historical periods. The article describes the developed forms of play and indicates what conditions are necessary for their emergence.

Keywords: ideal form of the play, children's independent symbolic play, creative play, organized play, story-role-playing play, fantasy play, the leading activity of a preschooler.

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Детская игра с позиций культурно-исторической психологии: подмена, утрата и воссоздание идеальной формы деятельности в образовательном пространстве

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В статье рассматривается проблема детской игры с позиций культурно-исторической психологии. Ситуация ухода игры из жизни современных детей анализируется с позиции отсутствия в их жизни идеальной формы игры, что неизбежно приводит к тому, что соответствующая деятельность не может быть присвоена. Искажение и утрата идеальной формы игры произошла не одномоментно, этот процесс имеет долгую историю. На основании анализа документальных источников (методических писем, периодической печати, научной литературы и пр.) показано, как менялись представления педагогов о детской игре, какая форма игры транслировалась детям в условиях образовательных организаций и какие другие каналы присвоения игрового опыта были в распоряжении детей в разные эпохи. В статье дана характеристика развитых форм игры, показано, какие условия необходимы для их возникновения.

Ключевые слова: идеальная форма игры, самодеятельная игра, творческая игра, организованная игра, сюжетно-ролевая игра, фантазийная игра, ведущая деятельность дошкольника.

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The question of the essence of children's play and its role in the development of the child is revealed in the lecture by L.S. Vygotsky "The play and its role in the mental development of the child", read in 1933 in the Leningrad State Pedagogical Institute. Herzen and published in 1966 [2].

In this work, L.S. Vygotsky for the first time calls play the leading activity of a preschooler. Having stated this, one cannot ignore the objections of N.N. Veresov, who drew attention to this issue. Indeed, at the very beginning of the article, the play is designated as the leading line of development: "The play is not the predominant form of activity, but it is, in a certain sense, the leading line of development in preschool age" [2, p. 62]. However, at the end of the article, exactly the stated wording sounds, which demonstrates that the authorship of the provision on the play as the leading activity belongs to L.S. Vygotsky: "In essence, the child moves through play activity. Only in this sense can play be called a leading activity, i.e. determining the development of a child" [2, p. 75]. Of course, L.S. Vygotsky did not consider play as a leading activity in the modern sense, and this is important to emphasize. But the very authorship of the term, which was subsequently adopted by the theory of activity, still belongs to L.S. Vygotsky.

If only one thesis had to be left out of the entire article, the most significant from the point of view of characterizing children's play, then this would be the provision on the criterion of play activity: "The criterion for distinguishing a child's play activity from the general group of other forms of his activity should be taken as that in the play the child creates an imaginary situation. This becomes possible on the basis of the divergence of the visible and semantic fields" [2, p. 65]. The establishing a criterion takes the play from the level of general categories "which cannot be precisely defined, such as 'love', 'humor', 'happiness', etc." (Jan Van Gils) [26, p. 84] to the level of a full-fledged scientific concept. Such an understanding of the play exists only in domestic psychology, while in Western psychology the concept of "play" includes such activities and activities that in the Russian tradition are considered as drawing, designing, experimenting, etc. A look at the play as an activity of children free from adult control, does not highlight its specifics, but at the same time allows you to save the most important characteristic of children's amateur performance, which, due to a number of historical reasons, which we will discuss below, was lost in Russian pedagogy, which led to a distortion of the ideal form of the play within the framework of real pedagogical practice. This substitution is still found even in the understanding formulated by L.S. Vygotsky of the play criterion: "Often we confuse an imaginary situation that should unfold in the play by the child himself, and a scenario already invented by someone and only embodied by the child in his own activity" [16, p. 73].

The next most important provision of the L.S. Vygotsky's article should recognize the disclosure of the dynamics of the development of children's play: "The development from an explicit imaginary situation and hidden rules to a games with explicit rules and a hidden imaginary situation constitutes two poles, outlines the evolution of children's play" [2, p. 67]. The description of the most complex interaction within the framework of the play of children's arbitrariness and the emerging self-regulation is one of the most important provisions of L.S. Vygotsky. The most valuable is how he shows the birth of self-regulation: not through effort, but through affect: "In the play, a situation is created in which ... a double affective plan arises. A child, for example, cries in the play, like a patient, but rejoices, like a player. The child refuses to play from a direct impulse, coordinating his behavior, each of his actions with the rules of the play" [2, p. 72]. From the standpoint of understanding development as mastery of one's own behavior, the play appears as "the realm of self-regulation and freedom" [2, p. 72]. Until now, one has to face the opinion that there are children whose story-role-playing play is not yet sufficiently developed, but they can follow certain rules in life. Here it is important to breed reasons: this is self-regulation, which has internal motivation or subordination to an external requirement? The play contributes to the formation of self-regulation; self-regulation in the implementation of one's own activity and discipline, obedience are not phenomena of the same order [27].

Developing the idea of the formation of children's self-regulation, L.S. Vygotsky writes: "Playing with an imaginary situation ... is a new type of behavior, the essence of which lies in the fact that activity in an imaginary situation frees the child from situational bondage" [2, p. 68]. However, the transition from direct to indirect behavior is determined not only by affect: the subject field of the play is one of the most important "tools" that allows you to move from the "visible" field to the "semantic" one: "Action in a situation that is not seen, but only thought, action in imaginary field, in an imaginary situation, leads to the fact that the child learns to be determined in his behavior not only by the direct perception of a thing or the situation directly affecting him, but by the meaning of this situation" [2, p. 69]. However, to this day, this provision is ignored by adults, so far in kindergartens and at home, a realistic toy "rules the ball".

What does this lead to? The child remains within the framework of a real, non-playing action, i.e. in fact, within the framework of manipulating the toy, there is no going beyond the visual field into the semantic field, while "movement in the semantic field is the most important thing in the play" [2, p. 73]. But it is precisely this provision that is completely ignored in most kindergartens, despite the requirement of "multi-functionality" of the developing subject environment, which is spelled out in the Federal State Educational Standard for Preschool Education.

And the last: in 1933, L.S. Vygotsky noted that "play creates the child's zone of proximal development... in play, he is, as it were, head and shoulders above himself" [2, p. 74]. In 1948 Z.V. Manuilenko published the results of an experiment in which she clearly showed with numbers and graphs exactly which "head" the child is higher than himself in the play, how much longer he is able to maintain a motionless posture on the instructions of the experimenter or in a meaningful context of the play. A modern study by E.O. Smirnova and O.V. Gudareva showed qualitative differences in the formation of the self-regulation of modern children, and these differences are determined precisely by the low level of development of children's play, which was also established in the study [25]: most modern children do not have the opportunity to become "head and shoulders above themselves" precisely because that their play does not receive the conditions for its development in accordance with the age possibilities. In fact, this is a play that remains at the level of manipulation without moving into a semantic field.

Describing the specifics of child development, L.S. Vygotsky introduces the concept of an ideal form: "In the development of a child, what should happen at the end of development, as a result of development, is already given in the environment from the very beginning" [3, p. 83]. He designates this as the "ideal form" of the corresponding activity, ability, etc., which the child discovers in an adult, older child, or more developed peer and appropriates in the process of joint activity with him.

Ontogenetic development is understood as the interaction of a real (existing in a child) and an ideal (established in culture) form and is largely determined by how successfully an intermediary action is built, usually implemented by an adult. According to B.D. Elkonin, the crisis of modern childhood is connected precisely with the crisis of mediation. The mediating action in relation to the play is built in such a way that the child is presented with a completely different "ideal form" of the play than the one that embodied the developed forms of the play in the time of L.S. Vygotsky and later. If we compare the story-role-playing plays that children played on their own in the 50s of the last century with those that are offered in a kindergarten to a modern child, then a colossal difference will be revealed. Moreover, the story side of the play is the least of all; here the goal-setting, the ways of implementing the play, the external pattern of this activity are built differently. Neither in essence, nor in appearance, it is completely different from that artificial form, which is called "play" in pedagogical practice. In such a play, the movement in the semantic field is completely transferred to the optical field, thereby turning the play into acting out.

Below, the process will be described and the reasons for how and why the substitution and loss of the ideal form of the play occurred.

There are plays that are similar in animals and in infants and young children (while the higher forms of play have not yet been mastered), they can also be observed in older children. If we turn to the psychological classification of children's plays S.L. Novoselova [17], then these are plays-experiments with natural objects and any objects, as well as plays-experiments with the capabilities of one's own body [23]. At a certain stage of sociogenesis and then ontogenesis of the child, a story-role-playing play arises, where there is a discrepancy between the visible and semantic plan. In the classification of S.L. Novoselova, they are all combined into a large class of plays that arise on the initiative of the child, including both the lower forms of play behavior (experimental plays) and its higher forms (story-role-playing plays).

The lower forms of play can arise in the child "by themselves" just as they arise and are observed in higher animals. They are not a product of culture and do not ensure the formation of proper human qualities and abilities: "Those who believe that all children are naturally creative, inherently imaginative, that they need only be given freedom to evolve rich and charming ways of life for themselves, will find in the behaviour of Manus children no confirmation of their faith. ... but, alas for the theorists, their play is like that of young puppies or kittens. Unaided by the rich hints for play which children of other societies take from the admired adult traditions, they have a dull, uninteresting child life, romping good humouredly until they are tired, then lying inert and breathless until rested sufficiently to romp again" [15, p. 176].

The highest forms of the play have a cultural and historical origin, which was shown in the works of D.B. Elkonin [30] and confirmed by a number of ethnographic and psychological studies [15; 21 and others]. The specificity of the content and methods of organizing such plays depends on the cultural traditions of the society: "Story-role-playing plays have never reproduced the social relations existing in the community, the roles of father and mother were absent in the plays. One of the local women explained to the experimenter that children do not play adults because such plays show disrespect for them. The latter is unacceptable — the community treats adults and older people with great respect" [21, p. 130]. Those, if the story-role-playing play is prohibited or distorted in society, it does not develop. Below we will show the influence of social attitudes on the spe-

cifics of the development of the story-role-playing play of the Soviet and Russian children.

Ethnographic and historical documents indicate the specifics of the transfer of playing experience. Children aged 6—10 were more often involved in housework, including as "nannies" looking after the kids. This practice was common in many societies [6]. Obviously, for children aged 6—10, play is an already established and preferred activity, which they indulge in at every opportunity. The kids left in their care first watched these plays, then imitated, then joined them in secondary roles, then as full participants in the play. So in children's groups of different ages, the transfer of playing experience took place. It is obvious that such plays did not have educational and educational functions, but they fully performed the role of a leading activity, because those mental qualities of a child that are really formed in the play are formed in any play, regardless of its content (correct or incorrect, "good" or "bad"), because the content of a children's play is always determined by the historical era, the social system, the social orientation of society, the peculiarities of the family way of life, etc., and the developing potential of the play is universal [29, p. 85].

Since the 17th century the play becomes a means of education [18; 28]. Since the 19th century Froebel gardens open in Europe and Russia. The literature contains eloquent descriptions of how this system was implemented in kindergartens and in relation to the use of didactic kits [11, p. 249—250], and in relation to the organization of story-role-playing plays [12, p. 98—100]. These descriptions give an idea of how the ideal form of the play was distorted, in which spectacle and effectiveness came first instead of "movement in the semantic field" [2] and procedurality [10]. It can be assumed that in those years such dramatizations could not have a strong influence on children's plays, since the possibility of plays in children's communities of different ages remained. However, the trend was already very clear at that time.

The attitude towards the excessive organization of the play on the part of teachers was steadily preserved in pedagogical practice, the leading teachers of those years opposed it (A.S. Simonovich, A.B. Kraevsky, D.D. Galanin, members of the Commission for the Review of Plays and Entertainment at Petersburg Literacy Committee, etc.) [28].

After the revolution, during the formation of domestic preschool education, the normative documentation recognized the basis of the kindergarten as "amateur activities of children, their free creativity, play." The diaries of kindergarten teachers recorded plays organized by the children themselves in the civil war, in the arrest and imprisonment of feasting bourgeois, in agitators in the stands, in the funeral of Lenin, as well as typically children's plays in arranging rooms, horses, etc. However, at the end of the 20s, the educators of plays on everyday topics are not mentioned. Even if they existed in children's life, they were not dominant in official discourse, they did not reach the level of discussion even in the practice of compiling written documents that were not intended for publication [24, p. 119], i.e. since the late 20's. there was a revision of plays into "suitable" and "unsuitable" with the dominance of "correct", "ideological" plays.

In the 1930s, methodological letters were published in various areas of preschool education, incl. and children's play. Independent symbolic plays, which were previously called imitative, imitation, etc., got their name, which then existed for a long time in domestic pedagogical practice — "creative plays". At the same time, the play was proclaimed "one of the means of the comprehensive development of the child." As a result, "stimulated" children's plays appear, i.e. plays with a certain content, which is set (stimulated) by the educator. At the same time, "the methods of the most rude imposition, coercion were applied to the so-called" stimulated "plays" [14, p. 49].

In 1936, the resolution of the Central Committee of the All-Union Communist Party of Bolsheviks "On Pedological Perversions in the System of the People's Commissariat for Education" was issued, where stimulated play was declared a pedological perversion and prohibited. From this point on, many educators withdraw from the direct management of the play, fearing that they will be accused of returning to "stimulated" plays. It is characteristic that it was at this time (the end of the 40s-50s) that the descriptions of the most interesting plays in methodological collections fall. In particular, caregivers described long plays that continued to unfold for several weeks. Then they tried to revive such plays in the 1980s, but in those years there were no suitable conditions for such plays.

So, in the mid-1930s, the term "stimulated plays" disappeared, but the need to organize children's plays on the topic needed by educators remained. The situation unexpectedly turned in favor of organized plays in the 1940s and 1950s, when D.B. Elkonin and S.L. Rubinshtein, a new term "story-role-playing" appeared and began to gain strength [28]. The new term was followed by a different understanding. The term "creative play" reflected the essential characteristic of children's play — this is a play in which the child himself creates, "creates" his own world, in accordance with his desires and ideas. The term "plot-role-playing play" reflected the formative characteristics of the play. But one and the same form can be filled with different content, and the term "story-role-playing play", defining the play in terms of form, did not fix the difference that was clearly defined by the names "creative" and "stimulated" play, i.e. the difference between the actual play activity and the set of play actions performed by the child when he has neither a play motive nor an actively recreated imaginary situation. This line has been erased terminologically. And, as a result, it began to fade from the consciousness of teach-

ers of those years. The ideal form of the play, broadcast to children, acquired a completely unchildish, artificial character.

In parallel, there was a change in the way of transferring gaming experience: it was in the middle of the twentieth century. natural forms of transferring gaming experience from generation to generation (from child to child) are changing to artificial ones (from adult to child), while kindergartens and schools have become increasingly important in the transfer of plays [7].

With the release of the Kindergarten Education Curriculum, the term "story-role-playing plays" was fixed as the only one, and the term "creative play" was declared "outdated terminology" and actually banned [28]. The story-role-playing play begins to be organized in the manner of a stimulated play, and from that time on, the dominance of organized plays in kindergartens is fixed and the stereotype is firmly fixed that a "good play" is a plot played out in roles on a certain topic according to a certain plan. As shown by the work of the innovative platform "Development and pedagogical support of the play as the leading activity of preschoolers" by "Russian Public Organization of Kindergarten Teachers", this attitude is very strong to this day.

It was these play-outs that were understandable to adults that were presented to children as a "play". The methodical letter of 1977 already captures an unfavorable picture: "Role-playing plays ... are monotonous and poor in subject matter ... Their content is mainly actions with objects and the relationships between people are poorly reproduced. Only a small part of the group (3—5 people) has the ability to invent a plot" [19, p. 14].

In 1977 A.V. Zaporozhets in a conversation with D.V. Mendzheritskoy noted that "the introduction of the term "story-role-playing play" into the kindergarten curriculum was a mistake" [22, p. 10].

However, children still had the opportunity to gain and expand their gaming experience within the framework of yard plays. And the description of the higher forms of play that have been found to date, which are already characteristic of younger schoolchildren, refer specifically to this era of the 70—80s [4; 20 etc.]

In the late 1980s, powerful perestroika processes began in all spheres of our society. During these years, the concepts of preschool education were developed, while in both there is a sharp criticism of the current situation in kindergartens: children's play is regulated, reproductive, deformed as an activity, imposed on children.

As a reaction to the current situation, the slogan sounds: "Let the children play enough, do not teach children to play!". The pendulum has swung the other way: in contrast to the total organization of the play, there is a complete rejection of interference in it. By itself, this refusal could have been a way out, but it took place in a very specific socio-economic situation: there were few or only one children in families, parents and grandparents were busy earning a living in the difficult conditions of those years, the criminogenic situation was that children alone were no longer allowed into the yards. The channels for transferring gaming experience both through adults and through the children's subculture turned out to be closed. In the absence of cultural patterns, children's plays are being primitivized, both independent symbolic play and organized. An extremely accurate description of the situation: "Today, the play is not disappearing from culture, but rather culture is disappearing from the play" [9, p. 259]. It can be assumed that more global processes are reflected here than the "perestroika" ones. they were also observed in other countries: modern children are almost always under the control of adults, there are practically no free communities for children, and there are no conditions for free play with peers [5].

What are the consequences of changing the ideal form in the cultural space? "If there is no corresponding ideal form in the environment, then the child will not develop the corresponding activity, the corresponding property, the corresponding quality" [3, 86]. One of the main reasons for the disappearance of the play is that the ideal form of gaming activity appears in a distorted form (when learning to play, when the goals of the play change to educational ones) or disappears altogether (in the absence of cultural gaming experience). And the fact that "children do not play" is connected not only with the crisis of mediation (B.D. Elkonin), but also with the fact that an adult replaces the ideal form of play by transmitting a different activity to the child.

A child who has not watched real exciting plays, but was forced to take part in organized ones, most likely will neither want to, nor, accordingly, be able to play such plays. This, in turn, means that his play will remain at the level of playing around with objects and situations, there will be no transition to more complex play forms, in the process of implementing which the child will develop the corresponding abilities (which was shown in the study by E.O. Smirnova and O.V. Gudareva [25]).

These days, there is a very gradual resurgence of the "real" play as a cultural phenomenon. This process is extremely slow because the forms of existence of such a play are very different from those understandable actions for which the play has been presented for many years, which causes rejection and even outrage among teachers. Nevertheless, the position of cultural-historical psychology in relation to understanding the essence of children's play is spreading in the pedagogical environment (the curriculum "PROdetey", "Let's Play" Festival-Competition, Yegor Bakhotsky Playground and Communication, experience of advanced kindergartens, publications that give criteria separation of the quasi-play and the "real" play, etc.). This indicates a process of rebirth, recreating the ideal form of the play in its original form.

The conditions for the development of play should provide the child with options for organizing more

complex, developed plays, which he will observe as some ideal form and include at an accessible level in his own activities.

D.B. Elkonin characterized the expanded or developed form of play, noting that "in play, the child, as it were, passes into the developed world of higher forms of human activity, into the developed world of the rules of human relationships" [30, p. 335]. However, D.B. Elkonin made an important clarification: "not every recreation and recreation of every life phenomenon is a play" [30, p. 21], so the transfer of money and products in the play corner "shop" is not a play, even if it is accompanied by memorized polite phrases; there is no real relationship here.

The highest forms of the plot play are a kind of "designing of worlds" (A.G. Asmolov) with attempts to recreate, feel, survive the complexity of the world order, the richness of human relations — interpersonal, political, economic, etc.

Descriptions and characteristics of such plays can be found in fiction (L.A. Kassil), in memoirs (A.N. Benois, A.V. Krotov, N.V. Gladkikh, I. Krasilshchik), not as much as one would like would — in scientific works (W. Wundt, S.M. Lojter, N.V. Gladkikh, A.S. Obukhov and M.V. Martynova, etc.). These are fantasy plays, which are "Modeling aimed at creating a new reality with its own picture of the world" [13]. In the process of unfolding such a play, "children's consciousness appropriates the content of the cultural space of the adult world and masters the ways of constructing and being "their own" worlds, relatively independently born and existing according to the play principle" [20, p. 231].

In the studies of S.M. Lojter they are called plays in the country-utopia or country-dream [13]. N.V. Gladkikh specifies that whether children invent their own country or borrow its image from books or movies, they create some kind of "ideal" space that they like. However, "a necessary condition for a group play is to be interesting, and playing the "realm of abundance and harmony", in general, is rather boring. The ideal space is ill-suited for action" [4, p. 191]. "Where the exemplary and correct frame of the "dream country" is initially set, the play fizzles out, almost without starting. And where there is scope for surprises, adventures, scandal and laughter, everyone is drawn in with enthusiasm" [4, p. 196].

The specificity of such a play is that it can be realized completely internally (in the child's imagination) or in the space of dialogue, becoming less accessible for observation. At the same time, the visible field is either simply completely removed ("imagination play"), or it can be based on extremely unpresentable and incomprehensible elements of the play (play artifacts), which, at the same time, are extremely clear to the players. Actually, according to these artifacts, years later, the semantic field of the play is recreated, which covers all the available phenomena of human existence (reproduction of periodicals, news, language, calendar, state symbols, historical events, etc.) [4; 8; 20]. And it is important to understand the specifics of the existence of such a play: it exists not so much at the moment of implementation (you can simply "not catch" these moments), but in the space of preparation: "the main thing ... was the preparation for the play, it took 5—6 hours, and the play 30—50 minutes" [1, p. 73].

Such plays can be considered as the most striking manifestations of an extended developed form of play, encountering which can qualitatively affect the gaming experience of younger children. However, as discussions in the framework of seminars or advanced training courses on the problems of play show, such plays, being present in the memory of many teachers, are not perceived by them as possible options for organizing joint activities with children. Due to the dominance of a different model of the play, they do not consider such plays as a pedagogical resource for organizing the conditions for children's development, they do not fall into the practice of organizing plays with children of older preschool age.

Providing conditions for the formation of developed forms of play, it is important to take into account that in addition to meeting with different options for implementing the ideal form of play, it is important for children to interact with the bearer of this experience, a mediator who does not teach, but introduces children to this culture, and it is also necessary that the child there was a sufficient (excessive) amount of time and a variety of ornamental and junk materials to construct their worlds.

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Role Play in the Focus of the Cultural-Historical Scientific School: Developing the Ideas of L.S. Vygotsky

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The article is devoted to the analysis of the most well-known concepts of preschoolers' role-play, elaborated in the Russian scientific tradition. All these concepts underlie the ideas of L.S. Vygotsky and the followers of the Cultural-Historical scientific school, who argue that play as the leading activity of preschool age determines the development of the key new formations. The article studies the approach of S.L. Novoselova and E.V. Zvorygina; N.Ya. Mikhailenko and N.A. Korotkova; E.O. Smirnova; G.G. Kravtsov and E.E. Kravtsova; M. Bredikyte and P. Hakkarainen. The criteria, taken for the analysis of the scientific approaches in the article, include: theoretical basis, the criterion of the developed form of the play, position of the adult, object-developing environment, conditions/principles of play development. In all of the concepts the general tendency is traced to avoid a directive position of the adult in play with the child as well as not to impose play activity on the child neither by the adult, nor by the environment itself. This means that in Russian scientific tradition there is a shift towards supporting the child's independence and initiative in play.

Keywords: role-play, comparison of approaches, position of the adult, object-developing environment, play criterion, preschooler.

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Сюжетно-ролевая игра в фокусе культурно-исторической научной школы: развивая идеи Л.С. Выготского

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Статья посвящена анализу наиболее известных концепций сюжетно-ролевой игры детей дошкольного возраста, сложившихся в российской практике. Все они развивают представления Л.С. Выготского и сторонников культурно-исторического подхода о том, что игра, как ведущая деятельность в дошкольном возрасте, определяет развитие основных возрастных новообразований. Рассматриваются подходы С.Л. Новоселовой, Е.В. Зворыгиной; Н.Я. Михайленко, Н.А. Коротковой; Е.О. Смирновой; Г.Г. Кравцова, Е.Е. Кравцовой; М. Бредиките, П. Хаккарайнен. В качестве критериев анализа подходов выделяется: теоретическая основа подхода, критерий развитой формы игры, позиция взрослого, предметно-развивающая среда, условия/принципы развития игры. Во всех обозначенных концепциях прослеживается общая тенденция отказа от директивной позиции взрослого в игре с ребенком, а также не навязывания игровой деятельности ребенку ни взрослым, ни посредством предметной среды, т. е. очевиден сдвиг в сторону самостоятельности и инициативности ребенка в игре.

Ключевые слова: сюжетно-ролевая игра, сравнение подходов, позиция взрослого, предметно-развивающая среда, критерий игры, дошкольник.

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Russian pedagogical tradition usually assigned the key role to the adult, who organizes and guides children's activities. According to the materials of the website of the Federal Institute of the development of education the majority of complex programs for preschoolers are educational programs increment. In contrast to the foreign pedagogical tradition of which emphasizes the independence and initiative of the child. The specifics was also underlined by E.O. Smirnova [29]. At the same time when it comes to the value of preschoolers play both Russian and European specialists are unanimous. In Russian psychological and educational practice if you role-play concepts have been created. All of them underlie the ideas of L.S. Vygotsky and the followers of the cultural historical scientific approach according to which play as the leading activity of preschool age determines the development of the key new formations of this age period. The breadth of views of L.S. Vygotsky allowed his followers to develop his ideas in the context of the rule concepts of theories of a child play. In the return of the theories of L.S. Vygotsky followers are elaborated in contemporary concepts of role-play which emerged in Russian scientific tradition. Therefore, it is interesting to consider and compare the most well-known concepts including:

- the approach of S.L. Novoselova, E.V. Zvorygina;
- the approach of N.Y. Mikhailenko, N.A. Korotkova;
- the approach of E.O. Smirnova;
- the approach of G.G. Kravtsova, E.E. Kravtsova;
- the approach of M. Bredikyte, P. Hakkarainen.

For the analysis the following criteria were considered:

- theoretical basis;
- the criterion of the developed form of the play;
- adult's position;
- object developing environment;
- conditions/principles of play development.

The approach of S.L. Novoselova, E.V. Zvorygina

The criteria of play in the framework of the approach by S.L. Novoselova, E.V. Zvorygina is the motive in accordance with A.N. Leontiev activity theory. In contrast with the other types of activity the motive of play is connected not who is the result, but rather was a very process of play, in the content of the actions. The approach by S.L. Novoselova and E.V. Zvorygina is based on the principle of amplification of child's development that was stated by A.V. Zaporozhets and according to which the play develops to its transition in the form of the child's independence. The authors of the approach elaborated and described a complex method of pedagogical support of independent play [1; 4; 7]. This method includes the following conditions:

1. The enrichment of children's real experience in their activity;
2. The enrichment of children's play experience in joint games with the adult and with the better playing children;
3. Organization and transformation of the object play environment;
4. Activating interaction of the adult which the children.

For the development of the child's play all these conditions have to be respected at every age period. However, the importance of each of them changes. In early childhood, when the play is at the stage of formation, the enrichment of children's play experience (educative games with the introduction of more complex play materials) as well as interaction which boosts the communication with the adult become extremely important. These have to be used for the systematization of the knowledge the children gain about the surrounding environment and the practical possibilities of using or applying them in play [2; 5; 19; 22]. That is the main goal of addictive games is considered is the possibility of all introducing a real-life experience of children into the play plan. It is also highlighted that even educative games should represent a joint play activity of the child and adult. The transfer of the play experience from the adults to the children has to be made and impulsively should not be imposed on the child in a direct way. The authors highlight that direct teaching of play actions are leads to the formation of stereotypes of play behavior while non-direct guiding methods contribute to the development of creativity and child's initiative. A means of non-direct guiding is the method of the play problem situation [2; 7; 22]. While using this method the adult does not give a pattern authority solution, but rather stimulates the child to look to search for a solution on the road which contributes to the development of initiative.

In older preschool age non-direct methods of pedagogical support of play acquire particular significance. The enrichment of children's ideas or concept about the surrounding environment and organization and transformation of the object developing environment. Knowledge which are children gain from different sources and determine the content of play tasks and the play plot.

Timely change and complification of the object environment significance influence the development of play. Object development environment has to include such elements as various role markers, elements of clothes and particular objects, objects substitute, craft supplies [5; 6; 7; 20; 21]. The constellation of these elements of the object developing environment allows the child to act both in the imaginary plan as well as using an object / a picture / an artifact which contributes to broadening the framework of play.

The approach by N.Y. Mikhailenko and N.A. Korotkova

The approach of N.A. Korotkova and N.Ya. Mikhailenko is based on the classical understanding of the play by D.B. Elkonin, where role is regarded as the criterion of play. In a later works of N.A. Korotkova we can trace the dynamics of the development of her ideas about role-play. The key factor in play N.A. Korotkova regards an event which catches the child's attention [10; 11]. When the role moves to the backstage and becomes one of the ways of expressing the event. The term role-play, or in Russian at his role plot a game, is litters substituted simply by plot play which represents a particular kind of the child is story narrative about an event with the help of substitutional actions [10; 11]. The events can be introduced in three forms:

• Functional projection (an event is expressed in an activity);

• Role projections (event is expressed via a wrong or a character);

• Spatial projection (when the event is conducted with the help of space).

The adult position in the framework of supporting the play is limited or has to be limited or exclusively by creating conditions for boosting children's play. N.A. Korotkova and N.Ya. Mikhailenko regard play skills are is the lead is the child leading way of constructing play and potential possibility of using various means of action [18]. Therefore, the goal of educational influence in relation to the play becomes the formation of play skills which contribute for independent creative play, where children introduce different content according to their desires and freely interact with their arrangements. Therefore, the authors systemized the means of constructing the play on different age stages (without strict connection to particular age period):

• 2—3 years — the formation of conditional play action;

• 3—5 years — the formation of role behavior;

• 5—7 years — the formation of means of creative narratives

As far as the significance of the object developing environment is concerned in the framework of this approach its importance for the development of children's play is not less important than the adult's role. In early preschool and early school-age object developing environment is the basis for organizing children's independent play. Wealthy children of older preschool age are more oriented on their inner ideas. Therefore, it is important to highlights of the environment histamine the principles of poly functionality and variability [8; 9]. For organizing merit of a narrative game in the framework of this approach three principles are elaborated:

• In order does the children acquire play skills the adult has to play with the children. The position of the adult is indicated as "playing partner". It is highlighted that the child in play should not feel the pressure on behalf of the adult, but to whom here/she has to obey, but rather feel free and equal part of participant of the play [11; 18].

• At each stage the play should be constructed in the way sort of the children discover and acquire new more complex means of it's a construction. An important place here is the development of the child's play skills without which the "play continues to be constructed according to the acquired learn schemes and in the best of luggage of the child while rich knowledge and ideas remain passive in the child" [11, p. 106].

• While developing play skills it is important to draw the child's attention to completing the play action and to explaining the partners (adult or age-mate) the sense of the play actions. This principle or contribute to the development of role dialogue to the construction of various role connections in play [18].

For realization of these principles of the formation of play skills they don't have to help children with constructing the plot of the play from one topic to multiple topic play with a big variety of different characters.

Following these principles of organizing a role-play step-by-step allows us to develop children's Free Play in accordance with their desires and interests. At every age period pedagogical influence includes two aspects the formation of play skills and children in the process of joints play, where is the adult keeps the position of playing partner, and creating of conditions for stimulating children's Free Play. The better all of the means of constructing role-play are presented in the child's activity, broader is the repertoire of they play skills and the more various topic content the child can include into the play, which means they have more freedom and self-realisation.

The approach by E.O. Smirnova

According to D.B. Elkonin's idea the period of the formation or development of initiative is preschool E.O. Smirnova regards play is the key form of showing initiative and self-realization of preschoolers. Following L.S. Vygotsky, E.O. Smirnova considers the difference between the imaginary and the real situation is the main criterion of role-play [31].

E.O. Smirnova argues that the object developing environment should not impose particular topics or plots on children, but has to be on the contrary transformative full of open and polyfunctional materials that could stimulate initiative and independency play. Moreover, she stresses the need to divide the space in zones as well stresses the importance of free space for the organization of children's joint play. She also argues that it is important that freed the children have enough free time to construct the plot. Among the elements of the object developing environments E.O. Smirnova base particular attention to toys and objects substitutes that are defined as "objects which allow the child to get beyond the real situation" [31, p. 65]. Toys and objects substitute role markers which help children to stick to the play situation and the accepted role shut stimulates the child for free play and for fulfilment of his or her idea. Therefore, an important characteristic of toys is the possibility of using them in different ways and combinations. In

Smirnova's approach a number of conditions for a successful play are indicated:

1. The open of educative program;
2. Inadequate object developing environment;
3. Play competence of the adult which requires or means and nondirective guidance of the play.

E.O. Smirnova highlights many times did support of children's initiative does not imply that the adult is included it from children or their activity. On the contrary the adult should stimulate independence activity and initiative of children not guide, not require, not give instructions, but rather stimulate children for independent activity [25; 26; 27].

The approach by G.G. Kravtsova and E.E. Kravtsova

The approach to the interpretation of play elaborated by G.G. Kravtsov and E.E. Kravtsova is based on the ideas of L.S. Vygotsky according to whom play regarded as the zone of proximal development of the child. The main criterion of the play in the framework of this concept is the imaginary situation. The main characteristic of children's play is its double subjectivity, when the child is in the play and out of the play [12; 14]. For the formation of the role-play the child has to move through five stages:

1. The acquaintance of the child with the objects and events that will be reflected in the game;
2. Joint plot reflecting play;
3. Joined play-dramatization;
4. None mediated games with the child are (each time constructed in a new way);
5. Play with an imaginary partner or toy.

For organizing step-by-step movement to these stages by the child the authors of the approach indicate three conditions:

- equating a child with different spheres of activity;
- a specific process of our teaching how to play as a form of transfer of the play experience;
- toys, adequate for the child's imagination.

In order for the child's activity to be launched from the child's idea and intention, rather than from a concrete toy, E.E. Kravtsova suggests to use in the framework of the object developing environment free materials and stationery [12]. The use of such materials and toys can become the basis for an imaginary play of the child. It is was emergence of imagination of the authors of the concept link the play an independent activity of the player [13].

The position of the adult in the framework of the concept dependently tasks which need to be solved. Apart from the classic roles of the adults which are indicated in the framework of this approach as roles "above" and "near", the authors also in the gate the adult partner position, when the child and adult play as if they were equal. Development of this position is linked with the development of collective forms of play as well as a collective productive activity. Position of demonstrative detachment is regarded as a potential resource for launching and stimulating the child's communication in all the positions accessible to the child. And it is very important for the development for the role-play that the child demonstrates the roan involvement that the child becomes the source of the play and does the main task of the adult in the play is to hamper the child to play, that is, to create problems situations allowing the play to move beyond the habitual patterns and stereotypes [16].

The approach by M. Bredikyte and P. Hakkarainen

In the framework of the narrative pedagogy M. Bredikyte and P. Hakkarainen elaborated an approach to understanding narrative play activity. The theoretical basis of this approach underlie the ideas of J. Bruner, M. Cole, J. Dewey, M. Donaldson, M. Donald, K. Egan, G. Lindqvist, T. Ribot, G.G. Shpet, L.S. Vygotsky, D.B. Elkonin, B.D. Elkonin, V.V. Davydov, V.P. Zinchenko, V.T. Kudryavtsev, G.A. Zuckerman, L.I. Ekoninova, E.O. Smirnova.

The basis of the developing education in the framework of the narrative approach is the creation of Playworld, based on the motives of a famous fairytales. Fairytales become the starting point the plot, that children can use for a free and spontaneous improvisation and recreation of events and situations which are important for the participants of the play [38]. In the framework of the narrative approach the criterion of the developed form of play is the plot, which is constructed jointly. As well as the ability to act according to a certain role. It is also important, that the play is based on the ideas of children and is rather the ideas of the adults. Children interpret events or stories of fairytales according to the own experience, "pereghivanie", imagination and fantasy. In the framework of the narrative approach the following stages of play organization are indicated:

1. Probing the play topic (observing children are finding the topics, that interest children through children's favorite plots);
2. Trying to create a new story (trying on play actions and events);
3. Joint step-by-step elaboration of the Playworld (preparation of the Playworld — creating and observance of rituals, spontaneous FreePlay without a plan, a play event without an end);
4. Reflection about joint experience of other children or a team (discussing through painting playing with children planning a new adventure);
5. Reflection of children in the form of a free play (when adults observe children's play and think about the following narrative adventure).

Thus, the play which is created or constructed jointly creates the zone of proximal development for all the participants of play, including adults, who are involved in the creative process and for each of the participants are unique narrative is created [38].

The role of the adult in the framework of organizing narrative play consists in participating as an observer, a play partner or a character in play. Observing children's

play the adult indicates play skills and needs of each child and helps him or her to choose a suitable role. The adult is the play partner consist and supporting assisting in the process of play: the adult is to motivate to stimulate the development of the plot, the same time not to impose their own ideas; the adult has also to explain the sense of what is going on in the play; to assist the child to controls their emotions and play, but is to provide emotional safety [37; 39; 40]. Thus, the key task of the adult in the framework of the narrative approach consists in motivating children for active participation in narrative a kind of activity, as well as showing initiative and creativity [38].

An important criterion of playing environment is it's variotivity. The authors of the approach suggest organize the play not simply in a particular closed space, flat, rooms, but also outdoors, including all of the elements of the surrounding world into the play environment. Indoors children also should have access to furniture, boxers, sticks, blocks, that is to everything, that they can use for constructing the play environment and "safe" places, such as houses, caves, underground and someone. It is very important to pay attention to the construction of the process of entering the game. It can be some kind of portal, or magical door, or whatever. This entrance will allow to divide to the Playworld from the real world, where the child can be back to any time, when he or she starts off feeling uncomfortable [40]. Apart from that are among the elements of the object environment there should be a big variety of different materials that children can use according to their ideas and desires [37; 40]. The use of the various role markers contributes to the child excepting the chosen role position. Therefore, children should have access to various bathrobes, capes, raincoats, hats, etc. Used materials the authors of the approach regard of the most suitable for play, since the child would not have the fear to break or spoil anything in the process of play, and does the freedom of the child's actions would not be limited in the process of play.

The presented analysis of the existing concepts of role-play in the framework of the Russian practice is briefly given in Table 1.

Table 1

The comparison of role-play concepts in the framework of the Russian tradition

	The approach by Novoselova S.L., Zvorygina E.V.	**The approach by Mikhailenko N.Ya., Korotkova N.A.**	**The approach by Smirnova E.O.**	**The approach by Kravtsov G.G., Kravtsova E.E.**	**The approach by Bredikyte M., Hakkarainen P.**
Theoretical basis	Leontiev A.N., Zaporozhets A.V.	Elkonin D.B.	Elkonin D.B., Vygotsky L.S.	Vygotsky L.S.	Bruner J., Cole M., Dewey J., Donaldson M., Donald M., Egan K., Lindqvist G., Ribot T., Shpet G.G., Vygotsky L.S., and etc.
The criterion of the developed form of play	Motive	Role / Event (later N.A. Korotkova)	Imaginary situation	Imaginary situation	The plot, which is constructed jointly, the ability to act from a role
The position of the adult	Non-directive, non-direct guidance	Play partner	Non-directive	Dependently tasks which need to be solved	Play partner, observer, character in play
Object developing environment	Multifunctional, variotivity	Multifunctional, variotivity	Transformative, variotivity, open, time to play	Multifunctional, variotivity	Multifunctional, variotivity, time to play
Conditions or principles of play development	1.The enrichment of a children's real experience in their activity; 2. The enrichment of children's play experience in joint games with the adult and with the better playing children; 3. Organization and transformation of the object play environment; 4. Activating interaction of the adult which the children.	1.The position of the adult is indicated as "playing partner". 2. At each stage the play should be constructed in the way sort of the children discover and acquire new more complex means of it's a construction. 3. To oriental the child at completing the play action and at explaining the partners the sense of the play actions to the adult or to the age mate.	1. The open of educative program; 2. Inadequate object developing environment; 3. Play competence of the adult which requires or means and nondirective guidance of the play.	1. Equating a child with different spheres of activity; 2. A specific process of our teaching how to play as a form of transfer of the play experience; 3. Toys, adequate for the child's imagination.	1.Probing the play topic; 2. Trying to create a new story; 3. Joint step-by-step elaboration of the Playworld; 4. Reflection about joint experience of other children or a team; 5. Reflection of children in the form of a free play.

Conclusion

All of the approaches presented in the article are elaborated in the context of the cultural historical scientific school and activity approach. Thus, theory of play elaborated by D.B. Elkonin was further elaborated in the approaches of N.Y. Mikhailenko, N.A. Korotkova. G.G. Kravtsov, E.E. Kravtsova based their concept first of all on L.S. Vygotsky theory of play. The approach by S.L. Novoselova's and E.V. Zvorygina was elaborated in the context of A.N. Leontiev's activity approach. The approach by E.O. Smirnova underline the ideas of of D.B. Elkonin and L.S. Vygotsky. Approach by M. Bredikyte and P. Hakkarainen is based on a wads number of the ideas of Russian and foreign followers of the cultural historical tradition. Each of the approaches emphasises one particular criterion of play activity. S.L. Novoselova, E.V. Zvorygina, following A.N. Leontiev, suggest to regard motive as a main criterion of play activity. N.Y. Mikhailenko and N.A. Korotkova in early works indicate role as the criteria of play activity, and later N.A. Korotkova also suggested to regard an event involving the child as the play criteria. E.O. Smirnova and G.G. Kravtsov, E.E. Kravtsova consider, that the criterion of play is the imaginary situation. M. Bredikyte and P. Hakkarainen argues, that play criterion is the plot, which is constructed jointly, as well as the ability to act according to a particular role.

Interestingly enough all of the indicated criteria were criticized in other scientific community. Thus, a number of authors state, that the motive which is regarded as a criterion, does not allow to distinguish between play and other non-productive creative types of activity. A plot which is constructed jointly in approach by M. Bredikyte and P. Hakkarainen does not make play play activity, but it's simply creates a context for its development. The role indicated by D.B. Elkonin according to a number of researchers are comparing to use to a formal playing of plot, when there is no play motive. An event, which interests the child, that was indicated in N.A. Korotkova's later works, can be actually realized in any type of creative activity which is accessible to the child, while the imaginary situation is often replaced by a given scenario or topic. Therefore, the challenge of indicating the criteria of play activity still remains.

Among the indicated conditions and principles of the development of play, all of the authors of the discussed approaches, discuss the necessity of the presence of the adult is the bearer of the play culture, who is interacting with a child in joint play. Therefore, in all of the approaches directive guidance of the adult in relation to the child is denied. Thus, in the approach by S.L. Novoselova, E.V. Zvorygina, E.O. Smirnova, M. Bredikyte, and P. Hakkarainen, nondirect adult participation in play is emphasized, which is characterised by nondirective means of guidance and support of children's independent play. In the approach by N.Y. Mikhailenko, N.A. Korotkova, G.G. Kravtsov, and E.E. Kravtsova the accent is put on teaching children play activity and transferring the play experience.

The importance of multifunctional and of various developing object environment is anonymously indicated by all of the authors of the approaches, presented in the article. It is also important to highlight, that E.O. Smirnova, M. Bredikyte and P. Hakkarainen additionally points to the necessity of organizing time and space for constricted play activity. Thus, in all of the concepts presented in the article, there is a tendency of nondirective of avoiding directive imposing of play activity, neither by adult guidance, nor through the object environment.

There is we can state that in psychological and educational science, there is a movement in direction of supporting independent activity and initiative of the child and play. Unfortunately, despite the fact, that this issue is elaborated rather well and that they are practical recommendations about the organization of play activity, not all complex programs of a preschool education, set a goal of developing children's play activity. Thus, the majority of them are reduced to formal organization to the process of play, which does not fully meet the age tasks and needs of preschoolers.

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Child's Play in the Context of Digital Transformation: Cultural-Historical Perspective (Part One)

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The article is devoted to the peculiarities of preschoolers' play within the Information Society. It studies the types of technologies used by preschoolers in the process of play (video games, educational apps, smart and digital toys). It also provides an overview of the existing empirical research, proving that contemporary play represents a specific type of play activity, where physical and digital objects interact in real time. The article discusses different approaches to the analysis of digital play in the context of Cultural-Historical Theory (M. Fleer, N.N. Veresov, N.E. Veraksa). It also focuses on the key differences between technical behaviors and digital play activity. The authors stress the need of transition transition from contrasting traditional play and play, mediated by technologies, to the analysis of digital play as a complex system of child-child and child-adult communities that construct the socio-cultural context of the child's everyday life.

Keywords: digital childhood, preschoolers, digital media, play activity, digital play, digital toys, digital content, technical behavior

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Детская игра в условиях цифровой трансформации: культурно-исторический контекст (Часть 1)

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Статья посвящена особенностям игровой деятельности дошкольников в условиях информационного общества. Рассматриваются основные виды технологий, используемых дошкольниками в процессе игровой деятельности (игровые и образовательные приложения, «умные» и «цифровые» игрушки). Приводится обзор эмпирических исследований, доказывающих, что современная игра представляет собой специфический тип игровой деятельности, при котором физические и цифровые объекты взаимодействуют в режиме реального времени. Обсуждаются подходы к анализу «цифровой игры» в рамках культурно-исторической традиции (М. Флир, Н.Н. Вересов, Н.Е. Веракса). Рассматриваются отличия «технического поведения» и собственно игровой деятельности с использованием

новых технологий. Обосновывается необходимость перехода от противопоставления «традиционной» игры и игры, опосредованной технологиями, к анализу «цифровой игры» как сложной системы детских и детско-взрослых взаимодействий, образующих социокультурный контекст жизни ребенка.

Ключевые слова: цифровое детство, дошкольники, информационные технологии, игровая деятельность, цифровая игра, цифровые игрушки, цифровой контент, техническое поведение.

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Introduction

Contemporary researchers often speak about a particular cultural-historical type of childhood – that is, *digital childhood*, which emerges within Information Society [8; 9; 16; 28]. The peculiarities of *digital childhood* are conditioned by the ubiquitous character of digital media [48], in which the boundaries between virtual and real modalities become extremely flexible, and in which physical and digital objects coexist and interact in real time [43]. In the context of the Cultural-Historical Theory, digital technologies may be regarded as a new means of mediating activity which combines both tool and sign components [4; 8; 9]. As with any new means of mediation, technologies change the existing types of social interactions and determine the development of higher mental functions and processes at different stages of human development. In this new social situation, researchers have noted qualitative changes in children's play activity [11; 12; 29]. On the one hand, play becomes more complex due to the use not only of traditional toys and plots, but also various gadgets and digital devices which provide access to virtual reality [41]. On the other hand, contemporary children seem less often to be involved in developed forms of play (particularly role playing), and the level of play skills seems to be relatively low during the preschool period [12; 14]. Considering the significance of play for the development of preschoolers' new formation, studying how the observed changes influence various aspects of contemporary children's development is an important challenge for contemporary psychology and education.

The purpose of this article is to identify the peculiarities of preschoolers' play in the context of digital transformation and to evaluate possible approaches to the analysis of such play as a new socio-cultural phenomenon.

Play and toys: how do digital natives play?

Today, all over the world, the age at which children become acquainted with digital media is dropping, while their daily consumption of media is increasing [20; 21; 45; 46]. In many countries, digital devices developed specifically for children (Internet of toys, books, and games with VR, etc.) keep gaining popularity, while in Russia, the majority of preschoolers use their parents' devices: smartphones, tablets and computers, which, to a large extent, determines the digital content to which they have access [15]. Russian preschoolers most often use educational apps and video games.

Educational programs for preschoolers occupy an intermediary position between learning and play content. Usually, these programs require that the preschooler completes certain tasks, causing a character within the program to praise the child. The aim of this kind of app is to get the child acquainted with letters, numbers, colors, etc., through play. This category can also include programs in which the child is trained in logical and spatial thinking, visual memory, and attention. This type of digital content also includes puzzles and programs that lead the child to form a picture from different parts. The category can also include programs aimed at the development of creativity (the most popular apps of this type focus on drawing and coloring).

Digital content designed for preschoolers is very diverse, as are the approaches to its classification. Usually, genres of play are identified according to:

- the content of the play task (puzzle-game, gambling, sports games, martial arts, etc.) [18];
- the skills used in the game (action, strategy, etc.) [22];
- the presence of plots and rules (game-exercise; game with rules; game with a plot) [7].

In our view, the psychological categorization of video games suggested by E. O. Smirnova and R.E. Radaeva is

particularly interesting. It is based on the character of role behavior, as per the position of the player in relation to the play situation, and includes the following types of video games: 1) puzzle-game and traditional games on a computer; 2) arcade games – a play genre in which the player manages a character to overcome different obstacles (this kind of games usually has various levels, with each level becoming more difficult or requiring greater speed); 3) strategies – games, in which the player has a bird's-eye-view on the play activity, allowing them to manage the process; 4) simulators – games allowing the player to be personally included in the play situation (first-person games); 5) narrative games – games with a constantly developing plot, reminiscent of cartoons or films [13].

In the last few years, the so-called *virtual play worlds,* designed for children, have become widespread. These play worlds are developed either as independent virtual platforms, or as supplementary platforms for existing toys (Barbie, Lego, etc.). Such programs allow one to create a personal play world within a virtual space, develop unique characters and play plots [41].

Apart from the various apps and programs for preschoolers, toys with digital elements, which include both material and electronic components, have recently gained in popularity. Usually, these toys can be managed from a computer or smartphone. Digital toys contribute to bilateral interaction, which means that they can suggest a task and then praise the child or answer a question addressed to them [6; 35]. In Russia, digital toys are not as popular as in Europe, Japan, or the United States [15].

One of the most well-known classifications of digital toys, proposed by L. Hall et al., divides them into three categories: *interactive, smart, and connected.* This classification is based on the following criteria: 1) the level of sophistication and complexity of the technology supporting interactivity; 2) toy agency, or the degree to which the toy appears to be proactive or autonomous; 3) the interactions being offered by the toy [30]. *Interactive toys* usually do not require an Internet connection; interaction with them is limited to a given set of functions (and therefore the actions of such toys are predictable). This type of toy supports traditional play including role-play or outdoor play for young preschoolers. *Smart toys* involve the use of more complex technologies (including an Internet connection), which allow the toy to maintain a conversation and recognize the interlocutor. Interaction with this type of toy is aimed at the development and education of the child. Therefore, such toys are designed primarily for senior preschoolers. *Connected toys* represent the most complex type of digital toys, which, thanks to various technological solutions (connection to IoT, voice commands, etc.), can analyze previous interactions and adapt the content for the user, making the interaction as personalized as possible. There are also digital toys that can combine the features of several of the above categories.

Several authors distinguish between *smart* and *digital toys*, denoting that the main difference is the purpose of these toys. That is, if a toy provides sound or light signals and is designed primarily for the child's entertainment, this is a *digital toy* [35]. One common type of digital toy is the so-called *prototypical toy*. These are non-complex digital devices, which are not tied to particular play actions but rather give the child space for creativity (e.g., a Moff bracelet with a smartphone app).

Smart toys can demonstrate more complex behavior. They are ascribed a personality and demonstrate character. They can adapt to the needs of each family member. They can initiate and support communication, pick up on natural signals and react to people's emotions. One common type of smart toy is represented by animal robots, which closely mimic the habits of domestic animals (e.g., the dog AIBO, the dinosaur Pleo, etc). Such toys are also called *social robots* [19].

Generally speaking, the accessibility and diversity of digital content designed for preschoolers leads to the permanent interrelation of the elements of traditional play and play mediated by technology. As a result, the borders between these two types of play become very flexible. Children transfer traditional play plots into the virtual space, filling them with new content, and vice versa – they incorporate digital characters into non-mediated play interactions. Under these conditions, a new specific type of play activity emerges, which requires both empirical and theoretical consideration.

Empirical research on digitally mediated play

Contemporary researchers who study digitally mediated play usually focus on the following:

- the peculiarities of play activity mediated by various technologies (gadgets, digital toys, computer programs, and apps);
- comparative studies of play with digital and traditional toys;
- the influence of the frequency and type of the child's interaction with digital media on the development of cognitive processes.

In the first area of focus, as noted, researchers are interested in the interaction of children with different types of computer programs and apps [38]. Some researchers study preschoolers' interaction with digital

toys and VR toys in detail. The aim of this kind of study is usually to determine the educational potential of these technologies [41]. In the framework of such research, the peculiarities of children's interactions within digital play are also studied [23].

On the whole, research, conducted in this first area of focus shows that preschoolers interact differently with each type of digital content. This can be clearly seen in their interaction with different types of apps. E.g., a study conducted by C. Moore shows that the type of app influences not only how the child interacts with a device but also how children interact with each other. If preschoolers are playing close to each other, using apps of a similar type, each of them on their own tablet, they usually communicate rather actively. This shows that the children are actually in a *joint* play situation, which is created for them by the app, and they are actively discussing it, although each child is playing on their own device, entirely independently of the others [44].

Research by S. Kjällander and F. Moinian demonstrates that children have the tendency to transform apps according to their desires. In a digital space, preschoolers can create or rename objects and actions, as well as change the functional meaning thereof. This study has unequivocally established children's capacity to do so [34].

The second area of focus is that on children's play with traditional and digital toys. An example of this type of research is the work conducted in the US under the guidance of P. H. Kahn. The goal of this work consisted in comparing children's interaction with AIBO, a robotic dog, and that with a stuffed dog. A preliminary interview with each child provided no meaningful differences in their relationships with the robot dog and the stuffed dog. However, in the process of play, qualitative differences in the interaction with AIBO and the stuffed dog were revealed. Children tried to animate the stuffed dog using verbal means, moving the toy, or trying to feed it. Children were more likely to hug the stuffed dog in comparison with the robot dog. They were also some cases of aggression towards the stuffed dog. As far as the robot dog is concerned, most children tended to demonstrate attention toward it mainly when AIBO initiated action [33].

A comparative study of children's interaction with AIBO and a living dog are of particular interest. According to the empirical data, the robot dog interested the children first as an object for experimentation. The children were particularly interested in how AIBO plays with a ball. Therefore, they played with the robot and a ball more often than with the stuffed dog. While interacting with the stuffed dog, children demonstrated care. They caressed the stuffed dog and demonstrated social touch. The interview showed that, according to the children, AIBO had biological, psychological, social, and moral characteristics, but to a lesser degree than the stuffed dog [42].

The third area of focus is that which explores the influence of interaction with devices on a preschooler's cognitive development. Most often, these research works focus on such aspects as screen time (computer activity or online activity) and/or the genre of the digital content consumed by the preschoolers and the connection thereof with the development of attention, memory, speech, and social skills [2]. The results of this kind of research are very controversial. Thus, when spending too much time[1] at the screen, preschoolers often demonstrate such negative phenomena as weight gain, aggression, poor sleep quality, decreaseed attention span, poor vocabulary, low quality of traditional play activity, and difficulties in social interactions [1; 10; 36]. At the same time, when children stick to the recommended norms of screen time, many authors point to the positive influence that interaction with digital content has on perception, cognitive activity, visual-figurative and logical thinking, and working memory [2; 5; 17; 26; 39; 45].

On the whole, there has recently been a decline in the number of works devoted to the contraposition of the so-called "traditional play" and play mediated by technology. Given the constant interaction of children with various media, researchers increasingly turn to mixed forms of play activity, to study the transitions between virtual and physical play interactions. Findings show that this kind of play activity should be considered as an independent type of play, which requires specific research methods. This challenge has implications for the elaboration of the theoretical concept of *digital play*.

Digital play in the light of the Cultural-Historical Concept

Different terms are used to denote play activity that is mediated by technology. S. Edwards uses the concept of *converged play* where traditional play activity with toys is combined with new forms of mediated play [25]. A few authors use the concept of *connected play,* empha-

[1] Norms of screen time for preschoolers are based on guidelines from the American Academy of Pediatrics (2016) and the Canadian Pediatric Society (2017). According to the guidelines, screen time is not recommended for children under 2 years of age, while acceptable screen time for children aged 2-5 years is up to 1 hour a day [45; 47].

sizing the connections between the online and offline modalities in which the play process takes place [32; 40]. The term *digital play* is often used, however the interpretation of this concept differs greatly depending on the scientific school [27; 31; 37].

One of the most well-known authors elaborating on the concept of *digital play* in the framework of the Cultural-Historical scientific tradition is M. Fleer. Based on the ideas of L. S. Vygotsky, M. Fleer determines *digital play* to be "*the creation of an imaginary digital situation, supported through a specialized form of digital talk where the themes of the play are drawn from children's everyday experience*" [27, p. 87]. According to the author, the key characteristics of *digital play* are [27]:

1) *technical behavior* – the process by which children experiment with digital media through clicking, swiping, and other technical aspects of using the app; this kind of interaction is not regarded as play per se, because no imaginary situation is involved;

2) *imaginary digital situation* – the digitally stimulated roleplay interactions that create the context for imaginary play;

3) *digital talk in imaginary digital situations* – a form of metacommunicative language that children use in the process of play interactions; this means of communication is used both when a few children are playing on one device, and when children are playing on the same app but on their own devices, and discussing the plot;

4) *giving a new sense to digital objects and actions in imaginary digital situations* – making, renaming and/or modifying icons/text symbols to create imaginary situations, giving a new sense to the digital situation;

5) *porous boundaries between digital play and social pretend play situations* – the transition of characters, objects, and plots, created by children in digital space, into traditional play and vice versa.

According to K. Dýrfjörð, M. Fleer's characteristics of *digital play* can also be regarded as stages through which the child passes while getting acquainted with digital technologies [24].

From our point of view, M. Fleer has contributed much to the understanding of *digital play* and its developmental potential, primarily by pointing out the differentiated character of play activity mediated by technologies. *Digital play* includes, but is not limited to, technical behaviors, that is, experimenting with new apps or digital toys. This type of interaction with media occupies an important place in a contemporary child's activities. However, it is not play in the strict sense of the word. The child needs to experiment in order to get acquainted with technology, which they can later use in more complex forms of play activity. M. Fleer considers a criterion for the development of *digital play* to be an "imaginary digital situation", which she interprets in a rather different way than Vygotsky did. However, it seems that the author is not aware of these differences. M. Fleer argues that the developmental potential of *digital play* is determined by the child's participation in imaginary digital situations with the opportunity of developing the plot, changing the characters, roles, settings etc., and creating new digital situations. It is important that, in both cases, rules are required [27]. Despite the fact that the interpretation of the term "imaginary situation" in play requires further elaboration, M. Fleer's concept allows *digital play* to be considered a complex form of joint activity between children and adults, which is incorporated into the general social context of the child's life.

An interesting critique of the attempts to use traditional play theories (including the Cultural-Historical Concept) to the analysis of *digital play*, is presented in the works by J. Marsh. She finds that traditional play theories are human-oriented, and, therefore, they can be successfully used for studying speech and the social and cognitive aspects of play behavior. However, in her view, they cannot answer questions regarding the specifics of a child's interaction with technologies in the process of play. Using the ideas of post-humanism, the author elaborates the concept of *connected play*, where both physical and digital objects are regarded as possessing *agency*. Marsh considers post-humanism to be a concept which is more productive for the analysis of contemporary child's play, since the latter has very flexible boundaries between online and offline modalities and possesses absolutely different time and space characteristics [40].

From our point of view, the perspectives of applying the Cultural-Historical Concept for the analysis of digital play, are, first of all, connected with the possibility of interpreting technology as a new means of mediation, which combines tool and sign components [8; 9].

An interesting approach to the analysis of play mediated by technologies is presented in the works of N.N. Veresov and N.E. Veraksa. The authors point out the necessity of differentiating between a *digital game* and *digital play*. Although both terms are translated into Russian as *цифровая игра [tsifrovaya igra]*, they have different meanings. *Digital play* denotes a play activity per se, as a system of rules, plots and play actions, while the term *digital game* refers to software, material and/or a virtual feeling, which presupposes goals and tasks, stages, characters etc. According to N.N. Veresov and N.E. Veraksa, *digital play* possesses the same characteristics as traditional play, and can be assessed based on such criteria as an imaginary situation, rules, roles and play actions. Apart from that, for the analysis of play ac-

tivity, the authors introduce the concept of a *normative situation,* which is understood as a constellation of factors, conditions, and circumstances in relation to which society prescribes the subject certain actions (norms of behavior) [3].

Traditional play consists of typical normative situations. According to the system of normative situations, typical of particular plots and roles, children regulate their play actions and create an imaginary situation. The more diverse that the normative situations (and, consequently, the play activities that the play provides) are, the more they contribute to the development of the child. Thus, according to the authors, the developmental potential of *digital play* can be assessed based on the following criteria: 1) the extent to which its content contributes to the collective creation and the development of imaginary situations; 2) how its content facilitates and enriches interactions between players during digital play; 3) its cultural normative situations and how these are represented in the play content [47, p. 9].

In turn, a *digital game* can be assessed according to the following aspects: 1) the play roles it offers and what rules apply to these roles; 2) how taking on roles can help develop and enrich the interactions between participants during digital play; 3) how the rules of play represent cultural normative situations and what forms of player interaction are made possible by following these rules [47, p. 10].

The ideas of N.N. Veresov and N.E. Veraksa are very interesting for the analysis of the developmental potential of different types of play apps and toys, as for assessing the development of *digital play* in preschoolers.

In summary, we see that there are not many authors who turn to the problem of *digital play* in the framework of the Cultural-Historical Scientific School. At the same time, it is Vygotsky's theory that allows us to study this type of play activity as an integral part of the contemporary socio-cultural context, and provides perspectives for organizing *digital play* as a system of developing child-child and child-adult interactions.

Some concluding remarks

The presented analysis shows that contemporary children's play may be described in terms of *mixed reality,* which is characterized by the intersection of real and virtual modalities. The interaction of physical and digital objects, which takes place in the play process, represents a specific type of play activity, *digital play*, which requires empirical research as well as further theoretical reconsideration.

To understand the phenomenon of *digital play,* differentiation between "technical" and play behaviors is very important. Many authors regard *digital play* as a less developed, maybe even "worse" form of play, seeing play actions in this kind of play as limited to experimenting with a computer app or a *digital toy*. In fact, experimenting represents only one of the possible forms of interaction with digital content. It is important to highlight that the character of play interactions mediated by technology depends on the broader context in which a play activity takes place (e.g., where and with whom the child is playing, whether the parent is close to the child and whether they are taking part in the play, etc). From this point of view, *digital play* is little different from traditional play, since for the development of both types of play, specific conditions need to be created, and these conditions are connected with the organization of child-adult communities and joint means of interaction between the two. Thus, it is no wonder that, in the past few years, there has been a decrease in research works focusing on the opposition of traditional and *digital play*. At the same time, researchers have increasingly focused on the novel play practices in which children and adults are involved. Thus, the *digital play* research focuses on the necessity of classifying the categories thereof, considering them in relation to the traditional forms of play activity, and further elaborating on recommendations for organizing the interactions that emerge in specific types of child-adult communities which are mediated by digital technologies.

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Preschool Teachers' Views on Children's Play and its Observation

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There is a lack of studies about the interrelation between the quality of play support and teacher's views on it. Our aim is to study teacher's views on play and its observation; analyze the difference in views of the teachers from classrooms with different quality of play support. We conducted the survey to study teacher's views and structured observation with "Play support rating scale" (PSRS) to assess the quality of psychological and pedagogical conditions for play. The sample included 180 preschool teachers; the observation was conducted in 25 classrooms. M= 3.63, min=1.57, max=6.00. The majority of teachers consider play as a form of teaching or a context for other children's activities, but not as valuable itself. Teachers say that they observe play regularly and use their observations in planning play support. But the real quality of play support in the majority of groups is minimal. Regardless of their views on play, teachers rarely play with children as partners. There is no significant difference in teachers' views on play and its observation in the classrooms with different conditions.

Keywords: play, play support, teachers' views, observation, quality assessment.

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Особенности представлений дошкольных педагогов о детской игре и наблюдении за ней

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Существует дефицит исследований о связи представлений педагогов о детской игре и реального качества ее сопровождения. Наша цель — изучить особенности представлений педагогов об игре и наблюдения за ней, проанализировать различия между педагогами из групп с разным качеством психолого-педагогических условий сопровождения игры. Для изучения представлений педагогов проведен опрос, для оценки качества условий — наблюдение с использованием шкалы «Поддержка детской игры» (ПДИ). В исследо-

вании приняли участие 180 педагогов, наблюдение проводилось в 25 группах с разным качеством условий. Средний балл по шкале ПДИ — 3,63; min — 1,57; max — 6,00. Большинство педагогов относятся к игре как к форме обучения или контексту для другой деятельности, но не как к самоценности. Педагоги сообщают, что регулярно наблюдают за игрой и используют результаты для планирования сопровождения. Реальное качество условий в большинстве наблюдаемых групп остается минимальным. Педагоги, независимо от их понимания игры, редко включаются в нее из партнерской позиции. В исследовании не выявлено различий в понимании педагогами игры и отношении к наблюдению в группах с различными условиями.

Ключевые слова: игра, сопровождение игры, представления педагогов, педагогическое наблюдение, оценка качества.

Финансирование. Исследование выполнено в рамках государственного задания Департамента образования и науки города Москвы на научно-исследовательскую работу «Разработка и апробация модели развития компетентности дошкольных педагогов по комплексному сопровождению детской игры через использование инструмента педагогического наблюдения» в 2022 году.

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Introduction

The level of development of children's play remains low for a long time [1; 13]. An insufficient amount of play in kindergartens can be attributed to numerous factors, including changes in social situation of development, disappearance of mixed-age children's communities, substitution of play by structured adult-led play and play forms, too many school-type activities in a preschooler's timetable or a lack of free time for play, etc. [4; 7; 13]. Though most teachers recognize the meaning and value of play for early childhood development, true play is very rare in kindergartens.

According to Vygotsky, "... If there is no the appropriate ideal form in the environment, the appropriate child's activity, feature and quality won't develop" [3, p.86]. For play development children must experience ideal form of play, not its distorted version. According to the cultural-historical approach, we consider imaginary situation as a main criterion of play and double-subjectivity as its main feature. Double-subjectivity is the ability to simultaneously hold positions "in" and "out of play", to play and control the course of the play at the same time [6]. Researchers emphasize the increasing role of an adult in play support [12; 14; 27]. Play support can be indirect (a teacher does not participate in children-led play) or with adult's participation in joint play. The more effective adult's position for play support is partner position. Partner position means that the adult respects children's own play initiatives and suggests his/her ideas according to the flow and logic of children's play [12; 26]. Adult's didactic position (exploiting play for teaching, directive style of interaction and capture of all the initiative in play) destroys children's spontaneous play [14].

Studies from different countries show that preschool teachers more often prefer "outsider position" in play support [22; 26]. Russian teachers more often take an "outsider" or didactic position, they destroy play by inappropriate questions, infusion of additional educational tasks in play, or desire to make play more complete and spectacular [5; 14; 15].

Smirnova [14] and Fleer [24] consider preschool teachers' professional development as a transition from "outsider" or didactic position to a partner position in joint play with children. The challenge for researchers is to answer the question of what can facilitate this transition and make adult-child partnership in joint play more sustainable.

Pedagogical Observation of Spontaneous Play

Observation is an important part of play support. It helps teachers notice the needs of each child, create togetherness, be responsive and flexible in choosing the strategy of play support [12; 14; 26]. Observation can help a teacher to participate in joint play as a partner. However, some teachers prefer only to observe play staying in the "outsider" position; reducing their role only to observation providing materials [22]. Observation can help teachers participate in play or prevent from playing together with children, depending on how teachers practice observation, what aspects of play they focus on and how they use observation evidence. Observing children engaged in play is complicated, as many aspects of play are not obvious, and there is always a risk of misinterpretation or labeling children. Vygotsky argued: "Play is not just a recollection of child's experience, but a creative transformation of the experienced impressions,

combining them and creating with them new reality, responding to child's own needs" [2, p.87]. For effective play support and genuine partnership in joint play, teachers should understand what constitutes the basis of spontaneous play ("perezhivanie" and creative transformation of meaningful experience, not just reproduction of ready scenarios) and observe it regularly, use their observations to be flexible and responsive to child's play, decide whether they need to join play or not.

The way teachers observe children play may depend on their understanding of play and its role in the child's development [23]. Therefore, it is necessary to study teachers' perceptions and viewpoints on free play and its observation in kindergartens.

Teachers' Views on Children's Play

Recent studies indicate that Russian preschool teachers often expect play to be coherent, spectacular and scenario-based, which is contradictory to the very essence of spontaneous play [5; 15]. But these studies don't analyze how teachers' views are interrelated with real practice of play support in classrooms. Several small-sample qualitative studies include observations in classrooms (without using quality assessment rating scales) and point to a connection between teachers' views and their real strategy of play support [29; 30]. Rentzou et al. [27] showed that teacher's views on play influence real practice, however, the study is based on a survey, which is not a sufficiently reliable method for assessing the quality of play support.

Studies also show that teachers' views and beliefs regarding spontaneous play (including their understanding of play and its learning and developmental potential, the requirements of the educational program) are related to their preferred position in play support [22; 28]. Understanding spontaneous play as an adult-free activity may prompt teachers to stay outside of children's play, while their understanding of play as a form of teaching and learning may provoke excessive infusion of didactic tasks to play. However, this assumption needs further verification.

There is deficit of research on the relationships between teachers' views on play and the quality of play support in kindergartens, the analysis of differences in play support provided by teachers with diverse views on play.

The purpose of this research is to study preschool teachers' views on children's play and observation as well as to analyze the differences in views on play held by teachers using different strategies of play support in their classrooms.

Research hypothesis:

Teachers with different views on play use different strategies of play support. The more teachers consider play as valuable for itself, the more often they observe play and the higher the level of play support in their classrooms.

Teachers working in different educational programs vary in their attitudes toward play observation. If an educational program puts an emphasis on supporting play, teachers will observe children playing more often and use their observations to plan play support.

Methods

The study was conducted in the 2021—2022 academic year in two stages: 1) study of teachers' views on spontaneous play and pedagogical observation (online-survey); 2) quality assessment (structured expert observation) of play support in kindergartens in Moscow, St. Petersburg, Kostroma and Almetyevsk.

All participants of the study gave voluntary consent to participate in the survey and the assessment procedure and at any time could refuse to proceed. All the data has been anonymized.

Studying Teachers' Views on Play

To study preschool teachers' views on play and observation, we conducted an online survey based on the research of Bulgarelli and Stancheva-Popkostadinova [20]. The survey contained two set of questions. The first sed included general questions on the participants' place of work, teaching experience, current position and educational program, the age of children they work with. The second block featured questions concerning the teachers' understanding of spontaneous play and their attitudes to observing it.

All the respondents represented Moscow and three other Russian cities and answered the questions via an online form.

Assessing the Quality of Play Support

To assess the quality of play support we used the 'Play Support Rating Scale' (PSRS) [18] designed on the basis of: 1) the cultural— historical approach of understanding play and the conditions necessary for play development; 2) the principles of constructing quality rating scales of ERS [19]. The PSRS is based on the idea of complex play support that requires adult's participation in play as a partner, support of peer-interaction, organization of environment, empowerment of play during the whole day

in the kindergarten. PSRS includes 7 items: 1) space and equipment for play, 2) time for play, 3) materials for play, 4) indirect play support; 5) adult's participation in play, 6) peer-interaction in play, 7) mixed-age interaction and play. Each item includes the set of indicators (95 in total) grouped into 4 quality levels: inadequate (1—2 scores), minimal (3—4 scores), good (5—6 scores), excellent (7 scores). The PSRS allows to analyze both the overall quality of play support and the quality of conditions for play described by each item. PSRS has been validated and has a sufficient level of reliability and validity [9].

To assess the quality of play support according to PSRS, experts conducted 3-hours non-participant observation in the morning in each classroom. Before participating in the study, all the experts completed a training program on how to use PSRS (inter-rater reliability is more than 80%).

Sample

On the first stage of the study the sample consisted of 180 participants: 68.3% of the sample were certified preschool teachers, 17.2% held a position of a senior teacher or methodologist for preschool, 14.4% — other educational professionals. Moscow residents made up 37.2% of the sample. The overwhelming majority of the respondents (87.8%) worked in the public sector, 11.1% were employed by private kindergartens and daycare centers offering full-day or half-day programs, 1.1% of the respondents worked in mixed-aged play-based classrooms and didn't follow a specific educational program. The working experience of the survey participants is shown in Figure 1.

The survey participants worked with children of early preschool age (2—4 years, 20%), preschool age (4—6 years, 32.8%), early age (1.5—2 years, 5%) and mixed-age classrooms (42.2%).

The most popular educational programs for preschools are designed on the basis of recommendations of the Ministry of Education of the Russian Federation [10] and are available on the online platform 'The Navigator for Educational Programs for Early Childhood Education' [8]. Our sample includes the following programs for preschool education: 'Ot rozhdeniya do shkoly' [From birth to school] (51,1%), 'Vdokhnoveniye' [Inspiration] (11,7%), 'Detstvo' [Childhood] (8,3%), 'OtkrytiYa' [Discoveries] (5,6%), 'PROdetey' [ABOUTchildren] (6,1%) and 'Detskiy sad po sisteme Montessori' [Montessori] (5%). A much lower number of teachers relied on unique author's programs, such as 'Istoki' [Springs], 'Razvitiye' [Development], 'Raduga' [Rainbow] and 'Mozaika' [Mosaic] (1—2% or less). The data reflect the current situation with educational programs used in Russian kindergartens.

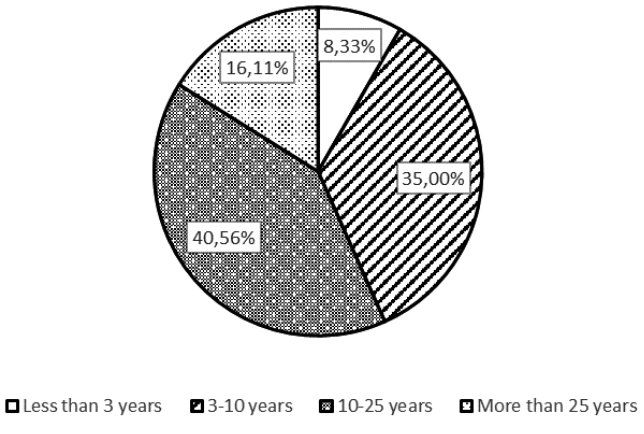

Fig.1. Distribution of the respondents by work experience

The second stage of the study included a series of observations in 25 preschool classrooms where 27 teachers, who took the survey on the first stage of our study, work. Our sample includes classrooms with different quality of play support, with an average score on PSRS of 3.63 and a standard deviation of 1.12. All in all, play support in the groups from our sample varied from inadequate (min = 1.57) to good (max = 6.00).

Results

The teachers vary in their understanding of play: 41.7% of the sample see it as a valuable for itself and as a resource for child development, 52.8% consider it as a context for teaching, assessment of academic progress, behavior correction, or personality development, while 5.6% believe play is leisure or recess-time.

When asked 'How do you evaluate the level of play development?', most of the respondents said they observe children engaged in play. 1.1% of the respondents said they conduct observation in laboratory settings, 52.2% regularly observe children in everyday settings, 41.7% observe play from time to time to notice remarkable details, 2.8% said they don't assess children's playing skills at all. Some of the given answers on these two questions contradict with each other, probably due to a distorted observation focus: watching preschoolers playing, teachers pay little attention to the play itself (they don't evaluate play development) yet evaluate children's abilities in other areas, such as communicative and cognitive skills, speech development and other learning outcomes. Only 37.3% of kindergartens in the sample made it a rule on the organizational level for their teachers to observe play.

The teachers' attitudes to observation are polarized, with some recognizing its necessity and others describing it as useless and burdensome. About half of the

teachers said they use information from observations to plan educational process (51.1%) and less than a half (39.4%) said observations help them assess a child's level of development. It is puzzling that a significant number of the respondents (39.1%) believe that observation of child's play is a legitimate procedure to evaluate teachers (for certification or quality assessment purposes), which is directly prohibited by the Federal Law 273-FZ 'On Education in the Russian Federation' and the Federal State Educational Standard for Preschool Education [16]. The teachers' views on pedagogical observation are presented in Figure 2.

To test the hypothesis of whether teachers' professional understanding of play is related to their attitude toward pedagogical observation, we conducted a statistical analysis of the collected data assigning scores to each answer choice and summing scores as a respondent's profile (total score).

First, we divided the respondents into two clusters according to their views on play and used the Welsh's t-test and the Mann—Whitney U-test to compare them. The normality of the distribution was confirmed using the Kolmogorov-Smirnov test. No significant differences were found (at the significance level of 0.05) for any value. An average profile of the teachers praising play as valuable for itself is 4.51 out of 7; an average profile of the respondents with opposing views is 4.04; p-value = 0.19 according to the Welsh's t-test; p-value = 0.23 according to the Mann—Whitney U-test.

We applied the same statistical method to test the hypothesis about differences in teachers' views on play from classrooms with different quality of play support as measured on the PSRS. Total PSRS score and scores for items about indirect play support, adult participation in play and peer interaction in play were used for statistical analysis. No significant differences were found. For the PSRS total scores, an average profile was 3.76 for the 'play is valuable for itself' cluster and 3.43 for the contrasting cluster, with p-value of 0.56 (t-test) and 0.51 (U-test). Average profiles for the indirect play support item were 3.82 and 3.70 respectively, with t-test p-value of 0.86 and U-test p-value of 0.88. Average profiles for the adult participation item were 2.71 and 2.20, with p-value = 0.50 and 0.26, average profiles for the peer interaction in play item were 4.41 and 3.60, with p-value = 0.20 and 0.17.

To form clusters according to educational programs, we analyzed answers of the teachers who worked with the educational programs implemented by at least 5% of the whole sample (6 different programs in total). We found no significant differences in profile scores of the respondents working with certain programs regardless of their pairing, with the Welsh's t-test p-value ranging from 0.08 to 0.96 and the Mann—Whitney U-test p-value = 0.053 to 0.94.

Discussion

Most of the teachers involved in our study consider play as a form of teaching or context for other activities, not as something valuable by itself, which is consistent

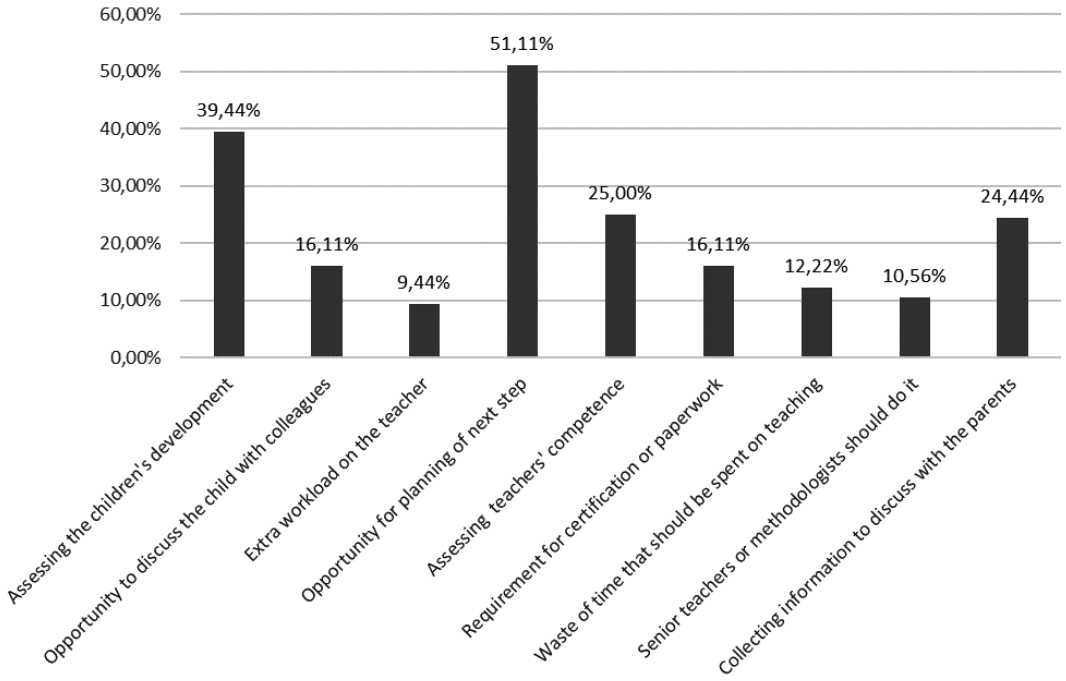

Fig. 2. The distribution of the first priority answers to the question 'What is pedagogical observation in your daily practice?'

with the data obtained in foreign [20] and Russian [15] studies. We found no significant differences in views on play of the preschool teachers with different quality of play support. A relatively large number of teachers' answers about the value of play yet score low in play support quality, it may be related to teachers knowing of the requirements of the Federal State Educational Standard for Preschool Education [16] without deepening their knowledge of children's play. Speaking of the value of play, teachers may consider it as a freedom from any adult intervention or, conversely, point to the advantages of utilizing play as a teaching tool.

The teachers, regardless of their views on play, rarely joined it as partners, which supports the results obtained by Devi et al. [22]. The opposite views on play and its value manifest itself in an apparently similar support strategy with a teacher taking an "outsider" position [2]. However, unsignificant differences in play support strategies preferred by teachers holding different views on play may be attributed to the research method (a survey) or the teachers' overall lack of awareness and reflection on their professional decisions in relation to children's play. The study of interrelation between teachers' views on conditions for play development, their role in play support and possibility to be a partner in joint play may be the issue for future research.

The majority of teachers report that they regularly observe children engaged in play and use their observations to plan appropriate play support. However, the quality of play support in most of the observed classrooms was minimal. Some teachers said they consider play observation as an assessment of their skills needed to obtain another certification, which contradicts the existing legislation and turns observation into a formal procedure. Observation is only effective as a part of complex play support that helps a teacher interact with children based on their interests, ideas and needs [26; 28].

Aspects that teachers tend to focus on during observation are often secondary to spontaneous play or even misleading [5; 6], which can make observation evidence irrelevant for planning play support. Further research is needed on how exactly teachers observe play and use their observations to plan play support, how regular observation is related to the quality of play support. It also might be necessary to provide in-service training for teachers focused on reflection on their views on play and development of competence for play observation [23].

Play support strategies may be influenced by quality of kindergarten's norms or organizational culture [19]. Our research has shown that observation in most cases is solely a teacher's initiative, not a requirement put forward by an educational organization. This may be explained by the fact that pedagogical observation isn't considered a part of teacher's everyday practice or an important step in planning play support. If a kindergarten doesn't expect teachers to observe children engaged in play, a teacher who does so anyway may receive criticism from colleagues and administrators. Therefore, when studying teachers' views on spontaneous play, their role in it and its relation to play support strategies and overall play support quality, it is important to take into account the culture of the entire organization.

The absence of significant differences in views on play of the teachers implementing different educational programs may be explained by insufficient methodological assistance for teachers in program acquisition. With no proper guidance, they tend to see a given program as a formality, not as a guide for professional development. To test this assumption, it is necessary to conduct research on a wider sample.

Conclusion

Preschool teachers vary in their views on play and attitudes to its observation, yet there is no significant difference in their strategies of play support, different educational programs also aren't related to differences in strategies of play support. There is no significant difference in views on play of the teachers from the classrooms with different quality of play support. Further research is needed to study teachers' views on the conditions of play development and their role in play support in relation to the actual practice of play support; to study how teachers understand spontaneous play and their role in its support implementing different educational programs; to identify aspects of preschool organizational culture that determine conditions for play development in kindergartens.

The obtained results can be used for elaboration of professional development programs for preschool teachers aimed at reflection and deepening their understanding of children's play and mastering pedagogical observation and play support planning.

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Psychological Assessment of a Doll within the Framework of Cultural-Historical Psychology: Possibilities and Limitations

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The problem of toy expertise is that a cultural object comes with no "instruction manual". The goal of the article is to reveal both potential and limitations of the cultural-historical psychology and activity theory as a conceptual framework for doll expertise and test the cultural form of pretend play as a criterion of its developmental function using the example of Barbie and Monster High dolls. The article proves the necessity of cultural and psychological analysis of doll play to assess the developmental potential of a doll. The work demonstrates that the image of a doll determines how a child plays with it, i.e. how the doll itself plays with that child (F. Boitendijk). For the first time it also describes how the unit of analysis of pretend play - its two-step form (Challenge + Reply to Challenge) is used as a tool to examine the function of these dolls in child development. An exploratory empirical study of children's play has shown how the images of Barbie and Monster High dolls define the way they are played with and answered negatively the following questions: does Barbie arouse premature interest in adult sexuality among preschoolers, and does playing with Monster High dolls blur the lines between good and evil.

Keywords: psychological expertise of the doll, cultural and psychological analysis of the play action, the unit of pretend play, the act of development in the play, the space of the play.

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Психологическая экспертиза куклы в рамках культурно-исторического подхода: границы и возможности

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Проблема экспертизы игрушки связана с тем, что на культурном предмете «не написан» развивающий способ действия с ним. Задача статьи — выявление потенциала и границ культурно-исторической психологии и теории деятельности как понятийных рамок для экспертизы куклы, испытание культурной формы игры в качестве критерия оценки развивающей функции игрушки на примере кукол Barbie и Monster High. В статье обоснована необходимость культуролого-предметного и психологического анализа игрового действия с куклой для оценки ее развивающих возможностей. Впервые описана функция единицы анализа сюжетно-ролевой игры — ее двухтактной формы (связки вызова и ответа на вызов) как инструмента экспертизы развивающей функции куклы. Поисковое эмпирическое исследование игр детей показало, как образы кукол Barbie и Monster High задают способ игры с ними, и позволило отрицательно ответить на следующие вопросы: вызывает ли Барби преждевременный интерес дошкольников к половой жизни взрослых, а так же размывает ли игра с куклами Monster high понимание детьми границ между добром и злом? Размывает ли игра с куклами Monster High границы между добром и злом?

Ключевые слова: психологическая экспертиза куклы, культуролого-предметный и психологический анализ игрового действия, единица сюжетно-ролевой игры, событие развития в игре, пространство игры.

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Introduction and the Issue of the Research

The starting point of our analysis and understanding of a doll assessment and evaluation is the psychological and pedagogical concept of toy evaluation developed by E.O. Smirnova, N.G. Salmina and I.G. Tikhanova [7] in the "Center for Psychological and Pedagogical Expertise of Play and Toys" of Moscow State University of Psychology and Education. The authors propose the following main criteria for psychological assessment of the quality of toys: (a) the toy complies with age-related tasks (analysis of games and toys should be carried out through analysis of the developmental actions preprogrammed in them); (b) the properties of the toy ensure complete orientation of play actions; (c) the toy allows to perform various developmental actions (i.e., its developmental potential).

A toy "*is a kind of 'packaging' of all components of an activity*, and it is from this point of view that its assessment should be carried out (analysis of the characteristics of motivational, orientational, control and evaluation parts), and, thereby, its ability to realize its developmental functions" [7, p.10]. A figurative toy — a doll — as a means of mastering relationships between people should trigger pretend-playing of human relationships, the meanings of actions. "*This type of toy does not contain complete orientation and operatorics for the child to pretend-play a relationship*" (emphasis ours) [ibid.].

The difficulty of toy evaluation is that its developmental action is not "written" on the toy as a cultural object: the full form of orientation of the play action in the toy is merely suggested. How? According to the concept of the Center, the developing capabilities are programmed in the toy: all the components of the activity are "packed" in it, and the toy itself provides them (if an adult shows a child how to handle it properly). Thus, the duality of the meaning and sense of the action with a figurative toy is smoothed out, whilst the "decoding" of the symbolic meaning of the play vanishes into the background.

How can a researcher watching the pretend-play be sure that the child has identified the ideal cultural form of human relations instead of only recreating an example of behavior shown by a specific adult? When evaluating a doll, one cannot do without an ideal cultural form of a pretend play: mental development is assessed through establishing a gap between the real and ideal forms of the play. Otherwise, it is unclear whether the toy activates an age-appropriate play or not.

The ideal cultural form of pretend play \ as the unit of its analysis

When determining the ideal form of a pretend play, we relied on the procedure of objective and normative diagnostics of development, which was applied in the theory of developmental learning [5], and we found out that an ideal form of a play contains two steps: a challenge and response to a challenge [13]. The motive of play action is considered an initiative, and the agency of the child consists precisely of children testing the meaning of an action. The two-steps form for us is the norm of development, the unit to which the observed plays of a child with a toy can be compared.

Objective-normative diagnostics of the developmental function of the doll require (a) semantic analysis of the

symbolic content embodied in the doll, i.e. the answer to the question of how the toy's image plays with the player (F. Boitendijk), and (b) psychological analysis of the play actions by which the child discovers the doll's image.

Questions to be answered by the experts

We have chosen two dolls that cause a lot of controversy and negative ratings: Barbie and Monster High by Mattel. It was not so much the general characteristics of their negative and positive qualities that were important to us, as was the answer to specific questions from parents and specialists about possible negative consequences of playing with these toys. As for the Barbie doll, this is the question of whether it causes preschoolers' premature interest in adult sex life; *while for Monster High dolls, it is* whether playing with them blurs the boundaries between good and evil.

Analysis of Preschool Children's Playing with a Barbie Doll

Semantic analysis of playing with a doll is a new challenge for a developmental psychologist. Given the cultural predetermination of development, it is necessary to understand the socio-cultural context of Barbie, which affects its perception. Barbie was the first doll to embody the image of a young teenage girl. The target audience age for Barbie is defined by the company in the range from 3 to 12. For girls, she embodies an attractive image of future adulthood. L. Goralik [1] pointed out the ambiguity of Barbie's image. On the one hand, the company has been promoting this doll for decades as a friendly and active girl with good taste, able to make decisions on her own and take responsibility for her behavior, living a life full of diverse experiences (including professional ones), in which, nevertheless, there is no place for marriage or motherhood. On the other hand, Barbie has a feminine figure, and her image has always corresponded to an ideal of female beauty [19] fashionable at the release of the next collection of dolls of this brand.

The company offered not just a doll, but a holistic, diverse world of Barbie's life, which mirrored social changes that caused lively controversies, such as female emancipation or transformation of family relations. According to L. Goralik, Barbie has become one of the brightest socio-cultural symbols of the Western civilization. The author pointed out a number of symbols, or even stereotypes, with which Barbie is associated in the mass consciousness: femininity, prestige, well-being of its owner, a sex symbol, etc. The latter stereotype has caused arguments between supporters and critics of this doll, since it concerns a difficult-to-study personal sphere of the child and is associated with adults' understanding of psychosexual development and gender education of children. For example, when we asked a five-year-old girl in the kindergarten, who was constantly playing with Barbie, if she had such a doll at home, she said no, mom wouldn t buy one. "Mom says you can't put her in a stroller!" Adults want girls to play the maternal role in the right way, but they are not ready to recognize a child's right to a question about where children come from, and reasonable parents do not allow children to be aware about the intimate aspects of adult life.

How can adulthood, preset in culture, implying intimate relationships, be seen by preschoolers? It involves starting a family, bringing up the children, and a legal definition of a minimum age of marriage. Folk fairy tales addressed to preschoolers end with a wedding and accession to the throne; their characters undertake difficult but noble deeds, and they always win. The characters have high morals and beautiful appearances, but there are no hints of intimate relationships in these texts. In the plots of books, magazines and cartoons about Barbie's life, there is no wedding of Barbie and Ken. Barbie's body has no genitals or nipples. At the same time, some psychologists, educators and parents all over the world believe that Barbie causes premature interest in sexual relations in girls. Unlike preschoolers, those specialists do know about sex life, and their negative attitude towards this doll is based on a projection: it is difficult to explain to a child where children come from, so it is easier to remove the doll. But with the disappearance of the doll, the question of children's comprehension of the birth of children or marital relations does not disappear. It is important to understand whether preschoolers really do associate adulthood with intimate relationships, if they do read sexuality in the image of Barbie, and if this is how playing with Barbie differs from playing with ordinary dolls. To answer this question, we did a pilot research[1] aimed at identifying differences between the play of girls aged 3—7 with Barbie and with ordinary dolls.

Psychological analysis of playing with two types of dolls made it possible to determine the agency of chil-

[1] The pilot experiment conducted by M.V. Antonova [14] involved 10 girls from 3 years, 4 months old to 6 years, 8 months old; the total number of recorded plays was 56 (with Barbie — 29, with ordinary dolls — 27). The partner in the play was an adult who acted for another doll, played along with the child, but his participation in the play was aimed at supporting the initiative of the child, avoiding repetitions of the same events, so he built situations requiring leaving the house (the child coughs; there is no food). At an older age, the girls unfolded the plot on their own, and pointed out to the adult what he should do.

dren's play initiative, which was evaluated according to the following indicators:

1. Structuring of the play space and the presence of polarized semantic fields (if adult and non-adult/children's relationships were played as oppositions).

2. Intentional transitions across the border of semantic fields of child-parent relations and other semantic fields where relationships are arranged in an adult way. The place, where the girl playing for Barbie goes indicates her interest in human relationships characteristic of this semantic field.

3. Features of characters' behavior in each of the spaces, i.e. what actions, according to the player's ideas, are appropriate there.

The following features of playing with different sets of dolls were observed.

Younger preschool age (3—5 y.o.; 19 pretend plays)

1. While playing with *both t*ypes of dolls, the girls started inhabiting only "their own" space: the parent's house, in which the dolls acted as mom and dad taking care of the baby (Barbie was mom Alina, and Ken was dad Seryozha), or the house in which a mom, a child, and a mom's sister lived. They gave the other doll, Veronica[2], the role of an aunt, a neighbor or a parents' friend. The girls played "family", played "house" where everybody lived in one place, for example, in the kitchen, i.e. in an inner space of the house, which was gradually becoming well-differentiated: a bedroom (each doll had its own bed, but girls could put dad and mom in the same bed, and the baby and friend in other ones), a dining room, and a bath appeared. By the age of 4, children were building separate bedrooms for their parents and family friends. By the age of 5, they were creating separate houses for their own family and family friends.

2. In the beginning, the dolls left the house for the outside world only when heading for two places: mom or dad would go to do the shopping or to work. But by the age of 5, the "other" world had expanded significantly: there was a forest with a clearing, a zoo, a circus, a hospital, a barbershop, etc. These transitions were accompanied by changing the clothes: before going to the zoo, the dolls put on different dresses. The transitions were supposed to ensure a normal life of a family, so they cannot be considered semantic transitions from childhood to adulthood.

3. Since the girls gave the dolls the parts of parents, i.e. adults, the doll's behavior in the external space was relevant to the role given: mom tried on clothes in the store ("Ask me where I came from, so beautiful"), scolded her daughter, put her in a naughty corner for disobedience, went out with the child for a walk or to the doctor's, took her to kindergarten, etc. Barbie's female friend Veronica would cook. Manifestations of a close relationship between dad and mom consisted of a kiss before leaving for work, or before going to bed. The dolls changed into pajamas for the night.

Senior preschool age (5—7 y.o.; 25 pretend plays)

Since the age of five, important differences between playing with two types of dolls started emerging.

1. When playing with *Barbie dolls* (17 pretend plays), the interior space of the house was divided into functional zones (separate bedrooms for parents, child, guests; a dining room, a kitchen, a bath). The outer space was also well differentiated; there were many different locations in it.

2. Plays with threefold content were observed. The first content consisted of family life (parents and a child, or a husband and a wife without children), in which transitions were similar to transitions in the plays of younger children, e.g., as in "playing house".

The second content consisted of a transition from the children to the adult space. It was embodied in three consecutive plays, which made up for a semantic transition from a girl to a wife/mother. In the first play, Barbie and Ken meet, Barbie and Veronica invite Ken to visit, and offer to choose a bride (a challenge). In the second play, Ken chooses his future wife, they go dancing or to a movie, and then they go back to their own homes. The main event of the last play is Ken and Barbie's wedding (an answer to the challenge). After that, they move houses to live together as a married couple, go to bed, and in the morning, there is a baby in the crib. They take care of the baby.

In the third content, the couple lives together in a pink house, they do not have any children, the wedding is not played out, but is implied to have happened (one-step plays). Barbie and Ken go to work, visit friends, do the shopping, or go dancing.

3. In all the plays, the girls adequately recreated the characters' behavior appropriate, in their opinions, in each of the spaces. For example, the wedding was played out very enthusiastically and in much detail: they prepared a celebratory dinner, an engagement ceremony, and a bouquet. When the child was born, they chose a name and a godmother, etc. The girls paid a lot of attention to the dolls' appearance.

1. When playing with *ordinary dolls* (18 pretend plays), the play space was divided into "their own", i.e., home, and "another", external space: shops, work, a kindergarten, a dance floor, etc.

[2] Veronica is a Russian version of Barbie.

2. When six-year-old girls "played house", transitions between spaces were not semantic, since they were determined by the context of family life. However, in the plays of children aged 6+, the behavior of dolls at home and outside it changed: the dolls lived a new, teenage life, were independent from their parents, and we assess this fact as a semantic transition.

3. Six-year-old girls located the play in the house and recreated family life. The family, or just the mom, would go for a walk with the child, the dad could go to work or take the child to kindergarten, parents did shopping, went to the pool, etc. By the age of seven, the repertoire of play actions had narrowed gradually: dolls came home to eat, change clothes, pretty up, go to bed in the evening, but they spent most of the days and evenings visiting friends, going to birthday parties, dancing, walking in the park, buying new outfits in the store, etc. Dolls acted as grown-up friends, took care of themselves, combed their hair in front of the mirror, applied creams, and changed before going out.

The research helps to answer the question of whether playing with Barbie causes an untimely interest in the sexual life of adults, i.e. to picture to yourself how the image of Barbie plays with the imagination of a child playing. We have already mentioned that understanding Barbie as a stimulus of having interest in the intimate relationships comes from an adult. The children's question is rather where children come from[3]. The image of Barbie (a teenager, a young girl) is ambivalent; she fits into the children's understanding of the structure of the family life in different ways. In one case, it engages the child's interest in understanding the path that must be followed in order for a child to appear. This path is associated with external attractiveness, responsible choice and a wedding as a public sanction for the birth of a child, as a ritual separating adulthood from childhood/childlessness. A girl aged 5 years 5 months plays a dance of Alice (Barbie) with Sasha (Ken), and tells Sasha: "We are going to have a baby. Oh no, first the wedding, and then the baby!" The cohabitation of Ken and Barbie in the same house is possible after the wedding, which is played out in detail and in various ways, the couple returns home, lies down in the same bed, they kiss, and the next morning their common life is focused on taking care of the baby. The girl is interested in the event of the ritual itself, in which love is embodied and revealed, rather than in the details of the fertilization procedure. It is evident from the flow of the play, as natural as breathing. We argue that the child's understanding of the appropriateness of the appearance of a baby after the wedding is an age-appropriate older preschoolers' idea of adult intimate relationships. It is important to the child that the baby appears when mom and dad love each other.

In another content, Barbie awakens a different experience in the child: the wedding is not being played out, Veronica and Ken are already married and live together. In the evening, after dinner a girl of 6 years8 months puts V. and K. in the same bed, K. kisses V., while the child giggles, looking closely at an Adult's (hereinafter — A.) reaction, covers the dolls with a blanket over their heads, with only her feet left visible. Another girl (6, 1 y.o.) who has not played the wedding either, puts B. and K. in the same bed in the evening, looks at A., says they will sleep naked, and laughs; K. kisses B. and the girl giggles again. She recreates the behavior of a couple in love in the play (this child has young parents who got married before the mother came of age). The translation of the peek at A. and the giggling indicates that the girls had had an experience which replay A. may disapprove of. The ban gives rise to interest, but ***playing with Barbie reveals having such an experience rather than stimulates it***.

A 7-year-old boy approached A., who was looking for Barbie dolls in a group for an experiment, and gave him one of them with her legs spread, showing her crotch: "Here's Barbie!" The child is living in a one-room apartment with parents who do not hide their intimate life from him, not to mention the TV with movies of 18+ content turned on.

Analysis of Children Aged 5—10 Playing Monster High Doll

Conducting a semantic analysis of plays with Monster High dolls (hereinafter — MH), we rely on the modern interpretation of the concept of monster by M. Foucault: "A monster is determined by the fact that by its very existence and appearance it violates not only the laws of society, but also the laws of nature" [11, p. 79]. In 2010, Mattel introduced fashionably dressed monster dolls as toys for girls, while rejecting the negative meaning of the concept of "monster", and claiming a new one: a monster is a bright teenager with a unique appearance, willing to communicate in the community of unique personalities [20]. The first line of MH dolls quickly became infamous. To promote the dolls, an animated series was filmed, books were published, video games were developed, etc. As characters, these dolls represent fashionable teenagers. In their images (and, hence, in the appearance of dolls), human and non-human features are combined. Thus, Frankie Stein is a "daughter" of Dr. Frankenstein, and her body has traces of artificial cre-

[3] One of the age tasks of a preschooler is to understand the finiteness of life and its origin (see K. Jung. Conflicts of the child s soul).

ation: seams, neat metal bolts in her neck, unnatural skin color. Some adults, in their turn, saw the products of the Monster School as wrecking, introducing unacceptable topics of death and demonism into the lives of children, representing evil as good.

A comprehensive study of these dolls was conducted under the guidance of E.O. Smirnova [8]. It shows that MH dolls for girls of preschool and primary school age are the standard of beauty. Most preschoolers played with MH as with ordinary dolls, without demonstrating any non-human specificity; there was no recorded aggression or fear manifested in their plays.

We were basing our assumptions on the following: *if undesirable ethical and aesthetic meanings are set in the dolls of the Monster High, then these meanings should manifest themselves in the plays of children with MH*. Our goal was to establish how children recreate the non-human, ambivalent image of monster dolls, the subjects of what actions these dolls become in the play. To identify the personality traits set in these dolls by the brand owners, we analyzed popular animated series sharing information about MH. Our analysis was based on the works of Yu.M. Lotman on the structure of the event of the plot text as a transition across the border of semantic field [2].

The world of MH is presented as chaotic and uncontrollable, with comical and incompetent adults: the school principal is an adult daughter of a headless equestrian, who cannot remember what happened a moment ago; the Math teacher — foolish Lu Zar, (hinting at *loser)*, who is the only human in the animated series.

The characters themselves are stable in this world; the plots of media products about MH are built around their relationships, and the events in the series consist of changes in these relationships. The mood of the series is ironic and cheerful. All conflicts are resolved successfully, each character is right in his own way, heroes can compete, but they are not enemies. Monster High students are focused on communication and self-expression.

The characters' non-human features have the following functions: a) to help the viewer to identify the character and the reasons for their behavior (Minotaur's son is stubborn as a bull); b) to turn scary characters into funny ones, to create specific comical situations (Gorgon's son can take off his glasses at the request of an impenetrable teacher, and turn the teacher into a stone until the end of the class). Non-human features are often played out ironically: vampire's daughter has fangs, but is vegetarian.

The images of MH dolls are difficult to perceive due to their ambivalence. According to their bodily proportions and colorful clothing, these dolls represent modern beauty dolls, but upon careful examination of the details, their non-human properties and signs of possible aggression (claws, fangs) become visible. Mattel designers intentionally conceived this combination of beauty with non-human properties as a joke.

A wholesome perception of ambivalent images of the MH requires simultaneous perception of various aspects of their appearance and an ironic connection between these two sides. It is not that easy for children: preschoolers are not yet able to hold several intellectual positions at the same time, while at primary school age this ability is only being formed [12].

The sample of our research consisted of 46 girls aged 5 to 10.

The researcher invited children into the play room in groups of 2—3 people to play with four MH dolls, as well as several Barbies, in order to reveal not only how children play monsters "among their own", but also the behavior of MH in relation to people; children could use toy furniture and some play objects (cubes, buttons, etc.).

If there was no meeting of people and monsters in spontaneous play, then A. joined them, acting for a Barbie (they were less popular) and played out such a meeting (Barbie accidentally met monsters, and was very surprised by the peculiarities of their appearance). To determine the agency of MH dolls in children's play, we used analysis of role-playing conflicts (challenges) that occur when monsters and people meet.

Senior preschool age (5—6 y.o., 3 pretend plays, 6 children)

We did not organize many plays for preschool-age girls, because they do not notice the non-human features of MH dolls [8]. Consequently, the children did not divide the play space into *human* and *monster* spaces: Barbie and Monsters got along in the same house and acted with the same rights (participated in the same beauty contest).

At the same time, all preschoolers avoided answering Barbie's questions about the features of the appearance of their monster dolls ("Oh, why is your skin of such an interesting color?"[4]). In the situation of role-playing conflicts, there were no cases of aggression on the part of monster characters to humans in general, or to Barbie in particular.

Primary school age (7—8 y.o., 8 pretend plays, 15 children)

Girls aged 7—8 perceived the non-human features of monster dolls in the play in one of the three ways.

1. They ignored all the differences between people and monsters (even despite Barbie's questions).

[4] Examples of answers: "It's okay", "How do we know, right"?

2. The children tried to convince Barbie that the differences were insignificant (her reference to fangs is countered by the fact that the "monster" does not eat meat at all, while grave skin color is explained as "just a tan").

3. Children used non-human features of monster dolls in the play as magical properties that have no "evil" or "good" meaning.

The space was divided between humans and monsters in a single play[5], and this distinction arose during the development of the play plot[5]. In other plays of children of this age, MHs could have an unusual appearance and magical abilities, but this did not lead to the opposition of people and monsters. MHs did not show any aggression to people, and in a situation of role conflicts (challenges) they acted in a human way[6].

Primary school age (9—10 y.o., 15 pretend plays, 23 children

Children aged 9—10 perceived the non-human features of monster dolls in the play in one of two ways.

1. The girls played with monster dolls as glamorous [10] villains who were both up for public entertainment, and ranged against humans. At the same time, the non-human traits of the characters (fangs, claws, magic) were used to gain an advantage in a conflict with people.

For example, Anya (nine y.o.) — Frankie, Olya (9) — Draculaura, and Nara (9) — Vandala went to McDonald's. Vandala went to make an order (Nara was busy looking for a suitable substitute item), and Frankie and Draculaura talked while they were waiting: Frankie: *Why do these people always cook for so long?*

Draculaura: *Because they are people, and we are monsters!*

They laugh.

Frankie: *We're monsters; we want it all in a second!*

Draculaura: *Yes, because we can eat people*.

In the same place, after a few replicas.

Vandala: *Girls, would you like a glass of juicy... eh, of bloody juice?*

Frankie and Draculaura, simultaneously: *Yes!*

In another play, Frankie, having tied up Barbie, asked her an ominous rhetorical question: "We are monsters. Do you think monsters can be kind?"

Predominantly, the meeting of Barbie (A.) and monsters ended with her death. If Barbie noticed their non-human features, they willingly turned them against her, and, using physical superiority and magic, killed her, after which they would often eat her.

The main topics of the plays were fashionable entertainment and villainous behavior. The girls' characters usually went to have fun in a restaurant or bar, and while playing, they often turned into real monsters (committed murder, fried the victim in a frying pan, and then ate them).

2. The girls played with MH dolls as magic tricksters, accentuating the situation that allowed them to violate social norms. The non-human features of the characters were used by children to play out provocations. When meeting Barbie, the monsters did not harm her, and let her join their activities (e.g., a party).

For example, two girls were playing out going to the bar. Alice (10) said about her doll

Frankie: "She is drinking alcohol" (giggles, looks at A.).

A. does not comment in any way, pretends to be busy.

Alice: "Okay, she's not drinking.[7]"

In an imaginary situation, while playing with dolls, children crossed the border, leaving the socially acceptable semantic field, and on a few occasions, they returned. In such plays, the challenge was often addressed to an adult: when a character intended to do something forbidden, the play slowed down, the children giggled and looked for the researcher's reaction.

Comparing the plays of girls of different ages allows us to imagine how the images of Monster High dolls play with the imagination of a child playing. We emphasize the complexity and ambivalence of the images of these characters. MH dolls can simultaneously respond to several different needs of girls: a) be beautiful and expose this beauty (model body proportions and bright, shocking doll outfits); b) actualize accumulated aggression in the play (signs of possible aggression of the MH lead to this), and c) try out prohibited behaviors (smoking, drinking alcohol).

At the same time, the topic of entertainment related to exposing their beauty was repeated in all the studied ages (becoming more complicated with age: from relaxing on the beach and participating in a beauty contest at preschool age, to visiting bars, clubs and restaurants in the plays of children aged 9—10).

[5] 8-year-old girls played Barbie and Claudine (a werewolf). They shared a house, but the werewolf began to growl and scare Barbie for fun. Other residents of the house were unhappy with the noise, but the werewolf had fun scaring Barbie, and as a result, some characters moved to other houses.

[6] When Barbie (A.) came to the monsters and claimed that their house belonged to her, and she was unhappy that some monsters lived there, they asked her to show her documents, and sent her off only in two cases using their own features (Claudine: I'm a werewolf! Shoo! Or I'll scratch you!).

[7] Frankie, Vandala (girls aged 10) and Claudine (Olya, 9) are going to play "truth or dare" in their house, and put their dolls to sit in toy furniture. Sasha (Vandala), pointing to the dolls-girlfriends on the couch, says: "And these two are pregnant." The girls giggle and look at A. "I'm kidding, they are not."

We have observed the following dynamics in perception of the non-human characteristics of MH dolls. Up to the age of 9, girls know that these dolls are "monsters" (they often called their characters by names from the animated series), but the meaning of the concept of "monster" remains unclear and has no negative connotations. In one of the plays, the character of a 6-year—old girl (Claudine) tells the character of A. (Vandala) that they are both monsters and, therefore, "should look great!" People and "monsters" are not opposed in any way, but get along; the non-human qualities of the images of the MH were perceived as their exceptional or magical properties.

Girls aged 9—10 oppose humans and monsters in plays. Monsters act as glamorous villains or "tricksters", violating behavior norms. Each of the described ways of playing with MH is based on the dolls' features. On the one hand, they call themselves monsters and have signs of traditional negative characters. On the other hand, according to the manufacturer of these dolls, they only look like monsters, but never behave like ones.

If the girls perceived dolls as villains, then the play acquired the character of *a direct discharge of aggressive feelings*. When Barbie (A.) appeared in the play, the girls' characters were happy to kill her, and eat her.

Analyzed plays do not allow us to assert that Monster High dolls "blur the boundaries between good and evil." Since these boundaries are never given to children in a ready-made form, the child is faced with a task of setting the boundaries themself. Proper and unacceptable behavior can be safely tested in a play. The analysis of various play actions (role-playing conflicts, construction of semantic fields and metacommunication) showed that the characters of the children acted consistently, as beauties, villains, or "tricksters". The beauties were exemplary well behaved, the villains were exemplary monstrous, and the activities of the "tricksters" were built around the possibility of violating the norms of a child's life. In the first two cases, the boundaries between good and evil were represented clearly, while in the last one, the focus of the children's attention was crossing the border: they tried violating the norm of their life, to act in a way they saw adults do.

Living through and making sense of aggression in a play situation is a norm [16]. Although MH dolls belong to the type of toys intended to be an example for children, their images cannot but "trigger" an aggressive experience of a child (e.g. fangs and claws are there for a reason). Some of the study participants were on the threshold of adolescence, and the tasks of this period include testing and mastering one's own aggressive or provocative behavior. Unfortunately, we do not know the family circumstances of our subjects (as it was in the experiment with Barbie), so we do not allow ourselves to try to guess the experiences that the images of MH awakened in them. A separate research question is to identify ways of playing in which the children themselves intentionally overcome the aggression preset in the image of monster dolls.

If the girls perceived monsters as non-humans, but not villains, then the play took on the task of testing out the norms of behavior. The characters of the girls went to have fun and found themselves in situations open to violating the norms of a child's life. At the same time, the images of dolls did not suggest ready-made behaviors to children, as it was in the play "Villains". The girls hesitated, giggled, looked for an adult's reaction[8] — they were looking for reasons for their own choice in relation to the ban that existed for themselves.

A junior schoolchild is surrounded by rules and regulations. Awareness and comprehension of these norms is an age-related task (especially so, as we approach adolescence). The study of the phenomenon of the play usage of MH as characters of unclear agency (neither "evil" nor "kind") who find themselves in provocative situations seems promising to us, since this way of playing allows a child to objectify and comprehend the real circumstances of one's own life that cause ambivalent experiences.

Conclusion

Finally, it is necessary to answer the question of the possibilities and limitations of our method of doll assessment and evaluation. The semantic and psychological analysis of playing with a doll has shown how difficult it is to link general scientifical schemes of ontogenetic development with daily child-adult life. At the same time, our study revealed a relatively complete and lively process of children searching and recognizing the contradictory image of Barbie and Monster High set in the toy, and helped to evaluate the toys' functions within the framework of developmental psychology.

Based on the research, it is legitimate to formulate the following conclusion: the comparison of the results of cultural analysis, real children's plays with a toy, and indicators of the ideal form of pretend play is a productive way of psychological assessment of a toy.

[8] It is essential that in the plays of villains, children did not hesitate and did not show any interest in the adult's reaction while their characters committed monstrous acts.

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IN MEMORY OF A.R. LURIA
ПАМЯТИ А.Р. ЛУРИИ

Introduction to the Rubric "In Memory of A.R. Luria"

Вступительное слово к рубрике «Памяти А.Р. Лурии»

Dear readers,

This issue of the Cultural-Historical Psychology journal contains a selection of the articles dedicated to the 120th anniversary of Alexander Luria's birth. He passed away 45 years ago, and there are not many of his disciples left who were lucky to learn from Luria, know him personally, and collaborate with him. In this selection of the articles, Luria's disciples Michael Cole, James Wertsch, and Luciano Mecacci write about him.

Michael Cole shares his very important thoughts on a shift in his consciousness — from a behaviorist and psychometrically oriented view of science typical for an American scientist of the middle of the XX century to a "...more mature understanding of the overarching theoretical framework that he (Luria) had been urging upon me from the beginning ("Read Vygotsky")". This theoretical framework is a cultural-historical psychology that helped Michael Cole to discover a new approach to experimentation and made him concern for ecological validity. The transition to the cultural-historical science was not easy, and the analysis of this transition seems prominent for a contemporary reader. Cognitive science is obviously approaching some of the ideas of Lev Vygotsky nowadays [2]. This is sometimes realized but more often not realized by cognitive scientists. A lot of scientists who are approaching the ideas by Vygotsky and Luria, hopefully, will have to overcome these difficulties of transition. Cole's thoughts and his article on his hooking up with romantic science of Alexander Luria [3] will be useful for them.

Memories of James Wertsch complement the thoughts of his friend and countryman Michael Cole. They refer to another — emotional and ethical — aspect of Luria's heritage. One of the strong and well-remembered impressions of James Wertsch was an impression from the dialogue between Alexander Luria and a female patient from the Institute of Neurosurgery, not so much the content of this dialogue but its atmosphere and Luria's skills to establish an emotional contact with the patient, uphold her, and inspire her to struggle against her illness. James Wertsch is famous in science as a promoter of Lev Vygotsky's ideas. The most famous book by him, "Vygotsky and the social formation of mind" (1985, 1988), was cited 8696 times.

Memories of Luciano Mecacci, an Italian psychologist and psychophysiologist, reflect the ebullient energy of Alexander Luria like a drop of water. In their first meeting, Luria conceived a project of translation of his works on neuropsychology and psycholinguistics to Italian and immediately wrote a table of contents for a book. He then switched from his own works to the works by Luciano and inspired him to write a book with a review of relations between psychophysiology and psychology in the Soviet Union. All of these plans were implemented. Mecacci became a faithful associate of Luria and successfully spread his ideas and the ideas of Vygotsky.

These articles are followed by the works of Moscow disciples of Alexander Luria and their younger colleagues, and the works of the followers of his ideas. This section begins with an article by Natalia Korsakova who

had been working at Luria's laboratory in the Institute of Neurosurgery for many years. Korsakova and her young coauthor Yana Vologdina who is currently working in the Institute of Neurosurgery address a concept of neuropsychological syndrome which is highly important for the theory of neuropsychology by Alexander Luria. The authors introduce an original view of the dynamics of this concept's content. Korsakova and Vologdina consider the concept of syndrome to be fully elaborated in 1962 when the first edition of "Higher cortical functions in man" was published. I can certainly agree with them as the concept of function and principles of its localization are analyzed in detail in this book. The concept of factor is introduced in the preface to the first edition of this book: "Thorough analysis of these deficits (deficits of higher cortical functions in local brain injury — *T.A.*) allows a clinical psychologist to identify the factors which underlie them in many cases and to raise important questions on brain organization of complex forms of mental activity" (p. 10). Luria's concept of neuropsychological factor is based on a mathematical term integrated in psychology and psychophysiology by Vladimir Nebylitsyn (p. 89). The prominence of this concept for Luria is seen in the fact that the title of his report at the Ciba Foundation Symposium on Disorders of Language in May 1963 in London which brought together the narrow circle of scientific elite was the "Factors and Forms of aphasia".

In the next article by young neuropsychologists Yana Panikratova and Roza Vlasova, the disciples of Tatiana Akhutina, and their colleagues Irina Lebedeva, Valentin Sinitsyn, and Ekaterina Pechenkova, the theoretical issues of neuropsychology are addressed from another perspective. The authors of this article set a promising and extremely difficult aim to demonstrate the scope of neuroimaging and neurostimulation methods to develop the neuropsychological theory of systemic and dynamic localization of higher mental functions (TSDL). In my opinion, they have successfully fulfilled this aim. They begin their article with a brief description of the TSDL, then highlight the basics of a particular neuroimaging or neurostimulation method and results that may be obtained with it, and further address the scope of this method to study the intact brain or the brain with local injury. In their conclusions, Yana Panikratova and her colleagues suggest possible designs of the neuropsychological studies in patients with local brain injury and healthy individuals and methods for statistical processing of the results. The complex material is presented succinctly, simply, and clearly so that the article can be recommended as a must-read for neuropsychologists, psychophysiologists, and cognitive psychologists during their education.

An article by Tatiana Akhutina, a disciple of Alexander Luria, continues the neurolinguistic line of his research. Tatiana Akhutina and her coauthor Ekaterina Oschepkova, a psycholinguist, analyze the possibility of dissociation between syntagmatic and paradigmatic mechanisms of language in typically developing children. Development of the structural-functional components of higher mental functions is irregular which is the main postulate of the contemporary neuropsychology of individual differences. Due to this irregularity, the neuropsychological analysis may reveal the relative strength/weakness in the functions of either anterior or posterior cortical regions located in either left or right hemisphere in healthy adult and child populations. The authors, following Luria, formulate a hypothesis on syntactic difficulties in construction of a text and sentence in primary schoolchildren with a weakness of the anterior regions of the left hemisphere, and lexical difficulties in children with a weakness of the posterior left-hemisphere regions. These difficulties were observed in the texts of narratives by second-graders based on a series of pictures. The finding confirms that it is valid to apply Luria's theory on syntagmatic and paradigmatic mechanisms of language to typically developing children.

The final article in this issue is a work by a famous psychophysiologist Regina Machinskaya and neuropsychologists Marina Zakharova and Anastasiya Agris, the disciples of Tatiana Akhutina. The relation between neuropsychology and psychophysiology is traditional. Complex studies which apply electroencephalography were carried out as early as by Alexander Luria and Evgeniya Khomskaya. The group of psychophysiologists from the Institute of developmental physiology of Russian Academy of Education under the leadership of Deborah Farber and then Regina Machinskaya has a long history of collaboration with neuropsychologists. Their reports and articles were always presented at Luria's anniversaries. This time the authors describe their studies addressing the associations between executive functions and school readiness in preschoolers.

All of the authors who provided the articles for the current issue rely on the same scientific basis. It is the theory of systemic and dynamic organization and localization of higher mental functions developed by Alexander Luria. Luria always insisted that he continues elaborating the ideas of his teacher and friend Lev Vygotsky. The neuropsychological school of Vygotsky and Luria is living and developing which is evident from the articles of our small selection. Their authors have a sense of duty to pay tribute of love and respect to their Teacher who was one of the founders of the world neuropsychology.

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Remembering Alexander Luria…

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Вспоминая Александра Лурию…

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It has been almost exactly 60 years since my first meeting with Alexander Romanovich Luria. I was a 24-year-old American psychologist with a PhD in mathematical learning theory and a participant in the recently formed post-doctoral exchange program between the USA and the USSR (pic. 1). He was a 60-year-old Soviet psychologist who had survived the Purges, survived World War II, and survived Stalinism. He was also an internationally influential psychologist specializing in neuropsychology. I had not the faintest idea of what to expect from this year abroad. I could not imagine that my post-doctoral year in Moscow would set in motion a sequence of experiences that would entangle my life with his, primarily as part of his biography but also of my own.

My essay is divided into two parts. The first is a narrative of how Luria came to have such a deep influence on my subsequent career. The second is a reflection on the complicated relationship between what I knew and what I could say given the historical circumstances at the time.

Fig. 1. Michael Cole in his dormitory of Moscow State University (1962)

What a difference a year can make!

During that first year in Moscow, Luria arranged for me to participate in the research taking place at several different laboratories, each involved in the use of conditioned reflex methods for the study of learning. I also followed him on his grand rounds of the Burdenko Institute, where I participated in lab discussions and observed how he interacted with individual patients. He was familiar with the existing Anglo-American test methods for psycho-diagnosing brain injuries, but he did not hold them in high esteem. Trained as a physician, he had worked out methods for diagnosing brain injury that were derived from his theoretical framework. To me, largely ignorant of that theoretical framework, he seemed like a magician pulling rabbits out of a hat. For each case, his diagnostic procedures and strategy of rehabilitation were geared to the individual patient in a flexible, but clearly theory-driven way. He entered the field at a time when modern imaging methods were entirely absent; as a consequence, his diagnoses served as guides for the subsequent surgery.

It was a fascinating year in every respect. Living in a student dormitory at Moscow State University (MSU) provided a unique position from which to engage with Soviet society as represented by its academic elite. My

cohort and I made lifelong friendships that have survived a tumultuous half century. However, when we left Moscow, I was anxious to get my career back on track after a year away, a year that my peers considered a career-threatening diversion. Then, an event occurred that both changed the trajectory of my own life and reconnected me with Luria in a way that has continued to evolve ever since.

Not long after returning from Moscow, a committee of mathematics educators selected me to make a month-long trip to Liberia as part of an international project on mathematics education. They needed an experimental psychologist to lend support to the project head. I was the only candidate they had who could travel on short notice as I possessed an valid passport. With scant preparation, I found myself in the Liberian hinterland.

That first experience of a rural, non-literate, subsistence culture forced me to re-think a lot of my prior assumptions about the study of psychological processes. As a fresh young experimental psychologist, I had to somehow reeducate myself if I was going to take cultural context seriously in making claims about those processes. That re-education began with Luria.

Just before we left Moscow, AR told us a little about his project in Central Asia in the early 1930s. One finding in particular stuck out in my memory: The adults he studied appeared incapable of reasoning about logical syllogisms. I began to correspond with Luria to find out more about his project and how it related to the work he had introduced me to during my post-doc. Initially I got nowhere. He was busy writing about other aspects of his work and the data required further analysis.

Fortuitously, Luria requested that I return to Moscow in the summer of 1966, just as I was planning a second round of research in Liberia on the cognitive consequences of education. He asked that I work with the organizing committee of the upcoming International Congress of Psychology to provide assistance dealing with the larger than expected number of English speakers. In return, he offered to spend an hour a day with me going over his Central Asian data while I brought him up to date on recent research in the study of culture and development.

This convergence of my keen interest in the role of culture in human development with Luria's long-buried treasure trove of data provided one key to understanding Luria's enduring influence in my life. No less important was my more mature understanding of the overarching theoretical framework that he had been urging upon me from the beginning ("read Vygotsky"). That was the theoretical framework that created the bridge between the linked data from cross-cultural research on historical change and the Pavlovian study on the development of word meaning that had drawn me to Luria in the first place. He subsequently published this research, first in a small, specialized compendium of essays on history and psychology in Russia, then in a translation of that article for publication in the USA, and finally as a full monograph.

Our subsequent research incorporated a number of the tasks that he had used years before. He, in turn arranged for Peter Tulviste to carry out a new series of studies in a still-remote part of Siberia. Peter's work then influenced my own, both replicating earlier findings and extending them. At the same time, it forced me to reconcile my insistence on the primacy of cultural context in development (a relativist view) with the idea of cultural evolution and historical progress. At present, this view is referred to as Contextual Cultural Historical Psychology, or Cultural Historical Activity Theory.

Following a decade and a half of cross-cultural research, the thrust of my inquiry and my family circumstances required changes (it is impossible to conduct proper cross-cultural work without a deeper immersion in the culture one is studying, which is incompatible with a normal family life). My goal to fuse psychology and anthropology had to be pursued through other means. Further progress, I concluded, required me to conduct my research in a culture I knew well — my own.

This shift made it possible to tackle a problem wherein social issues in the USA coincided with my concerns about a basic methodological problem in psychology that arises whenever consideration of culture enters the picture. That is, the ecological validity of psychological tests and experimental procedures. In the USA, this scientific concern expressed itself as a critique of the use of IQ tests as measures of intelligence and interpreted as evincing racial variations. In cultural-historical theory, this appears in endless arguments and misunderstandings concerning the idea that abstract concepts are higher than other, 'everyday' forms of thought and the conviction that one's own society is more virtuous that the Other.

To address this issue, we conducted research on variations in children's problem solving depending upon the social context; to what extent it is possible to identify and compare the processes identified in psychological tests to determine whether they are representative of processes that take place in everyday life. In the course of that research, we encountered a child clinically identified as learning disabled. One group of researchers observed and videotaped his participation in classroom activities and a set of specially selected tests. Another group of researchers observed the child as he participated with his classmates in afterschool activities which demanded constant reading. The two groups of researchers deliberately avoided discussing their findings with each other during the first few months of data collection.

In the friendly hurly burly of baking the cake, researchers had failed to notice anything unusual about the child's ability to learn. To explore how this disconnect arose, we rearranged subtle changes in group organization and took advantage of the normally occurring variations. Now, when we observed the video footage covering a range of situations, it became clear that the child had an excellent grasp of the overall task but struggled to read when the social circumstances left him no choice other than to struggle unsuccessfully in front of his peers. He was a master of inserting himself into the group activity in a strategic manner that obscured the source of his difficulty. Such results chimed both with our analysis of the child's specific difficulty in reading

(even simple decoding was a chore) but bore no correlation to the idea of a general learning difficulty.

These observations motivated our first intervention efforts to directly combine our contextualist learning approaches and Luria's cultural historical approach. We sought to create small group activities designed to serve both as a diagnostic procedure and a remedial procedure for children failing to acquire literacy in the first six years of schooling. As part of this activity, we included a combination of Vygotsky's concept of dual stimulation and Luria's combined motor method to create an after-school activity for children who were clearly failing to acquire literacy. The specifics of the activity are not important in the current context, but two conclusions are worth emphasizing. First, this work coincided closely with Tatiana Akhutina's prescriptions for creating remedial activities for such children, indicating their common roots in Luria's ideas. Second, we realized that once we took up the challenge of teaching "these unteachable" children, our social obligations to the subjects of our research were altered significantly. Suddenly, we became responsible for the children's welfare. Our roles as objective experimenters were fundamentally breached by our obligation to make a difference. Now we had to do more than make claims about zones of proximal development based on average differences between groups of children on some standardized measure. Luria would have understood the difference.

Luria ends his autobiography with a description of two case studies. These (one with a mnemonist, one with a brain injured engineer) were unlike his studies of Uzbeki peasant reasoning or the role of speech in the development of self-control, or even most patients he saw as a clinical neuropsychologist. Each case extended over many years and in each case, he acted as both diagnostician and therapist. It is through the mixing of these two roles that the form of psychological research he referred to as romantic science emerged.

In my view, to understand the theoretical importance of Luria's version of a romantic science, it is important to realize that this mode of research allowed him to satisfy his lifelong ambition to resolve two central issues that had dogged psychology since its inception in the 19th century. Those being, how are we to reconcile natural science with the cultural nature of humankind and how are we to reconcile nomothetic laws that apply to populations of humans with the reality of our individual, idiographic, lives?

I first encountered the idea of romantic science in the early 1970s in the process of editing Luria's autobiography. In the following decades, this idea has come to describe my own attempts to combine psychology with anthropology, experiment with observation, the personal with the social, and theory with practice.

The Said and the Unsaid in Biographical Narratives

A special challenge in writing about Luria arises from a confluence of his own distaste for writing about himself outside of his role as a scientist and his life-long residence in the USSR. From his first autobiographical writing in the early 1970s, he insisted that

It certainly does not seem essential that a participant in the volume A History of Psychology in Autobiography write autobiographical notes on the assumption that he must recount all the events of his life. This would be not only insufficiently modest but also beside the point. A series of such auto biographical sketches would not be likely to result in a true picture of the history of science. ... Individual people come and go, contributing some, to them insufficiently distinctive, bits of knowledge to the general enterprise. (p. 253)

To emphasize the irrelevance of his personal autobiography in the history of science, he followed these declarations with a barebones history of his family origins, his scientific accomplishments, and the honors he had received.

Only then did he turn to a description his own research program.

He focused the narrative almost entirely on the research connected with the development of Vygotskian theory, mentioning his cross-cultural research only in passing. He describes the social context of his research only in the following general terms.

The scientific atmosphere of Soviet Russia in the twentieth century, as many authors have noted, was very unusual, not to say unique. The greatest social revolution ever to take place had just occurred. It had occurred in an economically backward country but one which possessed strong intellectual traditions (p. 255).

Luria's 1979 autobiography provides a greatly expanded account of his scientific life. But it contains virtually no mention of the social or personal context, other than to emphasize the enormous opportunities that the Revolution opened up for his generation. As a consequence, the reader is left with no understanding of the logic connecting his different projects, other than his meeting with Vygotsky and the development of cultural-historical psychology. I travelled to Moscow specifically to discuss the manuscript with him, but he deflected my questions.

When I wrote the introduction to the English edition of his autobiography, I was well aware of Luria's aversion to discussing his personal circumstances in any writing about his work. I had translated his earlier autobiographical essay. As a matter of conscience, I felt obligated to adhere to such an explicit wish. Accordingly, I deliberately wrote an introductory essay on the historical context of his career in purely scientific terms, as he would have wanted. In the epilogue, I described my year in Moscow and the early years of my involvement with his theoretical framework. For that, I allowed myself to provide sufficient information about the circumstances of his life for the average American reader to get at least a glimpse of the common logic underlying his important projects which, on the surface, appeared to have very little to do with one another.

I was almost embarrassed at how well the historical introduction turned out. I managed to write strictly an account of the scientific historical context. The censors

removed only one reference (to Stalin and events in the early 1950s) that I had assumed would be permissible 25 years later. But the epilogue was a different matter; all references to the massive social events that provide context for Luria's apparently random choice to study one topic or another had to be removed (no peasants in Uzbekestan, no twins, no developmentally anomalous children, only pre-Vygotsky and post-Vygotsky.

The ensuing argument brought the publication of the book to a halt. The Luria family insisted that my epilogue be printed as it was. After a year of negotiations, Elena Luria asked Vladimir Zinchenko, himself a prestigious cultural historical psychologist and friend of the Luria family, to intervene. The latter, Volodya, minimized the omissions so artfully that any Russian reader would be able to fill in the blanks, but only the most informed and careful American reader could glean a rough idea of the dramatic circumstances of Luria's life and their relationship to his work.

Following the demise of the USSR, I began to collaborate with Karl Levitin, a prominent science journalist who wrote extensively about Vygotskian psychology and was a friend of the Luria family. We arranged to reprint the original autobiography and my two essays, this time adding our own contemporary understanding of what I had written at the time. I am not going to repeat our account of the confluence of events. Those who wish to read it may find it at luria.ucsd.edu

In recent decades, several scholars have written their own accounts of Luria's life and career. Rather than repeat what others have written I will repeat a discussion with Tatania Akhutina in preparing this essay. I complained that I had written about Luria too often and had nothing new to offer. She replied by saying, "But we have been good students, haven't we?" We have certainly tried.

* * *

When I set out to write about Luria in the epilogue to his autobiography, I began with the following epigram ascribed to an Athenian bard, who earned his living from the patronage of important, wealthy men whose praises he sang in return for his supper.

So I shall never waste my life-span in a vain useless hope, seeking what cannot be, a flawless man among us all who feed on the fruits of the broad earth. But I praise and love every man who does nothing base from free will. Against necessity, even gods do not fight. -Simonides

As I learned from the many visits I made to Moscow for the subsequent academic exchange programs that came to an end along with the USSR itself, Luria was not a flawless man. Rather, he was, as Karl used to say, "A decent man in an indecent situation," a high complement.

I want to end these remarks with the following invitation. Think back over this essay. Note that I have provided this account without any details of the harrowing personal events in Luria's life that allowed him to outlive Stalin. I'd like to think that I too could have withstood such terror and remained a normal human being. Could you?

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Impressions of Alexander Romanovich Luria

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Впечатления об Александре Романовиче Лурии

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My history with Alexander Romanovich Luria began in 1975, when I spent a year in Moscow for a postdoctoral study funded by IREX. I had been reading Luria's work over the years of my PhD studies at the University of Chicago, but I had assumed it was unlikely that I would ever meet the globally distinguished academic. But Mike Cole, who had studied with Luria a few years prior, helped make it possible. In fact, during that year in Moscow, I found that Mike's name opened many doors. So, in the fall semester of 1975 I turned up at a lecture that Luria was giving at the Faculty of Psychology at Moscow State University (MSU). At the end of the session, I walked up to him and told him I was a friend of Mike's, and he greeted me warmly and said I should come to see him soon for a chat.

A week later, I went to see him at his apartment on Frunze Street. He started by asking me whether I would prefer to speak in Russian or in English, and I told him English. It was only later in the year that my Russian began to approximate his English, and it was only then that we switched increasingly to Russian. I told Luria that was in Moscow to continue my studies in psycholinguistics, and after discussing the ongoing research that he and others were doing, he suggested that I get in touch with Tanya Akhutina.

Fig. 1. A.R. Luria and J. Wertsch

This was all part of my broader effort at the time to network with colleagues in Moscow, many of whom

were destined to become important figures in international scholarly circles in the decades ahead. In Moscow, Tanya Akhutina, who was part of Luria's research and clinical group, helped me delve both into my psycholinguistic studies and into neurolinguistics, a field that was only just then emerging and owed much to Luria's leadership. Tanya's hospitality and intellectual standing made it possible to meet other members of Luria's group and others at the Institute of Linguistics, particularly those in A.A. Leont'ev's group on communication and psycholinguistics. All of this opened a whole world of scholarship to me that few in the West even knew existed. The list of those I met in Moscow that year included figures such as A.V. Zaporozhets, V.P. Zinchenko, A.N. Leont'ev, D.B. El'konin, and V.V. Davydov, as well as younger figures such as A.G. Asmolov, V.I. Golod, and B.S. Kotik.

The time I spent with Luria left me with countless memories but here, I shall recount just couple of them that particularly stand out. The first occurred when Jerome Bruner visited Moscow in December 1975. Along with hundreds of others, I went to the Faculty of Psychology that day to hear his lecture. I arrived just as Luria and Jerry were walking down the hallway to the lecture room, and I overheard Jerry asking Luria who would be interpreting for him. The latter replied that he would do it himself. After the lecture hall became settled, Luria made his introductory remarks about Jerry and then turned the podium over to him.

What happened then was a demonstration of respect and admiration between two major figures in world scholarship, but it also had a humorous dimension. Jerry said about three sentences, and Alexander followed with three sentences in Russian. They followed this pattern for a few more turns, and then Jerry said three sentences, and Alexander Romanovich said five, which included what Jerry said plus some commentary. After another few minutes, Jerry was saying three sentences and Alexander Romanovich was saying 10, which included seven sentences of critical commentary. I don't think Jerry ever got to the end of what he wanted to say, but it was a rare and memorable intellectual experience for the audience.

This was all done with great respect and gentleness on Luria's part, but it left Jerry, always the enthusiastic speaker, without the chance to say as much as he wanted, and it also produced some puzzlement on his part since he did not know what was being said in Russian. In the years that followed, I met with Jerry on several occasions, and we revisited this story, which was a source of great amusement to both of us. But the bottom line for Jerry was his deep respect and admiration for Luria and his accomplishments, including his ground-breaking research on aphasia, neuropsychology, and cross-cultural psychology. But these accomplishments went even further than that, as in Luria's tireless efforts to introduce the world to the ideas of Lev Vygotsky, who, he modestly insisted, inspired everything that he had ever done.

A second episode that left a deep impression on me came from Luria's work as a clinician. At a time when scanning technology was barely imaginable, he coupled brilliant conceptual formulations with highly developed clinical techniques, borne out of long experience, in an effort to localize the site of brain trauma. He would carry out his assessments in a seemingly effortless way in clinical sessions, all the while providing a running commentary for the students in attendance. This often involved patients whose emotions could overcome them when they became frustrated and alarmed at not being able to perform a task that they had found so easy before their stroke or brain injury. During a clinical session I witnessed on March 15, 1976, I recorded in my notebook that a woman in her sixties who had suffered a stroke two months earlier broke down sobbing because she was so frustrated about her lack of progress. Without missing a beat, Luria reached over, grasped her hand, and provided some words of comfort before returning to the clinical seminar.

This episode was part of a clinical seminar about aphasia, primarily, but it was also a seminar about human compassion. Luria's sympathetic words and gesture were genuine, and the woman clearly felt this. Not being a clinician myself, I do not know how common or successful such small interventions are, but watching Luria do this in his own professional and compassionate way was very moving. It was all part of the clinical lesson for the day.

This episode also deepened my appreciation for two of Alexander Romanovich's books that will continue to be read long after the invention of scanning technology made it possible to pinpoint the exact site of brain injury. These are *The Man with the Shattered World* and *The Mind of a Mnemonist: A Little Book about a Vast Memory*. The latter was published in English with a foreword by Jerry Bruner, and both books were dubbed the first "neurological novels" by Oliver Sacks, who went on to produce many more works in this genre. These two slender volumes emphasize the need to study patients in all their complex humanity. Luria was far ahead of his time in formulating the idea that patients must be approached as whole human beings rather than simply vehicles of symptoms. This was reflected in his approach to the brain in terms of interacting functional systems and the assumption that specialized research

focusing on narrow issues is unlikely to succeed if we don't appreciate the larger issues involved in being human. For him, all this was simply part of being a decent, compassionate clinician.

For me, episodes such as these provided insight into Luria's approach to life. It is especially striking that he managed to keep this humanity intact after living through so many challenges brought on by war and Soviet politics. In the end, he was one of the best models I have ever encountered for how to combine great intellect and compassion, and for that reason, he continues to serve as an inspiration today.

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Some Remembrances of Luria

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Некоторые воспоминания о Лурии

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At the beginning of 1972, I went to Moscow, to the Institute of General and Pedagogical Psychology (as the current Institute of Psychology of the Russian Academy of Education was then called), to conduct a research project in the Laboratory of Psychophysiology of Individual Differences, directed by Vladimir D. Nebylitsyn. My interest was strictly psychophysiological and, together with Vladimir M. Rusalov, Nebylitsyn's assistant, I studied electroencephalographic variations in human beings during an attention task. As part of my study program, I also asked to meet the most famous Soviet psychologists of the time and, to my great pleasure, I had the opportunity to meet and discuss with eminent personalities such as Alexei N. Leontyev, Filipp V. Bassin, Anatoly A. Smirnov, Vladimir P. Zinchenko, Daniil B. El'konin, Boris F. Lomov (with whom I also formed a personal relationship, having then spent further periods of study in the Institute of Psychology of the Academy of Sciences headed by him), etc. These meetings were usually officially scheduled and were communicated to me through Rusalov.

With Luria, the meeting took place in a different manner. I was staying in the Hotel of the Academy of Sciences and one evening I received a phone call: it was Luria himself telling me he was happy to meet me. On the appointed day and time, I had to go to his house (Ulitsa Frunze, 13) where I would find his driver who would take me to the sanatorium where he was staying for a rest. I, then 25-years young (Fig. 1), was rather embarrassed at the thought of finding myself in front of this world-renowned scientist (Luria was 70 years old). As soon as I arrived, however, my anxiety vanished thanks to Aleksandr Romanovich's warmth. First, he explained to me that the Sanatorium had previously been a summer residence of Pavel Tretyakov, the famous art collector. Luria asked me if I knew who he was

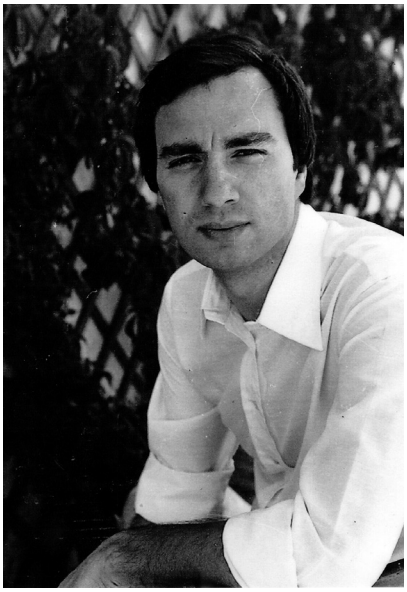


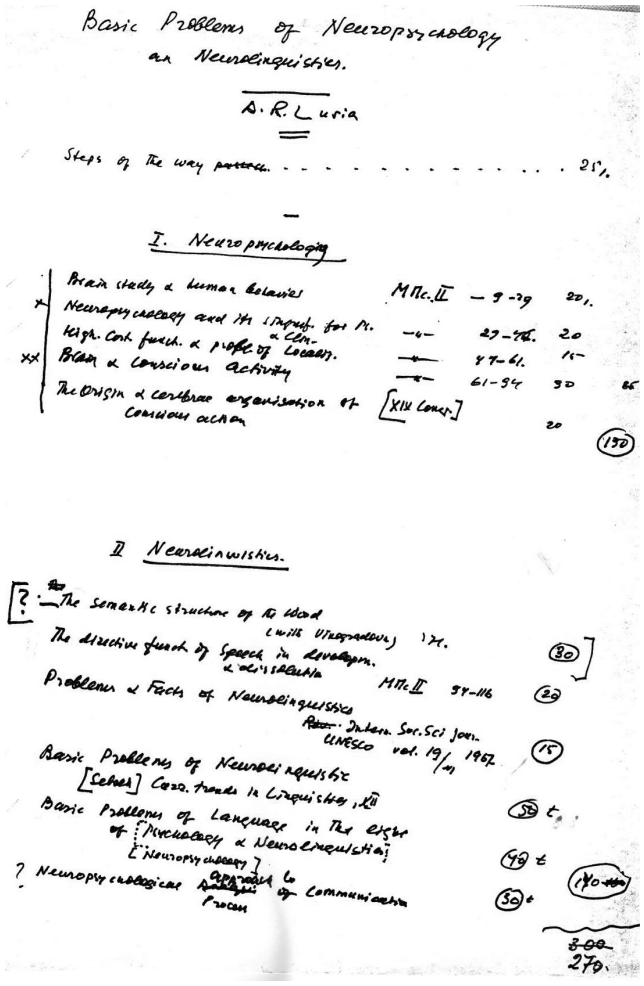
Fig. 1. Luciano Mecacci (1972)

and fortunately I did because I had visited the Tretyakov Gallery a few days earlier. Another question followed. Luria asked me if I liked Amedeo Modigliani's paintings. Again I had no problem answering. I told him that I also knew Modigliani well because he was born in the same Italian city (Livorno) as I was. Having passed the art history exam, we began to talk about psychology. Luria appreciated Nebylitsyn's research in psychophysiology, but at the time I did not realize that Luria's approach to individual psychological differences was not quite the same. He introduced me to the matter of clinical cases by asking me to read his books on the *The Mind of a Mnemonist* and the Zasetky case (*The Man with a Shattered World*). Right from this first meeting, we started a project for the translation of his works into Italian (Fig. 2). In addition to the two aforementioned "small" books, his course of lectures in psychology and a collection of articles edited by me together with the neuropsychologist Edoardo Bisiach were translated (Bisiach had already spent some time at the Burdenko Institute and had translated the book *Higher Cortical Functions in Man*). In addition, Luria encouraged me to write a short history of the relationship between neurophysiology and psychology in Russia. The book came out in Italian in 1977 and was then translated into English (*Brain and History. The Relationship between Neurophysiology and Psychology in Soviet Research*, Brunner/Mazel: New York, 1979). Luria wrote the preface, a contribution that obviously lent greater authority to my first book.

I would like to mention two general aspects of Luria's scientific work that had a particular influence on both my experimental and historical research. When I arrived in Moscow, I knew Vygotsky only as the author of *Thinking and Speech*. I knew nothing about the historical problems related to the banning of pedology in 1936 and the fact that Vygotsky's works could only be reprinted, and then partially, from 1956 onwards. When I showed a particular interest in these facts, Luria introduced me to Gita Vygodskaya, the great psychologist's daughter. Gita L'vovna showed me both the few remaining manuscript pages of *Thinking and Speech* (these pages were later photocopied for me thanks to Vladimir Rusalov) and the works that were banned in 1936. A new world opened up to me, to which I have dedicated many years. In 1990, I published the first complete world edition of *Thinking and Speech*, showing page by page the changes and cuts that were made in the Russian reprints of 1956 and 1982. This work was dedicated to Gita L'vovna, but it was also an explicit homage to Luria, who led me to understand the value of Lev Vygotsky. The other aspect concerns the historical development of brain functions: how the functional organisation of the brain depends on the specific historical and cultural context in which a human being grows up. I have written several articles and books on this subject.

I personally visited Luria in the first semester of 1972, then in the winter of 1975. Until his death in August 1977, we shared a continuous correspondence that I still jealously preserve (Fig. 2). On days when I was free from my experiments at the Institute of Psychology, I would go to observe how Luria analysed his clinical cases in the Neuropsychology Laboratory of the Burdenko Neurosurgical Institute. More than once, I went to his house, then together we took a trolley bus, always crowded, and finally walked the hospital in the snow. With his quick step, despite his age, I couldn't help but noticed his energy. He put the same energetic determination into examining his patients, while a group of pupils and coworkers painstakingly took notes. I realised how important the personality of the examiner was and how Luria could sum up decades of clinical and experimental research in a seemingly simple question. For me, it was the greatest lesson I had ever received.

Luria was notoriously kind and welcoming to foreign


Basic Problems of Neuropsychology
and Neurolinguistics.

A. R. Luria

I. Neuropsychology

II Neurolinguistics.

Fig. 2. The sketch of Luria's autograph for the collection: Neuropsychology and Neurolinguistics / edited by E. Bisiac and L. Mecacci (Rome, 1974)

students. I visited Frunze Street for dinner many times: sometimes it was a simple borsch, other times refined Russian cuisine. I always remember with nostalgia when his wife Lana Pimenovna and his daughter Elena Alexandrovna would prepare a special Uzbek dinner (Luria loved Uzbekistan and especially Samarkand). In 1992, I was in San Diego (California) when Michael Cole told me that dear Elena had tragically died. Mike and I were deeply shaken.

During one of our dinners I asked Luria what the term *besprizornye* really meant. He told me that they were a kind of homeless children, but that their story was very complex and had not yet been written down. He gave me a copy of the book he had edited in 1930 (*Speech and Intellect in Rural, Urban, and Homeless Child*), a precious gift because the book was very rare. For many years, I thought of studying the *besprizornye* phenomenon, following Luria's suggestion to do so. So, after much research, in 2019, I finally published my book on the topic. Soon, this book will also be published in Russian, to my great pleasure. In the preface, I recounted how Luria gave me a copy of his precious book with a wistful expression on his face.

Whenever I think back to my encounters with Luria, I cannot help but recall the group of his faithful students, sometimes in the Burdenko laboratory, sometimes at his's house on Frunze Street, especially my friends Janna Markovna Glozman, unfortunately no longer with us, and Tatyana Vasil'evna Akhutina.

And it was a joy to find us all in Florence in 2002, when I organised the International conference on Luria: Janna, Tatyana, Karl Levitin, Lena Moscovitch, Mike Cole, Anne-Lise Christensen, Edoardo Bisiach, Giuseppe Cossu, and many other neuropsychologists whose research was profoundly influenced by the work of the eminent Russian scientist.

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Variants of Neuropsychological Syndrome and Stages of Genesis of A.R. Luria's Concept of the Brain Organization of Mental Functions

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The article is dedicated to one of the basic concepts of Russian neuropsychology — the concept of the "neuropsychological syndrome", uniquely associated with the name of Alexander Romanovich Luria. Earlier, A.R. Luria became world famous by virtue of his works devoted to the study of deep, unconscious, and even taboo phenomena of the psyche. This area of Luria's work, which is close to the psychoanalytic paradigm, was interrupted in the late 1930s in the USSR for ideological reasons. A.R. Luria redirecting the field of research into the connections between the psyche and the brain to such sections of medicine as neurology and neurosurgery. The syndromic approach to the analysis of disorders of mental functions in local lesions of the brain becomes the method of studying this problem. To date, the ideas about the reasons for its variability within the textbook typology remain insufficiently covered and systematized. Recently, the problem of properly understanding and describing syndromes of mental disorders in the Lurian approach became especially relevant due to the expansion of neuropsychological diagnostic applications. This article analyzes the main stages in the development of the concept of the neuropsychological syndrome in the works of A.R. Luria. It also describes the main factors that determine the variability of the syndromes of disorders of brain function.

Keywords: neuropsychology, syndrome analysis method, syndrome, symptom, factor, syndrome variation.

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Варианты нейропсихологического синдрома и этапы генеза концепции А.Р. Лурии о мозговой организации психических функций

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Статья посвящена одному из основных понятий отечественной нейропсихологии — понятию «нейропсихологический синдром», однозначно связанному с именем Александра Романовича Лурии. Ранее Лурия получил мировую известность благодаря работам, посвященным исследованию глубинных, неосознаваемых и даже табуированных личностью явлений психики. Это направление работы, близкое к психоаналитической парадигме, в конце 30-х годов XX века в СССР было прервано по идеологическим причинам. А.Р. Лурия переадресует область исследований связей между психикой и мозгом в такие разделы медицины, как неврология и нейрохирургия. Методом изучения данной проблемы становится синдромный подход к анализу нарушений психических функций при локальных поражениях головного мозга. До настоящего времени остаются недостаточно освещенными и систематизированными представления о причинах вариативности синдрома в рамках хрестоматийной типологии. В последние годы в связи с расширением областей применения нейропсихологической диагностики проблема правильного понимания и описания синдромов нарушений психических функций в луриевском подходе особенно актуальна. В статье проанализированы основные этапы развития представлений о нейропсихологическом синдроме в работах самого Александра Романовича Лурия, описаны основные факторы, детерминирующие вариативность синдромов нарушений высших психических функций.

Ключевые слова: нейропсихология, метод синдромного анализа, синдром, симптом, фактор, вариативность синдрома.

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Introduction

Neuropsychology, and one of its basic concepts — the concept "neuropsychological syndrome" — are closely associated with A.R. Luria in Russian academia.

When the concept emerged, Luria was already world-famous thanks to his works devoted to the study of deep, unconscious, and even taboo phenomena withinф the psyche. A special place in these studies was occupied by his method for studying mental phenomena hidden from direct observation [19, 28]. Modifications of his method have proven to be transcendent and are used in practice in lie detector tests. This area of Luria's work, which is adjacent to the psychoanalysis, was interrupted in the late 1930s in the USSR for ideological reasons.

In our country, the period from the 1930s to the early 1960s was quite difficult for the study of psychology as a whole. Earlier, I.P. Pavlov had said that it was difficult to "put the non-spatial representations of psychology on the spatially organized tissue of the brain" [1; 26]. This thesis was explored by his students and followers in the 1950s when psychology was under ideological pressure and even the viability of psychology's existence as a materialistic science was raised. While the connection between behavior and the brain was obvious, mental functions were reduced to conditioned reflexes, which deprived psychology as a science of its own experimental basis for studying the problem of the psyche and the brain.

During the war, AR. Luria worked in a military hospital in the Urals — in Kisegach. Afterward, in 1947, he published the book *Traumatic Aphasia* [20]. The title of the book is perceived as purely medical, with Luria defending psychology, in a sense, by redirecting the field of research on the connections between the psyche and the brain toward such areas of medicine as neurology and neurosurgery. Nevertheless, the book clearly shows that speech disorders are syndromes of brain disorders.

In 1962, a cycle of publications was released on the problem of Brain and Mental Processes, the main results of which are presented in the book *Human Higher Cortical Functions and their Disorders after Local Brain Lesions* [13; 14; 10]. After the publication of this book, the term *neuropsychology*[1] appears for the first time in Russian academia, denoting a section of psychological knowledge that addresses the problem of the relationship between human mental activity, the psyche, and the brain.

The syndromic approach to the analysis of mental disorders arising from local lesions of the brain serves as Luria's method for studying this problem. The title book is a peculiar catechism of new knowledge, in which the main variants of neuropsychological syndromes caused by local lesions of the left hemisphere are presented in a substantial volume. Cognitive processes (and the neuropsychological factors that underpin them) are largley represented by these syndromes, which have since become classic cases. It is important to note that this is the

[1] The term "neuropsychology" first appeared in the work of Canadian physiologist Donald Hebb "The organization of behavior: a neuropsychological theory" in 1949

first time that a psychological factor has been introduced in this area. It is a component of various mental processes and is simultaneously underpinned by the work of certain brain structures (later, Luria's students will refer to this factor as neuropsychological).

At this stage, Luria still adheres to the medical interpretation of a syndrome, that is, understanding it as a combination of symptoms of a disease united by one cause [6]. At the same time, remaining faithful to Vygotsky, he shows that he considers the psyche as a whole, studying it not in separate mental functions, but mental functions that all interrelate [2].

At this stage of Luria's work, problems of personality are not specifically addressed.

Gradually, Luria moved away from the problem of studying cognitive processes toward to the topic of how human behavior is regulated. Luria's interest turned toward the study of mental activity as the regulation of human behavior, the programming of mental processes and control over their course. This period corresponds to the appearance in world science and practice of concepts related to computer science, and the first harbingers of information technology in the form of the first large computers. Luria started looking for answers to questions arising from research on the frontal structures of the brain.

Based on his research, Luria shows that the frontal lobes are polyfunctional and distinguishes three different syndromes in terms of their specialization: the posterior frontal, associated with the realization of kinetic work; the prefrontal, associated with the regulation of mental activity, behavior plans and programs; and the medio-basal, associated with self-awareness in the Lurian approach [9].

Although variants of the frontal syndrome have been described, the overall mystery of the frontal lobes has remained unsolved [3]. So far, the paradox of the frontal syndrome consists in a distinct dissociation between grossly impaired voluntary regulation of activity and relatively preserved complex forms of involuntary activity. Luria noted that the frontal lobe patient who is not able to memorize ten words can easily cope with this task if it is also done by a neighbor in the ward. Based on this, Luria concludes that the frontal lobes are not the "central apparatus of memory."

After the 18th International Psychological Congress in Moscow, one of the main areas of which was the problem of memory research, Luria moved on to the next stage in the development of ideas about such syndromes. This stage is associated with the study of amnesic syndrome in pathology of deep brain structures. During this period, it was fundamentally important that memory disorders were studied by Luria in patients with lesions on the entire complex of structures of Papez's circle. This implied a departure from localization (in its classical understanding in Russian neuropsychology) and a transition to the study of brain function disturbances in disorders of jointly working brain zones [5].

The notion of the syndrome as a set of disorders of brain function due to a lesion of the whole circuit of brain structures is also covered in the book *Memory Disorders in Arterial Aneurysms of the Anterior Connective Artery* [21].

At this stage, for the first time, much attention is paid not to the cortex but to the subcortical formations that regulate mental processes, which are essentially involuntary (through trace formation). Assigning special importance to the role of subcortical nonspecific brain structures in the formation of amnestic syndrome, Luria would later revise the hierarchy of brain structures in relation to the provision and realization of mental activity in general. Within the concept of the three functional brain units, the first unit includes not the frontal lobes but the deep structures of the brain [17].

As Luria said, his initial fascination with deep psychology at the beginning of his professional career was not subjectively suspended, and he gradually returned to his "first love," his original interest. He published books such as *A Little Book about Big Memory*, the second title of which is *The Mind of the Mnemonist*, addressing the problems of personality and its inner content [12], and *The Lost and Returned World*, written in collaboration with a patient Luria befriended during World War II. The latter is devoted to the inner workings of a patient's personality on restoring his inner spatial perception of the world, which had been destroyed by a gunshot wound in the posterior parts of the left hemisphere of the brain [18].

In the 1960s, a neuropsychology laboratory headed by Luria operated at the N. N. Burdenko Institute of Neurosurgery. There were no more fortunate and joyful days for Luria than those when he had the opportunity to personally examine a patient. He liked to conduct a dialogue with the patient in which the patient became, in the words of Luria, "not a rabbit of neuropsychological examination but its active participant." Patients felt better after talking with the professor, they felt as if they were more than just their disease. Such dialogues with the professor gave them back their humanity. It was not without reason that after being discharged from the clinic and finding themselves in other cities, they sent Luria letters and thanked him for the attention he had given them. Luria invited B. V. Zeigarnik to help penetrate into the depths of what patients with lesions of the frontal lobes experienced. While she interviewed a patient "with a pencil and a piece of paper," Luria would observe the patient's behavior and reactions in response to Zeigarnik's questions. In essence, it was all focused on the patient's attitude toward the examination situation and toward the disease.

The second volume of the book *Neuropsychology of Memory* focused on the description of individual pa-

tients and can be rightly considered the apotheosis of this stage of Luria's work [16]. It is possible to say that, in this work, Luria completely moves away from syndromes in its classical (medical) sense to the description of syndromes of the individual personality.

Turning to the fact that Luria treated each syndrome as a scheme, which he repeatedly emphasized in his book *Higher Cortical Functions of Human and their Disorders in Local Brain Lesions*, a number of important determinants delineating the content of a syndrome should be noted, namely:

1) a set of basic disorders of mental functions defining the completeness or incompleteness of a neuropsychological syndrome in its classical understanding;

2) the presence of symptoms of impaired brain function not related to this type of syndrome described in the classical scheme. Luria referred to such symptoms as *neighborhood symptoms*, referring primarily to the continued growth of a tumor toward adjacent brain structures. On this basis, the students and followers of Luria have long pursued the possibility of predicting the direction of the pathological process, emphasizing that subtle functional disorders accessible by neuropsychological examination could manifest themselves long before brain dysfunctions are registered at the morphological level [7];

3) the mass of the brain involved in the pathological process [8]. It is important to note that in cases of extensive brain lesions, a neuropsychological syndrome can be aggravated by such manifestations as a decrease in activity level. This can lead to sleepiness, increased exhaustion, the disorientation of the patient regarding place, time, and their condition up to anosognosia and anosodiaphoria. Of particular interest, in this case, are the changes described regarding brain function in craniopharyngiomas: as the general brain disorders developed and symptoms appeared in the brainstem — particularly respiratory disorders — the patient's EEG recorded respiratory rhythmics, i.e., the regulation of breathing became a function of the whole brain. This work was completed during Luria's lifetime and under his direct supervision. It is presented in the book *Brain and Memory* [25]. It was very probable to assume that the brain, based on its own afferent structures, self-regulates its states and involves in the process of breathing structures that are not ordinarily engaged in it. The aggravating influence of such manifestations on the neuropsychological status of the patient was confirmed by the remission of the syndrome as the general cerebral symptomatology regressed;

4) the functional status of a structure in a state of destruction, behind which lies the general mode of the brain in deficit conditions, such as protective inhibition;

5) individual developmental features including the lateral organization profile, environmental and cultural features [24], the degree of function automatization and interiorization during ontogenesis, the sphere of professional interests, personal and semantic components, etc.

Some of the facts described as part of the framework of neuropsychological syndromes in the Lurian methodology were ahead of their time in terms of understanding the brain's structure and functions, nad are now being verified through the use of modern neuroimaging methods.

Emerging data on the reticulo-frontal complex structures explain the secondary frontal syndrome in cerebellar tumors described in 1977 by Luria in co-authorship with Melnikova [29; 4]. Data on specific speech disorders in thalamic lesions and close to amnestic aphasia [23] find confirmation in work on thalamo-parietal connections. All this once again shows the inexhaustible possibilities of the method proposed by Luria and how universally it can be applied in the assessment of human mental functioning.

Luria attached great importance to the syndromic approach, often referring to Spinoza's statement that method is the mother of science. One day Luria’s young employees, wanting to flatter him, asked him who the father of science was. Luria chuckled and said that the father of science is fact. "A neuropsychologist skilled in the method of syndromic analysis," Luria continued, "is like a criminal investigator investigating a crime. Each symptom of an individual brain function disorder serves as a clue. The neuropsychologist collects evidence in the form of other disorders of mental functions and identifies the factor that unites them. It is important to add that in each neuropsychological syndrome, there is also an alibi in the form of links preserved in the structure of mental activity. It is the attention to the clues and the desire to understand them that determines the method of research." So, for the first time in the autumn of 1976, in a sanatorium named Narrow, Luria clearly pointed out the binary structure of neuropsychological syndromes, indicating the presence of disturbed and preserved mental functions therein.

Conclusion

In recent decades, the field of neuropsychological diagnosis has expanded considerably, and the overly mechanical nature by which the Lurian syndrome schema is applied is alarming. The latter leads to overdiagnosis and is especially dangerous when dealing with brain function in childhood and old age. The same is true when assessing brain function disorders as actually observed consequences of mental and somatic (including Covid-19) diseases in the form of distinct changes in neuropsychological functioning. In this regard, applying the Lurian approach requires a meaningful understanding of the syndrome in its entirety.

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Scope and Perspectives of Neuroimaging and Neurostimulation to Develop the Theory of Systemic and Dynamic Localization of Higher Mental Functions

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The theory of systemic and dynamic localization of higher mental functions by Lev Vygotsky and Alexander Luria was based on the data obtained via an original method, syndrome analysis of deficits of higher mental functions in patients with local brain injury. When this theory was being constructed, technical methods for brain investigation were only in their early stages. Although in later years Luria and his disciples pointed out that such methods were prominent for further development of Soviet/Russian neuropsychology, they are still rarely used by the followers of these scientists. In this article, we focus on neuroimaging and neurostimulation methods that are both noninvasive and the most accessible in Russia: structural, diffusion-weighted, and functional magnetic resonance imaging, as well as transcranial magnetic stimulation. We discuss their scope and perspectives for addressing research questions in neuropsychology and describe possible designs for neuropsychological studies in patients with local brain injury and healthy individuals.

Keywords: neuropsychology, Luria, neuroimaging, neurostimulation, theory of systemic and dynamic localization of higher mental functions, structural MRI, diffusion-weighted MRI, functional MRI, transcranial magnetic stimulation.

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Возможности методов нейровизуализации и нейростимуляции для развития теории системной динамической локализации высших психических функций

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Теория системной динамической локализации высших психических функций была разработана Л.С. Выготским и А.Р. Лурией на основе данных, полученных с помощью оригинального метода — синдромного анализа нарушений высших психических функций у пациентов с локальными поражениями головного мозга. В период разработки этой теории аппаратные методы изучения головного мозга еще только зарождались. Хотя в более поздние годы А.Р. Лурия и его ученики указывали на важность применения таких методов для дальнейшего развития отечественной нейропсихологии, они до сих пор редко используются в работах последователей этих ученых. В данной статье мы обсудим возможности применения неинвазивных и наиболее доступных в России методов нейровизуализации (структурная, диффузионно-взвешенная и функциональная магнитно-резонансная томография) и нейростимуляции (транскраниальная магнитная стимуляция) для ответов на интересующие нейропсихологов исследовательские вопросы, а также опишем возможные планы нейропсихологических исследований с участием пациентов с локальными поражениями головного мозга и здоровых людей.

Ключевые слова: нейропсихология, Лурия, нейровизуализация, нейростимуляция, теория системной динамической локализации ВПФ, структурная МРТ, диффузионно-взвешенная МРТ, функциональная МРТ, транскраниальная магнитная стимуляция.

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Introduction

Neuropsychology, as a branch of science, appeared long before technical methods for the investigation of brain structure and function began to develop intensively in the second half of the 20th century. For a considerable time, scientists had access to methods primarily associated with local brain injury — in animal experiments

and clinical observations of patients the exact injury location of whom was defined *post mortem*. From the 1930s, the intraoperative mapping technique invented by Wilder Penfield also became available to scientists.

Localization of mental processes in the human brain was and remains one of the core theoretical issues of neuropsychology. A prominent stage of its development was the theory of systemic and dynamic localization (TSDL) of higher mental functions (HMFs) proposed by the Soviet neuropsychologists Lev Vygotsky and Alexander Luria. This theory was a response to a scientific debate of the 18—19th centuries between narrow localizationists and equipotentialists, who either suggested localizing separate mental processes (or faculties) directly in the brain centers, or insisted on the equal impact of different brain regions in mental processes, respectively. None of these standpoints could explain the accumulated empirical data with any consistency (for a review, see [6]).

The TSDL is also based on data of local brain injury in humans. The location of injury was usually defined *in vivo* according either to the relative location of a skull fracture due to penetrating trauma or to the results of neurosurgery. However, the concept of function (i.e., what to localize) and the principles of its localization were revised within this theory. Vygotsky introduced the concept of HMFs as complex self-organizing processes in human activity (thinking, language, perception, etc.) which are voluntary, mediated by signs, and social in their origin. The TSDL rests on two basic principles.

The principle of the systemic structure of HMFs implies that a HMF is a functional system consisting of a set of components, each of which provides a unique contribution to this HMF and relies on the functioning of particular brain structures. Consequently, a HMF may become impaired due to a functional deficit of any component, whereas the type of the impairment depends on the location of an injury. A component of a HMF, i.e., a structural and functional unit characterized by a particular type of functioning of a particular brain region, is called a neuropsychological factor. Therefore, the main objective of neuropsychology within the TSDL is articulated through the concept of HMFs as the investigation of their brain organization, i.e., the contribution of different brain regions and structures to the components of HMFs.

The main method of Soviet/Russian neuropsychology, syndrome analysis, is closely linked to the principle that HMFs have systemic structure. Syndrome analysis was developed by Luria, and the data which the TSDL is based on were obtained with this method. An examinee is asked to perform a set of tasks aimed at the assessment of a wide range of mental processes, then a neuropsychologist analyzes the neuropsychological symptoms (i.e., impairments of HMFs) to identify the general cause (factor) the pathological change in which explains the origination of the former. The impairment of a factor and a set of symptoms caused by it constitute a neuropsychological syndrome. As long as technical methods for the diagnostics of brain injury were not accessible but data on the relations between injuries and deficits of HMFs were being accumulated, syndrome analysis was applied for topical diagnostics (identification of injury location, for instance, for surgical planning) and for functional diagnostics (qualification of the state of HMFs, inter alia, the hierarchical structure of deficits). Nowadays, syndrome analysis is used in practice and research only for functional diagnostics.

The principle that HMFs have a systemic structure can be seen in the functional role of several brain regions in language in right-handed individuals [2; 6; 12]. The left inferior frontal gyrus is involved in the motor and syntactic programming of speech and language. More anterior left frontal regions are associated with the generation of the idea of an utterance and development of the scheme of a sentence or text in inner speech. The posterior part of the superior temporal gyrus conducts phonemic analysis. The middle temporal gyrus supports the sufficient span of auditory verbal memory and word selection in the auditory form. The posterior inferior temporal regions store visual images linked to words. The inferior postcentral gyrus is involved in kinesthetic aspects of articulation. Regions at the temporal-parietal-occipital junction are relevant for the understanding of logical-grammatical constructions and word selection by meaning. The right hemisphere is implicated in pragmatic aspects of language (for instance, understanding of context; [1]). Subcortical structures support speech tempo, phonation, and verbal activity.

The second principle of the TSDL — the principle of the dynamic organization of HMFs — implies that HMFs and underlying functional brain systems can change in terms of their structure. First, the structure of HMFs changes in ontogeny and with skill automatization. For example, for a first grader, the act of writing activates visual, visuospatial, motor, auditory, and kinesthetic functions, whereas for a high school student, the technical operations are automatized, and the semantic organization of writing becomes the most attentionally demanding task [3]. Second, HMFs may be restructured through their variable components depending on the conditions and strategy of task performance. The variable components are present in the structure of HMFs along with invariant (i.e., constant, critically important) ones. For instance, when there are many people around speaking

loudly, to understand an interlocutor's speech, one needs to inhibit (filter out) the interfering messages, whereas in a quiet environment, such an additional mechanism is not required for language perception. Third, the reorganization of HMFs is also possible in patients with a brain injury [11]. In within-system reorganization, a HMF relies on its components being intact. For instance, writing impairments due to poor phonemic analysis may be partly compensated for by the kinesthetic components of writing (i.e., speaking aloud). In between-system reorganization, a HMF incorporates components from other functional systems. For example, to remediate visual perception of letters, a neuropsychologist may ask a patient to perform writing movements.

A study which addresses the dynamic reorganization of the brain's underpinnings of HMFs requires a longitudinal comparison of structural or functional brain characteristics in the same individual, or at least a comparison between groups with and without the expected reorganization. This was impossible before the emergence of noninvasive methods of brain investigation.

These methods must have substantially enriched neuropsychology. Evgeniya Khomskaya noted that a new, psychophysiological line of research was established in experimental neuropsychology by Luria; and that he considered the development of psychophysiology which would focus on complex, conscious, and voluntary forms of mental activity to be the most pressing task in the field [10]. Thus, Luria and Khomskaya applied electroencephalography in their studies. Khomskaya also stated that further development of Russian neuropsychology was associated with advances in technical methods for the diagnostics of local brain injury (computed tomography, methods of nuclear magnetic resonance, and others) [10].

However, neuroimaging methods — which Khomskaya referred to — long served neuropsychology only as technical support for specification of the individual location of brain injury (and at the same time, freed neuropsychologists from the responsibility of topical diagnostics). For 45 years after Luria's death, research capabilities of these methods remained almost not demanded by the TSDL and are still insufficiently integrated into Russian neuropsychology.

We will further describe the scope of neuroimaging and neurostimulation methods in neuropsychology. We will focus on noninvasive methods that are the most accessible in Russia and seem the most prominent for the development of the TSDL. They are magnetic resonance imaging (MRI) — structural (sMRI), diffusion-weighted (dMRI), and functional (fMRI), — and transcranial magnetic stimulation (TMS). Possible designs of studies on patients with local brain injury and healthy individuals that may inform neuropsychological theory in its different aspects will also be discussed.

Structural MRI

sMRI provides images of the brain wherein its tissues (gray and white matter and cerebrospinal fluid) have different intensity of pixels and voxels[1] on the gray scale due to the variable magnetic characteristics of hydrogen when it forms part of different molecules. With sMRI, the location of brain injury can be defined with an accuracy of fractions of a millimeter. Therefore, no description of a new clinical case important for neuropsychology is complete without sMRI [29]. Notably, sMRI also greatly adds to the understanding of historic cases. For instance, sMRIs of the preserved brains of two famous patients of Paul Broca demonstrated that their lesions extended into the insula and superior longitudinal fasciculus, in addition to lesions in the left inferior frontal gyrus (Broca's area) [20].

Converging data on the role of insular lesions in deficits of language production were obtained with another method which represents a natural extension of the traditional neuropsychological studies of local brain injury at a new technical level. This method, voxel-based lesion-symptom mapping (VLSM; [14]), allows researchers to analyze associations between quantitative neuropsychological data and data on lesion location in large clinical groups. Structural MRI images are labeled manually or automatically so that a binary 3D brain mask is obtained. In this mask, voxels corresponding to intact and damaged brain tissues have the values of 0 and 1, respectively. Then, statistical analysis of each voxel is carried out wherein the neuropsychological characteristics are compared between the patient groups with and without the lesions affecting this voxel. As a result, brain regions the injury of which contributes to the severity of a symptom may be revealed. In VLSM, there is also a procedure to test whether the lesion of another brain region is primary (i.e., has a direct causal role) for the symptom. It is important to prevent incorrect inferences because brain injury, especially of the vascular etiology, often involves adjacent brain structures (e.g., the inferior frontal gyrus and insula). Thus, VLSM conducted on a large clinical group has demonstrated that injury

[1] Voxel is a basic element of a 3D MR image of the brain.

to the inferior frontal gyrus *per se* causes speech fluency deficits with prominently less likelihood than injury to the anterior insula that had not been discovered in as long a time [14]. These results are fully consistent with the sMRI data on Broca's patients.

sMRI can also be applied in studies of the intact brain, wherein such a method as morphometry can be used. The most technically simple but laborious techniques imply manual segmentation of the brain structures in MR images with subsequent analysis of their volume. The voxel-based morphometry providing measures of gray and white matter volume in each voxel is fully automatized and was popular for a long time, due to the relative simplicity of its implementation. However, it is strongly criticized for the biases associated with the possibility of imperfect spatial co-registration of brain images to one another and with the inability to clarify the reason for between-group differences — atrophy of tissue, a higher number of sulci, or an increase in the area of gyri or cortical thickness [15; 36]. These limitations can be overcome with surface-based morphometry which provides measures of the thickness, area, and gyrification in different brain regions. There are also methods for analyzing the volume of subcortical structures [24].

Possible designs of neuropsychological studies using morphometry may imply the search for correlations between morphometrical and neuropsychological characteristics. For instance, the volume of gray matter and cortical folding in the ventromedial, ventrolateral, and dorsolateral prefrontal cortices predicted three components of executive functions: common executive function, switching-specific, and updating-specific performance, respectively [34]. Experimental study designs are also possible, wherein the volume of a structure is measured before and after the intervention — training to improve a certain skill among the experimental group and another activity among the control group. For example, working memory training was shown to increase gyrification in the parietal regions [37].

Diffusion-weighted MRI

This method measures the direction of diffusion of water molecules in brain tissues in the magnetic field during MRI. As white matter fibers are organized in co-directional bundles, diffusion of water molecules occurs predominantly along but not across the fibers in the bundle. The simplest mathematical model to describe the diffusion of water in tissues is a tensor model[2], for which diffusion tensor MRI, one of the types of dMRI, is named. In this model, diffusion is described by three eigenvectors (the direction of diffusion) and three eigenvalues (the magnitude of diffusion in the particular direction). These characteristics or their combinations may provide information on the white matter of the brain. Axial diffusivity, the value of the highest vector, reflects diffusion along the neural fibers, decreases in axonal injury, and increases with brain maturation in ontogeny. Radial diffusivity, the mean of the two vectors with lesser values, describes diffusion in the transverse direction and is sensitive to myelination. Radial diffusivity decreases in ontogeny and increases in neurodegenerative diseases. Fractional anisotropy reflects the degree of anisotropy (i.e., heterogeneity of directions) of diffusion of water molecules in each voxel[3] and is sensitive to any changes in the white matter. However, this measure is non-specific, and for its precise interpretation, the measures of radial and axial diffusivity should also be considered [13]. The diffusion models allow researchers to conduct tractography, that is, a 3D reconstruction of the white matter tracts.

dMRI may complement the structural-functional model of the brain within the TSDL with data on the functional role of white matter tracts. This can be done through the analysis of correlations either between neuropsychological symptoms and injury to the tracts [26] or between white matter characteristics, in particular tracts and neuropsychological measures in healthy individuals [28]. The contribution of the brain's structural connections to mental processes was left under-studied in Soviet and later Russian neuropsychology (except the role of the corpus callosum in the interhemispheric interaction during different HMFs; e.g., [5]). When the TSDL was being developed, methods for the individual examination of white matter tracts *in vivo* were not available, while their identification in *post mortem* brains was laborious and required high proficiency. However, white matter tracts are the infrastructure which allows individual gray matter structures to unite in functional systems. Injury to the tracts and even their separate segments causes particular symptoms (e.g., semantic and phonological paraphasias induced by lesions in the inferior fronto-occipital and arcuate fascicles, respectively [21]). Therefore, the structural-functional organization of white matter should not be ignored by neuropsychological studies.

[2] More complex diffusion models such as the diffusion orientation distribution function overcome the limitations of the tensor model [22].
[3] Diffusion is isotropic when eigenvalues are almost equal, and anisotropic when one of the eigenvalues is higher than the others.

Functional MRI

fMRI is a method for functional brain mapping which has a fairly high spatial resolution (usually 2—3 mm). It is based on neurovascular coupling, through which the enhancement of neuronal metabolism under neuronal activation increases the regional blood flow in the brain. Consequently, the ratio of oxy— to deoxyhemoglobin in the venous blood changes. This can be detected by an MR scanner as a local change of blood relaxation characteristics during MRI and is reflected in changes of the intensity of pixels and voxels in T2*-weighted images. This technique is known as BOLD (blood oxygenation level dependent) fMRI.

The most common application of fMRI in science is that used to investigate brain activation in healthy individuals during task performance. Development of the tasks loading particular neuropsychological factors is of great interest for neuropsychology — this has not been done so far. . To reveal activations specific for each mental process, it is necessary to use at least two tasks, main and control. The control and main conditions should differ only in the content of the mental process of interest. For instance, the main condition for a task aimed to load the semantic processing of language may include the reading of sentences, while the control condition may be the reading of syllables; or listening to an audiobook versus listening to the same recording played backwards [9].

Other important opportunities that the fMRI gives to neuropsychology are the research of age-related changes (e.g., [30]) and individual differences in the brain's underpinnings of HMFs. Brain localization of HMFs is characterized by high interindividual variability (e.g., language [23], executive functions [33]).

Within the framework of the TSDL, fMRI can reveal functional networks which include invariant and variable components of HMFs. However, in contrast to sMRI and dMRI studies of local brain injury, invariant components can be hard to isolate based on the data obtained from brain activation studies. The presence of local activation *per se* does not indicate that this activation is necessary for the mental function. To identify invariant components, a combined task analysis can be used. An examinee is asked to perform several tasks aimed to load the same mental process, and the invariant components are expected to be present in all activation maps [9]. For example, common components of activation in the tasks addressing inhibition [17; 25] are seen in the left dorsolateral prefrontal and right insular cortices, as well as the cingulate and inferior frontal gyri. Activation in the left fusiform gyrus specific for the Stroop test may be related to word recognition. Activation of the ventral attention network exclusive for the Go/No-go task may be explained by the detection of unexpected salient stimuli.

Apart from the analysis of brain activation, fMRI provides the crucial opportunity for neuropsychology to investigate functional connectivity (FC), through which separate brain regions become the components of a single functional system [7]. The functional integration between different brain regions is one of the core ideas of the TSDL. HMFs can exist only due to the interaction between highly differentiated brain structures, each of which provides a unique contribution to the dynamic functional systems [6]. Syndrome analysis, in contrast to fMRI, is not able to reveal changes in the FC between components of a functional system but only to assume that the FC is impaired due to a deficit of a particular component of a HMF.

Technically, the FC in fMRI is defined as a statistical correlation between low-frequency (<0.1 Hz) fluctuations of the BOLD-signal in different brain regions and subcortical structures. The FC can be studied not only during task performance but also at rest. In this case, the intrinsic functional brain architecture is supposed to be analyzed. Thus, a number of networks can be identified based on resting-state fMRI data, including the frontoparietal network, the default mode network, and the dorsal and ventral attention networks [38]. Associations between the results of outside-of-scanner neuropsychological assessment and characteristics of the resting-state FC seem the most interesting for neuropsychology. For instance, the FC of the dorsolateral prefrontal cortex with different brain regions was shown to be related to the switching, inhibition, and verbal components of executive functions [32]. In the same way, correlations between neuropsychological parameters and FC, or activation during task performance, can be analyzed. Another perspective approach is lesion network mapping wherein a single study includes sMRI in patients with brain injury to reveal regions that are crucially important for a particular function, and fMRI in healthy individuals to identify the FC of these regions [16].

Activation or FC during task performance and FC at rest can also be analyzed in patients with local brain injury — to explore compensatory reorganization of brain functioning during the development of a disease or during neuropsychological rehabilitation. Longitudinal designs are perfect for such studies. For further direct comparison, neurophysiological data should be obtained under the same conditions for each patient before, during, and after the rehabilitation, or before and after the onset of a disease. As the latter design can be implemented only in large screening studies, more feasible designs imply the comparison of activation or FC between patients and healthy individuals and the analysis of cor-

relations between neurophysiological and neuropsychological characteristics [35].

Transcranial magnetic stimulation

During TMS, a selected brain region is stimulated with an alternating magnetic field generated by a coil. The depth of stimulation is usually 2-3 cm, however, with the application of some coils, this can be increased up to 6 cm. Structural and functional MRI data can be used to choose the brain region for stimulation. Depending on the parameters of stimulation, the neuronal activity in this region may either be facilitated or inhibited. It is even possible to induce a so-called virtual lesion of a particular brain region in healthy individuals. The virtual lesion is an impairment of function of a stimulated region that is similar to symptoms of a real lesion but lasts only for several seconds and is fully reversible [4]. When the immediate effect of TMS (inhibitory or facilitatory) persists, a researcher may compare the task performance carried out by an examinee with her or his performance without stimulation, during stimulation of another brain region, or during sham (i.e., placebo) stimulation. Sham stimulation causes the same auditory and tactile sensations as that in TMS but does not stimulate the brain [4].

TMS studies demonstrating the improvement of task performance in healthy individuals [18] and possibilities of therapy of cognitive impairments in local brain injury [31] are also interesting for neuropsychology.

General discussion and conclusions

As can be concluded from the brief review presented above, neuroimaging and neurostimulation methods can be effectively implemented for the investigation of brain organization of HMFs considered as multicomponent functional systems with invariant and variable components. These methods can complement the information obtained through a neuropsychological syndrome analysis using the data on brain phenomena. They can also be applied in more specific objectives of neuropsychology — for the research of the structural-functional reorganization of HMFs in ontogeny, after local brain injury, and due to neuropsychological rehabilitation; and for the investigation of individual differences in the brain mechanisms of HMFs. Neuroimaging methods have a high spatial accuracy that was non-existant during the early development of the TSDL and provide opportunities crucial for neuropsychology — to analyze the functional (fMRI) and structural (dMRI) connectivity of the brain.

In this article, we suggested some examples of neuropsychological studies that apply neuroimaging and neurostimulation methods. They are summarized in Table 1.

Studies of the intact brain overcome a number of fundamental problems that arise during the examination of patients with local brain injury. The main problem is associated with the non-specific effects of brain injury that always accompany brain diseases: alterations in the vascular blood flow and dynamics of the circulation of cerebrospinal fluid, inflammatory processes, and hypertension-dislocation phenomena leading to abnormal dynamics of neural processes and an altered relationship between processes of excitation and inhibition [6]. Furthermore, examination of healthy individuals provides more opportunities for the investigation of subcortical brain structures. In patients with subcortical brain injury, this is complicated with high morbidity, altered states of consciousness [6], and severe motor symptoms that may mask cognitive symptoms. Finally, a sample of healthy individuals sufficient for the analysis is easier to draw in contrast to several clinical groups matched by sex, age, level of education; location, volume, and etiology of a lesion; and time post-onset of the disease.

A prominent research issue is what hypotheses can be tested in the study designs described above. One of the main hypotheses for neuropsychology is a causal hypothesis of the type "functioning of a brain region (X) *is necessary* for HMF component (Y)". The majority of designs of intact brain studies (2, 4, 6, 8, 10; Table 1) are able to test only hypotheses of type "X *is related to* Y" but not necessarily critically important for Y. Research on local brain injury (1, 3) brings us closer to the identification of the "X *necessary* for Y", however, only quasi-experimental study designs are possible in this case. A researcher cannot control to whom and when different levels of the independent variable (injury / its absence) are presented, does not have complete information on the effects of injury on the brain (e.g., diaschisis and neuroplasticity), and is not able to assess mental functions before the injury. Therefore, strictly speaking, the above causal hypothesis cannot be tested in such studies either. When the data obtained on patients with brain injury and on healthy individuals are interpreted in combination, a stronger level of inference is provided [19]. TMS studies (12), in turn, are able to test the hypothesis on causal relationships between the functioning of a number of cortical brain regions and components of HMFs through a true experiment wherein the independent variable (intervention) is controlled. Designs 11, 13, 14 are able to test causal hypotheses but of another kind: on the change of a brain region due to learning aimed at im-

Table 1

Designs of neuropsychological studies applying neuroimaging and neurostimulation methods

Method	Object of study	Study design	Research questions in neuropsychology
sMRI	Local brain injury	(1) Voxel-based comparisons of the severity of symptoms between patient groups with and without lesions in a voxel (VLSM)	Localization of the invariant components of HMFs in the brain and the functional role of the white matter tracts
	Intact brain	(2) Correlations between morphometric measurements and data on cognitive functions. Comparison of these correlations between groups or hemispheres	Functional role of gray matter regions, individual and age-related differences, hemispheric asymmetry
dMRI	Local brain injury (3), intact brain (4)	(3,4) Correlations between characteristics of white matter tracts and results of neuropsychological assessment. Comparison of these correlations between groups / hemispheres	3,4: Functional role of the tracts 4: Individual and age-related differences, hemispheric asymmetry
tbfMRI	Local brain injury (5,7), intact brain (6,8)	(5,6) Investigation of brain activation or FC during task performance (7,8) Correlations between activation or FC during task performance and results of neuropsychological assessment. Comparison of these correlations between groups or points in time	6,8: Localization of invariant + variable components of HMFs in the brain, interhemispheric interaction, individual and age-related differences in FC, volume of activation and localization of HMFs 5,7: Compensatory reorganization of brain function due to disease or after rehabilitation
rsfMRI	Local brain injury (9), intact brain (10)	(9,10) Correlations between FC at rest and the results of neuropsychological assessment. Comparison of these correlations between groups, conditions, or points in time	9: Compensatory brain reorganization 10: Contribution of the FC to HMFs, individual and age-related differences
sMRI, dMRI, tbfMRI, rsfMRI	Intact brain	(11) Comparison of MRI measures between the experimental group (which undergoes training aimed at enhancing a particular function) and the control group (another activity), before and after the experimental intervention	Reorganization of functional systems in learning
TMS	Intact brain	(12) Description of impairments of HMFs during task performance with virtual lesions of brain regions compared to sham stimulation	Localization of invariant components of HMFs in the brain
		(13) Description of the effects of stimulation of brain regions to enhance task performance compared to sham stimulation	Functional role of a number of cortical brain regions, hemispheric asymmetry, plasticity of HMFs in healthy individuals
	Local brain injury	(14) Description of the effects of stimulation of brain regions to remediate deficits of HMFs, compared to sham stimulation	Compensatory brain reorganization

Note: tbfMRI is a task-based fMRI; rsfMRI is a resting-state fMRI.

proving a particular HMF (11) and on the contribution of a brain region to the plasticity of HMFs in healthy individuals (13) or during the compensatory reorganization of HMFs (14).

An important problem that researchers will face in studies with designs 1—4 and 7—10 is associated with the necessity to present neuropsychological data in quantitative scales. The elaboration of integrative quantitative indices reflecting the state of neuropsychological factors is required to explore their brain organization. This demands substantial consideration due to the multicausality of a symptom — the same symptom can be caused by the impairment of different factors. For instance, anomia may occur due to either poor visual perception, language impairments, or executive deficits. This problem can be largely resolved with the elaboration of a detailed classification of errors in each task (based on their nature) and with the evaluation of neuropsychological data by qualified and skilled neuropsychologists. Another problem, the subjective nature of syndrome analysis, may be overcome through the development of precise evaluation criteria. A system for the quantitative estimation of the results of neuropsychological assessment has already been developed by the research group of Tatiana Akhutina in Russian child neuropsychology. This complex system combines the

qualitative analysis of a symptom with its scoring based on its severity [8]. As a result, the integrative indices of executive functions, serial organization of movements and language, processing of kinesthetic, auditory, visual, and visuospatial information, as well as the indices of hyperactivity/impulsivity and fatigue/slow tempo are derived from a set of single symptoms [27]. The composition of these indices is based on the theoretical considerations, experience of syndrome analysis, and the results of confirmatory factor analysis. The indices are calculated through the summation of the corresponding standardized measures of performance in different tasks, such as productivity and specific errors.

To conclude, a rich arsenal of up-to-date neuroimaging and neurostimulation methods, in combination with statistical data analysis, provide opportunities to verify, detail, and continue the development of the model of structural-functional brain organization within the TSDL using the data obtained on patients with brain injury and on healthy individuals.

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Brain Executive Functions and Learning Readiness in Senior Preschool Age

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It is known that the formation of executive functions (EF), which exert control over cognitive processes and behavior is crucial for children's cognitive development and social adaptation. It has been shown that the efficiency of EF during the preschool period is a predictor of academic performance in primary and secondary school. However, it is still unknown to what extent the age and individual characteristics of EF during the preschool period determine children's potential school readiness and success in mastering preschool educational programs. To address this issue, we conducted a comparative study using qualitative and quantitative neuropsychological tests. Children aged 5—6 (n=132, M=5.67±0.46 years) and 6—7 years (n=163, M=6.67±0.37 years) participated in the study. According to teachers' estimates, both groups were subdivided into three subgroups of participants with low, medium and high school readiness. The statistical analysis showed that such cognitive functions as programming, selective regulation and control of behavior, working memory, inhibitory control, cognitive flexibility and sustained attention were developed significantly (ps<0.05-0.001) better in children with a high level of school readiness (compared to children with low and medium levels of school readiness).

Keywords: brain executive functions, working memory, inhibitory control, cognitive flexibility, preschool age, neuropsychology, leaning readiness.

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Управляющие функции мозга и готовность к систематическому обучению у старших дошкольников

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Известно, что формирование управляющих функций мозга (УФ), осуществляющих контроль когнитивных процессов и поведения, является критичным для познавательного развития и социальной адаптации детей. Показано, что эффективность УФ в дошкольном возрасте является предиктором академических успехов в начальной и средней школе. Открытым остается вопрос о влиянии возрастных и индивидуальных особенностей УФ дошкольников на освоение дошкольных образовательных программ и потенциальную готовность к обучению в школе. С целью исследования этого вопроса проведено сравнительное нейропсихологическое обследование детей 5—6 (n=132, средний возраст — 5,67±0,46 лет) и 6—7 лет (n=163, средний возраст — 6,67±0,37 лет) с низкой, средней и высокой степенью готовности к систематическому обучению по экспертной оценке воспитателей детского сада. Использовались качественные, основанные на концепции А.Р. Лурии, и количественные методы тестирования. У детей с высокой степенью готовности к обучению выявлен значимо (ps<0,05—0,001) более высокий уровень развития функций программирования, избирательной регуляции и контроля деятельности, рабочей памяти, тормозного контроля, когнитивной гибкости и длительного удержания внимания.

Ключевые слова: управляющие функции мозга, рабочая память, тормозный контроль, когнитивная гибкость, дошкольный возраст, нейропсихология, готовность к систематическому обучению.

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Introduction

Brain executive functions (EF) is a term that combines various aspects of the control of goal-directed behavior. In cognitive neuroscience [26; 31], they distinguish three core components of EF: information updating and monitoring in *working memory* (WM), *inhibition* of prepotent and impulsive response and mental set shifting — *cognitive flexibility*. In Luria's neuropsychology EF are interpreted more broadly and are associated with frontal lobes and its functions — programming, selective regulation and control of behavior and mental activity [10].

EF develop within a long period of time. However, many researchers emphasize their important significant changes during preschool years [14; 28]. These EF changes are expressed in better organization of their mental processes and self-control, developing of inhibition of impulsive reactions, increasing *cognitive flexibility and capacity to* follow instructions.

EF development is determined both by the maturation of the *brain regulatory systems*, which are the neurophysiological basis of this process [12], and by child *social experience*, which should provide opportunities for mastering various ways of self-regulation and these skills automation. During development, the brain maturation, primarily the long-term maturation of the frontal cortex, and social experience including learning, constantly interact with each other. This reciprocal interaction must be taken into account during EF assessment and treatment [3]

Various components of EF show distinctive developmental trajectories and significant individual variability in the child population. Thus, 5-year-old children are already able to execute sequential action programs [11]. At 6—7 years the efficiency of performing tasks according to verbal and visual instructions becomes equal [7]. The ability to *understand instructions and algorithms of the activity* demonstrate significant positive age-related changes from 5—6 to 6—7 years [8; 18], which could be related with an increase in the efficiency and volume of WM observed between the ages of 5—6 and 9—10 years [19]. It is important to note the intense formation of the *planning function* at the age of 5 to 8 years, which determines the ability to organize one's actions consistently to achieve the goal [34]. The development of planning becomes possible due to the formation of the hierarchy of motives [17]. The hierarchical structure of motives and their relations with inner objects' images (rather than directly perceived objects) are formed in the process of development and execution of role-playing games, constructive activity and other activities in which preschoolers begin to implement their intentions [6; 17].

At preschool age, there is a significant increase in the effectiveness of *voluntary regulation of movements*,

including graphic movements, underlying the writing skills development [4]. In 6-7-year-old children, progress in voluntary regulation of movements is expressed also in the possibility of gaze fixing on the significant features of objects. That suggests the development of categorization and generalization processes, underlying the creation of an internal model of the object [14]. At this age, a child is able to use the sign as a means of external mediation [5], which also affects the regulation of *mnestic activity*, allowing the development of semantic memory [9].

The development of EF, which controls cognitive processes, social behavior and affective reactions, is critical for cognitive development, school success and general life achievements [26]. The effectiveness of EF turns out to be a predictive sign of school success in a number of disciplines [19; 22; 24] and even predicts the development of social intelligence and moral forms of behavior [32]. A longitudinal study [24] found that scores of visual WM measured in 4-year-old children predict the success of these children in learning mathematics at 7 years. In children aged 3 years, the statistical relationship is already found between the abstract thinking ability and cognitive flexibility [29].

Thus, the preschool age is characterized by the intense development of EF, which makes it extremely interesting and relevant for a thorough study and analysis of their influence both on cognition and behavior, and on the readiness of children for systematic learning and their future academic success at school. ***The goal*** of this study is to analyze the relationships between the level of maturity of various components of EF in preschoolers on the one hand and the readiness for systematic learning and the success of mastering the education program in the preschool organization on the other hand.

Method

295 children aged 6—7 years who attended the school preparatory group of the kindergarten, and children aged 5—6 years who attended the senior group of the kindergarten participated in the study. Based on the expert opinion of teachers, the children in each group were divided into 3 subgroups depending on the success (high, average, low) of mastering the school preparation program and participation in the educational process (see Table 1).

To assess the formation of EF, group and individual studies were used. The group study included the following tests:

- *Reciprocal Motor programmer Tes*t is aimed to analyze the possibilities of following the speech instruction, suppressing immediate habitual reactions, switching;
- *Graphomotor Sequences Task* is aimed to study the possibilities of mastering a motor program when copying a visual sample, switching from one element of the program to another, and automatization of motor series;
- *Spot the Difference Task* is aimed to assess selective visual attention, its distribution and switching from one image to another;
- *Cancellation Test* allows to evaluate the ability to keep attention on a monotonous task and switch from one rule to another;
- *"The Zoo Task"* allows to evaluate visual-spatial WM;
- *The Trail Making Test* is aimed at analyzing the possibilities of holding the program, planning the next action, suppressing immediate reactions.
- *The Maze-tracing Task* is aimed at analyzing the possibilities of forming an activity strategy and suppressing direct reactions;
- *Digit Symbol Coding Task* allows to evaluate the effectiveness of voluntary attention, including its selectivity, the possibility of switching and long-term retention on the task;
- *Three-dimensional Drawing Task*: allows to evaluate the possibilities of planning and creating a copy strategy based on analytical and holistic components of perception.

Some of the tests were taken from the methods of traditional neuropsychological examination of children [13], some are used in group neuropsychological diagnostics [1], and some were modified specifically for this study. Frontal diagnostics was carried out by one teacher in a group of no more than 12 people with the participation of 2-3 assistants who helped children with difficulties in understanding instructions and recorded

Table 1

Subgroups of children participating in the study

Group	Subgroup 1 (high success)	Subgroup 2 (average success)	Subgroup 3 (low success)	Total
6—7 years old (6.67±0.37 yrs.)	n =75 34 boys	n =67 33 boys	n =21 14 boys	n =163 81 boys
5—6 years (5.67±0.46 yrs.)	n =61 21 boys	n =54 31 boys	n =17 13 boys	n =132 65 boys
TOTAL participants				295 children 146 boys

various behavioral manifestations in the form of impulsivity or emotional reactions that were inadequate to the examination situation.

An individual study included 4 computerized methods from the "Praktika-MSU" battery of tests [2] presented on the touch screen of a tablet:

• *Cancellation test* is aimed at assessing the ability to keep attention on a monotonous task (series 1) and switch from one instruction to another (series 2). In each series, the child is presented with a 16x12 table, the elements of which are six different geometric shapes. In series 1, the child is asked to find and mark all the figures of one type — circles, in series 2 — figures of two types — circles and stars.

• *Hands-Legs-Head (HLH)*: a 1-back task procedure adapted for children, used to assess the development of WM and concentration.

• *Corsi Block-tapping Test*: the technique is aimed at assessing the visuospatial WM. In different places of the screen, images of cubes (from 2 to 9) are highlighted in turn in a certain sequence. The task of the child is to remember and then reproduce this sequence (if the answer is correct, the length of the reference sequence in the next sample increases).

• *Hearts and Flowers Test* is a modified method of *The Dots Task* [25; 26], consisting of three subtests, each of which presented 20 stimuli. Subtest 1 (task to press the response button on the same side where the image appears) assesses the ability to follow the instructions and reaction speed, subtest 2 (task to press the button on the opposite side from the image) — the ability to suppress direct response. In subtest 3, the participant needs to switch between two competing programs (combining the first two subtests).

Based on the results of performing neuropsychological tests according to the scheme proposed by Semenova O.A. [16], the individual characteristics (presence/absence of implementation difficulties) of separate components of EF were evaluated. The assessments of these components were combined into four integral indicators:

— deficit of programming functions (average indicators of difficulties in understanding instructions or algorithms and creating a strategy of an activity),

— deficit of selective regulation (average of scores that depicts difficulties in overcoming immediate (impulsive) reactions, switching from one action to another, switching between programs, difficulties in difficulties of sustained program execution),

— deficit of voluntary control of one's own activities, as well as

— general index of EF deficit (average of the deficits of programming, selective regulation and control).

All task evaluation parameters included in the integral indicators of the immatureness of certain components represent a system of penalty points: the minimum score corresponds to the best performance, and the maximum score corresponds to the worst performance. The statistical software package SPSS 28.0 was applied for data processing. Non-parametric Kruskal-Wallis (H) and Mann-Whitney (U) criteria were used for assessing the significance of group and subgroup differences in the analyzed neuropsychological parameters.

Results

Functions of programming, selective regulation and control

Comparison of children aged 5—6 and 6—7 years revealed significant **age differences** between the groups in terms of the level of EF development, assessed according to neuropsychological examination results, both in terms of the overall EF deficiency index ($U=3216$, $p=0.042$), and separately for three indices:

— deficit of programming ($U=5638.5$, $p<0.001$), including deficit of internalization of ready-made programs ($U=6949$, $p<0.001$) and creation of activity strategies ($U=6510.5$, $p<0.001$);

— deficit of selective regulation ($U=5128$, $p<0.001$), including the number of perseverations of program elements ($U=4800.5$, $p<0.001$), repeating of whole programs ($U=6267.5$, $p<0.001$), difficulties of sustained program execution ($U=5479.5$, $p<0.001$) and impulsivity ($U=6135.5$, $p=0.03$);

— deficit of control ($U=6117$, $p<0.001$).

In accordance with the study goal, **neuropsychological indices were compared in subgroups of children with different success rates in learning** (Fig. 1, 2) for each age group. An intergroup comparison in terms of the overall EF state index revealed significant differences in all three subgroups both in the older (6-7-year-old) ($H=19.735$, $p<0.001$) and in the younger (5-6-year-old) ($H=15.735$, $p<0.001$) groups. In children aged 6-7 years, the compared subgroups showed significant differences in almost all neuropsychological indices: *programming deficit* ($H=12.228$, $p=0.02$), primarily in terms of strategy formation difficulties ($H=9.968$, $p=0.007$); *selective regulation deficit* ($H=20.437$, $p<0.001$), including the severity of impulsivity ($H=12.357$, $p=0.02$) and difficulties in task switching ($H=17.168$, $p<0.001$), sustained program execution ($H=14.516$, $p< 0.001$), as well as by the number of perseverations of program elements ($H=12.283$, $p=0.002$); and by *control deficit* ($H=8.929$, $p=0.012$). At the same time, pairwise comparisons of subgroups 1 and 2 did not reveal any differences in relation to the programming deficit index (and its components) and control; thus, subgroup 2 turned out to be closer to subgroup 1 than to subgroup 3 in terms of neuropsychological parameters of EF.

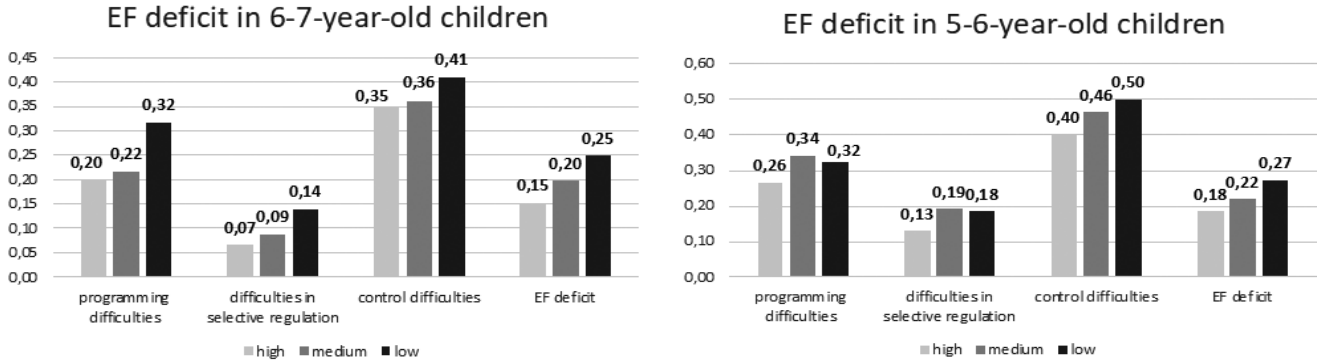

Fig. 1. Integral neuropsychological indices characterizing the state of various components of EF in preschoolers with different degrees of success in learning

At 5—6 years, intergroup differences were found for all EF deficit indices:

— *programming* difficulties (H=8.159, p=0.017), including difficulties in understanding instructions (H=12.095, p=0.002);

— difficulties in *selective regulation* (H=11.244, p=0.004), including impulsivity (H=9.335, p=0.009), perseveration at the action level (H=9.413, p=0.009), difficulties in task switching (H=9.631, p =0.008), difficulties in sustained program execution (H=14.187, p<0.001);

— *control* difficulties (H=11.773, p=0.003).

Differences were not found only for the parameter reflecting the difficulties of creating activity algorithms, which showed high rates in all subgroups, which indicates the immaturity of this EF component. For almost all analyzed neuropsychological indices, pairwise comparisons of subgroup 1 with the other two were significant (ps<0.05), and there were no differences between subgroups 2 and 3.

Working memory

The effectiveness of WM was assessed using three tasks — *the Zoo, Corsi Block-tapping Test and Hands-Legs-Head*. The main indicators of the effectiveness of WM were accuracy (the number of correct answers), the number of errors of various types, the pace of execution and productivity (the product of accuracy and pace). WM indicators showed significant age differences between children aged 5—6 and 6—7 years: older children made fewer mistakes in *the Zoo Task* (U=8747.5, p=0.012), completed the *Hands-Legs-Head Test* more accurately (U=1473.5, p=0.019), productively (U =1115.5, p<0.001) and quickly (U=3128.5, p=0.012), and more often correctly reproduced long sequences of 4 elements in the *Corsi Block-tapping Test* (U=940.5, p<0.001). They also showed a higher response rate within the trial (U=1150, p<0.001) with shorter pauses between them (U=1148, p<0.001).

In children aged 6-7 years, the comparison of subgroups with different level of learning readiness allowed to find significant differences in terms of productivity parameters (H=29.030, p<0.001) and the number of correctly shown sequences of 4 (H=30.433, p<0.001) and 5 (H= 29.030, p<0.001) elements in the *Corsi Block-tapping Test*, and in the *HLH* test — in terms of accuracy (H=12.085, p=0.002) and productivity (H=7.776, p=0.020). In terms of WM productivity, children with the average learning readiness were close to the subgroup with the low learning readiness: pairwise comparisons revealed differences (ps<0.05) only between subgroups 1 and 3 according to the parameters of *HLH* described above, and According to the *Corsi Block-tapping* Test, differences were noted only between subgroups 2 and 3

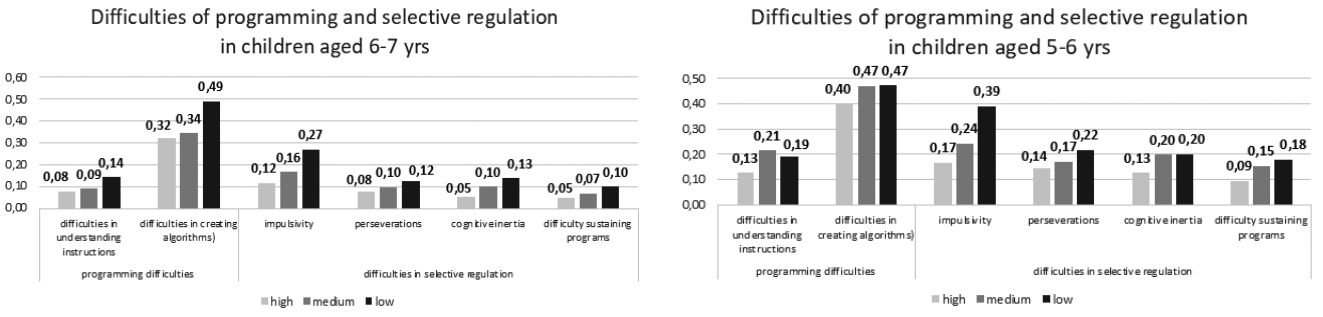

Fig. 2. Neuropsychological indices characterizing the state of various components of programming and selective regulation in preschool children with different degrees of success in learning (designations of subgroups with different success in learning — as in Fig. 1)

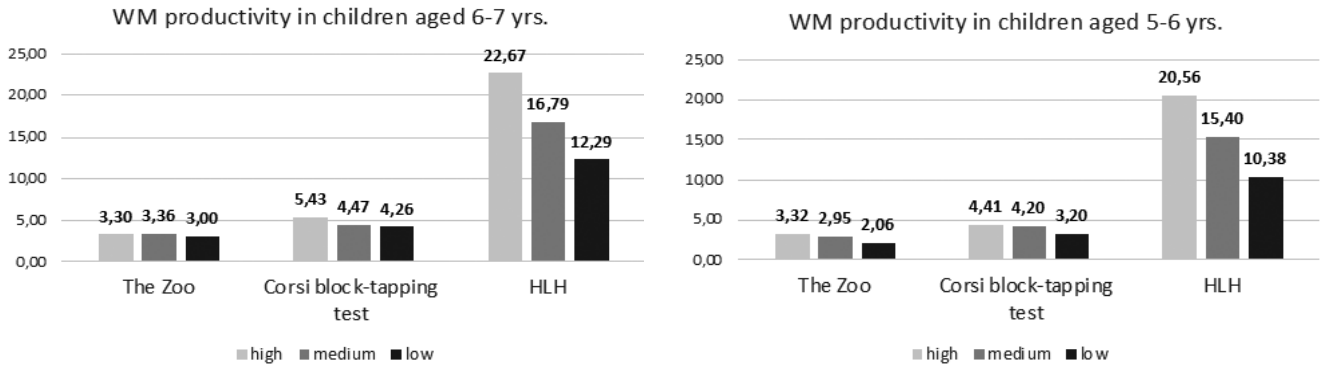

Fig. 3. The productivity of WM in preschoolers with different degrees of success in learning (designations of subgroups with different success in learning — as in Fig. 1)

in terms of the number of repeated answers — perseverations (U=462, p=0.035). Speed indicators depending on success in training did not differ.

In the younger group, children with different learning readiness significantly differed in productivity (H=13.066, p=0.001) and accuracy (H=18.315, p<0.001) in *the Zoo Task*, as well as in the number of repeated choices (H=8.683, p= 0.013) in the *Corsi Block-tapping Test*. Pairwise comparisons showed that children with the high level of learning readiness more often corrected errors in *the Zoo Task* (ps<0.05), less often made errors by the repeated stimulus selections (ps<0.05) in the *Corsi Block-tapping Test*.

Inhibitory control and cognitive flexibility

Consider the results of the *Hearts and Flowers* (The Dots task) *Test*, which evaluates, along with the ability to understand and retain programs of varying complexity, the ability to suppress habitual actions (inhibitory control) and switch from one action to another (cognitive flexibility). Productivity significantly increased in children aged 6-7 years compared with children aged 5-6 years in the first, the most simple series of this test (U=2503, p<0.001), and in the second, more complex series (U=2621, p<0.001) where it was necessary to push the button from the side of the stimuli. The number of errors decreased with the age (in series 1: U=2965.5, p=0.001; in series 2: U=2936, p=0.002), including omissions (in series 1: U=2636, p<0.001; in series 2: U=2891, p<0.001). Children aged 6-7 years made fewer errors and omissions in the entire test (errors: U=3214, p=0.022, omissions: U=2440, p<0.001). In series 1 and 2, the reaction time decreased (in series 1: U=2926.5, p=0.003; in series 2: U=2772.5, p<0.001), which also decreased throughout the test as a whole (U=2986.5, p=0.004). In the third, most difficult series, requiring the retention of two programs at once, no age differences were found.

In children aged 6-7 years, a number of differences in the performance of the test by children with different learning readiness (Fig. 4) were found for productivity (H=8.595, p=0.014) and errors (H=11.115, p=0.004) in series 2. Pairwise comparisons also revealed differences between children with high and average learning readiness in terms of the number of errors in the third series (U=1108, p=0.04), and children with average learning readiness did not differ from the low-ready ones.

In children aged 5-6 years, subgroup differences were obtained for productivity in the second series (H=8.734, p=0.013) and the number of errors in it (H=11.611, p=0.003), as well as for productivity in the first series (H=6.019, p=0.049) and the number of omissions in it (H=6.998, p=0.030). Pairwise comparison of subgroups

Fig. 4. Productivity of the Hearts and Flowers performance by preschoolers with different degrees of success in learning (designations of subgroups with different success in learning — as in Fig. 1)

at this age did not reveal a difference between children with low and average learning readiness.

Sustained attention in monotonous activities

Age-related changes of the ability to sustain a simple (subtest 1: cross out one type of stimulus) and more complex (subtest 2: cross out two types of stimuli) program during monotonous activity in the *Cancellation Test* was revealed for accuracy (test as a whole: U=3112, p=0.003, subtest 1: U=2910.5, p<0.001, subtest 2: U=2711, p<0.001), the number of incorrect answers in subtest 1 (U=3725, p=0.015), omissions in the entire task (U=1224, p <0.001), as well as in the 1st (U=2994.5, p<0.001) and 2nd (U=2708.5, p<0.001) subtests.

In children aged 6-7 years, subgroup differences associated with the level of learning readiness were found for accuracy (test as a whole: H=10.897, p=0.004; subtest 1: H=9.903, p=0.007, subtest 2: H=8.277, p=0.016), the number of skips (subtest 1: H=10.897, p=0.004; subtest 2: H=8.327, p=0.016), productivity of subtest 1 (H=6.573, p=0.032). Pairwise comparison showed no statistically significant differences between subgroups 2 and 3.

In children aged 5-6 years, the performance of the *Cancellation Test* by the three compared subgroups differed only in terms of the number of incorrect answers in subtest 2 (H=7.471, p=0.024). Pairwise comparison revealed no significant differences between subgroups 1 and 2.

Discussion

The study made it possible to obtain new, previously not described in the specialized literature data on significant *age-related progressive changes* in various EF components in children aged 5—7 years. This was largely facilitated by the combination of the qualitative syndrome analysis, traditional for Russian (Luria) neuropsychology, and more accurate quantitative methods of assessing the individual and age characteristics of children's cognitive activity. With the help of quantitative computer research methods, it was possible to detect an increase in the efficiency of WM (in the *Hands-Legs-Head* and *Corsi Block-tapping Tests*), in the ability to suppress task-irrelevant actions (in the *Hearts and Flowers Task*) and in sustained attention (in the *Cancellation Test*). These data are of high value for further research and practice because the listed indices of quantitative methods can be reasonably used to assess EF in senior preschoolers. Moreover, such assessment implies the acquisition of a large amount of accurate quantitative data that may be validly used to compare children with each other.

In accordance with the main goal of the study, we have managed to show the *relationship between children's EF components (programming, the selective regulation and control of behavior), school readiness, and success in mastering preschool educational programs*. Both 5—6— and 6—7-year-old children with high, medium, and low levels of learning readiness (LR) were found to be significantly different from each other in terms of EF in general-and in terms of programming, regulation and control of behavior in particular. These findings are consistent with the results of previous neuropsychological studies based on the principles of the qualitative syndrome analysis proposed by A.R. Luria [8; 15], as well as with the results of quantitative behavioral studies of EF [26]. It is interesting that 6—7-year-old children with a medium level of LR are similar to their peers with a high LR in terms of EF development. The difference between them concerns only the selective regulation of behavior: children with high learning readiness have fewer manifestations of elementary perseverations and cognitive inertia during task performance. The difference between children with medium and low levels of learning readiness concerns the majority of EF indices. The situation is different for children aged 5—6 years: the difference between participants with high and medium LR levels was observed practically for all EF components. At the same time, the difference between children with high and low LR was shown only for some aspects of the selective regulation of behavior, such as switching difficulty in the form of elementary perseverations. These age-related differences might reflect potential abilities of 5—6-year-old children with low LR, i.e. progressive changes in EF development at older ages, which seems to be a favorable background for the work of teachers and psychologists.

The results of performing *WM* tasks generally indicate low efficiency of WM in both 5—6- and 6—7-year-old children with low LR. It should be noted that the tests showed different sensitivity to the level of learning readiness in two age groups. *The Zoo Task* turned out to be more sensitive in the group of children aged 5—6 years: children with high LR were more productive, made fewer mistakes and corrected their mistakes more often during task performance. More difficult tests based on the 1-back task (*Hands-Legs-Head*) or on a longer sequence of elements (*Corsi Block-tapping Test*) were indicative for children aged 6-7 years: children with high LR memorized longer sequences (average number is 5.4 elements), made fewer mistakes in sequences with 4 and 5 elements (stimuli). It is interesting that in both age groups, children with medium and low levels of LR pressed the element they had already chosen from the sequence in the *Corsi Block-tapping Test* more often. It might be due to the fact that they forgot both the sequence and their own actions. It is worth noting that children aged 6—7 years differ from younger preschool-

ers not only in the productivity of performing tests but also in the speed of performing WM tasks.

The results of the *Hearts and Flowers Test* showed that the ability to suppress task-irrelevant actions was the most sensitive in relation to the learning readiness index in both age groups: children with high LR showed greater productivity and made fewer mistakes during the performance of subtest 2. This very age period is associated with the vigorous development of inhibitory control [33], which continues to develop during the primary school period [23]. At the same time, the differences between 6—7-year-old children with low and medium levels of LR were also observed during the performance of subtests requiring program switching, which is associated with *cognitive flexibility*; the differences between 5—6-years-old children with high and low LR were observed during the performance of a task requiring the retention of a simple program.

The obtained results indicate the importance of the formation of WM, inhibitory control and cognitive flexibility in senior preschoolers as well as the immaturity of EF components in a significant number of children aged 6—7 years. According to [20], even 7-year-old children have difficulty in performing-tasks that require the retention of several possible characteristics of an object and the switching of attention from one characteristic to another.

The ability to focus *attention on monotonous activities* also appears to be an important LR factor. The results of the Cancellation test differ between children aged 6—7 with a high level of LR and their peers: "successful" children perform this test more accurately and with fewer omissions. At the age of 5-6, children with high LR also make fewer mistakes and correct them more often. At the same time, the ability to detect a mistake and correct it is immature during the primary school period [30].

Conclusion

Academic performance and the effectiveness of almost any behavioral pattern largely depends on the state of executive functions, which provide purposeful activity and the voluntary regulation of behavior, i.e. the ability to be disciplined, to sustain attention for a long time, to switch promptly from one task to another, to control own behavior and its results. This statement is confirmed by numerous neuropsychological and experimental studies [20; 27; 35]. The results of the current study showed how important the formation of EF in senior preschoolers is for learning readiness. Based on our results, the identification of specific EF components (mostly related to school readiness) can contribute to the development of specific evidence-based methods of developmental education and their further inclusion in preschool education programs. This, in turn, can minimize the possible educational, emotional, behavioral and social consequences of children's maladaptation during the preschool and primary school periods.

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Dissociation of Syntax and Vocabulary Development in Junior Schoolchildren with Different Neuropsychological Profile

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This study aims to examine the features of text construction in terms of vocabulary and grammar in children with a weakness in the auditory verbal information processing (AV-group) and with a weakness in executive functions (programming and control of voluntary activity, EF-group). The participants were 71 second grade children from Moscow schools (mean age 8.8 years old, SD 0.29 years; 36 girls, 35 boys). Four groups were selected: children with good and weak development of AV and children with good and weak development of EF. The main hypothesis of the study, following A.R. Luria, was that in children with the weakness of AV, first of all, the paradigmatic mechanisms of word choice will suffer, and in children with the weakness of EF, the syntagmatic mechanisms for constructing a phrase and text. The use of non-parametric statistical analysis (Mann-Whitney test) showed the validity of the hypothesis and revealed the main errors in the narrative construction by children with both the weakness of AV and EF. The discussion of the results included consideration of the arguments in favor of a single or dual mechanism for the acquisition of vocabulary and grammar in children.

Keywords: child language, speech production, syntagmatic and paradigmatic, syntax, vocabulary, neuropsychological assessment.

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Диссоциация развития синтаксиса и лексики у младших школьников с разным нейропсихологическим профилем

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В статье рассматриваются особенности построения текстов с точки зрения лексики и грамматики у детей со слабостью функций обработки слухоречевой информации (2-ой блок, по А.Р. Лурии) и

со слабостью функций программирования и контроля (3-ий блок). Выборку составили 71 ребенок второго класса школ г. Москвы (средний возраст — 8,8 лет, ст. откл. — 0,29 л.; 36 девочек, 35 мальчиков). Из всей совокупности детей были отобраны 4 группы: дети с хорошим и слабым развитием функций 2-го блока и дети с хорошим и слабым развитием функций 3-го блока. Основная гипотеза исследования, вслед за А.Р. Лурией, заключалась в том, что у детей со слабостью второго блока будут страдать, прежде всего, парадигматические механизмы выбора слов, а у детей со слабостью третьего блока — синтагматические механизмы построения фразы и текста. Применение непараметрического статистического анализа (критерий Манна—Уитни) показало справедливость гипотезы и выявило основные ошибки в построении текстов детьми, как со слабостью 2-го блока, так и со слабостью 3-го блока. В обсуждение результатов вошла дискуссия о едином или двойном механизме овладения лексикой и грамматикой у детей.

Ключевые слова: детская речь, порождение речи, синтагматика и парадигматика, синтаксис, лексика, нейропсихологическое обследование.

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Introduction

Neuropsychological profile of a child reflects weak and strong sides of his/her cognitive functions. In other words, it reveals an uneven development of structural and functional components of higher mental functions that can be identified in a neuropsychological assessment. In each person, some brain structures and corresponding functions are developed better than others. For instance, in those with better development of the left frontal regions and weaker development of the left dorsal regions, especially the temporal lobe, better executive functions (EF) and weaker ability for auditory verbal information processing (AV) would be revealed in the assessment [2; 7].

The aim of this work is to analyze the uneven development of language in junior schoolchildren. Our study tests the assumptions that in children with a relative weakness of the anterior parts of the left hemisphere, not only EF but also syntax of the text and sentences is impaired, and in children with a relative weakness of the posterior parts of the left hemisphere, auditory language processes and vocabulary are impaired.

These assumptions are based both on the theory and empirical neuropsychological and neurolinguistic data. Alexander Luria addressed the structure of language activity in "Traumatic Aphasia" and described two aspects of language — nominative and predicative — and analyzed their development in phylogenesis [8, p. 51]. Elaborating this idea in the "Basic Problems of Neurolinguistics" [10], he distinguished between the syntagmatic and paradigmatic mechanisms for the formation of utterance and related them to functioning of the anterior and posterior brain regions (see [10, pp. 141—146].

Our work addresses differences in development of syntax and vocabulary in typically developing children with a relative (mild) weakness of functions of the frontal or dorsal regions of the left hemisphere. Previous studies in Russian-speaking children support our assumptions, but they are sparse and do not contain a detailed analysis of language [3; 4; 6; 12; 14; 15; 30].

Method

Seventy-one second grader from Moscow schools took part in the study (mean age 8.8 years old, SD 0.29 years; 36 girls, 35 boys). None of the participants had mental development disorders. Parents (or legal representatives) of the children gave an informed consent for the use of the neuropsychological data with scientific purposes.

All children underwent a neuropsychological examination [11]. Then neuropsychological profiles were constructed for each child. These profiles reflected the development of EF and functions of serial organization, functions of auditory and visual-spatial information processing, and left-hemisphere and right-hemisphere strategies.

A rank table was created based on these profiles. For each index, each child was assigned a rank. This procedure allowed us to identify children with the highest and lowest levels of corresponding functions in the sample.

For the analysis of text construction, four groups of participants were selected based on the rank table: two groups with better/worse EF and serial organization (indices 3.1 and 3.2) and two groups with better/worse AV (index 2.2) and analytic (left-hemisphere) strategy

of information processing (L index). Each group comprised 10 participants.

The children for the "better" group were selected from the upper part of the rating list for the main index and from the three upper quarters for other indexes. In particular, the "better" EF group consisted of children with the values 1—24 for the index 3.1 (EF), and with the values 7—27 for the sum of 3.1 and 3.2 indices, i.e. for the entire third unit of the brain (according to Luria). The "worse" EF group consisted of children with the values 55-71 for the index 3.1, and with the values 54—71 for the sum of indexes.

The "better" AV group comprised children with the values 3—25 for the index 2.2., and the values 1—28 for the L index (left-hemisphere strategy). The "worse" AV group included children with the values 55—70 for the index 2.2, and with the values 48-70 for the L index (see Table 1).

During the neuropsychological assessment, children were asked to generate a narrative based on a series of pictures. They were presented with four pictures for the "Garbage" story (see Figure 1), and asked to tell what happened in these pictures. If the narrative was incomplete, additional questions were asked.

All narratives were thoroughly analysed to identify parameters of language that characterize children with worse EF and children with worse AV.

As a result, three groups of parameters were identified. The first one consisted of *general narrative* parameters, for example, the characteristics of narrative deployment and transmission of its message; *grammatical* parameters, and *lexicosemantic* parameters reflecting the child's vocabulary.

The following characteristics were included in the list of **general narrative parameters** that proved their efficiency in previous research: narrative programming, semantic completeness, semantic (conceptual) adequacy, speech rate [11], narrative structure (goal — attempt — outcome) [29], and type of narrative (distorted, incomplete, complete, according to Irina Ovchinnikova) [25]. We also took into consideration the omissions of semantic parts, logical errors, and the elements of typical

Table 1

Average rank values (top line) and range of the values (bottom line) of neuropsychological indexes for the four groups of participants

	3.1	3.1+3.2	2.2	L	2.4	R	Total rank
Better EF group	**15.7** **2.5 — 24**	**15.5** **7 — 27**	30 4-60	24.65 3 — 50	18 1 — 38.5	23 2 — 54	11.2 1 — 23
Worse EF group	**63.8** **52 — 71**	**64.7** **54 — 71**	30.6 1 — 71	35.5 6 — 71	48.5 22 — 71	45 19 — 68	61.2 36 — 71
Better AV group	31.1 8 — 59	29 12 — 50	**14.5** **3 — 25**	**14** **1 — 28**	30 6 — 58	29.4 6 — 60	22.1 8 — 39
Worse AV group	38.4 5.5 — 69	39.5 11 — 63	**64** **55 — 70**	**55.8** **16 — 70**	45.5 19 — 65	39.8 4 — 71	48.4 25 — 68

Note. 3.1 and 3.2 are the indices of EF and serial organization, respectively; 2.2 and 2.4 are the indices of AV and visual-spatial functions, respectively; L and R are the indices of the left— and right-hemisphere strategies, respectively.

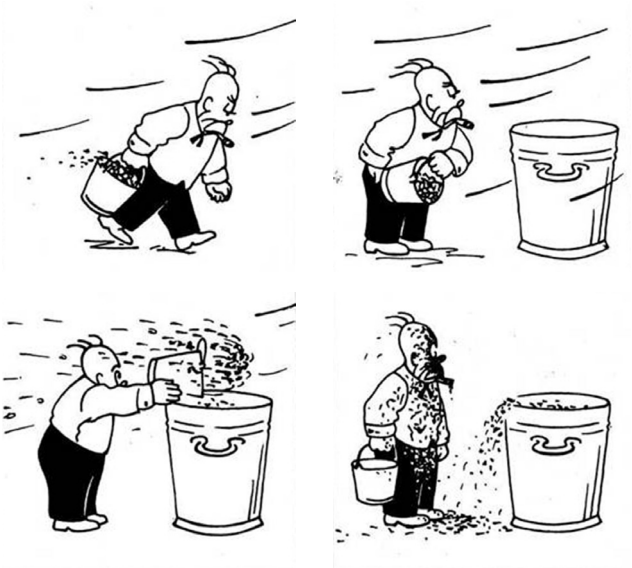

Fig. 1. Series of pictures for a narrative

genre-related style such as the presence of special introduction and ending of the narrative [18].

Finally, our analysis included the following narrative characteristics: 1) Narration mistakes (logical errors and omissions of the semantic parts); 2) Narrative length; 3) Programming of an utterance (the presence of all semantic parts and the construction of a phrase); 4) Introduction and ending; 5) Narrative type (distorted, incomplete, complete); 6) Narrative structure (goal — attempt — outcome); 7) Semantic completeness (based on a set of key words from the table 13 of the book [11, p. 40]; 8) Semantic (conceptual) adequacy [11, p. 41—42]; 9) Speech rate.

Programming, semantic completeness, and semantic (conceptual) adequacy were the most challenging parameters for the analysis. Let us compare two narratives to see how these features are used:

(Example 1) Once upon a time there was a man. He was always angry with everything. Once he decided to throw away the garbage to a garbage... to... a dump. He started throwing it in, but the wind blew, and it all flew over the man. And he was mad.

(Example 2) Well, a strong wind was blowing. And a man... Well, just a person, he went... Then he did this, he threw, and it all flew back. Because of the wind.

In the Example 1 we can see a successful deployment of the program of the narrative. The introduction is present (*Once upon a time there was a man*), and the protagonist is described (*He was always angry with everything)*. Then, the goal of his actions is explained (*Once he decided to throw away the garbage*), and the action is described (*He started throwing it in*) which met an obstacle (*but the wind blew*), and resulted in a failure (*it all flew over the man)*. Then, an emotional reaction of the protagonist is indicated (*And he was mad.*). Thus, a successful programming provides the coherence of the narrative; semantic (conceptual) parts consequently transmit the development of the plot based on the hierarchic predicative program of the narrative. The semantic completeness of this story is optimal as well as its semantic (conceptual) adequacy.

In the Example 2 we see a distorted programming of the narrative. First, the child mentioned the wind, then the man's actions, then the wind again. Important semantic parts are omitted (where the man went, why, what exactly he did, how the story ended). This is not a coherent story. Semantic completeness is minimal, but the meaning is not distorted and the semantic (conceptual) adequacy is achieved.

Let us consider other possible discrepancies between the parameters of programming, semantic completeness, and semantic (conceptual) adequacy. See the Examples 3 and 4.

(Example 3) *Once, a man went to throw away the garbage. First he... took the bucket...wanted to pour. Then... he pour (*an agrammatic error, wrong verb suffix *"sypAt"), it flew on him. The wind was flying, and everything on him... All that garbage was flying on him. The end.*

(Example 4) *A man was carrying a bucket with garbage. He brought it. He filled it. And everything went out. Or, it was dust, yes, rather, it was dust.*

The example 3 demonstrates a good beginning but a messy continuation. There is no coherent plot deployment which speaks in favour of difficulties with programming (this was evaluated with 2 points, with 0 meaning "good" and 3 meaning "bad"). Still, its semantic completeness is much better, there are much more than basic designations like *garbage* or *a bucket*, but the circumstances of the action are indicated (where does it fly? — *at him*), and certain definitions are provided (what garbage? — *all that garbage*). Therefore, 21 points were given for the semantic completeness. The Example 4 contains a sequence of actions, which confirms better programming (1 point), but the details are minimal, and the semantic completeness is very poor (6 points out of 30). Besides, the suggestion that someone was carrying a bucket of dust is not very realistic, so 2 points (with 0 — "good" and 3 — "bad") were given for the semantic adequacy.

Thus, the programming of narrative represents its coherence; semantic completeness reflects whether the event was described accurately and in detail; and semantic (conceptual) adequacy is related to the realism of the description.

Let us consider other parameters of narrative and corresponding examples.

In the Example 1, we see an introduction typical for this genre (*Once upon a time there was...*). In the Example 2, the child did not start his narration in accordance to the genre standards and actually composed the narrative as if he answered the interviewer's question "What happened here?". The answer was: "*Well, a strong wind...*" The first story contained a clear narrative structure "goal — action — outcome" (*he wanted to throw out the garbage — started throwing — everything was blown at him*). The second example contains only one of three elements, an action (*went, did*).

Our assessment of **grammatical parameters** was based on the assumption that typically developing children by this age have already acquired the core of the grammatical system of their native tongue. The syntactic structure of a sentence is supposed to gradually become more complex. In our sample, children experienced little to no difficulties with grammatical connections of verbs (case government) and concord. Therefore, to describe these features, we left only the criterion for the presence of agrammatisms, while syntax was analysed more thoroughly in terms of completeness and complexity of sentences used by children.

The structural complexity was evaluated based on the use of complex sentences, the length of a correctly composed sentence, and the number of not only correct but extended sentences. Simplification and distortion were identified based on the number of incomplete sen-

tences and omitted sentence parts (subjects, verbal predicates, objective complements, and adverbial modifiers). The "Garbage" series actually sets a difficult syntax task for a child, since he/she has to transmit the simultaneity of two actions (the wind blew when the man was pouring out the garbage). Therefore, a typical mistake would be: *The old man went to the dumpster / and/ threw. Then, a strong wind.*

The **grammatical parameters** that we analysed were: 1) Agrammatisms (for example, "I etot musor ispachkalsya dyadya" — "*And that garbage got dirty man*"); 2) Syntactic errors, e.g., omissions of necessary sentence parts such as subjects (*Flies at him*), verbal predicates (*Then, a strong wind*), objective complements, and adverbial modifiers (*And threw away*); 3) Unfinished sentences (*Too much he put there and sh-sh-sh...*); 4) Average sentence length; 5) Maximal length of a correctly composed sentence; 6) Proportion (Number) of correctly composed extended sentences in a narrative composed independently; 7) Number of complex sentences in an independent narrative (not when answering a question such as "Why?" — *Because the wind started blowing*).

Let us take a closer look at two examples.

(Example 5) *A man walked with a bucket full of earth. He wanted to throw it away. But it didn't work out, because the wind blew, and all the earth fell into his face. Just a little bit got into the tank.*

(Example 6) *He walked... He went to pour out. And then he poured out and turned black (Because of what did he turn black?) He probably carried coals.* ***He with coals … to pour out.*** *Spilled too much and sh-sh-sh ... (Too much) Oh, no,* ***it was blown out****. The wind, he walked, then he came, took out, began to pour out. And it all fell on him.* (Psychologist's words are underlined, agrammatisms are in bold).

The Example 5 demonstrates a good development of syntax. The narrative contains a variety of syntactic structures, with a complex sentence consisting of three simple sentences.

In the Example 6, on the contrary, we see agrammatisms ("*On s uglyami... vysypat'*" — He with coals... to pour out (Infinitive); "*Yego vydulo*" — It was blown out (singular form "it" instead of plural form)); unfinished sentences (*He walked*), many sentences in which their necessary members were missing (*He went to pour out* — Pour out what? Where?; *Too much spilled* — What? Where?; *And then poured out and became black* — Pour out what? Where?). In the Example 6, there is only one sentence in which there are no omissions of valences: "*And it all fell on him.*"

Lexicosemantic parameters were selected based on the features of AVdescribed in [11]. In addition, a new parameter "target nomination" was also proposed. This parameter assesses whether three key objects of the situation are named correctly, which requires the use of the low-frequency words (*garbage, bucket, dumpster*).

The basic lexicosemantic parameters included 1) Lexical errors (verbal paraphasias (*a bucket* or *a barrel* instead of *a dumpster*), word-formation errors ("*vdul*" instead of "*podul*"); word-finding difficulties (*decided to throw away the garbage to a garbage... to... a dump*); 2) Substitution of the noun with a pronoun (without antecedent); 3) Verbal-perceptual errors (*coal* or *water* instead of *garbage*); 4) Use of object attributes and action attributes (adjectives and adverbs); 5) Number of target nominations; 6) Pronominalization index (the ratio of pronouns to nouns).

Let us consider the examples from the better (the Examples 7 and 8) and the worse groups (the Examples 9 and 10).

(Example 7) *A man was going to throw away the garbage. He approached the dumpster and wanted to throw the garbage there, but a strong wind rose. And all the garbage covered him from head to toes.*

(Example 8) *Someone was carrying a bucket. Then he threw it, and got spattered* (And why was he spattered?) *Maybe there was too much water.*

(Example 9) *Here a man or an old man was transporting, well, he was carrying mushrooms, and put here. And this is what he was carrying. This is what he was going to put. This is what he had already put. He is taking out, and here he is done. (*And what happened to him then?) *He got black.* (Why?) *Because... Did he get black because of the coal? (*Where does the coal come from?) *Because the coal... You need to go far to get it. (*So, was he going for the coal?) *Well, first he was walking, then he wanted to pour out the coals, then he poured it, and then he was done pouring the coal, and then he got black accidentally. Dust was kicked up.*

The use of vocabulary in the Example 7 is normal. In the Examples 8 and 9 there are errors of lexical choice (*to put* instead of *to throw*) and verbal-perceptual errors (*mushrooms* instead of *garbage*). In the beginning of the narrative, pronouns *someone* and *this is what* are used; these pronouns without antecedents replace the required nouns. While in the Example 7 we see such adjectives as *strong*, in the Examples 8 and 9 there are no adjectives whatsoever. In the Example 9 the child did not name any of the objects from the goal nomination (garbage, bucket, dumpster).

The obtained data were processed with Statistica 12 software. First, we analysed descriptive statistics for all groups. Then the groups were compared with non-parametric Mann-Whitney test since each group consisted of 10 participants.

We compared 1) children with better and worse EF, 2) children with better and worse AV and analytic (left-hemisphere) strategy, and 3) children with low values from both groups.

Thus, we revealed typical features of children with worse EF and AV (and analytic strategy in general), and the specifics of all types of errors.

Results

In accordance with our hypothesis, the most significant differences between **children with better and worse EF** were seen in the programming of narrative. Programming is the deployment of narrative based on the internal plan of the content. It concerns the logical sequence of parts of the story, the presence of its significant parts, and the correct construction of sentences. The weakness of story programming is reflected in the omission of parts of the text ($Z = -2.72$, $p<0.01$) and in the type and structure of the created stories (respectively, $Z = 2.1$, $p<0.05$ and $Z = 3.5$, $p<0.01$). In weak children, the overall speech rate significantly slows down ($Z = 2.87$, $p<0.01$). Therefore, as a rule, these children experience significant difficulties with unfolding of narrative, they remake sentences several times trying to make them complete and express basic meaning. The difficulties of text programming are also related to more specific difficulties, namely the presence of logical errors ($Z=-2.26$, $p<0.05$) and the non-use of indicators for the beginning and ending of the story ($Z=2.1$, $p<0.05$). Semantic completeness of a narrative is also affected ($Z = 1.68$, $p = 0.09$). Moreover, we can also note a lower level of semantic (conceptual) adequacy of the story ($Z = -2.32$, $p<0.05$), but it was observed mainly in children characterized by poor EF combined with the weakness of the right-hemisphere functions.

Table 2

Quantitative outcome of the narrative analysis in four groups (group average in the top line, minimal and maximal values for the group in the bottom line)

	Better EFgroup	**Worse EF group**	**Better AV group**	**Worse AV group**
Narrative parameters				
Omitted narrative parts	0.1 0—1	1.4 1—3	0.6 0—3	1.2 0—4
Number of logical errors	0.1 0—1	0.7 0—2	0.1 0—1	1 0—2
Number of words in the independently composed narrative	26.1 15—39	20.9 10—34	24.3 12—35	22.6 9—31
Semantic completeness	19.5 15—21	16.2 6—21	21.3 12—27	11.4 6—18
Speech rate	1.65 1.17—2.5	1.15 0.7—1.7	1.46 0.9—2.3	1.01 06—1.6
Indicators of the beginning and the ending of narrative	1.9 1—3	1.1 0—3	1.4 1—2	0.8 0—2
Semantic (conceptual) adequacy*	0.1 0—1	1 0—3	0.3 0—2	1.3 0—2
Programming*	0.5 0—1	1.9 1—3	0.6 0—2	1.3 0—2
Narrative type (Narrative structure)	1.2 (2.8) 1—2 (2—3)	0.7 (1.6) 0—1 (1—2)	1 (2.7) 0—2 (2—3)	0.3 (1.8) 0—1 (1—3)
Omitted verbal predicate	0	0.3 0—2	0.1 0—1	0.1 0—1
Omitted subject	0	0.1 0—1	0.1 0—1	0.3 0—2
Omitted object complement	0.2 0—1	0.8 0—2	0.4 0—2	0.8 0—2
Omitted adverbial modifiers / attributes	0.1 0—1	**0.4** 0—2	0.3 0—1	**1** 0—2
Grammar-syntax parameters				
Agrammatisms	0	0.4 0—2	0	0
Number of incomplete sentences	0.3 0—2	1.8 0—4	0.3 0—1	1 0—3
Number of sentences	3.7 2—5	4.8 3—8	3.7 2—6	3.9 2—6
Average sentence length	7.04 5.7—8.3	**4.5**** 3.2—7	6.7 5.3—8.7	**6** 4.2—10
Maximal length of a complete extended sentence	11.9 7—16	6.7 4—10	11.4 7—16	8.3 3—16

	Better EFgroup	**Worse EF group**	**Better AV group**	**Worse AV group**
Number (and frequency) of complete extended sentences	3.4 (0.9) 2—5 (0.7-1)	2.1 (0.5) 0—4 (0—1)	3.5 (0.95) 2—6 (0.7-1)	2.4 (0.62) 1—5 (0.2-1)
Number of complex sentences	0.6 0—1	0.2 0—1	0.6 0—2	0.4 0—2
Lexicosemantic parameters				
Errors in lexical choice	0.2 0—1	**1** 0—2	0.5 0—2	**2.4** 0—6
Word-formation errors	0.1 0—1	0.5 0—1	0.1 0—1	0.6 0—1
Word finding	0.8 0—3	1.2 0—4	0.2 0—1	1.2 0—4
Verbal-perceptual errors	0.2 0—1	0.2 0—1	0.2 0—1	0.8 0—2
Number of object attributes and action attributes	1.6 0—3	1 0—4	2.7 0—4	0.8 0—4
Goal nomination	3.5 2—5	2.4 0—5	4.3 1—6	1.8 0—4
Pronominalization index	0.6 0.14—2	0.5 0—1	0.4 0. 14—0.8	1.01 0.25—2.7

* Higher values mean worse results
** Statistically significant differences between groups with worse EF and AV are in semi-bold

Let us return to the Examples 1—6 reflecting the language in children with better and worse EF. In the Example 1, the program of the narrative was deployed correctly. In the Example 2, the child was switching from one picture to another, breaking the order of the events (*First the wind, then the man was walking, then everything was flying because of the wind*). There is neither ending nor beginning of this story, it is rather an answer to a question. Important semantic (conceptual) parts of the story are missing, i.e., the goal of the protagonist and the result obtained.

At the level of a sentence, syntagmatic difficulties with the deployment of an utterance are also noticeable. Such children produced multiple unfinished sentences ($Z=-2.74856$; $p< 0.01$) which in turn reduced the average length of a sentence ($Z = 3.4$, $p < 0.01$). These participants were truly challenged by the need to compose complete extended sentences; therefore, their length and frequency of their use was much less ($Z = 2.35$, $p = 0.019$ and $Z = 3.23$, $p < 0.01$). For the same reason, the necessary sentence parts were often omitted ($Z = -2.01083$; $p<0.05$) and complex sentences were used much more seldom (at a trend level) ($Z = 1.74$, $p = 0.08$).

Let us focus on the agrammatisms. They are not seen in all in children with better EF, but in children with worse EF they are present, although it does not reach the level of significance ($Z = -1.76$, $p = 0.08$). The same is true for word-formation errors ($Z = -1.85$, $p = 0.06$).

In the Example 6, the child starts his narrative: *He walked...* Without completing this sentence, he tries to construct another sentence: *He went to pour out*. Still, this sentence is not complete either since its important parts — the direct object and adverbial modifier of place (what is to be poured and where) — are missing,. The following sentences also remain short and unfinished with their necessary parts omitted. Finally, in this case we see the most severe difficulties of sentence construction, agrammatisms: "*He with coals ... to pour out"; "It was blown out"* (about the coals).

Before we address the lexicosemantic aspect of language in children with worse EF, it is important to emphasize Luria's words about two ways of word selection: by a paradigmatic mechanism and through "syntagmatic connections" (distinguishing of a required word from spoken language constructions" [9, p. 40]). Therefore, it is no surprise that children with underdeveloped EF demonstrated more errors of lexical choice compared to the "better" EF group ($Z = -2.32$, $p < 0.05$), and lower score in goal nomination ($Z = 2.12$, $p < 0.05$). Our data confirmed Luria's assumptions, and we also believe that both the semantic incompleteness and lexical difficulties can be explained through the lack of deployment of narratives and insufficient use of syntagmatic connections.

Thus, the main difficulties in coherent speech in children with underdevelopment of EF include poor actualization of syntagmatic connections — the deployment of the text and individual sentences.

Now, let us discuss the results of children with **underdeveloped AV.** According to our hypothesis, these children mostly find themselves challenged when they have to use paradigmatic mechanisms for lexical choice in narrative production. Processing of the obtained data confirmed this assumption.

The largest difference between children with better and worse AV and analytic (left-hemisphere) strategy was found in the semantic completeness of their narratives ($Z = 3.38$; $p=0.0007$). Other differences indicated the reasons for such incompleteness. These are lexical

errors (Z = -2.81; p=0.004), word-finding difficulties (Z = 1.7; p=0.005), difficulties with finding of goal nominations (Z = 3.04; p=0.002), and word-formation errors (Z = -2.24, p=0.03). Children with poor AV lacked necessary denominations for objects and actions that were used for the assessment of semantic completeness (walks/carries/pours out, garbage/bucket, approached, dumpster/dump/trash, etc.). Usually, children tried to compensate their deficiencies replacing required words with pronouns (often without antecedents) or with pronominal adverbs (*Here a man or an old man was transporting, well, he was carrying mushrooms, and put here. And this is what he was carrying. This is what he was going to put.)* Therefore, we see the use of predominantly pronouns and their significant predominance over nouns. The Pronominalization index (pronouns/nouns relation) was significantly higher in children with weak AV (Z = -2.31, p=0.002). The poverty of the vocabulary concerns not only nouns and verbs, it is also seen in the rare use of adjectives and adverbs (Z = 2.46, p <0.01).

In addition to verbal (lexical) errors, children also make verbal-perceptual errors. Their difference is expressed at the level of a tendency (Z = -1.87, p=0.06).

At the sentence level, such children used much fewer complete extended sentences (Z = 2.75, p<0.01). The most significant differences are observed in the omissions of adverbial modifiers and attributes (Z = -2.67, p=0.007). Subjects, predicates, and objects were omitted much less, though. That is, the basis of a sentence is more preserved. It seems that the preservation of the basis of a sentence is due to stable syntagmatic connections, and the non-use of circumstances and definitions is due to the fact that these are additional, much more variable parts that are not fixed in the structure of a sentence. The same facts, in our opinion, can also explain the incomplete, unfinished sentences (Z = -2.22; p=0.05) and lesser maximal length of an extended sentence at a trend level (Z = 1.79; p = 0.07).

At the text level, problems with word selection are reflected, in addition to insufficient semantic completeness, in a decrease of the overall speech rate (Z = 2.31, p<0.05), in the non-use of indicators for the beginning and ending of the story (Z = 2.02, p<0.05), as well as in the worst type and structure of narratives (Z = 2.67, p<0.01 and Z = 2.22, p<0.05, correspondingly). The fact that logical errors were much more frequent in the narratives of children with weak AV can also partially be explained by their problems with the word selection. Let us consider the following example.

(*Here a man or an old man was transporting, well, he was carrying mushrooms, and put here.* (...) (And what happened to him then?) *He got black.* (Why?) *Because... Did he get black because of the coal?* (Where does the coal come from?) *Because the coal... You need to go far to get it.*) It is clear that the child made logical mistakes saying words that he has to explain later. A low level of semantic (conceptual) adequacy of the narrative can be related to the difficulties of word selection (Z = -2.29, p<0.05).

All above listed specifics of narratives produced by children with underdeveloped AV can be clearly seen in the Examples 8 and 9. For instance, in the Example 8, the child does not almost use any goal nominations (except the bucket) and avoids nouns at any cost: *Someone was carrying a bucket. Then he threw it, and got spattered.* Or, as in the Example 9, the child is trying his best to follow the storyline but has difficulties with choosing the right words, and therefore uses only verbs and pronominal adverbs. For instance, *and this is what he was carrying. This is what he was going to put. This is what he had already put. He is taking out, and here he is done.*

Thus, it has been confirmed that children with weak AV have difficulties associated primarily with the selection of a necessary language unit, that is, the paradigmatic mechanism.

Now, let us focus on the differences between **children with poor AV and EF.**

There are not so many statistically significant differences between the texts of children with these difficulties in our sample. The children with underdeveloped EF produce shorter sentences, while the children with poor AV make more errors in lexical choice and often omit adverbial modifiers and attributes. If we turn to differences close to statistically significant, we can note the following main trends:

1) children with poor development of EF have more agrammatisms. In the group of children with poor AV they do not exist at all (statistical data at the trend level: Z = -1.76, p = 0.07). They have a shorter average sentence length (Z = 2.16, p = 0.03) and more incomplete sentences (also at the trend level Z = -1.7, p = 0.08);

2) children with worse development of AV have lower semantic completeness (at the level of a trend: Z = -1.88, p = 0.06). They use more pronouns than nouns (pronominalization index — 1.014), while children with EF weakness use more nouns (their index is 0.47), differences in pronominalization indices at the trend level (Z = 1.7, p = 0.09). Children with worse AV also have more verbal-perceptual errors (at the level of a tendency: Z = 1.87, p = 0.06), they miss more adverbial modifiers required by the valence of the verb (Z = 2.22, p = 0.02).

Let us discuss all the results obtained in general.

Discussion

The results of the study showed that the difficulties in construction of stories in children with underdevelopment of EF are associated with the weakness of syntagmatic mechanisms, i.e., the mechanisms for constructing coherent speech and its deployment.

Alexander. Luria considered these mechanisms as a special case of the kinetic organization of movements

and speech which underlies the formation of smooth and time-organized skills and is implemented by the premotor cortex of the left hemisphere [9; 10]. Weakness of syntagmatic mechanisms is reflected in poor construction of a narrative program and its deployment into a consistent holistic and coherent text, as well as in the difficulties with the genre design of the story and in the omissions of its semantic (conceptual) parts. In addition, deployment difficulties are seen at the level of a single sentence in the terms of its abbreviation, incompleteness, and omissions of significant members of the sentence. The same difficulties cause the lack of semantic completeness, i.e., it is secondary in relation to the deficiencies of syntagmatic mechanism. As for the difficulties in the lexical choice, they are also a consequence of poor syntagmatic connections of words. It is well known from aphasiology that patients with efferent motor aphasia which occurs when the lower parts of the premotor cortex are affected, cope much better with naming than with searching for words in coherent speech. This is explained by the problems of using contextual (syntagmatic) word connections. Psychologists also mentioned the two ways of word search in the lexical memory. George Miller [24] who suggestedsix hypotheses on the organization of lexicon especially highlights two hypotheses: the lexicon as a catalogue with semantic markers and the lexicon as a part of the sentence formation mechanism (the predicate hypothesis). He writes: "...I personally believe that some combination of semantic markers and predicate hypothesis is required to describe our language abilities" [24, c. 234]. According to this researcher, "lexical memory should have at least two types of entrances: one to identify the topic of the sentence, and the second one to serve predicates." [24, p. 234]. The comparison of Miller's hypotheses and aphasiology data was made by Tatiana Akhutina [1; 6].

As for the deficits of text construction in children with poor development of AV and analytic strategy, they, on the contrary, have primary disturbances of paradigmatic mechanisms, i.e., difficulties in lexical choice. Alexander Luria regarded these mechanisms as a particular case of dysfunction of complex form of auditory analysis and synthesis caused by a damage or weakness of the external (upper and middle) parts of the temporal lobe [9; 10]. Functional deficiency of paradigmatic mechanisms manifests itself primarily in the difficulties of lexical choice which determines multiple verbal substitutions, semantic incompleteness of narratives, and problems with goal nomination. Children compensate for the difficulty of name selection by active use of pronouns.

Secondary problems caused by the same reason are lower speech rate, brief sentences, incomplete sentences, and distortion of narrative logic.

The idea developed by Luria about the relationship of sensorimotor (initial) functions and language in the phylogeny of language and morphogenesis of language structures [8] is now widespread. It is close to the nonmodular approach, which has different names (embodied or grounded cognition) [16].

However, the debate on the independent development and functioning of syntax and lexicon is not finished. Luria's perspective which is supported by the authors of this paper states that the mechanisms of syntax and lexicon are separate, and they interact in functioning. Such a view on the mechanism of language acquisition (so called dual-mechanism account of language development) does not entail the compliance with the idea of innate language knowledge promoted by Noam Chomsky [19]. The founders of the cultural-historical psychology, Lev Vygotsky, Alexander Luria and their followers, strictly insist on the social genesis of language. They rather stand by the theory suggested by Michael Tomasello and his colleagues, also known as the usage-based approach to language development [13; 21; 22; 26].

What are the arguments in favour of a single mechanism for language acquisition? One of the supporters of this idea was Elizabeth Bates [17]. As a continuation of oral discussions with Bates, Tatiana Akhutina [5] summed up three arguments of Bates which are repeated in modern works. The first and main argument is that the active use of two-word syntactic constructions occurs only with a certain amount of vocabulary. Consider the counterarguments to it. The growth of the vocabulary and, in general, the acquisition of language is based on some cognitive processes, in particular, the sharing of the intentions of adults [13; 26]. From the usage-based approach perspective, "...the child constructs language by connecting what they already know in terms of the cognitive and intention-reading developments of the first year to the language that they hear" [21, p. 348]. At first, not only individual words but also "big words" are holistically assimilated, i.e. memorized as a whole and not analysed as chains of words (for example, what's that?). Based on the statistical features of the input, children begin to identify categories of words and form the "slot-frame" patterns, where emerging categories act as slots, initially with a low level of generalization, such as THING or ACTION, but becoming more and more abstract. At first, their generalization level is very low, like A THING or AN ACTION, but with time they become more and more abstract. Elena Lieven et al. [21; 22] revealed that children create "THING" slots in the scheme "I want X, this Y". Initially, these schemes consist exclusively of nouns, then articles appear, and eventually attributes are added.

The possibility to use statistical features of input and to reveal its serial organization was supported by multiple studies (see the review [20]). For example, Gary Marcus et al. [23] found out that 7-months old babies could generalize repeating structures, such as AAB, ABB, and ABA. After getting familiar with triads of syllables of the same type (say, ba-ba-de for AAB), the

babies were presented with triads consisting of new syllables which either matched the familiar structure or a new one. The authors revealed that children clearly recognized the structure despite the use of new syllables, and drew the conclusion that the positions of syllables within the triad acted as variables. Babies discovered the relationship of those variables. Studies of this kind show the possibility of separating syntactic categories from speech heard by children.

Another important argument in favour of the dual-mechanism account of language development derives from the analysis of memory types participating in the language acquisition. As Ullman [27; 28] demonstrated, declarative memory provides the acquisition of vocabulary, while procedural memory contributes to syntax acquisition. The functioning of declarative memory is based on the temporal structures of the brain, while procedural memory is based on the functioning of a network of frontal, parietal, cerebellar, and subcortical (basal ganglia) structures.

Conclusion

Our hypothesis implied that the syntagmatic and paradigmatic mechanisms of language associated with the anterior and posterior parts of the brain will be reflected in text construction in children with a relative weakness in EF (the third brain unit, according to Luria) and in children with a relative weakness in AV (the second brain unit, the left hemisphere). We assume that differences between these groups of children will be seen in syntax and lexical choice.

The analysis of narratives created by second-grade Moscow school students allowed us to reveal several textual features that characterized children with poor EF or AV:

— Children with a weakness in AV primarily demonstrated paradigmatic difficulties, i.e., problems with word selection which were reflected in the semantic incompleteness of texts, lexical errors, and the use of pronouns instead of proper words.

— Children with a relative weakness in EF primarily demonstrated syntagmatic difficulties, i.e., problems with the construction of the text as a whole and its individual sentences, the omission of significant members of a sentence and the presence of agrammatisms.

Despite the fact that the sample consisted of typically developing children who have only a relative weakness in the development of either EF or AV, the differences in the syntagmatic or paradigmatic mechanisms of text generation can be seen. This confirms their psychological reality and shows the foresight of Luria's theoretical search.

Study limitations: the results discussed in this paper were obtained from a relatively small sample of typically developing children and need to be replicated on other samples.

In the future, we intend to study children of the same age group as well as children of other ages from 6 to 9 years. In addition, the results need to be clarified on samples of children with various developmental disorders and varying degrees of severity of these disorders.

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EMPIRICAL RESEARCH
ЭМПИРИЧЕСКИЕ ИССЛЕДОВАНИЯ

Dynamics of Academic Motivation and Orientation towards the Grades of Russian Teenagers in the Period from 1999 to 2020

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This study is devoted to the analysis of the dynamics of academic motivation in adolescents in 1999, and again 20 years later. The sample consisted of 735 students of the seventh and eighth grades of comprehensive secondary schools in Moscow (N=242 in 1999 and N=493 in Jan 2020). The results of the study indicate a decrease in all types of motivation, both intrinsic and various types of extrinsic, which indicates a significant change in the place of educational activity in the life of the contemporary student. At the same time, it is characteristic that one of the most significant types of academic motivation — studying for the sake of getting good grades — did not undergo significant changes during the study period. With regard to one of the types of extrinsic motivation — the motivation of parental control — a gender specificity was found: this type of motivation decreased only in girls, while in boys it showed stability, which speaks in favor of parents showing a constant level of control over boys' studies. The cognitive components of motivation also revealed negative trends — the level of perceived controllability of educational activities and perceived competence decreased, despite the fact that the level of subjective difficulty of educational activities did not increase, but, on the contrary, slightly decreased. The results obtained are analyzed from the point of view of the educational reforms of recent decades associated with the introduction of the Unified State Examination and the decrease in the value of a wide range of academic subjects, as well as the widespread use of social networks by contemporary teenagers.

Keywords: academic motivation, intrinsic motivation, dynamics of learning motivation, educational reforms, adolescents.

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Динамика учебной мотивации и ориентации на оценки у российских подростков в период с 1999 по 2020 гг.

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Настоящее исследование посвящено анализу динамики учебной мотивации школьников подросткового возраста в 1999 г. и спустя 20 лет. Выборку составили 735 учащихся седьмых и восьмых классов общеобразовательных средних школ г. Москвы (N=242 — в 1999 г. и N=493 — в январе 2020 г.). Результаты проведенного исследования свидетельствуют о снижении всех типов мотивации — как внутренней, так и различных типов внешней, что говорит о значительном изменении места учебной деятельности в жизни современного школьника. При этом характерно, что один из наиболее значимых типов учебной мотивации — учеба ради получения хороших отметок — не подвергся существенным изменениям за исследуемый период. Когнитивные составляющие мотивации также обнаружили негативные тенденции — снизился уровень воспринимаемой контролируемости учебной деятельности и воспринимаемой компетентности, при том, что уровень субъективной трудности учебной деятельности не повысился, а, напротив, несколько снизился. Полученные результаты анализируются с точки зрения образовательных реформ последних десятилетий, связанных с введением ЕГЭ и снижением ценности широкого спектра учебных предметов, а также широким использованием современными подростками социальных сетей.

Ключевые слова: учебная мотивация, внутренняя мотивация, динамика учебной мотивации, образовательные реформы.

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Introduction

Motivation is a key factor in learning — it is that upon which perseverance and the actual effectiveness of learning activities depend [5; 6; 12; 14; 15; 20], while the lack of classroom interest among schoolchildren is considered by Russians as the most serious problem facing secondary schooling, one which needs to be addressed in the coming years [7]. Psychological research conducted over the past few decades has made it possible to make significant progress in understanding the various characteristic types of learning motivation that regulate the implementation of learning activities, as well as their sources and consequences [19—21]. Initially present in psychology, the opposition of intrinsic and extrinsic academic motivation, the former based on interest in the learning activity itself and the latter on the desire to receive various kinds of rewards and incentives or avoid negative consequences, was overcome in self-determination theory [20]. Within the framework thereof, characteristic types of extrinsic motivation were identified, differing in varying degrees of frustration of the need for

autonomy, i.e., the desire of the subject to be the source of his/her activity — integrated, identified, introjected, external, and amotivational. In addition to motivation from external control, rewards and punishments (extrinsic), motivation from the secondary value of the activity (identified) and the motivation of guilt, shame and pride (introjected) were singled out as characteristic and essential for the educational process and well-being.

Studies show that a decrease in intrinsic motivation, with high rates of extrinsic regulation and amotivation, leads to low academic achievements among schoolchildren, and the students' failure to effectuate their full intellectual potential [6]. The results of a recent meta-analysis [15] (344 samples, N=223209) show that intrinsic motivation is associated with student success and well-being, while the regulation identified (personal value) is most closely associated with effort, perseverance, and involvement in the learning process. Introjected regulation (guilt and shame motives) is positively associated with persistence and goal achievement, but is also positively correlated with indicators of distress. Motivation driven by the desire to receive rewards or avoid punishment (external regulation) was associated with anxiety, depression, and negative emotions and was not associated with performance or persistence. Amotivation has been associated with negative academic outcomes such as absenteeism, high levels of anxiety, and low academic achievement [15].

Studies of the dynamics of psychological variables in adolescents in recent decades concern the dynamics of psychological well-being [10; 23; 24]. In our country, they concern the dynamics of values, long-term life plans and optimism/pessimism. The only study devoted to the dynamics of motivation and attitudes towards school and learning was conducted by A. D. Andreeva (2021) and concerns a comparison of the academic motivation of Russian adolescents in the post-war years (1945-1950, according to a study by L. I. Bozhovich, N G. Morozova and L. S. Slavina (2008) [2]), in the so-called era of stagnation (1980s) and in 2019 [1]. Significant dynamics in intrinsic learning motivation were found — from insignificant in the post-war years (with the predominance of the motive of obtaining a profession) to highly significant in the 80s and somewhat less significant in 2019. It was also shown that today's schoolchildren, unlike Soviet schoolchildren, do not relate to learning as their responsibility or duty to society and do not consider good academic performance as a means of self-affirmation in a peer group. Compared to schoolchildren of the late 1980s, contemporary teenage schoolchildren have begun to experience more negative emotions in the classroom, which is indirect evidence of a decline in the quality of the educational environment in contemporary schools. However, a significant limitation of this study is the use of non-uniform tools for data collection and different categories of data analysis. In addition, the state of motivation among adolescents in the 1990s, when a series of reforms was carried out to transform Russian education, was not covered.

Educational reforms in Russia over the past 20 years

In the 1990s, after a long period of "stagnation", there was a paradigm shift in Russian school education. The Education Act of 1992 created the regulatory framework for the introduction of real diversity in education [9]. The main principles were "freedom and pluralism in education" [9] and the adaptability of the education system to the abilities and needs of students. The educational reforms of the 1990s concerned the opening of various educational institutions designed to meet the needs of students with different abilities and interests: new lyceums and gymnasiums, schools with in-depth study of individual subjects, private schools, etc., were created, which implied the possibility of free choice regarding the profile of one's education. Many new subjects were introduced and new textbooks and curricula were developed. In general, there is reason to believe that these were quite constructive reforms and progressive educational innovations that could have had a positive impact on the academic motivation of adolescent schoolchildren in the late 1990s.

In contrast, over the past 20 years, the characteristics of the macroenvironment of education have changed significantly, which corresponded to a number of new educational reforms, including the widespread introduction of the Unified State Examination (similar to the SAT; introduced in 2009), the replacement of entrance exams by unified state testing, and the unification of schools into large educational complexes, accompanied by the closure of lyceums and gymnasiums for schoolchildren who wished to study (from elementary school) certain subject areas in depth, a decrease in the social status of teachers, accompanied by an increase in the responsibilities and requirements placed upon them. New educational standards were introduced along with paid services in schools and paid education in universities, which led to the perception of high-quality higher education as less accessible [7]. Many students have become interested only in passing the three selected exams that are currently required for university entrance, rather than showing interest in a broad educational process and a variety of different subjects.

The importance of this factor as influencing academic motivation is confirmed by previous studies, which showed that the features of the educational environment are an important source of academic motivation for schoolchildren [3; 4; 11; 13; 18].

Another significant change that potentially affects the attitude to learning and academic motivation among adolescents is the widespread use of the Internet, smartphones and social networks, which have become incredibly popular among today's teenagers.

The rise of smartphones and social networks as a source of change in attitudes towards learning

In the last decade, there has been explosive growth in the use of online communications [22]. Social networks have a significant impact not only on online activity, but also on offline behavior and life in general; digital activities are crowding out alternative activities such as reading books, socializing with peers and family, and playing sports. Contemporary children aged 8—12 spend an average of 6 hours a day on social networks, and teenagers aged 13—18 spend 9 hours a day, not counting the time they spend using smartphones at school or at home [17]. Researchers associate the active use of online communications with reduced indicators of psychological well-being, which contemporary adolescents have begun to demonstrate [23]. The negative impact of social networks on the educational process can be associated both with a reduction in the amount of time devoted to it, and with the quality of this kind of pastime, which tends to promote values outside of learning, interferes with concentration on the educational process and encourages a superficial approach to information analysis.

The main hypothesis of the study was the assumption that intrinsic academic motivation will show a decline due to two main factors, one related to the educational environment generated by the cycle of reforms carried out in the last two decades and the other related to global trends, including the active involvement of contemporary adolescents in social networks, both in their free time and in class. We also assume that one of the most significant types of extrinsic motivation, studying for good grades, will not change significantly over the study period, as grades are consistently used in our schools as the primary means of influencing student motivation [4].

Method

The sample consisted of 735 students of the seventh and eighth grades of comprehensive secondary schools in Moscow. In 1999, 242 students participated in the study, of which 108 (45%) were boys and 134 (55%) were girls, mean age M = 13.74, SD = 0.98. In 2020, 493 adolescents took part in the study, of which 270 (55%) were boys and 223 (45%) were girls (M = 13.61; SD = 0.66). In 1999, the study was conducted as a part of a project that included a series of questionnaires about school life and the psychological well-being of adolescents. In 2020, students completed the same questionnaires at the request of a school psychologist who invited them to participate in a survey on "how students of your age learn and what they are interested in?" The survey was conducted in January 2020, before the start of the COVID-19 pandemic in Russia.

Motivation was assessed using Multi-CAM, which estimates motives and cognitive components of motivation according to self-determination theory and self-efficacy theory [16]. It includes 51 items, which form 16 scales (see the description of the scales in the table 1). These scales allow intrinsic, identified, introjected, external positive and negative motivation to be assessed, as well as a number of cognitive components of motivation: the expected controllability of learning activities, self-efficacy and subjective learning difficulty. The questionnaire is made up of three blocks of items, each of which combines different answers to the stem question, for example, "Think about WHY you are learning new material at school. Because...". Each of the proposed options were asked to be rated on a scale from "Almost never" (1 point) to "Almost always" (4 points). The structure of the questionnaire including 16 correlated factors is confirmed by the results of confirmatory factor analysis (CFA): χ^2 = 2174.11; df = 1104; $p < 0.001$; CFI = 0.953; TLI = 0.946; SRMR = 0.033; RMSEA = 0.036; 90% confidence interval for RMSEA: 0.034-0.039; PCLOSE = 1; N = 735 (weighted least squares mean and variance adjusted estimator).

Welch's t-test was used to analyze differences in motivation scores. Due to the large number of pairwise

Table 1

Characteristics of the scales of Multi-CAM

Motivation types and scales	Number of items	Cronbach's α	Examples of items (with stem items)
Intrinsic motivation			
1. Enjoyment of learning	6	0.93	Why are you learning new material at school? Because you enjoy doing it?
Identified motivation			
2. Study for oneself	3	0.86	Do you want to do it for yourself?
3. Personal importance	3	0.76	Do you think that learning new material at school is important?
Introjected motivation			
4. Duty	3	0.73	Do you think that learning new material in school is what you are supposed to do?
Positive extrinsic motivation			

Motivation types and scales	Number of items	Cronbach's α	Examples of items (with stem items)
5. Motivation to obtain good marks	3	0.85	Why do you understand a new lesson? Because you want to obtain good marks?
6. To demonstrate one's skills	3	0.88	Because you want to show that you can do it better than others?
7. To demonstrate the ease of learning	3	0.82	Because you want to show that it's easy for you?
8. To earn the sympathy of classmates	3	0.89	Because you want to be liked by your classmates?
9. To please parents	3	0.88	Because you want to please your parents?
10. To please the teacher	3	0.83	Because you want your teacher to treat you well?
Negative extrinsic motivation			
11. To avoid ridicule from classmates	3	0.85	Because you don't want your classmates to laugh at you?
12. Don't make parents angry	3	0.83	Because you don't want your parents to be angry with you?
13. To avoid the teacher's disapproval	3	0.84	Because you don't want the teacher to think that you are a bad student (student)?
Additional motivational indicators			
14. Expected controllability	3	0.87	If you want to learn new material at school, can you do it?
15. Academic self-efficacy	3	0.68	Do you think that learning new material in school is something you can do if you want to?
16. Subjective difficulty	3	0.75	Do you think that learning new material at school is difficult?

comparisons, to enhance the reliability of the findings, only those differences that showed a high level of statistical significance ($p<0.001$) were considered significant. Two-factor analysis of variance was used to analyze the interaction of factors. All calculations were carried out in the data analysis and statistical programming environment R.

Results

The results of a comparison of motivation indicators between samples of schoolchildren of different years (see table 2) indicate that adolescents in 2020 have lower indicators of intrinsic motivation (the scale "Enjoyment of learning"), identified motivation (the scales "Study for oneself" and "Personal importance"), and introjected motivation ("Duty" scale), while the effect size (d-Cohen) ranges from weak to moderate. Moderate differences were found in indicators of external motivation related to the motives to earn the sympathy of classmates and to avoid ridicule from classmates, not to make parents angry and to avoid the teacher's disapproval. On all these types of motivation, the students in 1999 also outperform the students in 2020. Contemporary schoolchildren also have significantly lower expected controllability and academic self-efficacy.

Comparison of boys and girls on the motivation scales in the 1999 sample presents the conclusion that there are no significant differences. In the 2020 sample, significant differences were found in indicators of external motivation, reflecting positive and negative motives associated with attitudes towards parents: to please parents ($t(453) = 4.05$; $p \le 0.001$; Cohen's $d = 0.37$) and not to make parents angry ($t(474)=3.41$; $p \le 0.001$; Cohen's $d = 0.31$). In addition, there was a difference in the scale measuring the motive to demonstrate the ease of learning ($t(491)=4.39$; $p \le 0.001$; Cohen's $d = 0.39$). For all these indicators, girls in the 2020 sample have lower averages than boys.

The results of the analysis of the interaction between the factors of gender and the year surveyed using two-way analysis of variance showed the absence of any highly significant interaction. At the same time, trends were found that were statistically significant at $p \le 0.05$, indicating a weak interaction of these factors for the motives to please parents ($F(1;730)=5.6$; $p \le 0.05$) and not to make parents angry ($F(1;730)=4.4$, $p \le 0.05$). These trends reflect the fact that girls have lower means in 2020 than in 1999, while no such difference is observed for boys (see figure).

The trends revealed in the interaction of the factors of gender and year surveyed on the scales of motivation associated with parents correspond to the statistically significant differences described above on these scales between boys and girls in 2020, while there were no similar differences in 1999.

Discussion

The results obtained are in agreement with the main hypothesis of the study, according to which a decrease in intrinsic learning motivation was expected. This finding is presumably associated with the series of educational reforms in recent decades, including the introduction of

Table 2

Comparison of academic motivation indicators in groups of schoolchildren, surveyed in 1999 and 2020

Indicators of motivation	1999 (N = 242)		2020 (N = 493)		t	df	p-level	Cohen'sd
	M	SD	M	SD				
Intrinsic motivation								
1. Enjoyment of learning	2.7	0.81	2.31	0.77	6.28	456	< 0.001	0.5
Identified motivation								
2. Study for oneself	3.19	0.73	2.92	0.83	4.45	533	< 0.001	0.34
3. Personal importance	3.38	0.58	3.14	0.68	4.95	554	< 0.001	0.37
Introjected motivation								
4. Duty	3.15	0.68	3	0.67	2.92	473	< 0.01	0.23
Positive extrinsic motivation								
5. Motivation to obtain good marks	3.36	0.67	3.32	0.71	0.74	502	n.s.	0.06
6. To demonstrate one's skills	2.23	0.83	2.09	0.92	2.13	517	< 0.05	0.16
7. To demonstrate the ease of learning	2.13	0.84	1.94	0.76	3.01	437	< 0.01	0.24
8. To earn the sympathy of classmates	2.41	0.9	1.91	0.89	7.12	472	< 0.001	0.56
9. To please parents	3.1	0.82	2.99	0.85	1.7	496	n.s.	0.13
10. To please the teacher	2.69	0.83	2.6	0.86	1.4	490	n.s.	0.11
Negative extrinsic motivation								
11. To avoid ridicule from classmates	2.24	0.9	1.68	0.81	8.21	437	< 0.001	0.67
12. To not make parents angry	2.69	0.9	2.33	0.94	4.99	499	< 0.001	0.39
13. To avoid the teacher's disapproval	2.54	0.89	2.28	0.92	3.7	491	< 0.001	0.29
Additional motivational indicators								
14. Expected controllability	3.34	0.66	2.91	0.69	8.1	498	< 0.001	0.63
15. Academic self-efficacy	3.05	0.74	2.81	0.7	4.26	451	< 0.001	0.34
16. Subjective difficulty	2.4	0.72	2.29	0.63	1.98	424	< 0.05	0.16

Note. M — mean, *SD* — standard deviation, *t* — Welch's test value, *df* — degrees of freedom, n.s. — not significant.

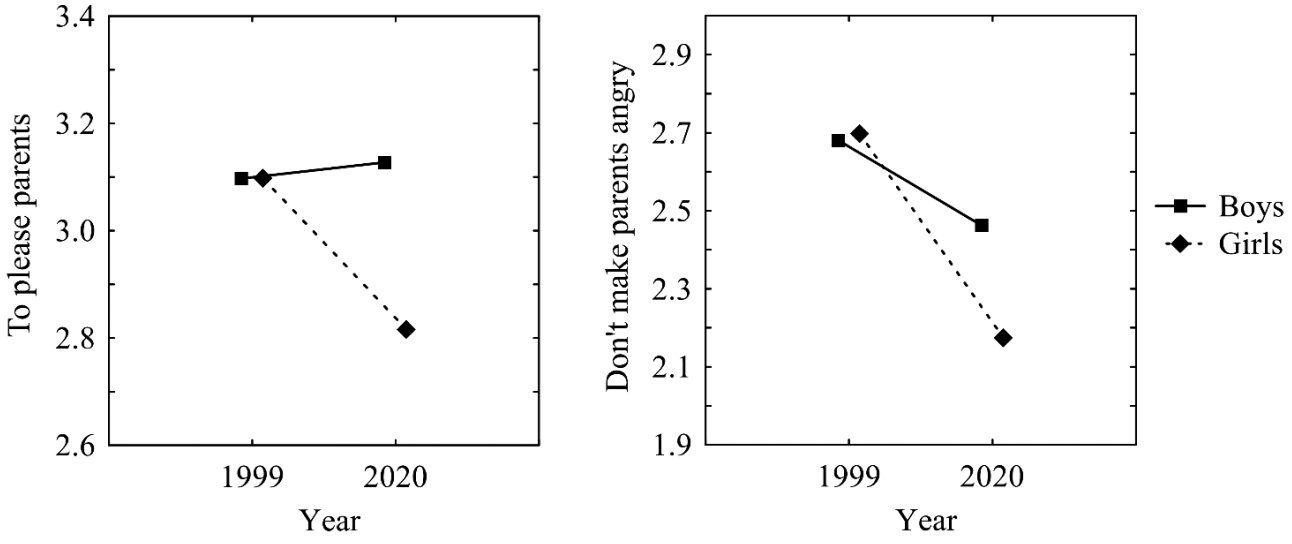

Fig. Interaction of "survey year" and "gender" factors on scales "To please parents" and "Not to make parents angry"»

the Unified State Examination and the decrease in the value of a wide range of academic subjects, as well as the widespread use of social networks by contemporary teenagers. Based on the results obtained, it can also be assumed that recent educational innovations, including the introduction of the USE and the concentration of schoolchildren on passing it, have led to a decrease in intrinsic motivation due to an increase in anxiety and a decrease in the need for competence.

In addition, an analysis of the dynamics of academic motivation of adolescents in 1999 and 20 years later indicates a decrease in all types of motivation, not only

intrinsic, but also various types of extrinsic, which indicates a significant change in the place of educational activity in the life of contemporary schoolchildren. At the same time, one of the most significant types of academic motivation — studying for the sake of getting good grades — did not undergo significant changes during the study period, which corresponds well with the constant use of grades in Russian schools as the main means of influencing student motivation [4].

With respect to one of the types of external motivation — parental control motivation — a gender specificity was found: this type of motivation decreased only in girls, showing stability in boys, which speaks in favor of parents maintaining a constant level of control on boys' learning and exhibiting greater trust in girls, which corresponds well with their higher academic achievement.

The cognitive components of motivation also revealed negative trends — the level of perceived controllability of educational activities, perceived competence, and self-efficacy decreased, while the level of subjective difficulty in educational activities did not increase, but, on the contrary, slightly decreased.

A comparison of our results with the data from A.D. Andreeva [1] shows that they are in agreement with each other — contemporary teenagers have become less interested in learning activities; their desire for knowledge is present to a lesser extent than it was in the 80s [e.g., 1] and the 1990s (our data).

Our study is unique in terms of the analysis of the temporal dynamics of academic motivation over the past 20 years and has broad prospects for future study. The negative dynamics of academic motivation revealed is associated with the increasing loss of meaning in learning activities among contemporary adolescents and requires the adoption of appropriate measures to counteract it.

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Ethnic, Civic, and Global Identities as Predictors of Emigration Activity of Student Youth in Belarus, Kazakhstan, and Russia

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The objective of this research is to assess the characteristics of the relationships between the cognitive and emotional components of ethnic, civic, and global identities with the emigration activity among students of Belarus (n=208), Kazakhstan (n=200), and Russia (n=250) aged 18 to 25 years. The assessment of emigration activity was carried out using six items. To measure identity types, we used the Questionnaire for assessing the positivity and uncertainty of ethnic identity by A.N. Tatarko and N.M. Lebedeva and the Identification with All Humanity Scale by S. McFarland in adaptation of T.A. Nestik. The negative assessment of one's own ethnicity is a predictor to emigration intentions among Belarusian students. Students in Kazakhstan and Russia have emigration intentions connected with a positive attitude towards the global community of people and a negative attitude towards citizens of their countries. In addition, Russian students with a high level of emigration intentions have imprecise representations of their own ethnicity. Emigration behavior of Belarusian students have links with negative attitudes towards the citizens of their country and towards their own ethnic affiliation. In Russian students, this behavior is also associated with a negative attitude towards the citizens of their country, but combined with a positive attitude towards the global community of people. Kazakhstani students have no statistically significant links in this case. The results confirm the importance of taking into account the civic and sociocultural contexts when organizing activities to prevent the emigration behavior of youth.

Keywords: emigration activity, emigration intention, emigration behavior, ethnic identity, civic identity, global identity, student youth, Belarusian students, Kazakhstani students, Russian students.

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Этническая, гражданская и глобальная идентичности как предикторы эмиграционной активности студенческой молодежи Беларуси, Казахстана и России

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Исследование направлено на изучение особенностей связей когнитивного и эмоционального компонентов этнической, гражданской и глобальной идентичностей с эмиграционной активностью студентов — граждан Беларуси (n=208), Казахстана (n=200) и России (n=250) в возрасте от 18 до

25 лет. Эмиграционная активность оценивалась с помощью 6 разработанных утверждений. Для измерения этнической идентичности использовалась «Методика оценки позитивности и неопределенности этнической идентичности» А.Н. Татарко и Н.М. Лебедевой, для оценки гражданской и глобальной идентичностей — методика «Идентификация с человечеством» С. МакФарленда в адаптации Т.А. Нестика. У студентов Беларуси предиктором эмиграционных намерений выступает негативная оценка собственной этнической принадлежности. У студентов Казахстана и России эмиграционные намерения связаны с позитивным отношением к глобальному сообществу людей в целом и негативным отношением к гражданам своей страны. Наряду с этим российские студенты с выраженными эмиграционными намерениями имеют размытые представления о собственной этнической принадлежности. Поведение по реализации эмиграционных намерений у студентов Беларуси связано с негативным отношением к гражданам своей страны и к собственной этнической принадлежности. У студентов России данное поведение тоже связано с негативным отношением к гражданам своей страны, но в сочетании с позитивным отношением к глобальному сообществу людей в целом. У казахстанских студентов статистически значимых связей в данном случае не обнаружено. Результаты подтверждают значимость учета гражданского и социокультурного контекстов при профилактике эмиграционного поведения молодежи.

Ключевые слова: эмиграционная активность, эмиграционное намерение, эмиграционное поведение, этническая идентичность, гражданская идентичность, глобальная идентичность, студенческая молодежь, белорусские студенты, казахстанские студенты, российские студенты.

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Для цитаты: *Муращенкова Н.В., Грищенко В.В., Ефременкова М.Н., Калинина Н.В., Кулеш Е.В., Константинов В.В., Гуриева С.Д., Маленова А.Ю.* Этническая, гражданская и глобальная идентичности как предикторы эмиграционной активности студенческой молодежи Беларуси, Казахстана и России // Культурно-историческая психология. 2022. Том 18. № 3. С. 113—123. DOI: https://doi.org/10.17759/chp.2022180314

Introduction

Relevance of this study on social identity as a factor of emigration behavior among students of Belarus, Kazakhstan and Russia is associated with increased emigration mobility of young people from the post-Soviet countries. The growth of young people's emigration mobility requires finding the ways for these countries to retain valuable social capital. Frequently, researchers turn to the theory of planned behavior by Icek Ajzen [14] when studying emigration behavior. According to the theory of planned behavior, intention is a factor of readiness for certain behavior. Therefore, intention may be an indicator or predictor of emigration behavior [19]. However, the emigration intention is not always realized in the appropriate behavior. This suggests that there are different factors that influence the transition of intention to action. It is especially important to study not separate factors, but the holistic structure of the socio-psychological space in which the emigration intentions of young people are formed [7]. In addition, it is important to carry out a cross-cultural analysis of these factors, as their contribution to the development of emigration behavior may differ in various cultural contexts.

The analysis of different types of social identity [2; 8] as factors of emigration behavior is particularly significant in today s rapidly changing world, when people are in dire need of identification with groups seeking support and positive self-determination and self-respect. Positive perception of one's social group, satisfaction with membership in this group, desire to belong to it gives the person a feeling of psychological security and stability [18]. If the group to which a person belongs loses its attractiveness and/or has a low social status, they may seek to distance themselves from it both psychologically and physically, including emigration [1]. Thus, the available research confirms the link between ethnic identity and emigration attitudes [12; 15]. Belonging to an ethnic minority and the degree of perceived discrimination can be factors influencing emigration behavior. The high level of civic identity, as the recognition of identification with the civil community and the significance of membership, can hinder the formation of emigration intentions [17]. In its turn, the high uncertainty of civic identity, on the contrary, may reinforce them [16]. A high level of global identity, as an identification with humanity and commitment to cosmopolitan values, can stimulate emigration intentions [10]. Ethnic, civic, and global identities are thus psychological constructs that may encourage or discourage the emigration intentions of youngsters.

The theoretical analysis which we conducted shows that most studies focus on ethnic, civic, and/or global identities as separate factors of emigration intentions. As far as we know, there is also a lack of research that assesses a cross-cultural analysis of the components of ethnic, civic, and global identities as predictors of emigration intentions of the youth from post-Soviet countries, whose cultures have both similar and different features. Therefore, the study of relationships between the system of cognitive and emotional components of ethnic, civic, and global identities and emigration intentions and behavior to realize these intentions among the youth of Belarus, Kazakhstan, and Russia is important for elucidating the migration processes in the post-Soviet space. After the dissolution of the USSR these countries, on the one hand, sought to maintain close socio-economic and cultural ties, as evidenced by the creation of a customs union, a single economic space, and other intergovernmental organizations. On the other hand, each of these countries developed their own political, economic, and sociocultural realities that influence the socialization of the young generation, and their identity and aspirations [3; 4; 9]. In this regard, it is important to find the answer to the question: are there differences in the links between the emigration intentions and behavior of young people from Belarus, Kazakhstan and Russia and cognitive and emotional components of their ethnic, civic and global identities?

Method

Participants and Procedure. The sample included 208 students from Belarus (75% female), 200 from Kazakhstan (74% female), and 250 from Russia (75% female) aged between 18 and 25. The mean age (standard deviation) for the Belarusian sample was 19.80 (1.91), for the Kazakhstani sample 20.54 (1.89), and for the Russian sample 20.03 (1.51). Among Russians, 87% considered themselves as Russians, among Kazakhstanis 54% considered themselves as Kazakhs, and among Belarusians 94% identified themselves as ethnic Belarusians. Students majoring in humanities, engineering, and economics participated in the study. They were students from the universities of Minsk, Vitebsk, Grodno (Belarus), Nur-Sultan, Pavlodar, Ust-Kamenogorsk (Kazakhstan), and Moscow, Saint Petersburg, Penza, Smolensk, Omsk, Khabarovsk (Russia).

Empirical data were collected in an anonymous survey on the anketolog.ru platform from January 2021 to April 2021.

Measures. We developed six items in order to assess emigration intentions and emigration behavior of students. We relied on the basic principles of questionnaire design according to the theory of the planned behavior by Ajzen [13; 14]. We measured the emigration intentions with three items: "I plan to move to another country in the next 5 years", "I want to live in another country in the next 5 years", "I am ready to move abroad in the next 5 years". We assessed the behavior of students aimed at realization of emigration intention with three items: "I have already been actively developing an action plan for moving abroad", "Currently, I am trying to get as much information as possible from different sources about the country of the proposed move", "I have already been actively cooperating with those who can help me move abroad". The respondents indicated their level of agreement with the items using a 6-point scale from 1 (strongly disagree) to 6 (strongly agree). Cronbach's alphas for the emigration intentions and emigration behavior scales were Belarusians $\alpha = 0.90/0.86$; Kazakhstanis $\alpha = 0.91/0.89$; Russians $\alpha = 0.88/0.87$, respectively.

For the measurement of ethnic identity, we used *the Questionnaire of positivity and uncertainty of ethnic identity estimation* by A.N. Tatarko and N.M. Lebedeva [11]. The questionnaire includes two scales that measure the emotional and cognitive components of ethnic identity. Cronbach's alphas for scales of the valence of ethnic identity and the certainty of ethnic identity were Belarus 0.64/0.57, Kazakhstan 0.60/0.59, and Russia 0.65/0.59, respectively.

The Identification with All Humanity Scale (IWAH) by S. McFarland [8] was used to measure civic and global identities. The Scale consists of nine questions with five possible options. Using this Scale, we measured respondents' attitudes towards their co-citizens and humanity as a whole. The Questionnaire includes two sub-scales. The first sub-scale measures the cognitive component of identity, and the second sub-scale measures its affective component. Cronbach's alphas for sub-scales of the cognitive and affective components of global identity and for sub-scales of the cognitive and affective components of civic identity were Belarus 0.82/0.85/0.79/0.83, Kazakhstan 0.83/0.88/0.87/0.85, and Russia 0.79/0.84/0.74/0.83, respectively.

Statistical Analysis. We used SPSS Statistics version 23 and AMOS version 23 for statistical analysis. We calculated the psychometric measures of the scales (Cronbach's alpha). In addition, we calculated descriptive statistics and the significance of mean value differences (Student's t-test) for each basic variable across the three samples. We used Multi-Group Structural Equation Modeling (MGSEM) for testing the assumptions. We performed

multiple regression analysis with gender, age, economic status, nationality, level of religiosity, knowledge of foreign languages, experience of international mobility, and social ties abroad as predictors of all other basic variables. We used the non-standardized residuals of these analyses in the remaining analyses. We built our structural models while controlling for these variables by using these residual scores. The dependent variables in the models were emigration intention and emigration behavior. The dependent variables were modeled as two latent factors, each represented by three measured variables. Separate models were made for each dependent variable. Predictors in the models were the cognitive and emotional components of global, civic, and ethnic identities.

Results

Table 1 shows descriptive statistics and the significance of mean value differences of basic variables in the three samples. We discovered statistically significant differences in the level of emigration intentions and emigration behavior among students from Russia compared to students from Belarus and Kazakhstan (Table 1).

Russian students, to a lesser extent than Belarusian (p=0.01) and Kazakhstani (p=0.01) students, plan to move to another country in the next 5 years. At the same time, Russians are less likely than Belarusians and Kazakhstanis to implement their emigration intentions. This manifests itself in a lower propensity to develop an action plan for moving (p=0.01/p=0.02); to search for information about the country of intended emigration (p=0.00/p=0.02); and to interact with people who can help to move (p=0.04/p=0.02). There are no statistically significant differences among Belarusian and Kazakhstani students in these parameters. However, emigration intentions are more pronounced than the behavioral manifestations of emigration activity in three samples.

Data in Table 1 shows that Belarusian students are less positive about their ethnic affiliation compared to Kazakhstani (p=0.00) and Russian (p=0.00) students. Kazakhstanis and Belarusians identify themselves more than Russians with the citizens of their country (p=0.00/p=0.00) and are more positive towards their civic community (p=0.00/p=0.00). In addition, Kazakhstani students, in comparison with Belarusian and Russian students, are more aware of their identity with people of

Table 1

Descriptive Statistics

Variables	Min	Max	Belarus[1] N=208		Kazakhstan[2] N=200		Russia[3] N=250	
			M	SD	M	SD	M	SD
Ethnic identity								
Certainty	1	6	4.79	0.94	4.96	1.06	4.83	0.91
Valence	1	6	4.61[2,3]	1.09	5.09[1]	1.04	5.12[1]	0.92
Civic identity								
Cognitive component	5	20	14.04[3]	3.45	14.10[3]	3.72	13.24[1,2]	3.33
Affective component	5	25	17.86[3]	4.23	18.07[3]	4.38	16.57[1,2]	4.02
Global identity								
Cognitive component	5	20	12.57[2]	3.53	13.29[1,3]	3.65	12.38[2]	3.22
Affective component	5	25	17.06[2]	4.25	18.10[1,3]	4.21	17.04[2]	4.16
Emigration intention								
1. I plan to move to another country in the next 5 years	1	6	3.14[3]	1.52	3.16[3]	1.65	2.80[1,2]	1.37
2. I want to live in another country in the next 5 years	1	6	3.53	1.70	3.55	1.75	3.26	1.56
3. I am ready to move abroad in the next 5 years	1	6	3.12	1.71	3.06	1.86	2.85	1.66
Emigration behavior								
4. I have already been actively developing an action plan for moving abroad	1	6	2.58[3]	1.57	2.55[3]	1.60	2.21[1,2]	1.33
5. Currently, I am trying to get as much information as possible from different sources about the country of the proposed move	1	6	2.86[3]	1.68	2.78[3]	1.73	2.43[1,2]	1.47
6. I have already been actively cooperating with those who can help me move abroad	1	6	2.22[3]	1.33	2.26[3]	1.45	1.96[1,2]	1.27

Note: [1] the statistically significant difference with Belarusians; [2] the statistically significant difference with Kazakhstanis; [3] the statistically significant difference with Russians (Student's t-test).

the whole world (p=0.04/p=0.00) and more positively assess this identity (p=0.01/p=0.00).

Figures 1 and 2 show multi-group models that demonstrate differences in the relationships between emigration intention and behavior and components of ethnic, civic, and global identities among students from the three countries.

All items that measured emigration activity were included into latent constructs with statistically significant estimates (see Figures 1 and 2). Both models (see Tables 2 and 3) showed acceptable fit. Since configural and metric invariance are present ($\Delta CFI < 0.01$), we can compare regression relationships among samples of the three countries.

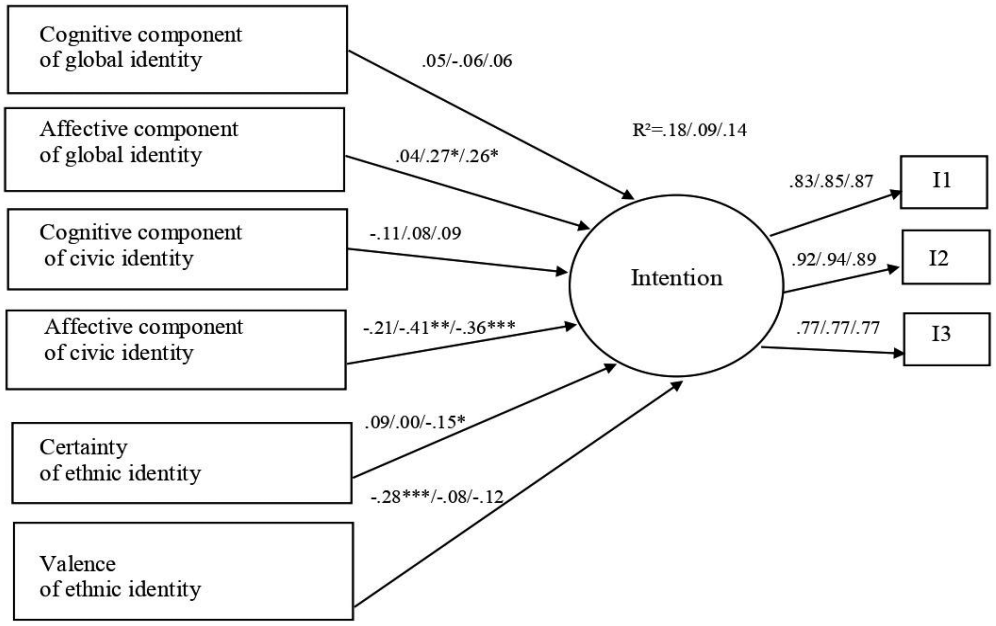

Fig. 1. Multi-Group (Unconstrained) Model of the Relationship Between Emigration Intentions and Components of Global, Civic, and Ethnic Identities Among Students of Belarus/Kazakhstan/Russia: I1 — "I plan to move to another country in the next 5 years", I2 — "I want to live in another country in the next 5 years", I3 — "I am ready to move abroad in the next 5 years"; * — p <0.05; ** — p <0.01; *** — p <0.001

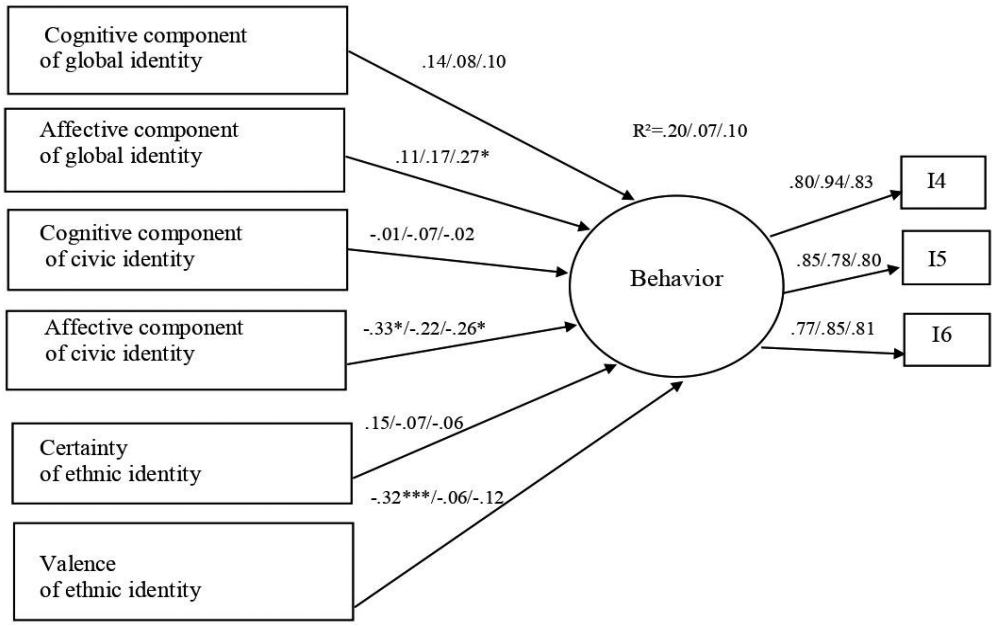

Fig. 2. Multi-Group (Unconstrained) Model of the Relationship Between Emigration Behavior and Components of Global, Civic, and Ethnic Identities Among Students of Belarus/Kazakhstan/Russia: I4 — "I have already been actively developing an action plan for moving abroad", I5 — "Currently, I am trying to get as much information as possible from different sources about the country of the proposed move", I6 — "I have already been actively cooperating with those who can help me move abroad"; * — p <0.05; ** — p <0.01; *** — p <0.001

Table 2

Invariance for Multi-Group Model of the Relationship Between Emigration Intentions and Global, Civic, and Ethnic Identities Among Students of Belarus, Kazakhstan, and Russia

Model	CFI	RMSEA	AIC	PCLOSE	Chi-square	df	p
Unconstrained*	0.999	0.009	289.935	1.000	37.935	36	0.381
Structural weights**	1.000	0.000	262.509	1.000	54.509	58	0.606

Note. CFI – comparative fit index; RMSEA – root mean square error of approximation; PCLOSE – p of Close Fit. AIC – Akaike information criterion; ΔCFI < 0.01; * — configural invariance; ** — metric invariance.

Table 3

Invariance for Multi-Group Model of the Relationship Between Emigration Behavior and Global, Civic, and Ethnic Identities Among Students of Belarus, Kazakhstan, and Russia

Model	CFI	RMSEA	AIC	PCLOSE	Chi-square	df	p
Unconstrained*	0,999	0,012	291,476	1,000	39,476	36	0,317
Structural weights**	1,000	0,002	266,132	1,000	58,132	58	0,470

Note. CFI – comparative fit index; RMSEA – root mean square error of approximation; PCLOSE – p of Close Fit. AIC – Akaike information criterion; ΔCFI < 0.01; * — configural invariance; ** — metric invariance.

The predictors contribute most to the explanation of emigration intentions in samples from Russia and Belarus than in the sample from Kazakhstan (see Figure 1). At the same time, emigration behavior is more determined by the predictors in the Belarusian sample than in the Kazakhstani and Russian samples (see Figure 2).

We found out that the regression links between the emigration intentions of students and the identities have their own characteristics in three samples. Among Belarusian students the negative estimation of their own ethnicity predicts emigration intentions (β=0.32, p=0.00). Among the students of Kazakhstan and Russia, emigration intentions are linked to with a positive attitude towards the global community as a whole (β=0.27, p=0.04; β=0.26, p=0.02) and negative attitude towards the citizens of their country (β=-0.41, p=0.01; β=-0.36, p=0.00). In addition, Russian students with emigration intentions have vague ideas about their own ethnicity (β=-0.15, p=0.03).

Regression relationships between the emigration behavior of student activity and their identities are also specific in three samples. Emigration behavior among Belarusian students is related to negative attitude towards the citizens of their country (β=-0.33, p=0.02) and to their own ethnicity (β=-0.32, p=0.00). Among Russian students, this behavior is also linked to negative attitude towards the citizens of their country (β=-0.26, p=0.02), but combined with positive attitude towards the global community of people as a whole (β=0.27, p=0.02). In this case, no statistically significant connections have been found among Kazakhstani students.

Discussion

Similar to our previous study [6], the results confirm that emigration intentions expressed by student youth are most often associated with a passive-preferred strategy that is rarely implemented in specific emigration behavior. This may be due to the specifics of the student sample. Students are oriented towards completion of their education and can postpone action on the implementation of emigration intentions. However, the differences in emigration activity between Belarusian and Kazakhstani students compared to Russian students may be indicative of the greatest dissatisfaction of the student youth of Belarus and Kazakhstan with their conditions in the country. The main reason for the dissatisfaction of Belarusian youth, for example, may be the socio-political situation that has developed in the country since the presidential election in August 2020. According to the experts, the situation in Belarus is characterized by instability and a protracted crisis [4].

The links we have found in the study between the components of ethnic, civic, and global identities and the emigration activities of Belarusian, Kazakhstani, and Russian students have both similarities and differences. The similarity is evident in the links between the emotional component of civic identity and emigration activity among students in the three studied countries. Thus, reducing students' positive attitudes and decreasing students' identification with citizens of their own country may encourage emigration activity among students. However, while for Kazakhstani and Russian respondents the affective component of civic identity is a predictor of emigration intentions, for Belarusian respondents it is a predictor of emigration behavior.

That is, the low degree of identification of Belarusian students with the citizens of the country contribute to the manifestation not of passive-preferred, but of an actively implemented emigration strategy. In general, the results show that the positive assessment of one s own nationality plays a universal role in preventing emigration activity. These results are expected and consistent with other studies, according to which it is usually those young people who do not identify themselves with the citizens of their country and have a low level of civic activity [3] go abroad.

There are differences between the components of ethnic and global identities and the emigration activities of Belarusian, Kazakhstani and Russian students. In the Belarusian sample we discovered no link between global identity and emigration activity. However, the similar type of the relationship between the sense of community with all humanity and emigration activity is revealed among student youth of Kazakhstan and Russia: the increase of global identity is accompanied by a rise of emigration activity of Kazakhstani and Russian students. At the same time, the affective component of the global identity of Kazakhstani students is linked only to emigration intentions. However, among Russian students, the affective component of the global identity is related to both emigration intention and behavior and respectively acts as a predictor of the active emigration strategy. Accordingly, for Russian student youth, positive identification with humanity can contribute not only to the formation of intentions of emigration, but also to actions for their implementation that is not found in Kazakhstani and Belarusian students.

At the same time, only among Belarusian students, a link was found between the emotional component of ethnic identity and emigration activity. Reducing attachment to one s ethnic group can stimulate the development of both emigration intentions and behavior among Belarusian students. This evidence corresponds to the results of a study according to which ethnicity is not relevant for today's Belarusian students and they prefer to identify with groups unrelated to this parameter [5]. This trend of diffusion of the ethnic identity among Belarusian students can stimulate the growth of emigration activity, both in the form of passive-preferred and actively implemented strategies. In turn, we found the link between emigration intentions and uncertainty of ethnic identity only among Russian students. Diffused representations of one's own ethnicity of Russian student youth can stimulate the search for groups to identify oneself with, including through the formation of emigration intentions. Thus, according to the results of this study, the affective rather than the cognitive components of ethnic, civic, and global identities play a major role in the formation of emigration activity of students of the three countries.

Conclusion

The results of the research allow us to answer positively the question posed at the beginning of the article. Indeed, there are differences in the links between affective and cognitive components of ethnic, civic, global identities, and emigration activities among Belarusian, Kazakhstani, and Russian students. This confirms the importance of taking into account the civic and sociocultural contexts in order to prevent the emigration activity of young people and to preserve valuable human capital.

Despite some limitations (correlation design, females predominate in the sample, and relied on self-report data), the results of the study can be used in the field of youth policy of three countries to predict and prevent mass emigration of youth. The study also enriches knowledge in the field of manifestation of various sociopsychological phenomena among citizens of the post-Soviet countries. We can make an additional theoretical and practical contribution by conducting a comparative analysis of this system of predictors of emigration activity among students and representatives of other sociodemographic groups of the post-Soviet countries population in the future.

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THEORY AND METHODOLOGY
ТЕОРИЯ И МЕТОДОЛОГИЯ

On the Problem of the Semantic Structure of Consciousness

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In the article, the authors consider the methodological origins and foundations of psychological science. They point out the impossibility of a mechanical transfer of the paradigm and explanatory principles of natural science to the field of psychology, in which such an approach inevitably leads to a methodological dead end. A person becomes part of a deterministic relationship, losing their most important trait — their freedom. Lev Vygotsky proposed an approach that offers a path beyond this outdated methodology. In the cultural-historical approach, the central concept of psychology is the category of personality, while consciousness serves as the subject of study. However, Vygotsky interpretats consciousness in a significantly different way than it had been in psychology before him. He writes about the systemic and semantic structure of consciousness and it is this aspect that is primary for Vygotsky. The authors consider the works of Lev Vygotsky's closest disciples and associates in this context. In these works, the problem of consciousness and the relationship between sense and meaning is solved in a manner different from traditional psychology. A meaning is always a generalization. Consciousness operates these generalizations. In this article, the authors discuss the problems of theoretical and empirical generalization in the works of Vasily Davydov. The authors conclude that the solution to the problem of generalization, as proposed by Davydov, leads away from the scientific tradition initiated by the works of Lev Vygotsky and his followers.

Keywords: cultural-historical approach, activity theory, developmental education, consciousness, sense, meaning, problem of generalizations, methodology of psychology.

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К проблеме смыслового строения сознания

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В статье авторы рассматривают методологические истоки и основания психологической науки. Авторы указывают на невозможность механического перенесения естественнонаучной парадигмы и объяснительных принципов на психологическое содержание. Такой подход в психологии с неизбежностью приводит в методологический тупик. Человек оказывается частью детерминистических отношений и теряет самое главное — свою свободу. Выход за пределы этой старой методологии в своем подходе предложил Л.С. Выготский. В культурно-историческом подходе центральным понятием психологии является категория личности, а предметом изучения становится сознание. Но трактовку сознания Л.С. Выготский понимает существенно иначе, чем это имело место до него в психологии. Он пишет о системном и смысловом строении сознания. Причем для Л.С. Выготского первичен именно смысл. В этом контексте авторы рассматривают работы ближайших учеников и соратников Л.С. Выготского. В этих работах проблема сознания и соотношение смысла и значения решается иначе, чем в традиционной психологии. Значение — это всегда обобщение. Именно этими обобщениями и оперирует сознание. В статье авторы обсуждают проблемы теоретического и эмпирического обобщения в работах В.В. Давыдова. Авторы приходят к выводу о том, что решение проблемы обобщений, предложенное В.В. Давыдовым, уводит нас от научной традиции идущей от трудов Л.С. Выготского и его последователей.

Ключевые слова: культурно-исторический подход, теория деятельности, развивающее обучение, сознание, смысл, значение, проблема обобщений, методология психологии.

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This methodological article attempts to carry out a scientific search aimed at identifying the methodological foundations of the cultural-historical approach in psychology. Thanks to a return to the fundamental sources of non-classical psychology, it is possible to build a non-eclectic scientific theory and overcome the limitations inherent in positivist and empirical approaches. Such an analysis seems to be extremely necessary at the present time, since, due to many historical reasons, the ideas of L.S. Vygotsky turned out to be unclaimed and distorted within the framework of other scientific approaches.

The volume of this article allows us to cover only some of the existing positions in psychology on the issue under discussion, which does not detract from their importance and interest in consideration. However, the main subject of this work is not a critical attitude to numerous views in scientific psychology, but a new awareness and raising to the surface to discuss the original ideas of the non-classical theory of L.V. Vygotsky.

Clearly, any particular field of science is uniquely defined by its subject, that is, by what it aims to study. In traditional positive natural sciences, the issue of defining the subject of a particular science is usually not a matter of contention. It is intuitively clear to everyone who partakes in such fields what they are doing and where the boundaries of their professional competence lie. For psychology, however, the question is a vital and pressing one. After the bankruptcy of Wilhelm Wundt's physiological psychology, the science of psychology entered a dark period of open crisis, which eventually took the form of a chronic disease. Later on, psychologists became accustomed to this, in fact, deadly disease; many even successfully adapted to it, finding their scientific niche. The trouble here is that the so-called "methodological pluralism," sometimes flaunted as a guarantee of productivity and future golden age of psychology is actually but vulgar eclecticism and indiscrimination in methodological issues.

In his methodological study, The Historical Meaning of the Crisis in Psychology, Lev Vygotsky notes that the external manifestation of this crisis is the emergence of many psychological schools and approaches, and its essential content is the loss of the subject of psychological science. [1, pp. 292—436] Each approach has its own theory with its own explanatory principle, which means it has its own interpretation and definition of what the subject of psychology is. Accordingly, there are as many psychologies as there are different approaches, theories, and prominent psychologists. This is precisely the case in modern-day psychology. The question arises naturally: which psychology are the field's students to be taught?

When analyzing the state of psychology in 1926, Vygotsky paid attention not only to the crisis in the field, but also the science's fundamental characteristics, as well as to finding ways out of the crisis [1, pp. 292-436]. He concludes that psychology is, first, a unified science with its own special subject, method, and a general theory. Second, psychology is an explanatory science, meaning that its theory has its own explanatory principle. Third, psychology is an experimental science. Later on, in his work The History of the Development of the Higher Mental Functions, written in 1931, and partially published only in 1960, Lev Vygotsky reproaches traditional child psychology, claiming that it "...was not aware, as we have seen, of the issue of the higher mental

functions, or of the problems of a child's cultural development, which is essentially the same thing. Therefore, the central, ultimate problem of all psychology remains closed for it. It is the problem of personality and its development." [4, p. 40—41] According to him, "Only a decisive step beyond the methodological limits of traditional child psychology can lead us to the study of the development of the highest mental synthesis, which with good reason should be called the personality of a child. The history of a child's cultural development leads us to the history of personality development."

Thus, according to Vygotsky, the central and ultimate problem within this field of science, that is the problem of personality should be the primary subject of analysis and the backbone of the general theory of psychology. No exhaustive definition of this concept is given in his works. However, the writings of Vygotsky offer a general context of its use, as well as fairly precise and specific statements clarifying his views on the subject. It should also be noted here that Lev Vygotsky was a genuine Marxist. He explicitly did not want to conceive yet another psychological theory simply by pulling a few citations from the classics. He saw his task in learning from Marx's entire method before writing his own analog to Das Kapital within the field of psychology. The non-classical psychology created by Lev Vygotsky is not simply a new form of that field, but a fundamentally new science and a new way of comprehending reality.

Karl Marx did not use the concept of personality, since it was not found in everyday use or the scientific works of his time. When writing about a person as a personality, he would use the wording "free individuality." From our point of view, this is an extremely abstract, yet accurate definition of the essence behind the concept of personality. It fully conforms to Vygotsky's views on the subject. In his work, Pedology of an Adolescent, he notes: "Where we feel ourselves to be the source of movement, we attribute a personal character to our actions." [5, p. 227] To be the source of an act is to be free. This is the most important postulate by Baruch Spinoza, to whose works Vygotsky repeatedly refers.

Spinoza considered himself a disciple and follower of René Descartes, even though he refuted almost all the fundamental provisions of Cartesian philosophy in his works. First, his worldview does not contain the total mechanicism proclaimed by Descartes. Causal determinism corresponding to the Cartesian approach is now inherent in all traditional science, which traces its lineage back to Galileo Galilei and Isaac Newton. Second, Spinoza claimed that everything in the world was animated. Such panpsychism is categorically opposed by "serious scientists," even though this view of the universe is the only one that offers a constructive approach to solving the famous mind — body problem as addressed by Descartes. Thirdly, Spinoza was the first in the history of philosophy to introduce the idea of self-causal being and internally driven movement, that is, the idea of "causa sui." Thus, the whole, totally dominant logic of justification through the other, which naturally follows from the formal logic inherited from the "father of all sciences", as Aristotle was known in the Middle Ages, can, after the works of Spinoza, be contrasted with the logic of internal self-determination. However, while for Spinoza internal self-causality was only an idea, in Vygotsky's cultural-historical psychology, this idea was embodied in concrete psychological studies [17].

The keyword for the "stumbling block" that those who partake in traditional science, naturalistic in origin, have been unable to overcome is the philosophical category of freedom. There is no room for freedom in such science. Classical science is totally deterministic — dominated by causal determinism: everything in the world has an external cause. Freedom for the natural sciences is an ephemeral thing that only exists in the minds of people far removed from "real" science.

For the epigraph to his methodological study, The Historical Meaning of the Crisis in Psychology, Vygotsky took a quote from the Gospel of Matthew: "The stone that the builders rejected has become the cornerstone..." [1, p. 291]. And in his notebooks, Vygotsky wrote that the ultimate problem of psychology is the problem of human freedom. It is generally accepted in psychology that consciously controlled action is free. This very wording indicates that the origins of freedom lie in the realm of consciousness.

According to Vygotsky, the primary difference between the higher mental functions and the elementary ones lies in the fact that the former are arbitrary and, therefore, consciously controllable and manageable. One might say that a person has a space of conquered freedom in one's higher mental functions. One is free in one's arbitrary acts, and this freedom is exercised easily and without effort. Arbitrariness itself is the acquisition of freedom, unlike the stage that precedes it, in which volitional efforts are required. In Russian, the word "arbitrariness" (*произвольность*, "*proizvolnost*") has a particular etymology: it is what is derived (*производное*, "*proizvodnoye*") from will (*воля*, "*volya*"). Will is something that only a person has. It is their ultimate psychological tool and the guide of consciousness.

In his lecture, The Problem of the Will and its Development in Childhood, Lev Vygotsky divided the existing theories of the will into heteronomous ones that attempt to derive this function of the psyche from some nonvolitional processes, and autonomous ones that explain the will based on the laws inherent to the volitional action. However, heteronomous theories "...were unable to explain what is most essential to will. They were unable to explain the volitional nature of acts, the voluntary nature of the act as such. They could not explain the internal freedom that the individual experiences in making a decision or the external structural variability

that distinguishes the volitional action from the nonvolitional action." [2, p. 457].

As is well known, Vygotsky referred to consciousness the subject of cultural and historical psychology. The concept of consciousness has no unambiguous, universally accepted definition, either in psychology or in philosophy. Some researchers consider it an intuitively clear concept that does not require a deep psychological analysis or a special study of its composition and structure. However, Lev Vygotsky and Aleksei Leontiev, giants of Russian psychology, considered this concept a fundamental problem of psychology. When analyzing this concept, the etymology of the Russian word "consciousness" (*сознание*, "*soznaniye*"), draws attention right from the start. There is an undoubted hint: "soznaniye" (lit. "with-knowledge"), that is, the attitude to what is realized with knowledge. However, the very concept of knowledge is extremely problematic. In Socratic philosophy, famously, the lack of true knowledge is the main cause of all human misfortunes. Thus, arises a well-founded assumption that Socratic "knowledge" differs significantly from the generally accepted meaning of this word today. According to Plato, his teacher confessed to hearing an inner voice that did not tell him what he should do, but warned him against what he should not do. This represents vitally important knowledge about the most important thing in our lives — that is, how to avoid undesirable consequences from one's actions, particularly irreparable consequences. Today, the word "knowledge" usually means informedness; or competence, scarcely different concepts; or one specific skill or another, or the ability to perform certain activities. This, however, is not at all the knowledge Socrates spoke about. [16, pp. 24—28]

Plato's philosophy raised the question of the origins and essence of true knowledge. According to this teaching, the path to understanding the truth leads into the depths of human subjectivity. The external world in which we live is Plato's world of shadows and a source of delusions. Therefore, Socrates' maieutic conversations, forcing the interlocutor to look inside themselves, are the way to get closer to true knowledge. This ancient wisdom echoes the core principles behind Vygotsky's cultural-historical concept. Both Socrates and Vygotsky see communication as the be-all and end-all of self-exploration and self-improvement.

In our opinion, Vygotsky's idea of the systemic and semantic structure of consciousness is extremely important for the entire science of psychology. It would seem that all psychologists know this perfectly well; alas, this idea has yet to see proper theoretical and experimental elaboration. As is well known, Vygotsky understood the system of consciousness as a kind of a warehouse containing the interrelations between mental functions at a particular stage of one's development. This, according to him, is an external characteristic of the structure of consciousness. Now, the inner, and therefore the essential characteristic of consciousness is its semantic structure.

We leave the system of inter-functional relations out of the scope of our analysis in a bid to focus on the essential sphere of consciousness, namely, its semantic structure. According to Vygotsky, sense is a unit of consciousness. In cultural-historical theory, the concept of sense is inseparable from the concept of meaning, and sense takes precidence over meaning. This is corroborated by Vygotsky's psychological analysis of the phenomenon of autonomous speech, described in his article, Earlier Childhood. This type of speech, as is well known, begins to manifest in children from one to three years of age. The child begins to speak in some self-invented "gibberish" language. The "words" the child uses may not be at all similar to the normative sounds of adult speech, and their meanings will also be very different from those of adult words. Nevertheless, by using these "words" that sound unlike anything universally accepted, the child successfully achieves mutual understanding with close adults; the child's goal is achieved as the needed help is provided. Amazingly, through such unusual "words", which, unlike full-fledged words, have nothing but a self-invented inner sense, the child enjoys the main psychological means of communicating with adults. Upon analyzing the phenomenon of autonomous speech, Vygotsky concludes that its presence at the appropriate developmental stage is natural and mandatory for all young children. It follows that the sense takes precidence over the meaning of words that form an established, universally recognized zone of unique meaning.

Aleksei Leontiev proposed a radically different solution to the problem of sense and meaning, even one directly opposite to that of Lev Vygotsky. While rightly pointing out that a sense is always a sense of something, he argued that it is not always the sense of a given word. According to Leontiev, "speech is not a demiurge of consciousness." In his theory, the demiurge of everything in the human psyche, and, perhaps, even beyond, is activity. He considers action, or rather, objective action to be the unit of activity. Accordingly, only this unit of activity has sense. In Leontiev's concept, the basis and criterion for distinguishing a specific activity is what the activity is aimed at, that is, its subject, referred to in this theory as the activity driver. Now, the criterion for distinguishing an objective action is its purpose. While the purpose of the action is always realized, the activity drivers, according to Leontiev, are usually not realized. [14]

The next step in the theory of activity is the assertion that the concept of sense is the sense of an objective action. Similarly to Vygotsky's theory, the sense of something singular is established through its relation to the whole of which it is a part. In Leontiev's theory of activity, the sense of an action is generated by the relation of its purpose to the driver of the activity carried out as

part of it. Having tied the concept of sense to the concept of objective action, Leontiev, nevertheless, was forced to propose his own solution to the problem of sense and meaning in the traditional sense of the relationship between a word and its meaning. According to him, a child first learns the meanings of words that exist independently in the outside world. However, the sense of the learned words has a different origin than the meanings. This is no longer dealing with the objective reality of speech, but rather the deep sphere of the human psyche. In Leontiev's theory, and, perhaps, in the activity-centered approach as a whole, the motivation/need sphere of the psyche is declared to be the core of the personality. To explain the relation of the sense and meaning of words, Leontiev cites the word "war"; its meaning is the same for a young man who has yet to smell powder, as for someone who has been through the tribulations and hardships of a war with all the associated misfortunes. Of course, the sense of the word "war" will be significantly different for each of these people. [13]

Thus, sense and meaning are qualitatively different psychological realities in Leontiev's activity theory; they differ both in their origin and in their inner essence. Meanwhile, in Vygotsky's concept, meaning and sense are, one might say, the same psychological reality; only there is sense, multidimensional and unique, and meaning, a certain part of the former that has settled down and become common. The meanings of words enable people to communicate and understand each other, including at the semantic level.

From our point of view, the activity-based interpretation of the problem of sense and meaning justifies and theoretically legitimizes didactics in educational practice, which still remains faithful to the principles set forth 365 years ago by John Comenius in his work, Didactica Magna. [9, pp. 8—12] Overcoming the limits of such fundamentally medieval didactics is closely tied to the solution of the problem of sense and meaning, proposed in the cultural-historical concept. Now, if sense and meaning are radically different, both in origin and essence, then this must mean that the teacher first needs to explain words unfamiliar to students and get them to digest and correctly reproduce the definitions of these words. However, the semantic content of the knowledge assimilated by schoolchildren will be determined by their subsequent experiences, including school life and education. Nevertheless, education in modern public schools is subject to the principles of John Comenius's didactics, based on elementary common sense and the philosophy of Aristotle.

This educational strategy, widespread in Russian schools, earned criticism from Pyotr Galperin, Daniil Elkonin, and Vasily Davydov [7, pp. 24-31]. This strategy leads to the forcible ingraining of artificial everyday concepts and ideas in schoolchildren. If a former student goes on to get involved in science and proves capable of thinking within the system of scientific concepts, then, according to Elkonin, this is an exception that owes nothing to schooling. Such a student is usually lucky to have met an adult interested in the development of children. Most likely, this happens outside the school and it is through this communication that the student develops scientific thinking.

Vygotsky's analysis of the phenomenon of autonomous speech convincingly demonstrates that there is no such thing as a mechanical assimilation of words in the mother tongue by children. One might say that the child starts by inventing their own language and actively uses it from their earliest days. The words of autonomous speech, as is well known, do not have universal meanings; nor do the "words" spoken by the child have a normative sound. All they have is the unique personal sense that the child attaches to these "words". Over time, the child adjusts the invented words to the commonly used meanings and sound forms of words in the mother tongue. Thus, the child does not mechanically memorize the words in the mother tongue, but, one might say, rather invents it. There is no such thing as direct assimilation of speech, but there is the child's introduction to the reality of the mother tongue, which occurs through the creative generation of the words' meanings, their semantic basis, and their commonly used sounds by the child. This logic of mastering a child's mother tongue is essentially the unified logic of the mental and personal development of children in ontogenesis.

According to Vygotsky, generalization is the key to the problem of the semantic structure of consciousness. He writes that the main psychological tool for a person is the word; the word is a sign; the sign is a sign because it has a meaning (Russian: *знак* [*znak*]) — "sign"; *значение* [*znacheniye*] — "meaning"); a meaning is a generalization; and a generalization has an obverse side, which is communication. We generalize as we communicate, and vice versa. Communication and generalization, according to Vygotsky, are two sides of the same coin. This is, in our opinion, an amazing statement. It would seem that it contains a blatant contradiction. After all, communication is the establishment and exercising of interpersonal relationships, that is, something interindividual, whereas generalization is a purely mental construct, that is, an inner property of a person. The result defies comprehension, like comparing apples to oranges. In fact, though, this is a brilliant insight into the unity of the external and internal in the composition of consciousness. This, we believe, is the fundamental postulate paving way to solving the famous problem of universals, as the problem of generalizations was seen in the Middle Ages [11, pp. 88—97.].

Aleksei Leontiev made the remarkable observation that the axe also generalizes. From our point of view, this is a profound and very meaningful notion. However, when explaining how exactly an axe generalizes,

Leontiev does it completely in line with the theory of empirical generalizations. According to him, the strike of an axe upon a log extracts from it hidden properties, thereby allowing them to be abstracted and brought to the appropriate generalization, designated by a word. It must be admitted that Vygotsky, who revealed the true nature and essence of generalizations by conceiving the thesis of communication and generalization being two sides of the same coin, stuck to the theory of empirical generalizations in his own psychological research. In his monograph, Thinking and Speech, devoted to the development of word meanings, Vygotsky's main experimental tool was the double stimulation technique, known as the Vygotsky — Sakharov method. It was derived from the method created by Narziß Ach, as was pointed out by Vygotsky himself [3, pp. 120—130]. We shall not describe this technique, known to all Russian psychologists, here; we will pay attention only to the fact that the source of the artificial meanings invented by the subject were the properties of real objects — cubes, parallelepipeds, cones, pyramids, and other items of different sizes, shapes and colors. In other words, in this experiment, the generalizations offered by the subject originated in real objects. This means that all the values invented by the subjects were traditional empirical generalizations.

Vasily Davydov paid special attention to the problem of generalizations in his works. In his monograph, Types of Generalizations in Teaching, he based his own educational theory on the opposition of empirical and theoretical generalizations. [8] However, both fundamental concepts in Davydov's theory raise questions. The empirical generalization in his works is interpreted in full accordance with the tradition that extends back to Aristotle. The main flaw in the Aristotelian theory on the origin of generalizations lies in the very attempt to deduce the general from the singular. Strikingly, the "father of all sciences", whose legacy is the framework of formal logic—its requirements still religiously observed by modern science and scientifically based practice — built a logically impossible structure of empirical generalization.

Davydov fought the hegemony of empirical generalizations in education, setting them against theoretical generalizations. However, he struggled with what people had artificially created. At this point, one cannot help but think whether one really has to fight what already exists, but rather simply provide children with a proper life and schooling to ensure that it no longer exists.

Theoretical generalization and education based in it are central to Davydov's research; however, the very word "theoretical" raises many questions. There is no single, well-established opinion on this concept in the philosophical and psychological literature. There has been much discussion on this issue, so far leading to nothing. In Davydov's works, this issue has a logical, unambiguous solution: in order to define the concept of "theoretical," one needs to turn to a sphere of reality in which something obviously theoretical exists explicitly. Naturally, this is science. Scientific theories are, without doubt, theoretical. It follows that anything more or less significantly related to science will be theoretical. Scientific theory, according to Davydov, is based on a genetically initial abstraction as a germ cell; following the logic that ascends from the abstract to the concrete, the corresponding theory grows from it and unfolds to the fullest extent. In this matter, he agreed with the findings of Vygotsky on psychology being an experimental science based in an appropriate theory whose explanatory principle is a fundamental concept that generates all the consequences and conclusions of this theory. In Davydov's concept, the genetically initial abstraction that generates a psychological theory should be a real life relationship, rather than a mental construct. [8]

The above provisions of Davydov's concept raise certain questions. For example, it is unclear how the ascent from the abstract to the concrete is different from elementary logical deduction. Mathematicians claim there are at least a dozen and a half ways to prove the Pythagorean theorem. This theorem is relatively easy to prove in a geometric manner, based on Euclid's axioms and the rules of inference from them. Still, it took the genius of Pythagoras to introduce this theorem to mankind. He didn't have anything to lean on, however; no laws of formal logic or of deduction. All he had was clarity of mind and brilliant intuition. The question of the ascent from the abstract to the concrete and the possible replacement of this practice by logical deduction remains an open one.

The mistake made by Davydov was his interpretation of the concept of "theoretical". Having tied this term to scientific theory, he made a concrete practical conclusion, quite a logical one, that the basics of sciences should form the curricula for primary schools. Since the main activity at this age is learning, theoretical in nature, the subject of assimilation for younger schoolchildren must be theoretical generalizations, related in their origin to scientific theories. Tellingly, the sciences themselves come to realize their fundamentals only at the height of their development. Davydov proceeded from the fact that scientific theory is based in some ontologically initial relation; within the logic of ascent from the abstract to the concrete, it unfolds into a system of provisions explaining everything that this theory claims to explain. This understanding of the essence of science is consistent with Vygotsky's idea that an explanatory principle, as a fundamental concept, should be the basis of psychological theory. However, it needs to prove its "royal origin," that is, be philosophically cogitated and justified. This, one might say, is the most important notion Vygotsky has to offer; however, it is missing from Davydov's works. The latter does not have a single word to say about philosophical reflection justifying the ini-

tial idealization. Without that, no theory is worth much. Neither the initial abstraction nor the ascent from the abstract to the concrete in any way provide the theoretical essence of scientific theory by themselves; they in no way clarify why scientific theory is "theoretical". This means that not even the fundamentals of the sciences, in Davydov's understanding, can be a source of theoretical generalizations.

As we have seen in our research work, Davydov's erroneous definition of the concept of "theoretical" casts doubt on his theory of developmental learning and the curricula he created. According to him, the concept of theoretical generalization is fundamental. In his view, younger schoolchildren learn theoretical generalizations and concepts as part of educational activities and under the guidance of a teacher. This helps them master theoretical thinking. However, our research and practical work with children of this age shows that younger schoolchildren are fundamentally incapable of scientific thinking [12]. At the same time, we have seen them be able to hold the position of a theorist quite steadily and think theoretically. In other words, theoretical and scientific thinking are fundamentally different mental processes, significantly separated on the ontogenesis timeline.

As is well known, both Lev Vygotsky and Jean Piaget believed that scientific thinking could only be accessible to adolescents [15]. Our research shows that this window of opportunity opens up towards the end of adolescence, and only to those who were lucky in individual development, having met an educated adult capable of thinking within the system of scientific concepts and sincerely interested in the development of children; such communication led adolescents to become carriers of scientific consciousness.

As already noted, philosophical reflection is of utmost importance when selecting and justifying the explanatory principle of a theory. The issue, however, is that the very concept of reflection is missing from the activity approach. This approach initially stems from the subject-object relationship, which is in no way a reflexive one. Reflection cannot be deduced from activity in principle; conversely, activity cannot be obtained from reflection. It follows that any theoretical constructs in line with the activity approach are fundamentally incapable of defining and justifying the concept of "theoretical", since its very essence is reflexive.

Summing up some of the findings of our analysis, we can say that the fundamental concepts behind Vasily Davydov's theory, namely empirical and theoretical generalizations, do not stand up to scrutiny. The challenge of revealing the true nature and essence of such generalizations as part of the consciousness semantic developmental mainline in preschool and primary school age children calls for a different interpretation of these concepts. In the most general terms, the direction of inquiry to that end can be seen as a deep psychologization of research in pedagogy and education in line with the cultural-historical approach.

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MEMORY DATES
ПАМЯТНЫЕ ДАТЫ

Как делается деятель. Юбилейное интервью с Н.Н. Нечаевым Часть 2. Некоторые нерешенные проблемы психологии и возможности их решения

Статья представляет собой вторую часть интервью, проведенного с автором в рамках проекта «Психолог-и-Я. Живые истории» Московского государственного психолого-педагогического университета (ФБОУ ВО МГППУ). В нем автор раскрывает свой подход к оценке роли культурно-исторической теории Л.С. Выготского и теории деятельности А.Н. Леонтьева в системе психологии, анализируются современные тенденции развития высшего образования, место моделирования деятельности специалистов в профессиональной подготовке психологов.

Автор идеи и ведущий проекта — В.Т. Кудрявцев (далее — ВК). Встреча состоялась 4 февраля 2021 года[1].

Ключевые слова: орудие и знак, культурно-историческая психология Л.С. Выготского и деятельностный подход А.Н. Леонтьева, совместная деятельность, идеальное, высшее образование, моделирование деятельности, культура.

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How is a Doer Done. The Anniversary Interview with N.N. Nechaev Part 2. Some Unsolved Problems of Psychology and the Possibilities of their Solution

The article is made in the form of interview with the author within the frames of the project “Psychologyst-and-I”. Live stories” of the Moscow State University of Psychology and Education (MSUPE). There the author describes his approach to the evaluation of the role of Vygotsky’s cultural and historical theory and Leontiev’s activity theory in the system of psychology. Also the present day trends of higher education development as well as the place of modelling of specialized activity within the psychologists’ professional training system are analyzed.

The author and leader of the project: V.T. Kudriavtsev. The meeting took place on the 4-th of February 2021.

Keywords: P. Janet, cultural and historical psychology by L.S. Vygotsky, activity approach by A.N. Leontiev, tool and sign, joint activity, ideal, higher education, modelling of activity, culture.

[1] Видео-запись встречи по адресу: https://www.youtube.com/watch?t=46&fbclid=IwAR2QFHhZeHfkHWccYC-NKXqKUEfHnvzq69D23cOuMaohZYH0usbyt6EVkxA&v=iaRfcXCCRM0&feature=youtu.be

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В.К. Сейчас довольно активно обсуждается соотношение культурно-исторической теории и деятельностного подхода. Эта тема затрагивалась во всех наших выпусках. Я знаю, что недавно у тебя вышла статья на эту тему в журнале «Вопросы психологии». Как бы ты кратко сформулировал свою позицию?

Н.Н. Для меня это ключевой вопрос и до настоящего времени очень актуальный. И вновь для ответа на него надо обратиться к студенческим годам.

Когда я завершил курсовую работу под руководством Блюмы Вульфовны Зейгарник и перешел на 5-й курс, встал вопрос о теме диплома. Ее предложил Петр Яковлевич, предварительно посоветовавшись с Александром Романовичем и Алексеем Николаевичем. Меня пригласили в кабинет к Леонтьеву, где присутствовали все трое — тогда у меня со всеми ними были хорошие отношения, — и предложили название темы: «Л.С. Выготский и французская социологическая школа». Эта тема и стала темой моего диплома, а три профессора приняли участие в научном руководстве.

Алексей Николаевич дал мне несколько книг на французском языке — одна из них сохранилась у меня до сих пор, — и я начал работать. Довольно быстро я осознал, что представление об идеях Выготского, которое тогда сложилось по его главной книге «Мышление и речь», — а другого быть не могло, поскольку многие его работы еще не были изданы, — является не совсем верным (у меня же сохранился ряд прижизненных изданий его работ, которые я недавно передал в библиотеку нашего университета). Я читал работы французских авторов, и у меня при чтении работ Выготского и П. Жане возникло ощущение похожести текстов, порой казалось, что в ряде мест речь идет просто о переводе с французского.

В 1986 г. в журнале «Вестник МГУ»[2] А.А. Пузырей в своем комментарии к изданной в журнале рукописи Л.С. Выготского, которую он назвал «Конкретная психология человека», попытался по ссылкам на П. Жане, которые содержались в этой рукописи Л.С. Выготского, установить источник цитирования, но ему это не удалось, так как Л.С. Выготский цитировал доступные ему стенограммы лекций П. Жане, прочитанных последним в Коллеж де Франс в 1926—1927 гг.

Вот передо мной книга Жане, полученная по международному заказу: «La pensee interieure et ses troubles» — «Внутреннее мышление и его нарушения». Это как раз тот курс лекций, который был прочитан П. Жане в 1926—1927 гг. Многие идеи, содержащиеся в этом курсе, действительно кажутся очень знакомыми, если их сопоставлять с работами Выготского. Причем сам Выготский этого не скрывает. В своей статье «Коллектив как фактор развития дефективного ребенка», представленной в 5-м томе его Собрания сочинений, содержится одна из самых развернутых формулировок закона становления высших психических функций (причем Выготский использует термин не «высшие психические функции», а «высшие психологические функции» и, соответственно, говорит о переходе от «интерпсихологических» к «интрапсихологическим»), которую он сопровождает следующими словами: «Мы должны пояснить на конкретных примерах, как проявляется в психологическом развитии ребенка этот великий фундаментальный закон психологии, по выражению П. Жане»[3]. И, собственно, вся эта статья Выготского посвящена конкретизации указанного положения Жане.

И когда я в 1968 г. с подобными же соображениями пришел к триумвирату моих научных руководителей, Алексей Николаевич сказал: «По-моему, сейчас позиционировать эти идеи не очень актуально. Возьми что-нибудь попроще». Так, эта несостоявшаяся дипломная работа по Выготскому осталась со мной на всю жизнь.

В марте 2018 г. в журнале «Вопросы психологии» вышла моя статья «О возможностях реинтеграции культурно-исторической психологии Л.С. Выготского и теории деятельности А.Н. Леонтьева»[4]. В ней показано, что теория Выготского и теория Леонтьева — это два рукава, которые вначале были общим потоком в виде «инструментальной психологии», но затем под влиянием французских авторов линия Выготского пошла в сторону анализа коммуникативного аспекта деятельности, выявления роли знака в конституировании психологических возможностей человека, а у Леонтьева — в сторону исследования роли орудия в предметно-орудийной деятельности.

Конечно, в этом контексте Гальперин был леонтьевцем. Его кандидатская диссертация «О различии вспомогательных средств у животных и орудий у человека» этому наглядное свидетельство. Все участники харьковской группы психологов считали, что само орудие воплощает способ его применения, который — уже как «значение» — как бы прикреплено к орудию. Однако психологическая концепция природы и происхождения идеального позволяет утверждать, что идеальное не может «прикрепляться», идеальное — это психологические новообразования,

[2] *Выготский Л.С.* Конкретная психология человека / Вестник МГУ. Серия «Психология». 1986. № 1. С. 51—65.

[3] *Выготский Л.С.* Собр. соч. Т. 5. М.: Педагогика, 1983. С. 197.

[4] *Нечаев Н.Н.* О возможности реинтеграции культурно-исторической психологии Л.С. Выготского и теории деятельности А.Н. Леонтьева // Вопросы психологии. 2018. № 2. С. 3—18.

закономерно возникающие в ходе нашей деятельности, благодаря которым мы конституируем наш «субъективный образ объективного мира», видим этот мир по-другому.

В одной из своих последних статей, вышедшей в журнале «Культурно-историческая психология» в 2020 г.[5], я постарался показать, что каждый из наших учителей зафиксировал какой-то важный аспект в развитии деятельности. Здесь я хочу специально упомянуть В.В. Рубцова, который, разрабатывая категорию совместно-распределенной деятельности, этот проблемный узел развязывает. В ходе психологического анализа совместной деятельности становится очевидным: орудийное преобразование действительности без коммуникации участников этой деятельности есть бессмыслица: субъект может быть и сделает то, что необходимо для решения возникшей перед ним задачи, но не сможет осознать и, следовательно, осознанно понимать, что же он сделал, если у него нет задачи объяснить это другому, даже если этим «другим» будет он сам.

Такая же ситуация имеет место и в гальперинской теории поэтапного формирования. Если, как это принято в практике поэтапного формирования, психолог сохраняет традиционную «этапность», «разводит» материальное действие и громкую социализованную речь, то тем самым он разрушает их органическое единство как, пусть и противоречивых, но предполагающих друг друга моментов совместной деятельности. В экспериментальном плане такое «разведение», может быть, и является оправданным, скажем, для фиксации какой-то выявленной особенности осуществления деятельности, но на самом деле коммуникативный и орудийный аспекты всегда представляют собой единство. С самого первого момента вовлечения субъекта в экспериментальную ситуацию ему дается инструкция, значит, участники вступают в коммуникацию, составляющую условие совместной деятельности и возможности ее развития.

Представляется, что нужно еще многое расчистить в наших представлениях и о культурно-исторической теории и о деятельностном подходе, чтобы уйти от «накатанных» штампов в понимании идей и Л.С. Выготского, и А.Н. Леонтьева.

В.К. Статья, о которой говорит Николай Николаевич, вышла на английском языке. Однако ее русскоязычный вариант тоже напечатан, в «Психологической газете» — ссылку на нее можно найти на сайте газеты[6] и на сайте: http://nechaev.pro/ .

Я предоставляю слово еще одному постоянному участнику наших семинаров, В.В. Рубцову.

В.Р. Поздравляя юбиляра, хочу сказать, что университет представил его к награде, получение которой он практически обосновал — медали Л.С. Выготского.

Я хочу вспомнить своего учителя, В.В. Давыдова, который очень чувствовал социальную природу действия. Он тоже ссылался на работы Жане. И его тоже волновал вопрос о деятельности и о том, что у Выготского называлось высшие психические функции, или, как было сказано, высшие психологические функции. Надо понимать, что здесь нет простого «промокашечного» переноса, и в терминах, и в понятиях. В наших работах мы показывали этот удивительный переход, когда идеальное в форме совместности удерживало операциональную структуру действия. И указание на орудие как орудие или как знак... Я понял, что вы тоже были в такой ситуации, когда я или Б. Эльконин задавали Давыдову вопрос: «Как же так, действие — это действие с предметами и вдруг — появление смысла, действие с речью, на которое указывал Выготский, как вы это сохраняете? Давыдов очень не любил отвечать на этот вопрос. Однако в своей последней статье «О нерешенных проблемах теории деятельности» он этот вопрос поднимает. Он связывает изменение социальной ситуации с изменением деятельности. Это ведь ключевой вопрос.

Финский ученый У. Энгстрем, изучавший подходы А.Н. Леонтьева, В.В. Давыдова, ввел в обиход понятие «социальная теория деятельности». Это сочетание не может радовать нас, потому что есть теория деятельности, а есть Выготский со своей теорией развития высших психических функций, т. е. культурно-историческая линия.

В чем, по-вашему, связь операциональной стороны действия с социальной ситуацией, если исходить из позиции Давыдова, да и вашей позиции?

Н.Н. Мне интересно вновь вернуться к вопросу, который обсуждался на одном из наших методологических семинаров. Мне нравится то, что если даже речь идет об аспирантской работе, мы обсуждаем ее на очень серьезном уровне: мы понимаем, что дело не в академических степенях, а в том, как человек ставит вопрос. В таких вещах вопрос должен ставиться принципиально.

Мне кажется, мы должны изменить свое представление о речи. Я перечитываю Выготского чуть ли не ежедневно — всегда, когда намечается какой-то поворот в изменении моего понимания, мне важно найти его конкретный текст по данному поводу. Перечитывая его вновь, я часто вижу то, чего не увидел раньше. Наверное потому, что я сам уже изменился, пусть прошла всего лишь неделя.

Как я уже говорил, с 1991 по 2016 г. я работал в Лингвистическом университете и очень много общался с «речевиками»: от фонетистов до литературоведов, трактующих смыслы. По прошествии этого периода я вижу, сколь прочным является представление о том, что смыслы содержатся в языке, закрепле-

[5] *Nechaev N.N.* «Ambivalence» of joint activity as the basis for the emergence of psychological growths: ways to develop the activity approach // Культурно-историческая психология. 2020. № 3. С. 27—37.

[6] *Нечаев Н.Н.* «Двойственность» совместной деятельности как основа становления психологических новообразований: пути развития деятельностного подхода // Психологическая газета. URL: https://www.psy.su/feed/8660/

ны за его единицами. Это представление укореняют словари: мы видим там некие сочетания букв — слова — вместе с указаниями на то, что данное сочетание имеет определенное значение или несколько значений. В этих случаях лингвисты говорят о полисемии слова. Но у слов нет полисемии — все эти разные значения есть у человека, они принадлежат человеку, который может использовать один и тот же звуковой комплекс для выражения того смысла, который становится значимым для него в конкретной ситуации взаимодействия, опосредованного коммуникацией.

Помню щекотливую ситуацию, в которую я попал на защите одной своей магистрантки, когда меня попросили выступить после вопросов ее рецензента, которая, как мне показалось, не поняла какие-то моменты работы. Я, говоря о значении слов, неосторожно привел слово «д-у-р-а» как пример различных вариантов использования этого «звукового комплекса» в различных коммуникативных ситуациях. Я хотел показать, что смыслы, которые мы связываем с определенным звуковым комплексом, на самом деле определяются ситуацией коммуникации, коммуникации — не в информационно-техническом контексте используемых каналов, но коммуникации как формы общения в контексте отношений людей. И мой пример вызвал совершенно неадекватную его содержанию реакцию рецензента, для которого данный звуковой комплекс, произнесенный мной, был трактован как прямое оскорбление.

Этот подход к слову есть именно то, что разделяло Выготского и Леонтьева. Леонтьев применительно к речи всегда говорил «опосредствование» и речевое общение рассматривал как «орудийное общение». Выготский же считал, что рассмотрение знака как орудия — ошибочное рассмотрение. Известно его хрестоматийное высказывание: «орудие направлено вовне, знак направлен внутрь». Но ведь и орудие тоже направлено «внутрь»: человек, действуя лопатой, ощущает, что она тяжелая. Значит, копание канавы для него может стать делом бессмысленным или, наоборот, осмысленным, если, скажем, это не просто канава, а индивидуальный окоп для защиты. Более того, само это орудийное действие может рассматриваться и как коммуникативный акт; неслучайно «жестовая речь» может быть гораздо выразительней, чем привычная нам вербальная оболочка нашей коммуникации. И, конечно же, и речью можно убить, если она вызывает к жизни, т. е. актуализирует для человека что-то такое, что невыносимо для него.

Я несколько раз проводил эксперимент, когда вдруг в процессе устного общения переходил на то, что можно назвать тарабарским языком — набором непонятных звукосочетаний. При этом используемая мной интонация явно подразумевала выражение какого-то смысла, но для русскоязычного человека в этом потоке звуков нет сообщения. Это была лишь имитация звуков несуществующего языка, возможно, напоминающего тюркский (однажды моя слушательница, женщина из Казахстана, даже начала внимательно прислушиваться к тому, что я произносил, ей показалось, что в этих звуках она улавливает какие-то смыслы).

Мы осмысляем звуки, и актуализация этого смысла меняет конструкцию нашего понимания. Я советую всем перечитывать серьезные книги — читая их, мы осознаем то, в чем мы изменились, а тем самым человек узнает («осознает») себя. Об этом говорил еще Л.Н. Толстой: «Подмечай, что ты помнишь, а что забываешь: по этому ты узнаешь сам себя». Иными словами, мы своей речевой/звуковой продукцией актуализируем те смыслы, которые бессознательно приобретаем в совместной деятельности, и тем самым их осознаем. Поэтому, чтобы их осознать, надо об этом кому-то рассказать.

Вспомним, что З. Фрейд изучал бессознательное, используя речь пациента: выясняется, что через какое-то время звуковые комплексы, которые пациент воспроизводит как поток свободных ассоциаций, очерчивают определенное смысловое поле для психоаналитика, и он уже может использовать это в психотерапии.

Б.Э. Вопрос об уподоблении, действии по логике предмета... Это же икс. Во-первых, кто-то должен намекнуть, что некий предмет должен употребляться в функции орудия, которая ребенку и вообще другому человеку не дана. Он видит, как отец действует отверткой и тоже ее хватает, но для него это игра. Во-вторых, что такое логика этого самого предмета? Будь то возникновение ощущения, будь то звуковысотный слух? Что в вещи, которую мы ощупываем, задает то, что мы определяем словом логика? Если отвечать на этот вопрос, то первое, что мы увидим: логика — это переходы в предмете. При ощупывании стола наша рука в ходе уподобления будет фиксировать углы, т. е. изменения своего хода. И, как показано в гениальном леонтьевском эксперименте, рука может ощупать переход цветов. Такой работы в экспериментальном, а не словесно-логическом плане больше нет.

Н.Н. Мною такая работа была проведена в словесно-логическом плане: это статья 2003 г. «Леонтьев и Гальперин: диалог во времени»[7]. Я показал там, что Леонтьев был неправ и гипотеза уподобления объекту — ложная, она отвечает вульгарно-натуралистической теории отражения. Но тогда нельзя было по-другому, хотя операционализм, как философская доктрина, выше: мы видим объект нашего действия в качестве того или иного предмета через операции, а не саму вещь как таковую. Любую вещь как таковую можно использовать самым различным способом.

Б.Э. Верно, но я не говорю об истинности или ложности теории. Если ты берешь уподобление или, допустим, операции, ты должен показать, что свя-

[7] *Нечаев Н.Н.* А.Н. Леонтьев и П.Я. Гальперин: диалог во времени / «Вопросы психологии», 2003, № 2. С. 50—69.

зывает эти операции. И тогда здесь идет разговор о слове. Поэтому я говорю: то, что называется действием, вслед за Даниилом Борисовичем и его работами о предметных действиях, требует для себя значения другого, жеста другого: здесь очень интересны эксперименты Запорожца тех лет. Жесты, действия взрослого телом ребенка, подчеркнутые его словом...

Н.Н. Звуковым комплексом, который в совместной деятельности приобретает смыслы, т. е., «опредмечиваясь», выступает как значение.

Б.Э. Да, но это еще одно ответвление. Об этом отдельно. Само то, что звуковой комплекс моего пса для меня обретает смыслы, и мой для него тоже, если не считать это рефлексом, — это отдельный интересный вопрос.

Н.Н. Что ж, я готов максимально подробно аргументировать эту точку зрения, прежде всего для себя — здесь еще нет готовых ответов. Смыслы каждый раз будут возникать разными в зависимости от задач и целей наших действий.

Вот сюжет, который многие вычитывают у Выготского, но не «прочитывают». Это взятое им из дневников Достоевского наблюдение — разговор между собой нескольких мастеровых — это есть в 7-й главе работы «Мышление и речь». Пятеро мастеровых идут и что-то обсуждают, произнося при этом лишь одно известное слово из трех букв, которое, как писал Достоевский, в присутствии дам не произносят. Каждый из них говорит о своем, но они договариваются, так как есть общее «поле» смыслов.

Б.Э. Я думаю, здесь более широкий контекст, дело не в данном чудесном звуковом комплексе. В данной ситуации важно было вместе выпить, потом вместе идти — в этом их единение. Здесь не один смысл, мы имеем дело с разносмысловым комплексом.

Н.Н. Всем советую посмотреть книгу современного лингвиста А.В. Вдовиченко: «Расставание с языком»[8], где показано, что можно изменить оболочку звукового комплекса, а смыслы, тем не менее, будут переданы. Вернее, будут пробуждены, т. е. смыслы появятся у другого участника коммуникации, потому что передать их нельзя.

Вся эта наша сегодняшняя встреча нужна для того, чтобы и пробудить, и породить те смыслы, которые возникают у тех, кто нас слушает.

В.Р. Мы подошли к интересной точке, которая, с одной стороны, нас разводит, а с другой — сводит. Действительно, Выготский не занимался проблемой генеза. Он занимался тем, как бессмысленное слово обретает значение. Он показал жизнь этих значений на примере своей методики. Фактически, он в этой связи ничего не сказал о том, какую роль играет коммуникация для развития этого процесса. Он просто показывает, как ребенок по-разному комплектует свойства предметов, как по-разному эти свойства образуют, с его точки зрения, осмысленные совокупности у ребенка, но он не показывает, какую роль в данном случае играет взрослый. Он просто сам спроектировал эту провокационную ситуацию для ребенка, он прямо задает вопрос и прямо строит свою методику. В этом смысле Выготский открывает новую сферу и ставит вопрос, который задавали потом последователи Пиаже: что есть коммуникативные действия, их не может там не быть. Я согласен: здесь нужны тонкие экспериментальные исследования (в этом отношении интересна работа А. Конокотина, где идет переосмысление смысла и появление нового значения). С этих позиций Другой — как пространство возможности появления значения в отношении к смыслу.

Я не соглашусь с тобой, Николай, по поводу уподобления, но это относится к другой сфере исследования. Итак, ключевой вопрос: что является рамкой для происхождения нового значения? Как возникает значение для самого ребенка, что делает взрослый в этой ситуации, как возникает общность, какая это общность — это описано в наших работах. Но проблема остается, проблема, которую надо изучать. Исследования продолжаются: появились работы, рассматривающие специфику этого акта, этого контакта, этой общности, в которой живет смысл. Доклад должен сделать Николай Николаевич.

Н.Н. Я согласен, но прошу предварительно познакомиться с двумя моими статьями: «О возможностях реинтеграции культурно-исторической концепции Л.С. Выготского и теории деятельности А.Н. Леонтьева», опубликованной в журнале «Вопросы психологии» № 2 за 2018 г., и «О новом подходе к языку и речевой деятельности в условиях цифровизации», опубликованной в журнале «Вопросы психологии» № 6 за 2019 г. Их обе можно найти у меня на сайте.

В.К. Мы переходим к блиц-вопросам. И первый из них: каков критерий хорошей лекции?

Н.Н. Прежде всего, аплодисменты студентов**.** Но даже если аплодисментов нет, это ситуация, когда студенты не уходят сразу, а, нарушая все графики, не отпускают тебя. Еще один критерий — приходят ли они дружно на следующую лекцию. Насколько я знаю себя как лектора, для меня важно искусство заражения. Поэтому самая трудная лекция — не когда слушателей несколько сотен, а когда их всего несколько человек.

У меня были и такие лекции. В качестве лектора Всесоюзного общества «Знание» я был послан с целью поддержки морально-психологического состояния наших военных, которые несли службу в Киргизии на советско-китайской границе. Это был 1978 год,

[8] *Вдовиченко А.В.* Критическая ретроспектива лингвистического знания. Расставание с «языком». М., 2007. 510 с.

когда отношения с КНР были очень напряженными. Так вот, на одной из застав я читал лекцию о воспитании детей для двух женщин — жен командира заставы и его заместителя. После лекции были простые и насущные вопросы, типа: что делать, если солдаты, недовольные дополнительными нарядами, учат детей командиров матерным словам? Совет был простой: надо, чтобы командиры действовали справедливо.

Лекция важна вчувствованием. У меня были ситуации, когда после лекции мне говорили: «Лекция была блестящей, но я ничего не смог записать». Это значит — плохо. Но все же я считаю главным, чтобы каждая лекция была основой для следующего шага в развитии студента.

В.К. Чем для тебя является семья?

Н.Н. Это вся моя жизнь, мы с женой вместе почти 50 лет, у меня двое взрослых, состоявшихся детей. К сожалению, дочь живет далеко, но мы часто переписываемся и переговариваемся, благо технические возможности сейчас немалые. Зато сын рядом с нами. Это все мое, я не мыслю жизни без них. Семья — это не тыл, это жизнь.

В.К. Я знаю, что ты поешь. Не мог бы ты немного показать что-то для нас?

Н.Н. Действительно, я с детства пою, и, став студентом МГУ, я пришел записываться в хор, но меня направили в студию вокала. Я занимался там примерно год, пока был на философском факультете, но потом, с переходом на психологическое отделение, оставил эти занятия. Зато я много участвовал в самодеятельности: сохранилась смешная фотография, где я на концерте старательно исполняю арию Фигаро: «Мальчик резвый, кудрявый, влюбленный...». Пел я очень зажигательно.

Теперь я часто пою в компании, у нас есть друзья-музыканты высокого класса, они с удовольствием садятся за инструмент, а я с удовольствие пою, чаще всего романсы.

В.К. Передаю слово А.А. Марголису, который давно хочет задать свой вопрос.

А.М. Мой вопрос к Николаю Николаевичу связан с циклом его работ, включая и его диссертацию, по подготовке кадров в системе высшего образования. Фактически это реализация деятельностного подхода в подготовке кадров высшей квалификации. Мне кажется, что это крайне важная тема, учитывая, что мы занимаемся образованием, профессиональным образованием. Не могли бы вы сформулировать основной тезис, который вам кажется отсутствующим в практике образования в настоящее время, без которого реализация деятельностного подхода в подготовке специалистов невозможна.

Н.Н. Аркадий Аронович, спасибо, очень важный вопрос.

Надо отметить, что моя докторская диссертация 1987 г. действительно была первой серьезной работой по психологии высшей школы, как тогда называлась эта отрасль, одной из первых рассматривавших именно психологию процесса — подавляющее большинство работ оставались педагогическими. Она называлась «Проектное моделирование как творческая деятельность» с подзаголовком «Психологические основы высшего архитектурного образования». К сожалению, я не озаботился задачей ее публикации, она опубликована частично. Первым оппонентом по этой работе был В.В. Давыдов, который в своем выступлении констатировал, что в этой диссертации — две диссертации: одна про проектное моделирование как творчество, а вторая как раз про высшее образование. Мне удалось это соединить общей канвой благодаря идеям моего учителя, П.Я. Гальперина.

В общем виде мой подход к высшему образованию заключается в том, что это самый высокий уровень — для русского уха этот уровень «передается» белорусским языком: «вышейшее» образование.

Для меня высшее образование — в отличие от высшей школы — это передний край культуры. Человек может выйти на него в разном возрасте, когда он в состоянии сделать то, чего никто другой не делал. Недавно десятилетний мальчик обыграл чемпиона мира по шахматам. Высшее образование — это не диплом. Когда человек говорит, что у него два высших образования, значит, у него нет ни одного. Высшее образование либо есть, либо его нет, и оно исчезает, когда человек, пусть даже профессор, перестает двигаться вперед. Эта необходимость движения выражается через употребление соответствующих языковых форм: недаром по-итальянски, т. е. на языке, идущем от древней латыни, школа — это «scala» (лестница).

Следовательно, самый главный тезис, отсутствующий в современной модели высшей школы, заключается в том, что должна быть перевернута вся система. Начинать надо с тех задач, подчеркну, профессиональных задач, которые обычно предлагаются на заключительном курсе, а их надо предлагать с самого начала подготовки, но так, чтобы они были посильны для студента, начинающего свое профессиональное развитие. И только тогда становится нужной та теория, которую ему сейчас вдалбливают на младших курсах и которая в таком отдельном виде (вне практических задач) ему не нужна. Так, математика для будущего физика — это инструмент, и встает вопрос, когда ему нужно давать эту математику. Инструмент, лежащий на полке — это не инструмент, значит, надо находить те профессиональные задачи, которые могут и должны быть освоены с помощью этого инструмента.

На эту тему были опубликованы тезисы моего выступления на Международной конференции 1996 г., посвященной столетию со дня рождения Л.С. Выготского. Высшее образование начинается, когда человек преодолевает свою ограниченность.

Нам с женой часто говорили: какие у вас умные дети! Школьную программу они осваивали, в основном, без проблем. Но для ребенка в любом возрасте

важно создавать ситуацию преодоления своих сложившихся возможностей, но именно это, по сути, и есть ситуация высшего образования: сделать так, как не сделал никто.

Здесь возникает вопрос к самим основам наших теорий, которые должны быть раскрыты не путем прослушивания и прочтения первоисточников, содержание которых становится актуальным лишь тогда, когда жизнь заставляет задуматься, а создавать проблемы, для которых эти идеи могут стать той ориентировочной основой, которая выступит руководством для решения этих проблем. Но даже Алексей Николаевич, умный человек, понимавший роль теории, всегда представлял такую схему: сначала надо освоить, интериоризировать то, что нужно, а уж потом экстериоризировать, т. е. реализовывать свои возможности. Подобная точка зрения требует принципиальной корректировки: интериоризация — это побочный продукт экстериоризации. И в той мере, в какой мы меняем жизнь, мы интериоризируем школу, знание и др. Они возникают как закономерный продукт моей деятельности, становясь формой моего понимания, принятой в данной социальной группе.

А.М. Я полностью согласен с тем, что Вы говорите про интериоризацию, но надо ли рассматривать ее как ключевой процесс? Многие беды современного образования связаны с непониманием роли экстериоризации, а не интериоризации.

Еще один вопрос в развитие того, что вы говорили. Видите ли Вы аналог, подобие моделированию как клеточке в подготовке архитекторов в вашей работе — в подготовке педагогов или психологов?

Н.Н. Я благодарен судьбе, что на этом этапе жизни я попал в наш университет. Главный лозунг здесь — «Университет для неравнодушных людей» — очень мне близкий, хотя равнодушных, т. е. тех, для кого все уже ясно, тоже, к сожалению, хватает.

Я считаю, что волонтерство — это главное, это ключ к профессиональной подготовке будущего педагога-психолога. Регулируемое волонтерство, когда будущие педагоги-психологи становятся педагогами-психологами уже на первом курсе, решая задачи, пусть и модельные (я знаю, что в Университете делается специальный симулятор подобного рода задач). Может быть, симулятор — неудачное слово, оно предполагает уподобление тому, что уже было. Не уподобление, а преодоление. Делать сегодня, исходя из того, что будет завтра. Это похоже на создание системы мастерских (как делали выдающиеся реформаторы педагогики начала XX века, типа Дьюи). Я готов в этом участвовать. Я читал курс бакалаврам третьего года обучения: по моему мнению, из 25 человек четверо явно готовы к такой форме работы. Задания профессионального уровня и специальной направленности, которые они смогут делать, обеспечат их профессиональный рост.

Студенческая научная работа — это научная работа студентов. Я готов взять подобную экспериментальную группу.

В.Р. У меня вопрос, связанный с тем, что Николай Николаевич был на острие противоречий между выготскианским и леонтьевским подходами. Это точка для нас остается центральной, потому что это разные истории в предмете исследования. Я полагаюсь в этом вопросе на мысли, высказанные В.В. Давыдовым. Но Николаю Николаевичу предстоит сделать доклад на эту тему.

В.К. Я ретранслирую вопрос, который задали наши общие магистранты первого курса. Ты скорректировал название нашей встречи, назвав себя не учеником, а учащимся. Как и чему учащийся профессор учится у своих магистрантов или же он работает с ними?

Н.Н. Я думаю, основа — это деятельностный подход. Меня никто не учит, кроме меня самого. В результате совместной работы я вскрываю и открываю себя для себя самого. Но себя уже другого, потому что в совместной работе возникает то, что я сам делать не могу. Как сказал поэт: «Голос единицы тоньше писка».

Я очень коллективен. Может быть, это связано с самым начальным этапом моей жизни. Возвращаясь к началу нашей беседы: я родился в исправительно-трудовом лагере под названием «А.Л.Ж.И.Р.» — Акмолинский Лагерь Жен Изменников Родины, в месте, где содержались жены «изменников родины». Туда попала моя мама из-за своего мужа, расстрелянного в 1937 г. Первые полгода своей жизни, до ее освобождения, я провел там, среди женщин, изголодавшихся по материнству. Наверное, поэтому я такой открытый миру человек.

И я учусь все время. Не проходит и дня, чтобы я не сделал запись или пометку в своих электронных дневниках относительно новой мысли, нового понимания, нового поворота. Я и студентов учу читать так, чтобы не довольствоваться первичным пониманием, когда, казалось бы, все ясно. Значит, ты еще не вполне готов. А если ты зацепился за какую-то мысль автора, то выдели ее и зафиксируй свою, возникшую благодаря твоему прочтению. При чтении других мы открываем себя. Тем самым я делаю шаг в своем понимании самого себя — как Мюнхгаузен, вытаскивающий себя за волосы.

Я не люблю термин «саморазвитие», употребляемый сейчас в психологической и педагогической литературе. Его можно уподобить онанизму.

Для меня очень важно, чтобы люди, с которыми я работаю, хотели бы изменить себя. И пытаясь помочь им в таких попытках изменить себя, я приобретаю больше, чем они, ведь за мной стоит background моей деятельности, которой у них еще нет или не было. У каждого возраста свои прелести.

В.К. А за ними стоишь ты со своим backgroundom, поэтому непонятно, кому повезло. Вопрос от участников: И. Кистяковская интересуется, какую работу вы считаете главной среди своих работ?

Н.Н. Может быть, неловко скажу, но каждую свою работу я считаю репрезентативной. Я пишу долго, каждую работу выстрадываю. Но, например, статья 1975 г. — я написал ее за 3 дня, она потом вошла в мой сборник работ, изданных в 2014 г. Эта статья называется «О механизме управления поэтапным формированием умственных действий и понятий». Там я впервые сформулировал точку зрения, что закон поэтапного формирования, т. е. психологический закон становления новообразований, может использоваться по-разному, так сказать, и в добро, и в зло. Под последним я имею в виду некоторые работы из школы Н.Ф. Талызиной, где поэтапное формирование понимается как шагистика: сено/солома. С подобной точки зрения первым, кто ввел поэтапное формирование в жизнь, был Петр I. Сержанты его армии, учившие строевому шагу неграмотных крестьян, не знавших, что значит право/лево, привязывали им к одной ноге сено, а к другой — солому. Так формировался правильный навык. Действительно, почти поэтапное формирование умственных действий и понятий: есть ориентиры, есть материальное действие, есть речевой этап, а мотивацию задавали командиры.

А. Шапиро: Мне интересно, как Николай Николаевич относится к изучению языков и сколько языков он знает?

Н.Н. Должен вас разочаровать, я не знаю ни одного языка, даже русский для меня — «terra incognita». Я учил французский, и, по словам французов, у меня неплохое произношение. Мне повезло: моя жена — лингвист и помогает мне в случае необходимости с английским. Моя дочь знает китайский, английский — в общем, я живу в языковом окружении. Работая в лингвистическом вузе, я всегда вспоминал одну поговорку: «В доме повешенного не говорят о веревке». Если бы я начал там распространять свой взгляд на язык и речь, мне бы стало там очень неуютно.

Надеюсь, Саша, я ответил на вопрос.

Я вижу среди участников нашей встречи своего друга по философскому факультету Геннадия Лобастова.

Г.Л. Я попал на эту сессию случайно, зайдя по ссылке. Я не знал о твоем юбилее, поздравляю от души. Я вижу в тебе одного из немногих серьезных ученых, кто вхож в философию и для кого философия — это не внешнее знание, а внутренняя потенция работы в собственной сфере. С тобой всегда интересно говорить, потому что у тебя есть философская культура, всегда проявляющаяся в твоем деле. Это не назывная культура, это культура творческого человека. Твоя позиция, которую я знаю и сейчас слышу, — в понимании того, что человек — это не некое извне питаемое существо, но человек, в форме активной творческой деятельности входящий в этот мир и этот мир изменяющий. И себя изменяющий. Замечательно, что ты видишь массу вещей, которые общественное сознание и научное сознание, как его часть, проглатывает и живет околонаучной пошлостью, притом считая, что это и есть научное сознание. Важно, что в твоей работе, тобою воспитывается глубокая философская культура. Желаю тебе успехов в научных делах, понимая, что ты в таких пожеланиях не нуждаешься. Но через это пожелание выражается отношение к человеку — к тебе. Я уверен, что твое отношение к науке, к другим, к самому себе никуда не денется, оно каждый раз становится все глубже, все интереснее, раскрывая смысл бытия в этом мире. Эта смысловая позиция нас объединяет.

Н.Н. Спасибо, Гена. Для меня очень важно наше сотрудничество по поводу научных конференций, посвященных Э.В. Ильенкову.

Г.Л. Коля, приглашаю тебя принять участие в следующих ильенковских чтениях.

Н.Н. Спасибо, очень интересно.

В.К. Думаю, после этого диалога уместно задать один из вопросов, посланный в чат. Вопрос: «Что вы думаете о проблеме идеального?»

Н.Н. Проблема идеального — нерешенная проблема.

Я в своих лекциях широко использую видеоряд, в том числе так называемые «гифки». Вот одна из них. Кота, сидящего на столе, заинтересовал стакан с водой, который стоит рядом с ним так, что он может опускать туда лапу и облизывать ее. Он повторяет эти действия, но в какой-то момент стакан исчезает, его убирают. Кот направляет лапу в то же место, но стакана нет, и кот «с недоумением» смотрит на экспериментатора.

Для меня этот маленький эксперимент — про проблему идеального. Для Ильенкова идеальное связано с человеком, с культурой. Для меня идеальное выступает так, как об этом говорил Гальперин: идеальное — это то, чего еще или уже нет, но с учетом чего я могу что-то сделать иначе. Выготский разбирал эту проблему в работе «Исторический смысл психологического кризиса», рассматривая ее как проблему кажимости. Он пытался уйти от этого, но в конечном итоге пришел к выводу: кажимость — это то, что возникает в ходе нашей деятельности и «начинает» определять нашу деятельность. И поэтому он зафиксировал: мир, с одной стороны, идеален — и здесь правота Ильенкова: мы видим мир только через призму идеального, — но с другой стороны, выступает неправота идеалистов: мы видим объективный мир через призму нашей деятельности и наших возможностей, постоянно возникающих в нашей деятельности и благодаря этой совместной деятельности.

Я пытался ответить на этот вопрос в своих курсах лекций: «Основы общей генетической психологии» и «Методологические проблемы психологии образования» — оба этих курса выложены на моем сайте.

В.К. Дальше серьезное послание и серьезный вопрос от Алекса Шмидта, предваряемый большой цитатой из Джона Донна.

Наука — часть человеческой культуры. Занимаясь научной, т. е. культурной деятельностью, вы являетесь частью научного глобального мира, российского академического сообщества и локальных сообществ в виде кафедр... Наука, и шире — культура, являются силой, преобразующей окружающий мир. Чувствуете ли вы как ваша деятельность и деятельность научных коллективов, частью которых вы являетесь, преобразует действительность и влияет на ход событий? Приведите, по возможности, какие-то яркие примеры.

Н.Н. Вопрос блестящий, но очень сложный. Его автор исходит из аксиом, что есть некая культура, и есть некая наука. Для меня это не аксиомы, а теоремы, потому что культура — это люди, считающие, что это устроено так, а это — эдак. Если они людоеды, то их культура людоедская, а если они порхают в эфире, то их культура эфирная. Мне трудно ответить на этот вопрос, потому что культура — это не мертвые останки, «былые останки немого прошлого». Об этом хорошо сказал Г. Лобастов; он, опираясь на точку зрения Э. Ильенкова, сформулировал и мою позицию: культура — это моя деятельность с другими людьми. И если я, как говорил булгаковский профессор Преображенский, начинаю мочиться мимо унитаза, наступает разруха. А если у вас в доме все чисто и приходящая уборщица говорит о том, как у нас чисто и какие мы культурные люди, то это значит, что она ощущает людей, а не то, что у нас чисто. Чистота для нее — свидетельство нашей культурности.

В этом вопросе проявляется своего рода культурный фетишизм. Мы все признаем шедеврами Джоконду Леонардо или Мадонну Рафаэля. Мы — это те, кто пребывает в соответствующем культурном контексте, т. е. за этим признанием — знание о том, какой огромный период времени прошел с тех пор, и это делает данные работы свидетельствами человеческой жизни прошлых эпох. Я видел эти работы в музеях. Джоконда Леонардо висит за стеклом, она относительно небольшого формата и на первый взгляд ничем не отличается от литографии, которую можно купить в магазине. Я думаю, что таким будет восприятие любого «ненасмотренного» человека. В этом случае визит в музей превращается в мероприятие «для галочки», по типу «Ося и Киса были здесь».

У меня сложное отношение к этой проблеме, и я боюсь, что разочарую автора этого серьезного и значимого для него вопроса. В целом, я отвечаю на него так: я лишь в той мере влияю на людей, в какой другие люди начинают влиять на других людей в заданном мною как бы векторе, а это происходит не всегда.

В.К. Автор уточнил свой вопрос: это вопрос о контексте окружающей нас российской культуры.

Н.Н. Культура нас не окружает. Если говорить о контексте российской культуры: я, Нечаев Николай Николаевич, есть фрагмент российской культуры, и то, что значимо для меня, есть фрагмент российской культуры. Но то, что значимо для меня, может быть совсем не значимо для других.

В пьесе Метерлинка «Синяя птица» дети встречают уже умерших, но как бы спящих дедушку и бабушку, которые говорят: «Мы оживаем, когда нас вспоминают». Культура живет, когда она жива в деятельности каждого из нас. Сама по себе она ничто.

В.К. Я тоже помню, как в детстве смотрел во МХАТе Синюю птицу. В сцене, где появляется Хлеб, я очень удивился, потому что узнал по голосу актера, игравшего эту замечательную роль. Это был Николай Николаевич Озеров, актер МХАТа, но я его узнал, потому что он был широко известен как лучший спортивный комментатор того времени, а я увлекался футболом и хоккеем.

Н.Н. Это блестящий пример: твоя хоккейная культура привела к тому, что ты видел актера не Хлебом, персонажем пьесы, а хоккейным комментатором.

В.К. Есть еще много вопросов, а мы работаем уже почти три часа. С учетом предстоящего семинара, в котором многое надо обсудить, я задаю последний вопрос. Если бы открылось окошко, в котором бы появился П.Я. Гальперин, какой вопрос, только один вопрос ты бы ему задал?

Н.Н. Ответ будет не в темпе «блиц», мне важно это проговорить.

Я уже говорил, что моя докторская защита состоялась 2 октября 1987 г., и это случайно совпало с днем рождения Петра Яковлевича, ему в этот день исполнилось 85 лет. Он не смог быть на защите, но пришла одна из его учениц Лада Иосифовна Айдарова и в своем выступлении передала слова самого Гальперина: «Это для меня большой подарок — Коля сегодня защищает докторскую диссертацию».

Я уверен, что если бы он появился в окошечке, он бы спросил: «Коля, как дела?». А я бы ответил: «Хорошо. Двигаем науку. Думаю, Вам было бы интересно узнать, что оба — и Выготский, и Леонтьев — были не совсем правы, а Вы, Петр Яковлевич, оказались правы. Вы в своей теории поэтапного формирования постарались их соединить, пусть и механистически». (Наверное, я нашел бы другие слова.) Но идея была схвачена. И за это мы Вам очень благодарны».

В.К. Позволь еще раз поздравить тебя с юбилеем. У тебя все есть, и есть еще перспектива. Сам факт, что мы почти три часа беседуем online и, кажется, еще не устали: многие остаются до конца, и это замечательно. Царящий здесь дух вдохновляет, энергетизирует и бодрит, направляет на то, чтобы говорить дальше. Все это — о том, что ты молод. Перефразируя Сальвадора Дали, я мог бы сказать, что твоя молодость и твоя личность намного крупнее, чем твой талант. У плохого таланта — наоборот: он вырывается вперед, и личность ползет за ним долго-долго. Мы тебя

любим и всегда ждем встречи. Огромное спасибо, что ты согласился участвовать в этой встрече.

Н.Н. Володя, большое спасибо. Очень рад был видеть всех, включая и магистрантов — здесь Татьяна Попова, магистрантка прошлого выпуска, Володя Рыжков, мой коллега по Госкомитету по народному образованию, в котором я работал в эпоху перестройки, — и всех остальных. Всем большое спасибо.

Хотел обратиться к ректору: Аркадий Аронович, я прошу извинения за то, что порой говорю жесткие вещи, хотя и пытаюсь найти для них щадящую форму.

В.К. В этом твоя прелесть, за это тебя ценим. Много благодарностей в чате.

Н.Н. Хотел еще отметить, что очень рад на этом этапе оказаться в психолого-педагогическом университете, где, «куда ни плюнь», одни психологи. В течение жизни я не всегда был в своей профессиональной среде, поэтому очень благодарен Виталию Владимировичу за приглашение работать в Университете. Оно поступило уже давно, но я не мог нарушить прежних обязательств и перешел в МГППУ лишь несколько лет назад. И я очень рад.

В.Р. Несколько слов в завершение. Думаю, нам очень повезло, что Николай Николаевич, Коля является нашим современником. Для меня важно, что и кафедра, и университет, и научное сообщество говорит о том, что Вы, конечно же, находитесь в культурном пространстве, у которого есть и значения, и смыслы, и которое продвигает себя, благодаря тому, что оно движется в смыслах и значениях.

Н.Н. Согласен.

В.Р. Поскольку эта общность все время продвигает внешнее, а без этого нельзя, то она и развивается. И Вы вместе с ней. А мы вместе с вами. Поэтому я очень рад, что состоялась наша встреча и мы можем все вместе двигаться в культурном поле людей и идей. Судя по всему, у нас это получается. Большое спасибо Владимиру Товиевичу за то, что он старался держать в узде Николая Николаевича, что в целом невозможно, но ему это удалось.

Николай Николаевич, берегите семью, она у вас очень хорошая.

Н.Н. Большое спасибо всем.

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