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**GENDER DIFFERENCES IN ADOLESCENT AGGRESSIVENESS
IN CORRELATION WITH THE MANIFESTATIONS OF ANXIETY**

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Abstract

The article deals with the analysis of regular interrelationships between psychological and physiological indicators of adolescents' adaptation to the conditions of secondary school. Anxiety is considered as a component of maladaptation. We used the following methods: the personal anxiety scale for students aged 13—16 (by A. M. Prikhozhan) and the Russian version of Buss-Perry Aggression Questionnaire (by A. Buss, M. Perry). Aggressiveness and anxiety rates are presented along with the associated physiological markers. EEG in Pz and ECG were recorded at rest during 5 min with eyes closed, sitting. The examination was conducted using Neuro-KM machine, Russia. Adolescent girls demonstrate higher levels of anger and hostility, interpersonal and self-evaluation anxiety than adolescent boys. Adolescent girls do better in basic subjects.

The results of the research confirm that there is an anxiety risk group: latent anxiety manifests as excessive tranquillity and performs the function of psychological defence. The physiological correlate of anger and physical aggression in "inadequately tranquil" students is the index of the adequacy of regulatory processes. According to the results of the research, in the risk group of "inadequately tranquil" adolescents anger and physical aggression correlate negatively with the index of the adequacy of regulatory processes.

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Keywords: Aggressiveness, anger, hostility, anxiety, "inadequate tranquillity", the index of the adequacy of regulatory processes.



1. Introduction

Gender and intersexual differences in aggressive behaviour and anxiety are interesting for researchers (Prikhozhan, 2009; Enikolopov et al., 2011, p. 70; Han, Wang, & Su, 2016; Pajer, Edwards, Lourie, & Fields, 2016). Modern data on gender differences in the dark triad (narcissism, psychopathy, machiavellianism) that is associated with aggressive behaviour are contradictory (Egorova, Parshikova, & Sitnikova, 2015). It should also be borne in mind that the manifestations of aggression in girls and boys may differ.

2. Problem Statement

Psychological differences between men and women have a neurobiological basis. Women can process information more stably and consistently and systematize it, while men are mostly characterized by emotionally holistic perception and synthetic thinking (Berezantsev & Mitrofanova, 2009, p. 31). Women's coordinate system concerning both the surrounding world and their own personalities is more conservative and, consequently, more resistant against the influence of psychotraumatic factors.

After A. M. Prikhozhan (2009) we consider anxiety as a personal formation which includes behavioural, emotional and cognitive aspects. It can exert not only negative but also beneficial effects on the personality development due to its pronounced adaptive nature.

3. Research Questions

Before we analyze the gender differences, it is necessary to explain why we call the psychological characteristics we study "gender" rather than "sexual" ones. Speaking of psychological characteristics, the differences between men and women are always a combination of biological and sociocultural factors. The term "gender" is intended to emphasize the fact that biological features are not given to a person directly, but are always refracted through the prism of individual development and upbringing and exist as subjective experience.

4. Purpose of the Study

The purpose of this study was to identify gender differences in adolescent aggressiveness and anxiety, taking into account the associated physiological markers. We assumed that in the latent anxiety risk group, which included the "inadequately tranquil" teenagers, the indices of aggression and anger correlated negatively with the index of the adequacy of regulatory processes. "Inadequate tranquillity" functioned as a sort of "rest" from anxiety when it threatened the psychosomatic or mental health of an adolescent. Besides, it was assumed that adolescent girls were more adaptive than adolescent boys.

5. Research Methods

5.1. Psychodiagnostic methods

We used the following methods: the personal anxiety scale for students aged 13—16 (by A. M. Prikhozhan) and the Russian version of Buss-Perry Aggression Questionnaire (by A. Buss, M. Perry). The Russian version of the BPAQ includes the following scales: *Physical aggression* is a self-report on the

inclination towards physical aggression (behavioural component); *Anger* is a self-report on the inclination to irritability (emotional component); *Hostility* is a scale that includes the statements of two subscales: *Suspiciousness* and *Touchiness* (cognitive component).

The teachers provided their assessments of the students' progress in basic subjects: Algebra, Geometry, Physics, English, Literature, Russian. The teachers evaluated the academic achievement of each teenager using a five-point scale.

5.2. Physiological methods

EEG in Pz and ECG were recorded at rest during 5 min with eyes closed, sitting. The examination was conducted using Neuro-KM machine, Russia. Then we determined and subsequently analyzed the individual characteristics of alpha activity for each participant of the study: the individual alpha peak frequency (IAPF) and its amplitude. Besides, in accordance with the recommendations of the International Standard (1996), we analyzed the following parameters of the heart rate variability (HRV) as well as the results of spectral analysis of heart rate: vegetative balance index (VBI); index of the adequacy of regulatory processes (IARP); vegetative index of rhythm (VIR); stress index (SI); heart rate (HR); total power of the spectrum (TP) (ms²); spectral power in the high-frequency range (0.15-0.4 Hz) (HF) (ms²) and its percentage in the total spectrum (HF%); spectral power in the low-frequency range (0.04-0.15 Hz) (LF) (ms²) and its percentage in the total spectrum (LF%); spectral power in the very low-frequency range (0.003-0.04 Hz) VLF (ms²) and its percentage in the total spectrum (VLF%); the ratio of normalized power (LF/HF).

The SI demonstrates the degree of centralization of heart rate control and, accordingly, the stress level. The VBI shows the proportion of the contributions of the sympathetic and parasympathetic nervous systems. The IARP indicates correspondence between the activity of the sympathetic nervous system and the leading level of functioning of the sinoatrial node. If we compare the IARP with the heart rate, we can judge that the centralization of the heart rate control is excessive and, accordingly, the level of mental stress is increased. The VIR assesses the vegetative balance in terms of the activity of autonomic regulation contour.

The statistical processing of the data was carried out using the SPSS programme, version 21.0. Due to the small sample size, given that the spectral characteristics of the heart rate had a distribution different from the normal one, we used nonparametric statistics methods.

The research was conducted on the basis of the musical cadet corps in Moscow. 45 7th grade students took part in the study. There were 14 girls and 31 boys. The students fulfilled the tasks of psychological tests individually.

All the participants were divided into 3 groups depending on the level of interpersonal anxiety: "inadequately tranquil" ones (1-2 sthenes) – 20 people, adolescents with normal school anxiety (3-8 sthenes) – 21 people, and manifestly anxious students (9-10 sthenes) – 4 people. We also conducted a pathopsychological examination of the "inadequately tranquil" adolescents.

6. Findings

6.1. Gender differences in adolescent aggressiveness and anxiety

In the course of the research we found some gender differences. Adolescent girls have higher levels of hostility ($p < 0.01$), anger ($p < 0.05$), and interpersonal anxiety ($p < 0.05$) than boys. At the same time, hostility is associated with anger ($r = 0.71$ at $p < 0.001$), and anger is related to physical aggression ($r = 0.44$ at $p < 0.01$). Also, anger correlates positively with interpersonal ($r = 0.43$ at $p < 0.01$) and self-esteem ($r = 0.45$ at $p < 0.01$) anxiety. Despite high hostility, anger and interpersonal anxiety, girls have lower HR, but at the trend level ($p < 0.09$).

Hostility is a negative attitude of a person towards another person, a self-image of victimization, a hostile image of the world (Enikolopov & Chudova, 2017). Hostility and aggressiveness are the factors of inclination towards aggressive behaviour, including physical aggression. Whereas anger is an emotional state. Anger often accompanies emotional aggression.

According to the assessments provided by the teachers, girls do better in basic subjects (except English). Girls have better results in Algebra ($p < 0.05$), Geometry ($p < 0.05$), Physics ($p < 0.01$), Literature ($p < 0.01$) and Russian ($p < 0.01$). Interestingly, the academic performance correlates negatively with physical aggression and school anxiety; these preferences of teachers are more pronounced for girls (Table 01).

Table 01. The indices of connection between school marks and values of the aggression and anxiety scales

	Geometry		Russian		Physics	
	Boys	Girls	Boys	Girls	Boys	Girls
Physical Aggression	n.v.	n.v.	-0.40*	n.v.	-0.42*	-0.55*
School Anxiety	n.v.	-0.54*	n.v.	-0.61*	n.v.	-0.68**

n.v. = nonsignificant value; the symbols stand for significance levels: * $p < 0.05$; ** $p < 0.01$

6.2. Gender differences in the group of "inadequately tranquil" students

We also wanted to confirm that there was a group of adolescents with latent anxiety. Considering the age of the subjects and the fact that it was the level of interpersonal anxiety that differed significantly between boys and girls, we identified latent anxiety risk group specifically for interpersonal anxiety. In the group of "inadequately tranquil" students we found negative correlation of the IARP values with the rate of physical aggression ($r = -0.47$ at $p < 0.05$) and anger ($r = -0.58$ at $p < 0.01$).

We had already obtained similar results in the past, while studying the phenomenon of latent anxiety (66 9th and 10th grade students of Moscow comprehensive school: 37 girls and 29 boys) (Table 02) (Simakova & Tarasova, 2017).

Table 02. The results of correlation analysis (according to Spearman) in the group of inadequately tranquil adolescents

	Anger	Hostility
SI	-0.490*	-0.472*
VBI	-0.469*	n.s.
VIR	-0.544*	n.s.
HF	0.528*	n.s.
HF%	0.526*	0.469*

LF%	-0.658**	-0.475*
LF/HF	-0.582	n.s.
IAPF amplitude	n.s.	-0.517

n.v. = nonsignificant value; the symbols stand for significance levels: * $p < 0.05$; ** $p < 0.01$

We should also note that, according to A. M. Prikhozhan, latent anxiety is an unstable form that easily turns into clear, acute, uncontrolled anxiety, and vice versa. That is probably the reason why the group of manifestly anxious students includes only 4 people (girls).

What gender differences were found in the group of "inadequately tranquil" students? It is to be recalled that in this work the group of "inadequately tranquil" students includes 20 people: 12 boys and 8 girls. Adolescent girls have higher levels of hostility ($p < 0.05$), anger ($p < 0.05$), and self-esteem anxiety ($p < 0.01$) than boys. Girls do better in Geometry ($p < 0.05$), Physics ($p < 0.05$), Literature ($p < 0.05$) and Russian ($p < 0.01$).

In our previous study of the "inadequate tranquillity" phenomenon there were 23 people in the latent anxiety risk group, 15 of them were girls. Despite the fact that girls have higher level of interpersonal anxiety ($p < 0.05$), they have lower HR ($p < 0.05$) than boys.

Such results can be explained if we consider aggression and hostility as a coping strategy. And the legitimization of aggression, especially of defensive nature, may help to reduce the neuropsychic stress.

Moreover, the results confirm that we may interpret the "inadequate tranquillity" as a special form of anxiety, and, intrinsically, as a strong defence mechanism. While psychological defences are usually unconscious, coping strategies are mostly realized. Both personal defences and coping strategies are divided into productive and unproductive, adaptive and maladaptive, but the attribution to these categories can be arguable. R. Lazarus (1993) said that denial could be useful for individual's mental health. There is evidence in favor of higher adaptability of women: they resort to social support more often than men. In adolescent girls, active overcoming of difficulties is positively connected with the academic achievement (Rasskazova & Gordeeva, 2011). Women of different age groups are more adaptive even in case of endogenous disease (Rozhdestvensky, 2015; Bobrovnikova & Tarasova, 2018, p. 80). Thus, we have good reasons to assume that today's adolescent girls are not only more hostile, but also more adaptive than the adolescent boys, at least as regards the adaptation to current events.

In the future, we are going to continue to study gender differences in the "inadequate tranquillity" phenomenon.

7. Conclusion

Adolescent girls demonstrate higher levels of hostility ($p < 0.01$), anger ($p < 0.05$), and interpersonal anxiety ($p < 0.05$) than adolescent boys. At the same time, adolescent girls do better in basic subjects ($p < 0.05$).

It is confirmed that there is a risk group for anxiety: latent anxiety manifests as excessive tranquillity and functions as a psychological defence. In "inadequately tranquil" adolescents, the index of the adequacy of regulatory processes correlates negatively with anger rates ($r = -0.58$ at $p < 0.01$) and physical aggression ($r = -0.47$ at $p < 0.05$).

References

- Berezantsev, A. Yu., & Mitrofanova, O. I. (2009). Gender, compliance and quality of life in schizophrenic patients (analytical review). *Russian Journal of Psychiatry*, 1, 24-32.
- Bobrovnikova, A. S., & Tarasova, S. Yu. (2018). The role of psychotraumatic factors in the genesis of schizophrenia, *Materials of scientific-practical conference with international participation "Polyakov readings"* (pp. 78-81).
- Egorova, M. S., Parshikova O. V., & Sitnikova M. A. (2015). Sex Differences in the Dark Triad. *Psikhologicheskie Issledovaniya [Psychological Studies]*, 8(39). Retrieved from <http://psystudy.ru/index.php/eng/2015-vol-8-issue-39/1107-egorova39e.html>
- Enikolopov, S. N., Kuzminykh, A. A. (2011). The widespread ideas about male and female aggression. *Psychological Science and Education*, 5, 70-80. doi: 10.17759/pse
- Enikolopov, S. N., Chudova, N. V. (2017). The problem of hostile attitude. *Psikhologicheskie Issledovaniya [Psychological Studies]*, 10(54). Retrieved from <http://psystudy.ru/index.php/eng/2017v10n54e/1471-enikolopov54e.html>
- Han, H., Wang, G., & Su, P. (2016). Association of pubertal timing and the different dimensionality of adolescents' aggressive behavior. *Wei Sheng Yan Jiu*, 45(1), 19-23. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/?term=4.+Han%2C+H%2C+Wang%2C+G%2C+Su%2C+P.+>(2016).Wei+Sheng+Yan+Jiu%2C+45(1)%2C+19-23
- Lazarus, R. S. (1993). From psychological stress to the emotions: A history of changing outlooks. *Annual review of psychology*, 44(1), 1-22.
- Pajer, K. A., Edwards, M. C., Lourie, A. E., & Fields, S. (2016). Depressive symptoms, hostility, and hopelessness in inner-city adolescent health clinic patients: factor structure and demographic correlates. *Int J Adolesc Med Health*, 30(1). doi: 10.1515/ijamh-2016-0009
- Prikhozhan, A. M. (2009). *Psychology of anxiety. Preschool and school age*. Moscow: Piter.
- Rasskazova, E. I., Gordeeva, T. O. (2011). Coping strategies in the psychology of stress: approaches, methods, perspectives. *Psikhologicheskie Issledovaniya [Psychological Studies]*, 3(17). Retrieved from <http://psystudy.ru/index.php/eng/2011n3-17e/505-rasskazova-gordeeva17e.html>
- Rozhdestvensky, V. I. (2015). *Psychological and sex-age determinants of schizophrenic delirium* (Dissertation abstract).
- Simakova, I. N., & Tarasova, S. Yu. (2017). "Inadequate tranquility" as a latent form of anxiety in children and adolescents, "7th world conference on educational technology researches (WCETR-2017)" *AAB College* (pp. 49-52).