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**PRESCHOOL CLASSROOM QUALITY AND CHILDREN SOCIAL-
EMOTIONAL DEVELOPMENT**

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Abstract

One of the rapidly developing areas of modern Russian research in psychology and pedagogy involves quality assessment of the educational environment that exists in pre-school educational institutions. The purpose of this research was to study the relationship between the quality of the kindergarten educational environment and the social-emotional development of senior preschoolers. To assess the quality of the environment the ECERS-R method was used. To diagnose social-emotional development of pre-schoolers we used the NEPSY-II subtest "Theory of Mind" and the "Test of Emotion Comprehension". The study sample consisted of 706 children aged 5-6 years (Me = 5.6 years) from 33 senior groups in Moscow kindergartens. The sample included 357 (50.6%) boys and 349 (49.4%) girls. This study showed that there is no direct link between classroom quality and the social-emotional development in preschool children. However, the study made it possible to identify a whole series of interrelations between theory of mind and emotion comprehension development and certain indicators of educational environment quality in a kindergarten. Cluster analysis shows that theory of mind development tends to occur most rapidly in groups with medium level of classroom quality. At the same time, the ability for decentration is better developed in children from groups with the high quality environment.

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Keywords: Preschool age, classroom quality, ECERS-R, theory of mind, emotion comprehension.



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1. Introduction

One of the rapidly developing areas of modern Russian research in psychology and pedagogy involves quality assessment of the educational environment that exists in pre-school educational institutions (Shiyan, 2013; Remorenko, et al., 2017). In the past 15-20 years, the results of numerous studies have proven the classroom quality to be very important for preschoolers' mental development (e.g., Caspi, & Silva, 1995; Hamre, & Pianta, 2003; Hamre, Pianta, Hatfield, & Jamil, 2014).

At the preschool age, the child spends most of their time in the kindergarten, being included in the system of social relationships that exist within it. A whole complex of conditions that mediate the process of interaction between preschooler and caregiver and other children can be summed up by the educational environment concept. During this period, theory of mind is actively evolving as preschool children gradually overcome the egocentrism of thought bolstering the development of their communicative qualities that are bound to have a greater impact on the child's successful socialization and adaptation in school (Mashburn & Pianta, 2006; Miller, 2012). In this regard, it is important to realize which aspects of the classroom environment in the kindergarten matter most for the emotional and social development of preschool children.

1.1. The quality of the classroom environment

Modern research practice distinguishes the following two components in the quality of the educational environment (Remorenko, et al., 2017):

- Structural quality involving quantitative characteristics of the kindergarten environment that create the basis for implementing pre-school educational processes (the ratio of teachers and children in a group, available facilities, play areas and learning resources, safety standards compliance, teacher and staff qualifications, etc.).
- Procedural quality means educational interaction between teachers and children, between children themselves, as well as that between children and space and materials (the environment).

The most popular two tools for assessing the quality of the educational environment include: 1) Early Childhood Environment Rating Scale-Revised (ECERS-R) (Harms, Clifford, & Cryer, 2005); 2) Classroom Assessment Scoring System (CLASS) (Pianta, LaParo, & Hamre, 2008).

ECERS-R provides an assessment of the quality of both components of environment quality and is based on 7 scales: 1) Space and Furnishings; 2) Child Care; 3) Language and Reasoning; 4) Children's Activities, 5) Interactions; 6) Program Structure; 7) Parents and Staff. Each of these includes 4-10 indicators.

CLASS is designed to provide a more detailed assessment of the interaction processes between caregiver and children and includes three main scales: Emotional support, Classroom organization, Instructional support. Unlike ECERS-R, this methodology evaluates only the procedural component of the environment, because its authors believe the child and adult interaction to be instrumental for child development (Hamre & Pianta, 2003).

1.2. The association between classroom quality and the social-emotional development of preschool children

The study by C. Clawson and G. Luze (2008) examined the presence and extent of behavioral problems, depressions, anxieties and aggressiveness in children attending kindergartens with different levels of quality of the educational environment. The study involved 60 children aged 4-5 years. The results show that in children from groups with the high and medium environmental quality, measured by using the ECERS-R method, the problems of behavioral and social-emotional character are less common than in children from groups with low quality.

The study by H. Jeon and colleagues (2010) analyzed the influence of the educational environment on the children's preparedness for schooling on a sample of 138 students aged 5 years. As the results of the study showed, children from groups with a low assessment of the environment, using the ECERS-R method, experienced difficulties in establishing contact with their peers, but had no problem assimilating educational material.

The research by T.W. Curby and collaborators showed a significant link between the quality of the environment and children's communicative development (Curby et al., 2009). Kindergarten students with a high score on the Emotional Support parameter (CLASS) showed higher outcomes in the development of social competence than other children did: they entered into interaction with other children and supported cooperative relations more confidently. Many studies show that emotionally supportive relationships between caregiver and child can have a significant impact on cognitive and emotional development (Hamre, & Pianta, 2003), formation of social competence in preschool children (Mashburn et al., 2008).

However, there are a number of correlation studies in which no statistically significant relationship was found to exist between the overall ECERS-R score and the presence of severe behavioural problems in children (Peisner-Feinberg & Burchinal, 1997; Howes, et al., 2008) and the social development of preschoolers (Peisner-Feinberg & Burchinal, 1997; Howes et al., 2008; Pinto, Pessanha, & Aguiar, 2013; Abreu-Lima, Leal, Cadima, & Gamelas, 2013). Thus, the available data on the correlation of environmental indicators and emotional-personal development are rather contradictory. In connection with this, the existing longitudinal studies are of particular importance.

For example, in the longitudinal study by J. Hall and colleagues (Hall, et al, 2013) the researchers observed the cognitive and emotional-personal development of 2,587 children aged 3 to 5 years. The study showed that the general assessment of the environmental quality by using ECERS-R, as well as individual scales of this technique like Language and Reasoning and Interactions are predictors of development of children's ability to cooperate with one another.

A similar study was conducted by M.L. Broekhuizen and colleagues (2015) of the connection between the quality of the educational environment and the emotional and personal development of preschool children using the CLASS methodology. 1013 children took part in the study by undergoing psychological diagnostic testing twice: first, on being admitted to a kindergarten and second, on making a transition to the first grade. Analysis of group dispersions of children who received various experience of preschool education convincingly testifies to the effect the quality of the educational environment has on the developmental trajectory of children. For example, children attending groups with high CLASS scores on Emotional Support and Group Organization demonstrate a higher level of emotional and personal

development and are less likely to suffer from behavioral problems than are children from low-quality groups.

2. Problem Statement

Thus, the available research shows that a higher level of the educational environment is associated with a more successful social-emotional development of preschool children. However, the overall quality indicator of the environment is not always linked to the development of preschoolers' communicative skills, with only some of the scales of the tools acting as significant predictors. Thus, the question about what particular characteristics of the educational environment produce the greatest impact on developing the social-emotional sphere of preschool children demands more detailed study.

It is important to note, that in evaluating preschoolers' social-emotional development and communicative qualities most studies often used the questionnaires focusing on assessment of children's group behavior (Peisner-Feinberg & Burchinal, 1997; Howes, et al., 2008; Pinto, Pessanha, & Aguiar, 2013; Abreu-Lima, Leal, Cadima, & Gamelas, 2013). Whereas successful peer communication also depends on children's cognitive abilities to understand others' emotions and thoughts, and the level of theory of mind development (Miller, 2012).

3. Research Questions

In this study, we planned to check which characteristics of the educational environment have the greatest impact on the social-emotional developing of preschool children. Is the quality of the classroom environment related to theory of mind and emotion comprehension development? We assume that some average level of classroom quality is optimal for the child's social-emotional development.

4. Purpose of the Study

The purpose of this research was to study the relationship between the quality of the kindergarten educational environment and the social-emotional development of senior preschoolers.

5. Research Methods

5.1. To assess the quality of the environment:

The ECERS-R method was used (Harms, Clifford, & Cryer, 2005). Validity, reliability and consistency of the outcomes obtained by using this method were borne out by numerous scientific studies. This technique is also the most widely used in Russia and it was tested and approved of in Moscow (Remorenko et al., 2017).

The ECERS-R scales for making integrated assessment of educational environmental quality function based on the principle of expert observation. An objective evaluation of the educational environmental conditions is ensured by the fact that the expert uses an evaluation sheet that includes specific observable and measurable environmental conditions (indicators). Depending on the conditions that are

present in the environment, the expert decides on giving points from 1 to 7 for each of the 43 indicators, then sums up the average score for each of the scales and the final score.

5.2. To diagnose social-emotional development we used two methods:

- First, Theory of Mind (ToM), which is a NEPSY-II subtest (Korkman, Kirk, & Kemp, 2007) and aims to directly diagnose the development of various mental model components: the ability to understand other people's figures of speech, intentions, thoughts and feelings, the ability to distinguish between real and imaginary planes of reality as well as the understanding of false beliefs. This method is designed for children of up to 16 and it includes 21 tasks.
- The second method, "Test of Emotion Comprehension" (TEC) (Pons, & Harris, 2000) aims to study the children's ability to understand the emotions of other people in different situations. This method was designed to diagnose preschool children and consists of 22 tasks, each of which is scored as either 0 or 1 point.

6. Findings

6.1. The sample and procedure of the study.

The study sample consisted of 706 children aged 5-6 years ($Me = 5.6$ years) from 33 senior groups in Moscow kindergartens. The sample included 357 (50.6%) boys and 349 (49.4%) girls. This study was conducted in 2016-2018. All the psychological tasks were carried out individually, in a quiet room. One meeting lasting 15-20 minutes was organized for each child.

6.2. Analysis of the relationship between the indicators of emotional and personal development and environmental quality.

As a result of the correlation analysis (Spearman's criterion), no significant relationship was found to exist between the overall ECERS-R indicator as well as the average for each of the 7 scales and the outcomes of children's performance of psychological tests to diagnose their emotional development.

In this regard, we turned to the analysis of individual indicators that formed part of the methodology. The following statistically significant, albeit weak, relationships were obtained (r from 0.150 to 0.270 at $p < 0.005$):

- The Space and Furnishings scale. The results of the children's performance of the ToM test were significantly linked by three indicators included in the scale, namely: Space for Privacy, Cozy Area and Equipment for Developing Gross Motor Skills.
- The Child Care scale. ToM was found to have a significant reverse relationship with the Toilet Use indicator.
- The Language and Reasoning scale. There is no connection between the indicators of the scale and the aspects of emotional development under consideration.
- The Children's Activities scale. Three significant correlations were revealed: the ToM results are largely associated with the Role-playing Games indicator; and those of the TEC method with the Art indicator.

- The Interactions Scale. The outcomes of children's ToM and TEC performance turned out to be inversely related to such environmental characteristics as Supervision of Gross Motor Activities; the ToM outcomes are reversely linked to Interactions between Staff and Children and the TEC outcomes are reversely linked to the Children's Interactions with One Another indicator.
- The Program Structure scale. A significant inverse correlation is observed between the ToM outcomes and the Daily Routine environmental indicator and a direct one is observed between ToM and the Settings for Children with Disabilities indicator; the TEC outcomes are also significantly associated with the Settings for Children with Disabilities indicator.
- The Parents and Staff scale. A significant reverse correlation was found to exist between the ToM method and the Settings for Professional Needs of Staff indicator.

6.3. Features of social-emotional development of preschool children with different levels of classroom quality.

One of our assumptions was that some average level of environment development is optimal for the child's social-emotional development. In order to test this hypothesis, kindergarten classes were divided into three groups based on their ECERS-R scores. As a result of the cluster analysis (the K-means clustering method), three levels of environmental quality were identified: low, medium and high (Table 01 - centers of the clusters obtained).

Having checked the score differences (first by using the Kruskal-Wallis criterion, then the t-criterion for independent samples in pairs), we found that the scores for all the ECERS-R scales differed significantly in all the clusters selected which allowed us to speak about qualitatively different types of educational environments. Almost half (48.7%) of the children attend kindergartens with a low level of educational environment, slightly less than a quarter (24.0%) go to kindergartens with the average one and slightly more than a quarter (27.3%) go to those with the low one.

Table 01. Cluster Centers - ECERS-R scores for different levels of the educational environment

ECERS-R scales	Low quality level	Medium quality level	High quality level
1. Space and Furnishings	2,8	3,5	3,8
2. Child Care	2,5	3,8	4,0
3. Language-Reasoning	3,0	3,4	3,8
4. Children's Activities	2,2	3,0	3,5
5. Interaction	3,1	3,8	4,6
6. Program Structure	2,1	2,8	3,9
7. Parents and Staff	2,7	3,3	4,6
Number of children	344	169	193

Using the Kruskal-Wallis criterion for several independent samples, it was established that the ToM measurements differ significantly in preschool children from educational environments of different types

(K-W = 8.628, $p = 0.013$). Using the t-test for independent samples, we saw for ourselves that the ToM scores were significantly higher in preschool children from secondary-level educational environments than in all other children ($p < 0.005$, Fig. 01 - the span diagram).

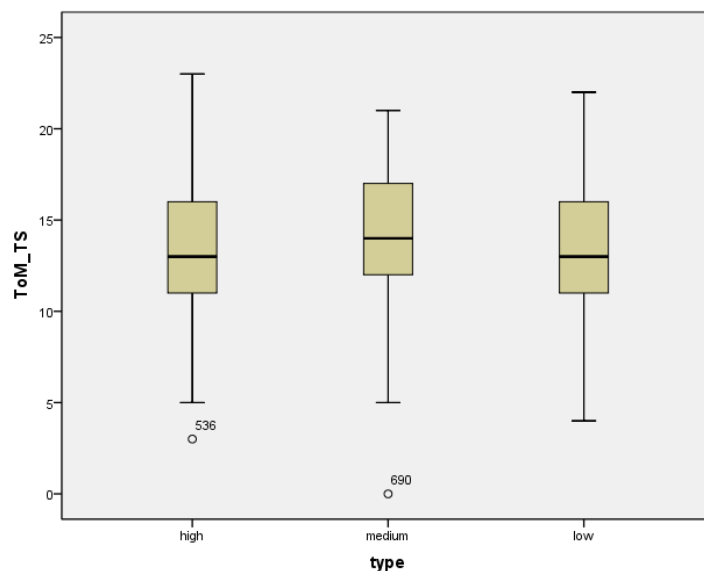


Figure 01. Diagram of the ToM score span in preschool children from classroom quality of different types

Further, to obtain a more detailed analysis of the emotional development of children in different types of educational environment we checked the differences in the performance outcomes of individual tasks aimed at diagnosing the mental model and emotion comprehension (ToM and TEC) in preschoolers from educational environments at different levels (using the Chi-squared test).

The tasks aimed at determining the level of mental model development (ToM) produced the following outcomes: in 5 out of 21 tasks, the environmental level is associated with success, which means significantly different performance of tasks for preschoolers from groups with different environmental quality levels ($p < 0.005$). For example, in Task 1 of the procedure a child was shown a picture of a table with a box depicting cookies on it and told the story about a boy called Andrei: "He opened the box and saw that Mom had put pasta in it. He was upset and put the box back in its place. Andrei's brother entered the room and saw the box with cookies depicted on it. What did Andrei's brother think was in the box? Preschool children from kindergartens with a high environmental level cope with this task better (children, who told «cookies» from high level – 83.2%, medium – 76.8%, low – 70.8%; $\chi^2 = 10.176$, $p = 0.006$). In other tasks that proved to associate the quality of the educational environment with the performance of the task (i.e., the outcomes differed significantly in different environments), preschoolers from kindergartens with the average environmental level coped with the tasks better than the others did.

The analysis of tasks aimed at understanding emotions (TEC) showed that preschoolers who are brought up in kindergartens with different environments cope with 5 tasks out of 22 differently ($p < 0.005$). Children from groups with a high or medium level of educational environment quality also successfully coped with the rest of the tasks aimed at emotion comprehension. For example, in Task 13 the child is told a story about a rabbit who is sitting in a clearing eating its favorite carrot, but hiding behind the bushes is a

wolf who wants to eat it. The child is then asked a control question about whether the rabbit knows that the wolf is hiding behind the bushes - if the child makes a mistake, he or she is told the story once again and a point is made that the rabbit does not know about the wolf hiding there. Then the child is asked a question about what the rabbit feels. Preschool children from kindergartens with a high environmental level also cope with this task better than other children do (for comparison: right answer in high-level group – 43.3%, medium – 32.1%, low – 32.7%; $\chi^2 = 6.666$, $p = 0.035$).

7. Conclusion

This study showed that there is no direct link between environmental quality and the characteristics of the social-emotional development in preschool children. However, the study made it possible to identify a whole series of interrelations between ToM and emotion comprehension development and certain indicators of educational environment quality in a kindergarten. We consider the following correlations between the ECERS-R indicators and the outcomes of the performance of ToM and the TEC methods to be the most interesting:

- Theory of mind is associated with the development of environmental quality of preschool education more than any of the other items;
- ToM development is largely related with the characteristics of interactions between child and caregiver while emotion comprehension is associated with the specifics of children's interactions with each other.
- The connection between ToM development and space and furnishings, as well as the availability and accessibility of costumes and other attributes for role-playing games may speak about the importance of children's play for ToM development in preschool children since these factors provide conditions for children to create role-playing games. At the same time, no links were found to other indicators related directly to the game.

An unexpected outcome is that there is a reverse link between ToM development and the sufficiency of the conditions created to meet staff needs. We presume that this factor may be an artifact and requires additional verification provided the sample is increased.

Analysis of the performance of individual tasks by children from groups with different educational levels shows that, on the whole, ToM development tends to occur most rapidly in groups with medium environment quality. At the same time, the ability for decentration is better developed in children from groups with the high quality environment.

Thus, the research showed that the general level of environmental quality is indirectly related to the emotional and personal development of preschool children. It is important to note that the ECERS-R indicators tend to mingle the structural and procedural characteristics of the environment, i.e., the caregiver's material conditions and behavior are taken into account simultaneously. To clarify the links obtained it would be interesting to analyze both the interactions between caregiver and children and the structural quality of the environment separately. To do this, the CLASS method can be used in addition to the ECERS-R technique. Comparison of the assessments of the two methods and the identification of the parameters that have a greater impact on developing preschoolers' communicative qualities will help to make useful recommendations for pre-school staff in the future.

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