



ASSESSMENT OF THE LEVEL OF ANXIETY AS AN INDICATOR OF REGULATORY-ADAPTIVE CAPABILITIES OF STUDENTS TO EDUCATIONAL LOAD IN HIGHER EDUCATIONAL INSTITUTION

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ABSTRACT

The purpose of this publication is to clarify the level of anxiety as an indicator of the regulatory-adaptive capabilities of students to the educational load in a higher educational institution. The Spielberger-Khanin method was used as a methodological tool for the study. The regulatory-adaptive status was determined depending on the level of personal and reactive anxiety of students, and measurements were made at the beginning and at the end of the academic year. At the end of the academic year, the regulatory-adaptive capabilities of students to the academic load decreased, which led to an increase in the level of anxiety and to the redistribution of students in groups according to the level of anxiety.

Keywords:**INTRODUCTION**

In modern conditions of socio-historical, socio-political and economic development, a collision with a reality that imposes new standards and requirements on a person is the cause of high anxiety among the population in general, and young people in particular. Mobility, competence, a high level of communication skills, stress resistance, a useful optimal or desirable level of anxiety, adaptability to new conditions of existence - these are some of the main requirements of the modern world order, imposed not only to the adult population, but, above all, to its young part (Vaskov, et al., 2019; Kovaleva, et al., 2019).

Over the past two decades, scientists have expressed concern about the deterioration of the physical, mental and social health of student youth (Ponomarev, et al., 2019; Gafiatulina, Tarasenko, et al., 2017; Chikaeva, et al., 2018; Shakhbanova, et al., 2019). Researchers are unanimous in the opinion that the uncertainty, riskiness of society, anticipation of failure, trouble, threat or challenge reduce the level of health, giving rise to a state of anxiety and reducing the regulatory-adaptive capabilities of students to the educational load in a higher educational institution (Volkov, 2003; Chikaeva, Gorbunova, et al., 2019; Pokrovsky, Kashina, et al., 2013).

The problem of anxiety as a stable personality trait is relevant for modern psychology and medicine in connection with the widespread prevalence of this phenomenon among students. Currently, the number of students prone to excessive worrying, negative feelings, isolation, detachment and other negative feelings, emotions and feelings caused by a psychological personality trait - anxiety, "the central problem of modern civilization" has increased (Volkova, Pronina, 2020: 81; Gafiatulina, Kasyanov, Samygin, 2020).

Assessment of anxiety level as a personality trait and indicator of the regulatory-adaptive capabilities of students to the academic load is of great importance, because this property determines the student's behavior as a subject of the educational space. A certain level of anxiety is a natural and obligatory feature of an active personality. Each individual has his own optimal level of anxiety (reactive and personal) - this is a vital anxiety (Khanin, 1976). However, as empirical studies show, the academic load leads to a decrease in the regulatory-adaptive capabilities of students and an increase in the level of personal anxiety (Kashina, 2012; Pokrovsky, et al., 2010; Kashina, Vishnevsky, Vaskov, et al., 2020).

It is caused by the fact that the rapid scientific and technological progress, the high pace of life (including academic) put the body of young people in front of the need to constantly adapt to the changing requirements of the environment, work, life, education (Gafiatulina, Shevchenko, Samygin, 2019); to be in a state of tension of psychophysiological mechanisms of life (Pokrovsky, et al., 2010: 81; Chikaeva, Scherbakova, Karapetyan, et al., 2018), which necessitates assessing the level of anxiety as an indicator of the regulatory-adaptive capabilities of students and predicting their ability to cope with increasing academic loads in a higher educational institution.

MATERIALS AND METHODS

Modern research on anxiety is aimed at distinguishing between situational (or reactive) anxiety associated with a specific external situation; and personal anxiety, which is a stable personality trait; as well as on the development of methods for analyzing anxiety as a result of interactions between the individual and his environment (including the academic environment) (Volkov, 2003;

Pokrovsky V.M., Kashina Yu.V., Abushkevich, 2019; Gorenko, Akinina, 2020).

A research tradition has formed to single out trait-anxiety as a personality trait and state-anxiety as a negative emotional state (Levitov, 1969; Pasynkova, 1996). Wherein, a long-term state-anxiety in an individual, according to A.R. Luria, can eventually become a personality trait, passing into the category of trait-anxiety (Luria, 2004). From which we can conclude that the state of worrying is nothing more than a fundamental concept for the definition of anxiety.

Analysis of scientific literature also shows that increased anxiety arises because of a complex interaction of cognitive, affective and behavioral reactions provoked by various stressful conditions (Spielberger, 1983; Prikhozhan, 2000).

Special attention on the part of researchers is paid to the problem of students' anxiety, since the degree of manifestation of anxiety determines the success of a student's education, the peculiarities of his relationship with peers, the effectiveness of adaptation to new conditions (Molokova O.A., 2015). Scientists note that the mental performance of students undergoes changes under the influence of educational and labor activity, which are clearly observed throughout the academic year. Research shows that students' performance has different levels and types of changes, which affects the quality and volume of work performed (Shamshina N.V. et al., 2010; Gafiatulina, Makadey, Gluzman, 2019).

The methodological and theoretical basis of this study consists of the conceptual provisions of psychological and medical theories that reveal four basic concepts: anxiety, regulatory-adaptive capabilities, personal and reactive anxiety, the combination of which within the framework of a medical and psychological theoretical platform allows us to study the subject field of the research.

The methodological basis of the study was the provisions of A.M. Prikhozhan about the psychological nature and age dynamics of anxiety, as well as the theory of C. Spielberger about the differentiation of the concepts of state-anxiety as a situational (reactive) reaction and trait-anxiety as a personality trait.

The practical task of the research is to assess the level of reactive and personal anxiety as an indicator of the regulatory-adaptive capabilities of students. The index of regulatory-adaptive capabilities (regulatory-adaptive status - IRAS) was proposed by V.M. Pokrovsky. This index combines the most significant parameters of cardiorespiratory synchronization (SDS): the range of synchronization and the duration of synchronization development at the minimum boundary of the IRAS range ($\text{range} / \text{duration of development at the minimum boundary} \times 100$) (Pokrovsky, et al., 2010). The range of adaptive, compensatory capabilities of the students' organism determines the success of adaptation.

The Spielberger-Khanin method was used as a methodological tool for the study. In other words, students' anxiety at the beginning and at the end of the academic year was determined using Ch.D. Spielberger's self-assessment scale adapted by Yu.L. Khanin (Khanin, 1976). This is the only technique used in psychological and pedagogical practice that allows differentiated measurement of anxiety both as a reactive (situational) state and as a personality trait.

The observations were carried out on the same students at the beginning and at the end of the academic year. The results obtained were processed by the methods of variation statistics.

RESEARCH RESULTS AND THEIR DISCUSSION

From the point of view of psychology, two basic terms coexist, which, despite their similarity, are independent concepts. These are the terms "state-anxiety"

and "trait-anxiety", the differentiation of which demonstrates the multifaceted nature of these phenomena, the primary source of which is the feeling of fear.

In the psychological dictionary, the concept of state-anxiety is defined as "the experience of emotional discomfort associated with the expectation of trouble, a presentiment of impending danger. Unlike fear, as a reaction to a real, concrete danger, anxiety is the experience of an indefinite, diffuse, non-objective threat" (Psychological Dictionary, 2010: 275). In turn, trait-anxiety is defined as "an individual psychological feature that manifests itself in a person's tendency to frequent and intense experiences of anxiety" (Psychological Dictionary, 2010: 276).

Trait-anxiety as a stable personality trait is caused by the negative influence of external factors, as well as an internal, psychophysiological predisposition to the occurrence of such a property.

Reactive anxiety as an emotional response to a current stressful situation is characterized by subjectively experienced emotions: tension, worrying, nervousness, concern.

Personal anxiety is a stable individual characteristic that reflects a person's predisposition to anxiety and suggests that he has a tendency to perceive a wide range of situations as threatening, responding to each of them with a certain reaction. As a predisposition, personal anxiety is activated when certain stimuli are perceived by a person as dangerous for self-esteem and respect (Khanin, 1976).

Anxiety states entail tension, a feeling of fear, apprehension, exaggeration of the importance of information, as a result of which they lead to a decrease in students' academic achievements, i.e. reduce the regulatory-adaptive capabilities of students to the educational load at the university and negatively affect the final result of education (Eysenck, 2008; Gorodetskaya et al., 2019).

As S.M. Gorenko and E.B. Akinina note, the result of excessive trait-anxiety among young people are: increased demands on themselves, fear of not living up to expectations, low self-esteem, low emotional background, emotional experiences, confusion in goal-setting, fear of expressing themselves, fear of testing knowledge, fear of not meeting the expectations of the social environment, low physiological resistance to stress, problems in relationships with teachers and classmates.

In the course of the study of the level of trait-anxiety among young people, conducted by A. Volkova and A.A. Pronina, it was found that the majority of respondents are characterized by a high level of anxiety. Individual results indicate that young people are often worried about relationships with peers, parents, their academic performance, and are very sensitive to criticism, especially from the educational team. Highly anxious individuals tend to perceive a threat to their self-esteem and life in a wide variety of situations, often in those that do not carry true danger. Trait-anxiety has a great impact on the productivity of educational activities, relationships with others, perception of one's own personality (Volkova, 2020: 83).

During the preliminary survey, students noted the following factors that can cause the appearance of trait-anxiety of a personal nature: problems in the family, in relationships with friends, a difficult financial situation; factors of educational nature: a large amount of educational material, a lack of time for preparation, an insufficient level of practical training, problems in interaction with teachers and classmates.

We carried out a study to determine adaptation depending on the level of personal and reactive anxiety of students, wherein measurements were made at the beginning and at the end of the academic year. As part of the article objectives, we present here the data.

Adaptation at different levels of personal and reactive anxiety of students at the beginning and at the end of the academic year.

According to the level of personal anxiety at the beginning of the academic year, 184 students observed were divided into three groups. The first group - 20 people - consisted of people with a low level of personal anxiety (less than 30 points). The second group - 126 students - had a moderate level of personal anxiety (31 - 45 points). The third group consisted of 38 people with a high level of personal anxiety (over 45 points).

At the beginning of the academic year, the students of the first group had the highest range of cardiorespiratory synchronism and the index of the regulatory-adaptive status, and the smallest duration of the development of synchronization at the minimum boundary range (Tables 1, 2, 3).

Among the students of the second group, the range and index of the regulatory-adaptive status were 17.8% and 25.7% less than those among the students of first group were respectively. The duration of the development of synchronization at the minimum boundary range was 14.2% higher.

Students of the third group had the smallest range of cardiorespiratory synchronism, the index of the regulatory-adaptive status, and the greatest duration of the development of synchronization at the minimum boundary range. The range and index were, respectively 60.2% and 82.1% less than the range and index among students of the first group, and the duration of the development of synchronization at the minimum boundary range was 123.0% higher.

Parameters		The beginning of the school year n=20	The end of the school year n=20
Baseline heart rate per minute	M±m	82,9±0,4	81,6±0,5
	P		>0,05
	SD	1,8	2,3
Baseline breathing rate per minute	M±m	19,8±0,2	22,4±0,3
	P		<0,001
	SD	0,9	1,4
Minimum sync range limit in cardiorespiratory cycles per minute	M±m	82,8±0,5	80,3±0,6
	P		>0,05
	SD	2,3	2,7
Maximum limit of the synchronization range in cardiorespiratory cycles per minute	M±m	98,6±0,5	94,3±0,7
	P		>0,05
	SD	0,5	3,2
Timing range in cardiorespiratory cycles per minute	M±m	15,8±0,2	14,0±0,1
	P		<0,001
	SD	0,9	0,5
The duration of the development of synching at the minimum boundary range in cardio cycles	M±m	11,3±0,1	12,6±0,1
	P		<0,05
	SD	0,5	0,5
The index of regulatory-adaptive status	M±m	139,8±0,8	111,1±0,7
	P		<0,001
	SD	5,6	3,2
Regulatory-adaptive capabilities of the body		High	High

Table 1: Index of the regulatory-adaptive status, regulatory-adaptive capabilities and parameters of cardiorespiratory synchronism in students with a low level of anxiety at the beginning and at the end of the academic year.

Parameters		The beginning of the school year n=126	The end of the school year n=116
Baseline heart rate per minute	M±m	81,6±1,1	79,7±0,9
	P		>0,05
	SD	12,3	12,0
Baseline breathing rate per minute	M±m	19,8±0,3	20,2±0,2
	P		>0,05
	SD	3,4	2,2
Minimum sync range limit in cardiorespiratory cycles per minute	M±m	83,6±1,0	82,0±1,0
	P		>0,05
	SD	11,2	10,8
Maximum limit of the synchronization range in cardiorespiratory cycles per minute	M±m	97,0±1,2	91,0±0,8
	P		<0,001
	SD	13,4	8,6
Timing range in cardiorespiratory cycles per minute	M±m	13,4±0,1	9,0±0,2
	P		<0,001
	SD	1,1	2,2
The duration of the development of synching at the minimum boundary range in cardio cycles	M±m	12,9±0,2	19,5±0,4
	P		<0,001
	SD	2,2	4,3
The index of regulatory-adaptive status	M±m	103,9±1,0	46,2±0,3
	P		<0,001
	SD	11,2	3,2
Regulatory-adaptive capabilities of the body		High	Satisfactory

Table 2: Index of regulatory-adaptive status, regulatory-adaptive capabilities and parameters of cardiorespiratory synchronism in students with moderate levels of anxiety at the beginning and at the end of the academic year.

Parameters		The beginning of the school year n=38	The end of the school year n=48
Baseline heart rate per minute	M±m	79,0±0,7	79,7±0,9
	P		>0,05
	SD	4,3	6,3
Baseline breathing rate per minute	M±m	18,5±0,2	20,2±0,2
	P		>0,05
	SD	1,2	1,4
Minimum sync range limit in cardiorespiratory cycles per minute	M±m	81,1±0,6	82,0±1,0
	P		>0,05
	SD	3,7	7,0
Maximum limit of the synchronization range in cardiorespiratory cycles per minute	M±m	87,4±0,8	91,0±0,8
	P		<0,001
	SD	7,8	5,6
Timing range in cardiorespiratory cycles per minute	M±m	6,3±0,1	9,0±0,2
	P		<0,001
	SD	0,6	1,4
The duration of the development of synching at the minimum boundary range in cardio cycles	M±m	25,2±0,2	19,5±0,4
	P		<0,001
	SD	1,2	2,8
The index of regulatory-adaptive status	M±m	25,0±0,3	46,2±0,3
	P		<0,001
	SD	1,8	2,1
Regulatory-adaptive capabilities of the body		Satisfactory	Satisfactory

Table 3: Index of regulatory-adaptive status, regulatory-adaptive capabilities and parameters of cardiorespiratory synchronism among students with a high level of anxiety at the beginning and at the end of the academic year.

At the end of the academic year, the number of students with a moderate level of trait-anxiety decreased by 10 people, and the group of people with a high level of anxiety increased by the same number of students. The number of students with a low level of anxiety did not change.

The data obtained show that with increasing trait-anxiety regulatory-adaptive capabilities decrease. Nevertheless, at the beginning of the year, the majority of students rated their regulatory-adaptive capabilities according to the values of the regulatory-adaptive status index as "High" and "Good".

At the end of the academic year, among the students of the first group with a low level of trait-anxiety, the range and the index of the regulatory-adaptive status were 11.4% and 20.5% less than those parameters at the beginning of the year respectively. The duration of the development of synchronization at the minimum boundary range was 10.3% higher. Regulatory-adaptive capabilities remained "high".

Among students of the second group with a moderate level of anxiety, the synchronization range decreased by 32.8%, and the index of the regulatory-adaptive status - by 55.5%. The duration of the development of synchronization at the minimum boundary range increased by 51.2%. Regulatory adaptive capabilities decreased from "high" to "satisfactory".

Among students of the third group with a high level of anxiety, the range of synchronization decreased by 9.5%, and the index of the regulatory-adaptive status - by 17.2%. The duration of the development of synchronization at the minimum boundary range increased by 9.5%. Regulatory-adaptive capabilities decreased from "satisfactory" to "low".

CONCLUSION

According to the results obtained, we can conclude the following: the less the regulatory-adaptive capabilities of students, the higher their level of anxiety. For students with a higher level of anxiety, the educational load causes a greater decrease in regulatory-adaptive capabilities.

Thus, as one enters the educational process, there is an increase in both reactive and personal anxiety against the background of a decrease in the regulatory- adaptive capabilities of students. This fact should be paid attention to by the teachers of higher education. Knowledge of the factors contributing to the appearance of anxiety states in students, the degree of their reactive and personal anxiety is necessary to improve the educational process in order to improve its quality and increase the regulatory-adaptive capabilities of students to the educational load at the university.

Teachers of a higher educational institution and educational psychologists are recommended a number of correctional programs to reduce the level of anxiety in order to normalize the psycho-emotional state and create a favorable atmosphere among students. The use of special techniques will increase the effectiveness of students' academic activities, and act as a prevention of pathological conditions caused by prolonged exposure to high anxiety (Kasyanov, et al., 2019).

In general, the study and comparison of the level of anxiety and the regulatory-adaptive capabilities of students, assessed by the index of the regulatory-adaptive status, determined during the test of cardiorespiratory synchronism, at the beginning and at the end of the academic year will make it possible to bring additional clarity to the problem of students' adaptation to the

educational process, in particular, timely identify maladjustment and plan the necessary corrective measures.

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