

Impact of Computer Games on Social Determinants of School Readiness in Preschoolers

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The article focuses on how reduction of the preschoolers' traditional game and its substitute by computer games affect the social development of children at the end of the preschool age as well as their readiness for school education with regard to the social determinants of their personalities. This study is a part of a series of works dealing with: 1) social maturity as a specific new formation in personality of children, entering upon systematic schooling, and 2) assessment of factors, determining the quantitative and qualitative characteristics of this new formation. To clear up the logic of the current study, we consider it necessary to familiarize readers with the content of the preceding phases.

1. Introduction

1.1 The purpose of the preceding study

The main purpose of the study, carried out in early 2000es, was to test the hypothesis that the real role behavior (as an opposite to the pretend play behavior) as a special form of voluntary self-regulation, typical for 6-7 year-olds, reflects the child's concept of his/ her social competence and his/ her special attitude to this quality of self and thus can be regarded as a unit of analysis for social development in preschool age and as an indicator of the child's school readiness on this parameter.

The necessity to go back to the issue of social competence in children at the turn of the preschool and school age was brought about by dramatic changes in preschool education at the end of the 20th century (namely, decrease in the number of children attending pre-school kindergartens and a lower age at which kids started to go to school). Established as a fact by educators and scientists the so called social infantilism was reported to be the reason for poor academic achievements and school maladjustment in junior school students, including those, who were

diagnosed as ready for school on such commonly used criteria as: intellectual development, object-related activity, psycho-emotional status, etc. (Illesh E./ Venger 1988, Elkonin 1989, Venger 1988). At the same time, specific knowledge about the social competence of children in pre-school age as well as the ways of measuring levels of "social maturity" of preschoolers were extremely contradictory and incomplete.

We see the reason for this in the fact that in Russian psychology the sphere of child's social relationships with others was traditionally regarded as a context of his/ her general development. Sociogenesis and ontogeny were always treated as identical concepts (Vygotsky 1983, Leontiev 1978, Rubinstein 1957). There were only a few studies in Russian genetic psychology that focused on child's social competence as their special object of research. They described it as a child's capacity to get oriented in the system of social relationships, to cognize its specific laws and actually be involved in it (Bozhovich 1995, Zaporozhets 1978, Venger 1988, Elkonin 1989).

However, the generally accepted term for this ability has not been worked out. Writers often use either conventional definitions, or notions, actually narrowing the scope of functionality of the terms, used for designation of this ability. Correspondently the scientists' views of child's social qualities are contradictory enough, and absolutely different aspects of social activity of preschoolers become the object of their study, e.g.: social reflection, ethical standards, moral regulation of behavior, personality traits which can complicate or facilitate child's contacts with other people (such as altruism, conformity, aggression, shyness, etc.). This leads to the confused phenomenological picture of "social maturity" of children at the turn of the preschool and school age.

Considering this, we initiated a series of studies aimed at systematic examination of preschooler's social development in ontogenesis with regard to his/ her personality development and the selection of the unit of analysis for social development of pre-school children, able to simultaneously make a reliable indicator of the age and individual level of social competence of young children.

1.2 Theoretical approach

The methodological basis of the study was the Vygotskian concept of age and his idea of development of child's personality in ontogenesis as its qualitative transformation (within the crisis phase of development), and shaping specific (central for the age) new formations, which integrate the developmental processes of the previous stable phase and set the direction of development for the coming stable age. Personality in our study is understood as a system of attitudes, social in nature and directed simultaneously to the object-related world, to other people and to oneself (Lisina 1986, Rubinstein 1957). The attitude to the self sets the semantic orientation in human life (Lisina 1986). Child communicative activity with adults is believed to be the leading factor of his/ her personality development. In this type of communication the child's "self-image", as the specific affective-cognitive unit, reflecting the ontogeny of his/ her self-knowledge and self-esteem, is shaped. Child's image of self integrates the experience of his/ her individual activities and communicative experience that in total determine the character of his/ her activity (Lisina 1986).

In our study we also maintained the definition, given to psychological content of personality new formation emerging at the end of the preschool age, as connected with the shaping of the "feeling of social competence", which was proved to be connected with child's integral attitude to the surrounding physical and social world and to self as its part. It was reported to generalize child's experience of self-cognition, self-estimation and self-regulation in situations of solving social tasks (Ermolova/ Komogortseva 1995).

1.3 Aims and objectives of the study

We carried our several studies to test the following hypotheses: 1) The child's social competence at the end of preschool age manifests itself as a constellation of preschooler's views about his/ her social qualities and his/ her attitude to self as a subject of social relations, and provides a particular kind of self-regulation – the real role-behavior. 2) The real role-behavior is closely linked with the content of the leading activity of the following stage of development – learning activity, typical for junior schoolchildren. 3) The major factors of formation of real role-behaviors in ontogenesis is their age-appropriate communication with adults and peers, and the traditional game.

In testing the above mentioned hypotheses we were solving the following tasks: 1) designing and testing the experimental technique, allowing to produce quantitative and qualitative assessment of the non-play role behavior at the end of the preschool age, 2) description of the real role-behavior in preschoolers, 3) establishment of association between the specificity of the real role-behavior of 6-7-year-old and their readiness for school, 4) identifying influence of preschoolers' social experience on their adjustment to school.

1.4 Experimental models and samples

At the first stage, in the sample of preschoolers aged 5-7 years we measured the levels of their development with regard to 5 variables: "general intellect", and "social cognitions" (recognized by several researchers as the main sources of social content in the structure of self-consciousness in children); "form of communication with adults" and "game activity"(as defined in the science as the main factors for mental and personality development in the preschool years); as well as the features of the "real role-behavior". Diagnostics and evaluation of the development of children on the mentioned above parameters were carried out using tests developed in the laboratory of mental development of preschool children (Smirnova/ Ermolova/ Galiguzova/ Meshcheryakova 2008).

At the second stage, we were examining the levels of school adaptation of the same participants (aged 7-8 years) with application of the following variables: "academic achievement", "school behavior", "sociometric status", "mastering the elements of learning activity".

"Academic achievement" was measured as an average of three school grades (in mathematics, writing, reading). The "sociometric status" was determined with the help of the adapted sociometric test. Features of "school behavior" were evaluated in the standardized observation of children's behavior in class and during their free time from the point of view of its conformity with the requirements of the teacher. "Mastering the elements of learning activity" was estimated in a specially designed experimental situation, approximating it to children's joint performance aimed at solving the teacher's task (Pantsirnaya 2000).

The main experimental method, used for assessing and analyzing the specificity of the real role behavior as a behavioral correlate of the personality new formation

of preschool age, was the laboratory experiment “Role oppositions”. It was designed to simulate the situation of the child’s fulfilling a social task in the course of his/ her joint activity with a peer. This situation helped to actualize the child’s image of self and attitude to self as to a subject of specific social activity, and made it possible to stimulate a special kind of social actions arising from this kind of understanding and assessment of his/ her relations with partners.

1.5 The experimental situation “Role oppositions”

Two participants were invited by an experimenter into an isolated classroom. Their pairing was held on a voluntary basis. Then the children were told that their task would be to make a drawing and they were seated next to the table on which there were the standard album sheets and color pencils. Then the experimenter reported that the drawing was not going to be a usual one and asked each of the participants to indicate what they would like to draw. After the verbalization of the participants’ intentions was over, the experimenter announced that each of them in turn would realize the drawing project of his/ her partner and not the one of his/ her own.

Several rules of behavior in experiment were introduced by the experimenter. The “author” of the drawing project was supposed to explain in details the idea of his/ her plot and was given a right to regulate the process of its fulfillment and estimate the result. Simultaneously the “author” was forbidden to draw instead of a partner. The “executer” of the drawing project was not allowed to substitute the “author’s” project by the one of his/ her own or ignore the remarks of the “author”. The “executer” also had a right to ask for extra explanations and discuss the quality of his/ her drawing with the “author”. The role-behavior of each participant in both positions (active – “author” and passive – “executer”) was estimated in conditional points with an aid of a specially designed scale.

The experiment designed in this way made it possible to objectivize the *social character of the experimental task* (joint activity with a peer implemented from a perspective of a particular role), to measure the adequacy of *role-mastery* in various positions, the *subjective value* of a certain position for the child and the *experience of his/ her compliance* to it, child’s *views on rules* of conduct imposed by a definite position and his/ her *attitude* to the violation of experimenter’s instructions by him/ herself or by a peer. In general this experimental model offered an

opportunity to assess the preschooler's image of self and attitude to self in a certain position and also specific forms of his/ her role behavior in it.

1.6 Discussion

The analysis of the specific repertoire of children's behavior in the experiment made it possible to develop a scale that allowed to carry out the qualitative analysis of child activity in the experiment and to express the behaviors we observed in conditional points through the establishment of the developmental levels of each aspect of children's activity.

The behavior of children in the experiment was estimated from several viewpoints: *ability to accept the social task; emotional involvement in socio-centered activity; influence of the occupied position on behavior; observation of formal rules; retaining the initial sense of the experimental task.*

The analysis of children's behavior in the experiment allowed distributing them into three groups: with low, medium and high level of development of the real role-behavior and to analyze the behavior of each group separately. The ratio of children in groups with different levels of development of the real role-behavior in 6-7-year-olds was as follows: low-17%, medium-26% and high-57%. Typical behaviors of children in each group were as follows.

Children in Group 1 (low total scores on the real role-behavior – 17% of children) tended to ignore the social content of the experimental tasks, and sometimes refused to carry out the drawing project of the partner. Their emotional involvement in experimental situations was usually high but non-specific, i.e., they used to substitute the initial goal by the ones of their own. For example, a child was drawing something on his/ her own initiative and then put wise to his behavior as connected with impossibility to draw on someone else's idea.

Sometimes the children of this group resorted to "social" ways of transforming the initial plot of their partners, i.e., tried to spirit them for changing their initial plan and giving them the one they could carry out ("Let us say that you have changed your mind and now you want me to draw a cat, because I don't know how to draw a Robocop"). Children in this group display extremely weak ability to keep an adequate role behavior in both positions. For example, they oppose the implementation of partner's rights to regulate their actions, they take offence at every remark

of the peer, but simultaneously they are very critically-minded in their estimations of their partners. Also, they tend to look for the adult's not the partner's approval of their drawings. In Group 2 (with an average level the real role behavior – 26% of children) participants rarely take the experimental task as a nominal one and therefore not obligatory for precise execution. However, like children of the previous group, they sometimes transform it into a task of just drawing on a particular topic. Yet, part of the subjects manifests the ability to withhold a social context of the experimental situation and are capable of attaining and observing the rules of the experiment either in the position of the “author” or the “executer”. Their involvement in the experiment is more specific: they clarify the action rules, his/ her rights and obligations in a certain positions, but they do not always hold them in memory until the end of the experiment. Their behaviors in different roles appeared sensitive to the positions they occupied in the experiment, but not always consistent or free from partial distortions. They are more accurate in explaining the details of their drawing projects to their partners and display more adequate ways of regulating their partner's activity (e.g., they do not try to draw instead of a partner). However, they often estimated the peer's drawing at a low rate and asked the experimenter to let them show “how to draw”.

In group 3 (with a high level of development of “real role-behavior” – 57% of children) there appeared a special attitude to experimental settings. The experiment was not perceived by them as an interesting game or an unusual session of drawing, but as a special task, the main feature of which is their responsibility for the partner's success in implementing their drawing project and the extent to which their own performance will meet the requirements of the “author”. It was typical for children in this group to give a clear and detailed description of their projects and also thorough familiarization with the details of their partners' drafts. They often demonstrated a high degree of awareness of the abilities of other children (“do not erase much, always you have dirt in the picture, and I don't like it, and then I'll say: ‘poorly made’”).

Children in this group appeared capable of observing the rules of the experiment in both positions, though sometimes they were too ardent in one of the roles, for example, in the position of the “author” of the project where they were mercilessly criticizing the drawings of their partners or commenting on every step in the implementation of their projects. The active position (the position of the “author”)

is easily assimilated by all the children of this group, and in the passive one (the position of the “executer”) several children resorted to the transformation of the task in case of difficulty in its fulfillment (e.g., “Come on, say that my picture is all right, and I’ll say the same about your picture”).

In this group, children rarely demonstrated the interference of interpersonal relationships and communicative experiences with their partners into the implementation of the experimental task. They kept “fair” position even if they had fellow feelings for failing partners: they provided maximum of “legitimate” support to them, but never tried to break the rules to help out.

The typology of children’s behavior in the experiment “Role oppositions” shows the main areas in which we may observe differences between them.

First of all, it is a motivational sphere, providing specific (social and personal) or nonspecific (game-related and object-related) drives for action.

Second, it is the stage of their personality development, reflecting the presence or absence of the child’s ability to recognize and experience the experimental task as subjectively significant for him; his/ her attempts to select and implement particular ways of its solving, and his/ her capacity to hold in memory the criteria of “proper” behaviors and self-estimation in accordance with these criteria.

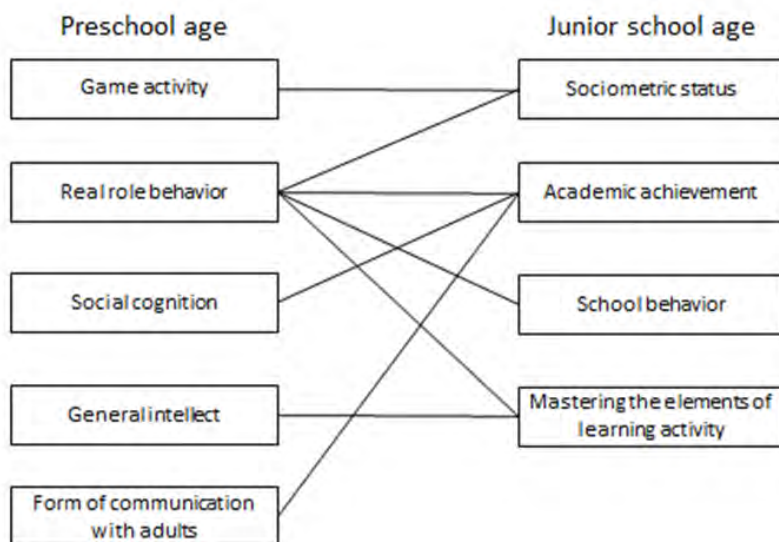
Third, it is a behavioral sphere, showing the presence or absence of the children’s ability to organize themselves in the situation of social tasks solution, i.e. the adequacy of their role behavior in a certain position.

Together they determine a child’s ability to comprehend the social content of some tasks and to select appropriate forms of voluntary self-organization for their implementation, i.e. they provide the measure of child’s social competence at this age. The behavioral component, especially the real role behavior, acts as an objective measure of social components of child’s self, as it is extremely sensitive to deficiency of other components or their deformities, and, as the experiment shows, it generally does not reveal itself in children with lack of expressed social motives or social criteria of their self-awareness.

On the second stage of the experiment, we evaluated the peculiarities of school adaptation in subjects, taking part in the 1st part of the experiment on the param-

eters of academic achievement, school behavior, sociometric status and mastery of the elements of learning activity.

To illustrate the results of this part of the study we used the figure published in the article written in co-authorship with E. Pantsirnaya (2000) that contained the correlation analysis of developmental indicators of 68 children who participated in the 1-st and the 2-nd parts of the experiment (preschool and junior school age). It displayed the significance of links between the certain developmental indices of children at the end of the preschool and the beginning of school ages and made it possible to discuss the predictability of “real role behavior” as a reliable criteria of assessing school readiness (see picture 1).



Picture 1: Measure of correlation between the indices of child development in preschool and junior school ages

1. Spearman coefficient of correlation was applied to reveal correlation between the indices of child development in preschool and school ages.
2. The arrows show the significance of correlations at 0.01 level.

1.7 Conclusion

The results of the correlation analysis showed that almost all the parameters of children's activity in preschool age (except the real role-behavior) had single or numerically insignificant links with their school activities. Yet, their ability to exercise self-regulation in the form of role-behavior was associated with all the parameters of their school life. It correlated not only with the social activity of junior schoolchildren, i.e. their relationship with the teacher (school behavior) and peers (sociometric status), but with the mastering of the elements of learning activity (the leading activity of the school age). At the same time, game activity manifested a poor predictability of participants' social development. Actually it only defined sociometric status of children in a group of classmates.

In other words, the study showed the close relationship between the level of the real role-behavior in senior preschoolers and their success in mastering the integral system of learning activity at school, which indicates the necessity to take into account the level of child's social competence (including his/ her ability to be engaged in real role-behavior with people around) when evaluating his/ her readiness for school education.

2. The current study

Two decades after the previous study, we made an attempt to go back to the results of our work in order to find out whether the real role-behavior retained its predictability in assessing the children's readiness for systematic learning, or whether it has lost its potential due to active interference of computer games into preschoolers' life thus reducing the amount of traditional symbolic game and transforming their relationships with adults and peers. If so, what form does the social competence acquire in preschool children nowadays?

In other words, we wanted to clarify the features of the real role-behavior in today's preschoolers and examine its dependence on gaming and communication activities. We do not claim that computer games in preschool children necessarily provide the negative impact on a child's social competence; however, we assume that they arrange preschoolers' communicative acts differently than the traditional game. In our last study, game activity (in the form of a traditional symbolic game) was not regarded as the leading factor in determining the quantitative and qualita-

tive characteristics of the real role-behavior of children. However, its relevance to the process of personal development in childhood is recognized by many scientists, as well as its dependence on the nature of the child's communication with adults and peers. As for computer games, their "contribution" to the developmental processes in the preschool years is still not fully clarified.

If we turn to empirical studies on the issues of computer games in early childhood we'll see that the attitude to early experience in computer gaming is rather ambiguous among researchers. Many studies suggest that computer games have a generally negative impact on a child as computer games with violence, criminal behavior or offensive themes can increase negative behavior in children.¹ Some researchers state that only video games which are solitary in nature can lead to disintegration of social fabric, and encourage children to spend their time in isolation and not from meaningful bonds with their peers. Although this might continue to be true for many games, the growing popularity of massive multiplayer role-playing games suggests that they have the potential to encourage cooperation and a degree of socialization. Some researchers found positive effects of moderate computer gaming on computer competence, cognition, and school readiness (Provenzo 1995). A study by Li and Atkins (2004) shows that students who play games on a weekly basis have improved hand-eye coordination and marginally higher IQs than their non-game-playing peers. School performance also increases slightly, though those students who play games on a daily basis lose this edge and actually perform more poorly at school than those who play no games at all.

Following the line of reasoning, we found it necessary to start a pilot research in order to examine whether the nature of the real role-behavior (which was regarded earlier as predictable for school readiness) transforms in children with regular computer gaming experience and whether this change is the same for children with different experience of communication with adults and peers (e.g. in children being brought up in the family and in the children's homes for orphans). This experiment has not been completed fully and not all received data are processed. So, we present the preliminary results. They seem to be interesting though disputable and requiring further examination.

¹ National Center for Education Statistics. Young Children's Access to Computers in the Home and at School in 1999 and 2000.

In response to this task we have carried out the comparative analysis of the real role-behavior in a group of preschoolers aged 6-7 years alongside with the level of their development at the end of their first year at school (at 8 years). The participants (202 boys and 110 girls) were divided into two groups, differing in communicative experience with adults and peers (children being brought up in the families – F group and in the children’s homes for orphans – O group). They were further subdivided into two subgroups (78 participants in each), differing in experience of their play activities (with or without an experience of computer games). They were labeled as F- and F+, O- and O+ subgroups (- and + meant the absence or presence of computer games experience in children).

This kind of sampling allowed assessing the “contribution” of the participants’ communicative experience with adults and peers and their gaming experience to the processes of development in the preschool years. Namely, children who were brought up in the families (F-sample) had full-scale contacts with adults and peers, and different experience of gaming activity. Children growing up in an orphanage (O-sample) were lacking communication with adults, had dissonant relationships with peers and also different experiences of gaming activity.

The specificity of participants’ development in this series of experiments was evaluated according to the same parameters and with the help of the same methods as in the previous series (assessment of their real role-behavior at the end of the preschool age and examination of their school readiness with regard to their academic achievements, sociometric status in a group of peers, school behavior, mastering the elements of learning activity).

The assessment of the real role behavior according to qualitative characteristics used in the previous study made it possible to estimate its formedness² as high, medium or low in a new sample of participants.

² Formedness – is a new word in psychology that appeared after the latest wave of penetration of Vygotskian ideas into the Western science. It is a direct translation of the Russian term “сформированность”, which does not have a proper English equivalent. It means in general “the result of the process of formation of some function or a phenomenon, when they reach their complete or final (sometimes typical for age) form. This word roots from the words: Form, formation, formed. It can be substituted by the word “maturity”.

Indices of the 1st sub-group (F-) on the real role behavior actually coincided with the data obtained in the previous study: 15% of the children in the sample showed a low level of development according to this index, 29% participants were rated as medium and 56% – as high. It is likely that the socio-cultural context of participants' development in the 1st subgroup (F-) completely coincided with the one which was previously studied. Ratings of the participants in in three other subgroups differed from previously received data.

In the 2nd sub-group (F +) the percentage of children with a high level of formedness of the real role-behavior unexpectedly turned out to be lower than in the 1st sub-group while the medium level was the most expressed one: 25% of children in the sample showed a low level of development, 54% – the medium one and only 21% were rated high.

In the 3rd subgroup (O-) the rating distribution was as follows: 40% of children had low levels of the real role behavior, 47% – medium one and 13% – high levels.

In the 4th subgroup (O+) the rates were higher than those in subgroup 3, including orphans who had no access to computer games. Distribution in this sample was similar to F- subgroup, including children with family upbringing and having access to computer gaming: 26% of children had low levels of the real role-behavior, 50% – the medium one, and 24% were rated high.

Qualitative analysis of children's behavior in the experiment "Role oppositions" revealed the following differences in two samples of participants as connected with their communicative experiences with adults and peers (F and O samples).

As far as the children's *ability to accept the social task* is concerned we rated children with regard to their capacity to perceive the social sense of the experimental tasks and to focus on it in their actions. In O group it was significantly lower than in F group, but in the O+ subgroup it exceeded the indices of O-subgroup.

On the parameter of "*emotional involvement in socio-centered activity*" the differences in children's behavior were discussed from the point of view of their emotional and cognitive attitude to the experimental task and the number of deviations from its initial content. Emotional involvement into the experimental task was fairly high in all the participants in both groups, but the cognitive attitude was more pronounced in participants of F+ and O+ subgroups.

As far as the *"influence of the occupied position on behavior"* is concerned the differences displayed themselves in presence or absence of role behaviors appropriate to the occupied position. Here, the highest rates were in two groups: F- and F+. The participants in O- and O+ subgroups were not sensitive to changes of positions and often displayed similar behaviors in different positions.

Differences in participants' *"ability to observe formal rules"* were regarded as keeping in mind the experimenter's instructions and observing them in solving a social task. It could also display itself as child's complains about breaking the rules by peers, or an attempt to clarifying the prescribed rules for "authors" and "executors". The lowest rates on this parameter are observed in both O samples and sometimes in F+ subgroup.

The capacity *"to retain the initial sense of the experimental task"* was distinctly expressed F+ and O+ subgroups. The participants in subgroups without an access to computer games (F- and O-) were rated lower according to this parameter.

An overall picture of the behavior of children from F and O samples in the experiment shows that for a significant number of children with family upbringing a role self-organization in the situations of solving social tasks becomes a typical form of activity at 7. Children start assessing the capabilities of their own and of their partners' when distributing obligations and responsibilities in the experiment or estimating the reliability of peers. They control the compliance of their actions and the actions of the partner to the prescribed rules, become interested in adequacy of the peer's social behavior and practice non-aggressive ways of resolving conflicts.

Role self-organization of 7-year-olds living in the orphanage can be observed in a smaller group of participants. Children in this sample are rather selfish and hardly capable of cooperative interaction with the partner in the experiment. They are more aggressive in expressing disagreement with the peer's assessment, in general are less sensitive to peer's opinion, and usually look for the adult's approval of their performance.

School readiness being regarded on the part of preschooler's social competence, manifesting itself in real role behavior, made it possible to predict that the number of children in our experiment who were objectively prepared to systematic learn-

ing were: 56% of the children in the sample F-; 21% of children in the F+ sample, 13% of the children in the O- sample and 24% of children and in the O+ sample.

This data also allows us to conclude that access to computer games reduces the level of the real role-behavior in F-samples and increases it in the O-samples.

The next step was to evaluate the peculiarities of children's development at the end of the first school year on the parameters characterizing their school activity. At this stage of the data processing we can provide only preliminary scores, describing the rate of children with high, above average, average, below average, and low level of development on each parameter of observation in each sample: (F-), (F+), (O-) and (O+). This data is presented in table 1.

As the results of this part of the experiment show, preschoolers having full families and visiting kindergartens (subgroups F- and F+), were ahead of their peers living in an orphanage on almost all the parameters of observation. They have better academic achievements, they are more ready to accept the necessary forms of school behavior, and they are more successful in mastering the elements of learning activity. At the same time, children in this sample with different experiences in play activity at the preschool age differ a lot. The unexpected result was that children with the experience of computer gaming before school have lower rates on the parameters of academic achievements and mastery of the elements of learning activity.

Children with the orphanage background (subgroups O- and O+), though rated lower than peers, living with parents, for the most part of activities in school settings, however, seem to do better at school if they had an experience of computer gaming before school. In this case they significantly outpaced their peers with an orphanage background, who had not had the opportunity to use the computer before.

Table 1: Levels of school-related activity in junior schoolchildren with various communicative and play experience.

Parameters of development	Samples	Levels of development				
		High	Above average	Average	Below average	Low
Academic achievements	(FC-)	52	26	17	5	0
	(FC+)	6	67	20	7	0
	(O-)	3	1	64	27	5
	(O+)	44	20	18	13	5
School behavior	(FC-)	55	36	9	0	0
	(FC+)	45	30	12	13	0
	(O-)	20	40	13	27	0
	(O+)	11	56	22	0	11
Sociometric status	(FC-)	25	21	33	17	4
	(FC+)	20	20	33	20	7
	(O-)	0	7	29	42	22
	(O+)	0	17	49	20	14
Mastery of learning activity	(FC-)	37	13	25	25	0
	(FC+)	0	16	67	17	0
	(O-)	0	0	12	74	14
	(O+)	7	14	42	17	20

In general, the qualitative analysis of the participants' activity in the school settings has shown that in a sample of children living in children homes for orphans (O sample), who had the potential opportunity to interact with peers but experienced lack of communication with adults, all indicators of development are lower than in the F sample. They have a poorly formed capacity for collective forms of activity with peers and weakly expressed understanding of the peers' qualities. These children show a high degree of adaptation to school from the perspective of the normativity of behavior in the classroom (they raised their hand to show that they know the answer to the teacher's question, readily lined up, and positively perceived the teacher's limiting instructions). At the same time, they have trouble in mastery of the elements of learning activity, and do not remember the specific conditions of the forthcoming activity. Their academic achievement is significantly lower than that in F samples.

Children who had full-scale and adequate for their age contacts with adults and peers before school (F sample), reveal a wide variation in indices of their development at school. They are not necessarily high rated students with a high level of self-organization in the class-room. They may have both high and low sociometric status, be exemplary students or violate the discipline at the lesson, but it is only in this sample where the participants demonstrated high levels in mastering the elements of learning activity.

Comparison of samples with different experience of communication with adults and peers shows that these two spheres of communicative activity in children have different effects on the emergence of child's social behavior. With a deficit of communication with adults (O sample) the child aged 7 years is not aware of his/her social qualities and is incapable of independent relations with peers. Lack of communication with peers even if it is accompanied by full-scale contacts with adults leads to distortions in child's self-esteem in situations of solving social tasks, inadequacy of his/ her group behavior caused by high levels of egocentrism and insensitivity to peers' initiatives. Experience of computer gaming in pre-school age, partly smoothes away this difference, but did not completely eliminate it.

3. Conclusion

At the age of 6-7 years, many children (though not all) are able to take different positions in their relations to surrounding people, and behave in accordance with them. Our study shows that it is this very ability of a child that determines the specificity of his/ her real role-behavior at the end of preschool age as well as his/ her readiness for productive forms of cooperative interactions with peers in situations of educational type.

The preschool experience of regulating contacts with peers, cooperation with peers in solving practice-related, cognitive and personal goals help the 8-year-olds to gain the ability to navigate through the business and personal qualities of peers, rely on these qualities in their joint activity with them, take them into account in arrangements of their own affairs and to seek recognition on the part of the peers.

Alongside with acknowledgement of an adult as a teacher, junior schoolchildren seek for recognition on the side of peers, who seem to become a mighty stimulus for self-improvement in junior schoolchildren.

The preliminary results of our study showed that children who lacked communication with adults, display insufficiently expressed ability to perceive the peer in all the positions possible for this age. Children with orphanage background rarely regard the peer as an object for imitation, as an equal partner, and as a judge of their accomplishments. More often, they consider a peer to be a rival standing between them and an adult, who has an absolute value for them. Children aged 7 with secure family background strive to communicate both with peers and adults.

It results in impoverishment of orphans' social contacts (e.g. they have trouble in making friends with peers). Their contacts are situational, dissonant and emotionally cold. The peer does not attain the quality of an additional source of knowledge and education for orphans living in children homes.

To sum up, we believe it is necessary to emphasize that the development of the child as a subject of social relations at the end of preschool age is not a purely intellectual or cognitive act. It is not a kind of insight, leading a preschooler to understanding of his/ her social entity. This quality is being formed gradually in the course of specific interaction with other people through taking the corresponding positions in interrelations with them.

It is in the course of this interrelation that the child cognizes the attitude of other people to his/ her social qualities. This knowledge enriches the cognitive areas of child's image of self through clarifying the idea of social sphere of human life in general and the one of his/ her own in particular. Closer to the 7th year of life the experience of real role-behavior penetrates into the nuclear areas of child's image of self and arises a specific experience of success in situations of social interactions.

Real role-behavior of preschoolers becomes the main activity into which children project themselves. It becomes an area in which child's self can become an object of assessment on the part of other people and in which new criteria for child's self-estimation (as social self) are being shaped. Communication with adults and peers is the leading factor of the role forms of social behavior. In communication with the surrounding people children single out attain the other people's attitudes to the specific (social) qualities of their selves. These attitudes are then interiorized and become psychological signs providing new means of self-cognition, self-estimation and self-control in situation of solving social tasks, that is, the task.

The change of play activity in preschoolers, the substitute of the traditional symbolic games by computer games seems not to affect the processes of socialization in 6-7-year olds if they have full-scale interrelations with relatives and peers. More so, computer games may have a positive effect on academic achievements in children with disadvantaged social background.

References

- Bozhovich, L.I. (1995): *Izbraniye psichologicheskiye trudy*. Moscow, 17-117.
- Elkonin, D.B. (1989): *Izbraniye psichologicheskiye Trudy*. Moscow, 123-263.
- Ermolova, T.V.; Komogortseva, I.S. (1995): Temporal aspect of self in senior preschoolers. In: *Voprosy Psichologii*, 2, 47-59.
- Ermolova, T.V.; Pantsirnaya, E.V. (2001): Role behavior and school readiness of 7-8-year-olds. In: *Psychological Science and Education*, 1, 38-45.
- Ermolova, T.V.; Kiryushkina, M.S. (2008): Problems of social development in early age. In: *Vestnik Volgogradskogo pedagogicheskogo Universiteta*, 5, 45-48.
- Galiguzova, L.N. (2001): Stanovlenie otnosheniya k sverstniku v ranem vozraste. In: *Interpersonal relations of a child from birth to 7 years*. Moscow, 5-97.
- Illesh, E.; Venger, A.L. (1988): Changes in child's relations with adults. Peculiarities of psychic development of children aged 6-7. Moscow, 34-48.
- Li, Xiaoming; Atkins, M.S. (2004): Early Childhood Computer Experience and Cognitive and Motor Development. In: *Pediatrics*, 113, 1715-1722.
- Leontiev, A.N. (1978): *Activity, Consciousness, and Personality*. Hillsdale.
- Lisina, M.I. (1986): *Issues of ontogenesis of communicative activity*. Moscow.
- National Center for Education Statistics (2003): *Young Children's Access to Computers in the Home and at School in 1999 and 2000 (NCES 2003-036)*. Washington, DC.
- Provenzo, E.F. (1995): 'Brave New Video': Video Games and the Emergence of Interactive Television for Children, Taboo. In: *The Journal of Culture and Education*, 1, 1, 151-162.
- Pantsirnaya, E.V. (2000): *Real role behavior as a factor of school readiness*. Cand. Diss. Psychological Institute of Russian Academy of Education. Moscow.
- Rubin, K.; Krasnor, L. (1986): *Social cognitive and social behavioral perspective on problems solving*. Minnesota.
- Rubinstein, S.L. (1957): *Being and consciousness*. Moscow.
- Smirnova, E.O.; Ermolova, T.V.; Galiguzova, L.N.; Meshcheryakova, S.Yu. (2008): *Diagnostics of psychic development of children from birth to 3 years*. Moscow.
- Venger, A. (1988): Development of social emotions in 6-7-year-olds. *Collection of articles*. Moscow, 4-11.
- Vygotsky, L.S. (1983): *Problem of development*. *Sobranie sochinenii*. T. 4. Moscow, 5-314.
- Zaporozhets, A.V. (1978): *Main problems of ontogenesis of psyche*. *Current problems of contemporary psychology*. Moscow.

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