Educational environment approach to preventing the growth of school students anxiety in the transition from primary to secondary school

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Abstract. The article describes the possible environmental approach for prevention of growth of school anxiety that was found in Russian students at the moment of transition from primary to secondary school. The authors present the content of the experimental study, which was attended by 213 children of the fourth and fifth years of school education. The author's model of the local personal-developmental educational environment in the fourth grades was implemented to prevent difficulties in the adaptation of fifth graders to secondary school, and prevention of the growth of school anxiety of pupils. For diagnostics of level of school anxiety the "Trait Anxiety Scale" of Prikhozhan was used. It is proved that the implementation of the environmental approach in the experimental classes prevents the growth of school anxiety in the transition to secondary school. The research materials can be used to solve the problem of continuity between the levels of school education.

Keywords: Intermediate school, primary school, school anxiety, secondary school

INTRODUCTION

Primary general education (from the first to the fourth grade) and basic general education (from the fifth to the ninth grade) are compulsory levels of school education in Russia. These stages have their own specifics in the organization of the educational process. At primary school, all major subjects, except special (foreign language, physical education, music), are taught by one teacher - primary school teacher and in one room assigned to the class. At the secondary school, a subject-specific learning and cabinet system operates: subjects are taught by different teachers, specialists (mathematicians, biologists, linguists) in various specialized classrooms. In some educational institutions of Russia, primary and basic education is implemented in different buildings.

Among the problems faced by children in Russia, we can distinguish those that relate to language learning. Bearing in mind that children in Russia learn English from an early age, it is also necessary to mention that such bilingualism can affect a child both positively and negatively (Dolzhikova et al., 2018; Guzhelya et al., 2019).

The need to ensure continuity between primary and secondary schools is emphasized in the Russian Federal State Educational Standard. The importance of this requirement is beyond doubt, it is implemented in the logic of construction and interrelation of educational programs of primary and secondary school. However, in a number of modern psychological studies of Russian authors, there is a significant increase in the number of children experiencing severe anxiety during the transition from the fourth to the fifth grade, from primary education to secondary school (Avramenko, 2017; Bikmetova, 2011; Dolgova et al., 2016; Litvinenko, 2009; Zuckerman, 2001). The problem of high school anxiety, as an indicator of emotional distress of students, affecting not only academic success, but also the state of mental and physical health of children, is undoubtedly important.

The complexity and diversity of this problem leads to a variety of approaches to the interpretation of the causes of school anxiety, methods of its diagnosis, the definition of means
and methods of reducing anxiety. It is necessary to state that some aspects of this problem remain insufficiently and fragmentary studied, in particular, in Russia the complex psychological and pedagogical prevention of growth of the anxiety at children connected with transition to a new educational stage has not received due development.

Priority attention is paid to overcoming, correcting already identified anxiety in high school students by means of special psychological programs. Proven to be effective for solving a range of problems of personal development of primary and secondary school students environmental approach: motivation of self-knowledge, self-esteem, subjectivity, tolerance, communication skills, worldview (Chernyshev, 2011; Nikolaeva, 2008; Skripnik, 2014) is not studied as a means of preventing the growth of anxiety associated with the change of educational level. This, in turn, makes it relevant to study the resources and capabilities of the environmental approach to prevent the escalation of anxiety of Russian students in the transition to the fifth grade.

**LITERATURE REVIEW**

**Difference Between School Anxiety and School Neurosis**

Each stage of school education has its own specific objectives, organizational and substantive conditions, the system of requirements for students. One of the first significant signs of violation of students’ adaptation to the new educational environment is the emotional distress of the child at school (Avramenko, 2017; Caglar, 1983; Litvinenko 2009; Lysytsia, 2019; Khotina, 2015; Prikhozhan, 2000).

Analysis of modern psychological and pedagogical research suggests that the most common form of emotional distress of students associated with the school is anxiety. Unlike "school neurosis", anxiety is not accompanied by somatic symptoms (headache, fever). From "school fears" as a reaction to a specific existing threat, anxiety is distinguished by the fact that it is a non-object experience of a predominantly imaginary character (Litvinenko, 2009; Prikhozhan, 2000; Rutter, 1999; Sizova, 2001).

School anxiety, as a specific type of anxiety, is manifested in the tendency of students to assess most situations related to school life as threatening. As noted by Prikhozhan (1998), on a psychological level school anxiety is reflected in the high anxiety and excitement in the learning situations in the classroom, expectation of negative evaluation by teachers and peers.

Miklyaeva and Rumyantseva (2004) pointed out that school anxiety is provoked by various components of the educational environment: the content and methods of teaching, interpersonal communication in the system "student – teacher – administration – parents", the physical space of the school.

**Behavioral Symptoms of School Anxiety**

Behavioral symptoms of school anxiety, monitored and allocated by the teachers, are highly variable (Hinchliffe, & Campbell, 2016; Hanie, & Stanard, 2009; Khotina, 2015; Prikhozhan, 2000):

- Violations of the educational activities’ productivity,
- inattention,
- refusal of public answers,
- quiet confused speech,
- resentment,
- aggressiveness.

Researchers emphasize that teachers have difficulty differentiating children with moderate and high school anxiety (Headley, & Campbell, 2011). More than half (61%) of parents of schoolchildren with high anxiety do not realize this problem in their children (Teagle, 2002).

Modern researchers agree that the high level of school anxiety, characterized by increased frequency and intensity of anxiety, has negative consequences for children in the short and long
term. High anxiety in primary school and adolescence disorganizes educational activities, significantly reduces academic performance, can lead to social isolation, suicidal thoughts, drug use (Litvinenko, 2009; Prikhozhan, 1998; Woodward and Fergusson, 2001). The scientific literature states that high anxiety in childhood is a predictor of the development of serious anxiety disorders in adulthood (Bittner et. al., 2007; Copeland et. al., 2009; Kovacs, & Devlin, 1998; Peleg, 2012; Pine et. al., 1998). The relevance of qualified and timely diagnosis of high school anxiety, its overcoming and prevention is obvious.

One of the peaks of school anxiety in Russian schools, according to psychological and pedagogical research, is the fifth year of children's education, the beginning of education in secondary school. In the works of Bikmetova (2011), Sizova (2001), it's noted a 50% increase in the number of children with general severe school anxiety, when entering secondary school. According to Dolgova, Baryshnikova, Sergienko, high and very high level of school anxiety is experienced by 47% of fifth graders (Dolgova et al., 2016).

In the thesis research of Litvinenko (2009), it's noted that about a 3rd of fifth-graders have a high and very high level of school anxiety, and about 68% of fifth-graders are characterized by increased, high and very high levels of school anxiety.

The seriousness of the situation is due not only to the percentage jump in high school anxiety among fifth graders, but also to the fact that it is in the pre-adolescence period (10-11 years), according to the results of long-term and large-scale research of Prikhozhan (2000), that "anxiety is increasingly fixed, acquires stable forms of implementation in behavior, regulation, compensation ... and becomes a stable personal characteristic having its own motivational force".

The reasons for the increase in school anxiety at the new educational level are differentiated into external, associated with the interaction with the new educational environment, and internal, associated with psycho-age changes and individual characteristics.

**Programs that Prevent the Anxiety Growth among the Students**

The most widespread in the Russian practice of overcoming and preventing high school anxiety of fifth graders received psychological programs of work with children (Bikmetova, 2011; Khotina, 2015; Miklyaeva, & Rumyantseva, 2004; Prikhozhan, 1998; Sizova, 2001). Psychocorrection of high school anxiety of fifth graders applied game methods, psychotherapeutic techniques (art therapy, therapy, verbalization, visualization, psychodrama), psychogymnastics (rhythm, pantomime, collective dances, breathing exercises, relaxation). Prevention of the growth of school anxiety includes exercises, group discussions, trainings aimed at building self-confidence, learning techniques to overcome difficulties, excitement. Thus, it is necessary to state the obvious prevalence of psycho-corrective programs over preventive. Despite the proven effectiveness of specific psychological programs, we share the view of Prikhozhan (1998), according to which the overcoming of high school anxiety cannot be restricted to a highly specialized psychological work with children who need a "treatment environment" as a family, and the community.

In the international experience of preventing the development of children's school anxiety, one of the leading places belongs to the "FRIENDS" program, developed in Australia, based on the principles of cognitive behavioral therapy and proved its effectiveness in a number of countries (Axelson, & Birmaher, 2001; Barrett, 1998; Shortt et. al., 2001). The undoubted advantage of "FRIENDS" is the presence of different target modifications of the program (universal, selective, nominal, therapeutic), the ability to include a universal version of the program in the educational process under the guidance of trained teachers.

The widespread use of the "FRIENDS" program in primary school allows to timely prevent the growth of school anxiety in children, to help students with hidden manifestations of anxiety, to stimulate the self-development of the child's personality (Barrett et. al., 2001; Barrett, & Turner, 2001). It is important that the "FRIENDS" program involves special work with parents of students and teachers in order to involve them in the prevention and overcoming of children's school anxiety.
Based on the above analysis, we believe that a comprehensive impact on all risk factors for school anxiety in fifth graders is possible through the implementation of an environmental approach. The essence of the environmental approach is understood by us, after Manuilov (1997), Yasvin (2001), as the organization of the educational environment and optimization of its impact on the personality of students. We believe that timely prevention of school anxiety in the fifth grade should be carried out in the fourth year of school, including not only children, but also teachers and parents into this process. The aim of our research was to study the possibilities of the environmental approach to prevent the growth of school anxiety when changing the educational stage in Russian fifth graders.

**METHODS**

**Research Design and Test Students**

The pilot study was conducted on the basis of school No. 186 of the city of Nizhny Novgorod, which has the status of the author’s academic school and is an experimental platform of Kozma Minin Nizhny Novgorod State Pedagogical University. At the ascertaining and control stages of the experiment, the level of school anxiety was diagnosed in the same students at the end of the fourth year of their education (primary school) and at the beginning of the fifth year of education (when these children go to secondary school). The study of the level of anxiety in the same respondents, we believe, is more correct for objective conclusions than the diagnostic by means of cross-sections method.

In total, 213 schoolchildren aged 10-12 took part in different stages of the experiment. The control group consisted of 105 students in the 4 classes. The experimental group included 108 people from 4 classes involved in the forming experiment.

At the stage of the formative experiment during the year, the author's model of the local personal-developing educational environment focused on fourth-graders was implemented (Ivanova, 2018).

Under the personal-developing educational environment at the final stage of primary general education, we understand a locally organized multi-component psychological and pedagogical system integrated into the educational environment of the school, which is a polysubjective community of fourth-grade students, specialists (primary and middle-level teachers, psychologists), and parents (Ivanova, 2018; Ivanova, & Sorokina, 2018). The target and functional purpose of this educational environment is to create conditions and opportunities for the most effective personal development of its subjects. One of the planned results of its implementation is the prevention of difficulties in the adaptation of students to the educational environment in the transition to secondary school and, in particular, the prevention of the growth of school anxiety in students. The Pearson's chi-squared test ($\chi^2$) and Fisher criterion ($\varphi^*$) were used to obtain quantitative results.

**Reasons to Choose the “Trait Anxiety Scale”**

To study the level of anxiety of students associated with the school, the “Trait Anxiety Scale” of Prikhozhan (2000) was used (Form "A"). The choice of this diagnostic technique is due to several reasons.

1. "Trait Anxiety Scale" contains a sub-scale "School Anxiety", which allows partially assessing the level of students’ anxiety associated with school situations, which is the subject of our study.
2. The method passed extensive testing; just the psychometric test was attended by about 1,400 people.
3. Standardization of the method was carried out not by classes, but by age of the test students, which is important for the current situation in Russian education, when the standards of enrollment of a child in the first class assume a range from six and a half to eight years. Accordingly, each class represents a different age group.
4. Standardization of "raw" assessments with their transfer to a 10-point sten scale is made separately for boys and girls of different age groups.
5. The method has an option (form "A") designed for 10-12 years old students, suitable in the age aspect for students of the fourth and fifth grades.
6. This scale refers to the blank methods, which allows it to be carried out collectively.

According to the instruction of the technique, the test students are invited to submit the situations listed in the form and assess in points how they can cause disturbance, fears, anxiety (from 0 to 4 points). For example, the subtest "school anxiety" provides such situations as:

- to answer at the blackboard,
- to write a test,
- to not understand the teacher’s explanations,
- to talk to the principal,
- to not cope with homework and others.

RESULTS

Structural Components of the Experimental Local Educational Environment

Based on the environmental approach, in each of the structural components of the experimental local educational environment, conditions were planned and implemented to ensure the leveling of school anxiety of students both at the stage of completion of primary school (the fourth year of study) and at the transition to secondary school (the fifth year of study). Let us consider the separately implemented transformations in each of the components of the experimental local educational environment.

Spatial-subject component (a set of spatial and subject units, their qualitative and functional characteristics)

Goal of transformation: overcoming the isolation of the space of the primary school, advance acquaintance of fourth-graders with the new space of the secondary school in the process of educational and extracurricular activities.

Tools, conversion tools:
- virtual tour to the space of the secondary school, the quest "School labyrinths" (prepared by high school students, school core group);
- "Open days of the secondary school for fourth graders" (prepared by teachers of the secondary school);
- holding separate lessons for fourth graders in the classrooms of the secondary school using new for children technology, demonstration materials, manuals (conducted by primary school teachers);

Social component (interpersonal relations, interaction of subjects of the educational environment)

Goal of transformation: overcoming the limitations of the sphere and improving the quality of communication of fourth-graders with each other, with teachers and parents in different activities.

Tools, conversion tools:
- effective communication trainings for parents of fourth-graders and specialists of local educational environment (conducted by teachers of Kozma Minin Nizhny Novgorod State Pedagogical University);
- interpersonal training for fourth-graders (conducted by school psychologists and University teachers);
- "Dialogues about the fifth grade" - meetings of fourth-graders with fifth-graders (prepared and conducted by teachers of primary and secondary schools);
creative projects for parallel fourth grades, bringing together children from different classes (prepared and conducted by primary school teachers).

**Psychodidactic component (educational programs, technologies, methods and forms of education, upbringing, development)**

Goal of transformation: enriching the educational process with personality-oriented technologies, methods and forms of work of teachers with children.

Tools, conversion tools: technologies of training in cooperation in educational activities, different age social and creative projects with the participation of fourth-graders and fifth-graders, variable methods of differentiated written self-assessment of the process by children and the result of educational and project activities (implemented by teachers of the fourth grade). Special attention was paid to work with anti-motives of training activities, as it was established their connection with school anxiety (Minaeva et. al., 2018).

**Subjective (characteristics and indicators of personal development of subjects of the educational environment)**

Goal of transformation: overcoming by fourth-graders of self-doubt, their capabilities, anxiety, low self-esteem when included in various situations of school life.

Tools, conversion tools:

- Constantly operating in the recreational space of the fourth grade "Our achievements" exhibition (demonstration by fourth-graders of their capabilities, achievements as subjects of different activities: educational, project, sports, creative);
- psychology lessons for fourth grade students on the author’s program "Know yourself" (Ivanova, 2018) as a resource for personal development of younger students (conducted by school psychologists and university teachers);
- "School of the future fifth grader parent" program (conducted by school psychologists and university teachers).

The main forms of work with parents in the framework of the program are: lectures, practical seminar, group and individual consultations, information support. The tasks of working with the parent group are: familiarity with the specifics of early adolescence, signs of violation of adaptation to primary school, the causes of school anxiety; awareness of parents of their essential role in the prevention and overcoming of child anxiety, mastering techniques to overcome increased anxiety of children.

**Competence-professional component (a set of professional competencies)**

Goal of transformation: overcoming of professional disunity of primary and secondary school specialists, insufficient knowledge of psychodidactic competence by teachers, to ensure optimal personal development of fourth-graders.

By psychodidactic competence we mean integrative professional and personal education, which includes:

- motivational component that determines the professional focus on the development of the personality of fourth grade students as a priority goal, the need for professional and personal improvement and integrative professional interaction to achieve this goal;
- cognitive component, representing a system of integrated psychological and didactic knowledge as a theoretical basis for the personal development of students and professional interaction in the environment;
- activity component, which includes a set of professional actions (analytical, diagnostic, prognostic, reflective) required for planning, implementation and evaluation of the conditions and opportunities for personal development of students.

Tools, conversion tools:

- master classes;
• open lessons of primary and secondary school teachers for each other;
• psychological and pedagogical consultation for teachers of the fourth and fifth grades;
• lectures "Features of age and personal development of students at the turn of primary and secondary school", "Causes, manifestations, consequences of school anxiety".

**Descriptive Study**

As a result of the diagnosis, all students were divided into groups with different levels of school anxiety: optimal, increased, high and very high. The results of diagnostics of school anxiety of students of control (C) and experimental (E) groups in the fourth and fifth grades are presented in Table 1.

**Table 1. The severity of school anxiety of students in the fourth and fifth grades of the control and experimental groups**

<table>
<thead>
<tr>
<th>Levels of School Anxiety</th>
<th>Severity of School Anxiety in Subjects by Levels (% of total group respondents)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C Group (105 persons)</td>
</tr>
<tr>
<td></td>
<td>Fourth grade</td>
</tr>
<tr>
<td>Optimal</td>
<td>55</td>
</tr>
<tr>
<td>Increased</td>
<td>30</td>
</tr>
<tr>
<td>High</td>
<td>10</td>
</tr>
<tr>
<td>Very High</td>
<td>5*</td>
</tr>
</tbody>
</table>

The results of the study presented in the Table 1 show that in the control group during the transition of children from the fourth to the fifth grade there is a tendency to a significant increase in school anxiety of children, which correlates with the data of other authors (Bikmetova, 2011; Dolgova et al., 2016; Litvinenko, 2014).

To identify the statistical significance of differences in the severity of school anxiety of students in the control group between the fourth and fifth grades and in the experimental group (fourth and fifth grade), it was used the X-square Pearson criterion ($\chi^2$).

In the control group, the value of $\chi^2$ criterion is 16.262 ($p<0.01$), therefore, the increase in school anxiety in children of C group during their transition from primary to secondary school is statistically significant.

In the experimental group with which the formative experiment was conducted, the tendency to a significant increase in school anxiety was not found. There was only a slight increase in the number of children (3 persons) with high school anxiety (from 23% to 26%). There were no changes in the number of subjects with high and very high levels of school anxiety, while children with very high levels of school anxiety were not found. In the experimental group, the value of the criterion $\chi^2$ is 0.248 ($p>0.01$). Consequently, changes in the values of school anxiety of students of the experimental group are not statistically significant.

It was also important for us to check the significance of changes for each level of school anxiety separately. The comparison was carried out using the Fisher criterion ($\phi^*$). The data are presented in Table 2.

**Table 2. Empirical values of Fisher's criterion on levels of school anxiety of pupils of control and experimental groups**

<table>
<thead>
<tr>
<th>Levels of School Anxiety</th>
<th>Empirical Value of the $\phi^*$ Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C Group</td>
</tr>
<tr>
<td>Optimal</td>
<td>3.473*</td>
</tr>
<tr>
<td>Increased</td>
<td>0.301</td>
</tr>
<tr>
<td>High</td>
<td>2.364*</td>
</tr>
<tr>
<td>Very High</td>
<td>2.461*</td>
</tr>
</tbody>
</table>

Note: * $p < 0.05$. 
DISCUSSION and CONCLUSIONS

The empirical values of the Fisher criterion presented in the table suggest a statistically significant increase in the number of children in the control group with high (from 10% to 22%) and very high (from 5% to 15%) levels of school anxiety when entering secondary school. These children are the "risk group" and require special attention of psychologists and teachers. Attention is drawn to the fact that some subjects had a jump in school anxiety from the optimal level to high or very high. In addition to the named in the C group, statistical significance of reducing the number of children in the fifth grade with the optimal level of school anxiety was established. In the E group, the changes in each level of school anxiety are not statistically significant.

It should also be noted that in the experimental group, in contrast to the control, at the stage of diagnosis at the end of the fourth grade there is a smaller number of children with high anxiety, the absence of subjects with a very high level of anxiety, as well as a much larger number of children with optimal anxiety level (72% in the E group and 55% in the C group). This suggests that the conditions of personality-developing educational environment, implemented in the fourth year of school in the experimental classes, contributed to the reduction of school anxiety of students.

In general, our results indicate the success of the formative experiment conducted in 4 classes with the participation of 108 children, and confirm the effectiveness of the environmental approach in preventing the growth of school anxiety of students in the transition to the fifth grade. Based on the analysis of modern psychological and pedagogical literature, we were convinced of the lack of study of the possibilities of the environmental approach to prevent the growth of school anxiety when changing the educational stage in Russian fifth-graders. This determined the purpose of our study.

According to the results of the implementation in the experimental fourth grades during the school year with the participation of 108 children of the local personal-developing educational environment model, the effectiveness of the environmental approach was proved to solve the problem of preventing the growth of school anxiety in Russian fifth-graders at the transition from primary education to secondary one.

There was also a decrease in school anxiety in the last year of primary school in the experimental classes. We consider it necessary to note that in addition to the effect of reducing school anxiety, we have developed and implemented a model of personal development of the educational environment contributed to the leveling and other manifestations of maladaptation in the transition of students to the fifth grade. In particular, in the experimental classes during the transition of students from primary to secondary school, it was found that the level of academic success of children, educational motivation, remained (without falling). In general, the results suggest the effectiveness of the environmental approach to solving the problem of continuity between primary and secondary schools.

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REFERENCES


