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All manuscripts submitted to the journal undergo a double-blind peer review process involving at least two experts.

The journal adheres to international standards of publishing ethics in accordance with the recommendations of the Committee on Publication Ethics (COPE).

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The ultimate objective is to create a novel forum for: (a) providing novice and experienced scholars with high quality scientific information; (b) rapid communication of new findings, ideas, or perspectives; (c) facilitating international collaboration between researchers and practitioners in the field of psychology and education; and (d) increasing citations, visibility, credibility, and authority of Russian scholarly researches through indexing in international databases.

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The journal is intended not only for researches, scholars, students, and practitioners, but also for general readers with an interest in the state-of-the-art and most recent developments in psychology.

Russian Psychological Journal welcomes submissions from established researchers, young scholars, educators, and practitioners making significant contributions to thematic fields of the journal.

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Contents

General psychology, personality psychology, philosophy and psychology

Elena V. Turik, Lidiya A. Dyatlova

The Emotional Sphere Impact on Existential Fears

Actualization and Intensity.....6-18

Marina S. Romanova, Anastasia V. Grishina

Self-Esteem and Self-Attitude among Military Conflict Personnel Who Were Physically

Injured and Traumatized.....19-33

Tatyana P. Budyakova, Ekaterina V. Mikheeva

Victim Personality Types in Elderly People.....34-51

Ludmila A. Shaigerova, Alexey M. Bukinich, Alexandra G. Dolgikh,

Tatiana T. Batysheva

Psychological Well-Being and Resources of Mothers of Children with Autism

Spectrum Disorder in Forced Migration.....52-74

Yulya V. Selezneva, Natalia E. Komerova, Anastasia Yu. Tarasova

Hardiness and Time Perception as Personality Resources

of Self-regulation.....75-91

Oksana R. Tuchina, Ivan A. Apollonov

Study of Value Foundations of Place Identity: A Subject Approach.....92-111

Varvara I. Morosanova, Anna M. Potanina, Alexander K. Pashchenko

Diagnostics of Subjective and Objective Uncertainty Stress: Development and

Validation of a Questionnaire.....112-132

Elena I. Gorbacheva, Ekaterina A. Zykova, Kirill V. Kabanov

Young people's Interpretation of Ethically Loaded Situations: Dependence on

Subject Context and Individual-typological Characteristics.....133-151

Psychophysiology

Vitali V. Babenko, Ekaterina M. Kovsh, Aleksander S. Stoletniy, Pavel N. Ermakov,

Denis V. Yavna, Ekaterina G. Denisova, Konstantin A. Gapchenko

The Association Between COMT Gene Genotypes and EEG Activity in Assessing

the Emotional Valence of Visual Scenes.....152-171

Tat'yana E. Sizikova, Sergei V. Leonov, Irina S. Polikanova

The Effect of Self-Reflection on Electrophysiological Activity of the Brain

Depending on the Level of Anxiety.....172-189

Educational psychology

Yulia A. Tyumeneva, Ekaterina S. Kashchenko, Maria Y. Lebedeva

Text Interestingness: Approaches to Study and Methods of Assessment in Psychological and Educational Research.....190–210

Evgeniya N. Kameneva-Lyubavskaya, Tatyana V. Borzova

Metacognitive Engagement Skills Development through Teaching Text Comprehension Methods.....211–228

Elena A. Makarova, Elena L. Makarova, Elena B. Abrosimova

Psychological and Pedagogical Comparative Diagnostics of Russian and Chinese Students with Different Creative Potential in Music Education.....229–249

Interdisciplinary Brain Research

Artur A. Rean, Andrey O. Shevchenko, Alexey A. Stavtsev, Anton L. Linkov

Positive Neuroscience – Analyzing Research Directions of The New Integrative Approach.....250–263

Social Psychology

Haifa T. Al-Bokai, Ali A. Al-Subaihi, Abdulrahman A. Al-Subaihi

Validation and Reliability Study of the Arabic Version of the Multicultural Personality Questionnaire (AV-MPQ).....264–279

Omonigho Simon Umukoro

Heritage across Horizons: Role of Socializing Entities in Nurturing African Ethnic Identity.....280–295

The Emotional Sphere Impact on Existential Fears Actualization and Intensity

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Abstract

Introduction. The article addresses the problem of increasing existential fears, their growing prevalence and intensity among the population due to changes in objective reality associated with the deterioration of the social, ecological, and political situation in the country and the world. Despite numerous studies devoted to fears, the age-related characteristics of experiencing existential fears and their connection with psycho-emotional states remain insufficiently studied.

Methods. The sample included 317 respondents. The first group consisted of respondents aged 15–17, the second group of respondents aged 20–25, and the third group of respondents aged 30–45. We examined the prevalence and intensity of fears in three age groups, taking into account gender, using the authors' questionnaire, "Features of the Actualization of Existential Fears in Individuals". We also assessed the levels of personal anxiety and depression using the Beck Depression Inventory (BDI) and the State-Trait Anxiety Inventory (STAI). The Mann-Whitney U-test was used to confirm the reliability of differences between subgroups of respondents, and Spearman's rank correlation coefficient was used to confirm relationships between variables.

Results. Fears were present in all participants, with intense fears being more common among women regardless of age group. The older age group showed a decrease in the frequency of high-intensity fears compared to the younger groups, regardless of gender. Additionally, direct significant correlations were found between the intensity of fears and the increase in anxiety and depression levels in all participants, regardless of age.

Discussion. The data suggest that a person's psycho-emotional status influences how

they experience fears, with an increase in their intensity, regardless of age and gender. Since high-intensity fears can lead to disruptions in normal adaptation and socialization, it seems necessary to create a program aimed at overcoming fears, taking into account certain psychological characteristics of the individual, including their emotional sphere (personal anxiety and depression).

Keywords

psycho-emotional status, existential fears, personal anxiety, depression, age groups

For citation

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Introduction

Fear, as a physiological phenomenon, plays a positive role: it restructures the functioning of the body in case of danger (increased heart rate, faster breathing, redistribution in the circulatory system), which ultimately has a positive effect on species survival. Sociological studies indicate that the prevalence of fears among the population is very high (NAFI Analytical Center): 92% of respondents reported experiencing fears of varying intensity; the most common fears are for the health and life of loved ones, fear of losing a job, and fear of terrorist attacks. The socio-political situation in the country and the world, the increasing number of large-scale disasters of social, biological, and technological nature, negatively affect people's emotional state, causing psychological and psychosomatic problems. Existential fears are related to the very essence of a person, to individual emotional experiences and the role of the individual in society. These fears are not always consciously recognized by a person but are present in everyone. If the biological role of fear is lost—that is, it ceases to serve as a signal related to danger or a threatening situation, and is characterized by prolonged duration and high intensity—fear becomes pathological and leads to vegetative disorders (e.g., sleep disturbances, constant tension, etc.). Individual experiences of fear and its intensity can affect the formation of a person's motivational attitudes, linked with negative emotional complexes, and can influence the individual's consciousness, making their behavior and activities less effective. Many fears are formed at an early age and are expressed both verbally and non-verbally (Akopyan, 2012). And in adolescence, in a situation of nervous system mobility and new life challenges, the problem of increased anxiety, existential fears, stress and depressive states becomes a pressing psychological problem (Simachenko, 2011).

Existential Fears

Existential fears have been a subject of study by philosophers and psychologists for many years (Kierkegaard, 2016). Significant contributions to understanding the nature of this phenomenon were made by Sigmund Freud (1925), who suggested that the formation of fears occurs in childhood and may lead to disorders in adulthood, such as sexual dysfunctions if the fear becomes neurotic (Freud, 1927).

From the behavioral perspective, reinforced maladaptive behaviors can lead to the development of fears triggered by initially neutral stimuli (Watson, 1914). Prominent Russian researchers such as L.S. Vygotsky (1993), A.N. Leontiev (2010), and S.L. Rubinstein (2017), examining phobias from a subject-activity approach, noted that fears can cause social maladjustment of a person. Russian scholar A.I. Zakharov (2000) developed Freudian ideas, distinguishing between imaginary and real fears. I.D. Yalom (1989) considered fear of death to be the primary fear experienced by every person throughout their conscious life. M. Yang (2020) pointed out that social, economic, and political crises significantly influence the formation and intensification of fears in the population, as demonstrated in studies related to the COVID-19 pandemic (Bodner et al., 2022). Courtney et al. (2020) also associate the emergence of fears with external global factors. For defining extremely intense fears caused by various adverse, threatening population-wide events, or individually significant events threatening a person's life, foreign scholars introduced the term "existential terror," which can be translated as "existential horror" (Greenberg & Arndt, 2012; Routledge, 2019; Vess, 2021).

Emotional States

Emotions are indicators of the satisfaction or dissatisfaction of needs. Persistent emotional states, which affect not only emotions but also other aspects of personality, fall into a separate category (Sudakov, 2002). Depression is a state characterized by a negative emotional background, disturbances in motivation, cognitive functions, and a decline in behavioral activity. Depression can lead to memory impairments, indirectly worsening other cognitive functions, and can thus negatively affect control over the intensity of existential fears, maladapting the individual and leading to disruptions in their socialization. Anxiety is a state characterized by an unpleasant anticipation of threat or danger, often imaginary (Chand et al., 2022). Prolonged, unfounded anxiety becomes a stable personality trait (Robinson et al., 2019). Existential fears can be subject to conscious control (Bregman, 2009; Greenberg et al., 2008; Greenberg & Arndt, 2012), while negative emotional states indirectly affect cognitive functions, leading to their decline. Could it be assumed that anxiety and depression influence the actualization of fears and the strength of their experience?

Research Objective

The aim of this study was to examine the intensity of existential fears in individuals of different ages and genders, to investigate the emotional sphere of respondents, including levels of anxiety and depression, and to explore the relationship between respondents' emotional sphere and the intensity of their existential fears. The following hypothesis was formulated: there is a relationship between the intensity of respondents' existential fears and changes in the psycho-emotional sphere of the individual.

Methods

Sample

317 people from three age groups were involved in this work:

- 15–17 years old (52 boys and 59 girls) secondary school students;
- 20–25 years old (52 boys and 53 girls) third-year university students;
- 30–45 years old (50 men and 51 women) conditionally healthy patients from among those who underwent medical examination at the medical center.

Methods

- The author's questionnaire "Peculiarities of actualization of existential fears of personality". The questionnaire contains open and closed questions, as well as several blocks aimed at studying various aspects of experiencing fears, and allows you to determine the intensity of fears (Turik, 2023);
- "Beck Depression Inventory Scale" (adapted by N. V. Tarabrin, 2001);
- "Spielberger's Anxiety Scale" (State-Trait Anxiety Inventory, STAI) (adapted by Y. L. Khanin, 1976).

The methods were used to confirm the hypothesis about the connection of existential fears of a person with stable emotional states that indirectly affect the characteristics of responding to fear and adapting to it.

Statistical processing of the results

The Mann-Whitney U-test was used, confirming the validity of differences between gender and age groups, and Spearman's rank correlation coefficient to confirm the links between variables in subgroups of subjects. The average values and standard deviation for all subgroups of respondents were also analyzed.

Results

At the first stage, we studied the existential fears of respondents based on their intensity levels. The results in the groups of respondents were distributed as follows (table 1):

- Low-intensity fears were characteristic of 46.3% of respondents in the first age group, 38.0% in the second group, and 43.6% in the third group.
- Medium-intensity fears were reported by 22.7% of respondents in the first group, 30.4% in the second group, and 33.6% in the third group.
- High-intensity fears were found in 34.5% of respondents in the first group, 30.4% in the second group, and 22.7% in the third age group.

Table 1
Intensity of Fears (%) in the Studied Gender-Age Groups

Groups of Respondents	Fear Intensity (%)		
	Low	Medium	High
Male Youth (Group 1)	61.7	23.4	17.3
Female Youth (Group 1)	27.2	22	48.2
Male Youth (Group 2)	48.0	21.2	21.2
Female Youth (Group 2)	24.5	39.6	39.6
Male Adults (Group 3)	44.0	36	20
Female Adults (Group 3)	43.1	31.4	25.5

The results show that most respondents experience strong fears, but there is an age-related trend: a decrease in the intensity of fears with age in the studied population. Young men in the younger age group exhibit fewer high-intensity fears than men in the older age groups. This may be related to the fact that individuals in the second and third age groups have a better understanding of reality.

When comparing these indicators using the Mann-Whitney U-test between gender groups, the following results were obtained: in the first age group, the intensity of fears in girls was significantly higher than in boys ($p \leq 0.01$); in the second age group, the intensity

of fears in girls was also higher ($p \leq 0.05$); in the third age group, the previously observed pattern was not registered—differences in fear intensity between men and women were not statistically significant.

At the second stage of the study, we analyzed personal anxiety and depression as aspects of the respondents' psycho-emotional state, as well as their situational anxiety. When assessing the emotional state of respondents, it was found that in the first age group, girls exhibited high levels of personal anxiety, while boys in the same age group showed moderate levels (table 2).

Table 2
Average levels of personal anxiety in the studied groups

Average levels of personal anxiety in the studied groups					
First Group		Second Group		Third Group	
Men	Women	Men	Women	Men	Women
47.22 ±9.21	42.67±9.79	49.00±7.13	41.13±8.67	45.27±7.35	43.3±8.14

Using Spearman's correlation analysis, we found a pattern: the higher the personal anxiety level of respondents, the greater the intensity of fears. For girls, this indicator is higher (up to $11.523 \pm 19.31\%$), while for boys, it reaches $12.216 \pm 33.12\%$. A positive correlation was established between anxiety levels and the increase in fear intensity in both gender subgroups (for men: $r = 0.34$, $p \leq 0.05$; for women: $r = 0.36$, $p \leq 0.05$) (Table 3).

Table 3
Significant Correlation (r) Between Personal Anxiety and Fear Intensity in Different Gender-Age Groups

First Group		Second Group		Third Group	
Men	Women	Men	Men	Women	Men
$r=0.34^*$	$r=0.36^*$	$r=0.35^*$	$r=0.34^*$	$r=0.36^*$	$r=0.35^*$

Note: *Correlation is significant at $p \leq 0.05$

It was also established that there is a positive relationship between fear intensity and situational anxiety (for men: $r = 0.37$, $p \leq 0.05$; for women: $r = 0.34$, $p \leq 0.05$) (table 4).

Table 4

Significant Correlation (r) Between Situational Anxiety and Fear Intensity in Different Gender-Age Groups

First Group		Second Group		Third Group	
Men	Women	Men	Men	Women	Men
$r=0.37^{****}$	$r=0.34^{****}$	$r=0.68^*$	$r=0.35^{***}$	$r=0.64^{**}$	$r=0.56^{***}$

Note: *Correlation is significant at $p \leq 0.01$, **Correlation is significant at $p \leq 0.02$, ***Correlation is significant at $p \leq 0.03$, ****Correlation is significant at $p \leq 0.05$

In the second age group, average levels of personal anxiety were high for women, while men showed moderate levels of anxiety (Table 2). This group also exhibited the earlier established trend: an increase in fear levels with an increase in respondents' personal anxiety. Among women, it reached $11.623 \pm 18.09\%$, while among men it was $11.599 \pm 18.94\%$. A positive correlation was observed between fear intensity and personal anxiety (for men: $r = 0.35$, $p \leq 0.05$; for women: $r = 0.34$, $p \leq 0.05$) (Table 3). The relationship between situational anxiety and fear intensity was confirmed (for men: $r = 0.68$, $p \leq 0.01$; for women: $r = 0.35$, $p \leq 0.03$) (Table 4).

In the older age group, the average levels of personal anxiety among women corresponded to high levels, while for men, the levels were moderate (Table 2). In this group, as in the previous two, there is a consistent pattern of increased personal anxiety with increased fear intensity. Anxiety was higher among women (up to $11.024 \pm 18.69\%$) and among men (up to $11.242 \pm 19.96\%$). The data in groups with high and low fear intensity did not differ significantly. A positive correlation between fear intensity and personal anxiety was observed (for men: $r = 0.36$, $p \leq 0.05$; for women: $r = 0.35$, $p \leq 0.05$) (Table 3). A correlation between situational anxiety and fear intensity was also established in the older group (for men: $r = 0.64$, $p \leq 0.02$; for women: $r = 0.56$, $p \leq 0.03$) (Table 4).

Across all age groups, nearly identical results confirmed the assumption that there is a positive relationship between existential fear intensity and anxiety, regardless of age or gender. It was also noted that higher levels of personal anxiety are characteristic of women, regardless of age.

When examining the presence or absence of depressive symptoms in individuals with varying levels of fear intensity across different gender and age groups, the following results were obtained: in the first age group, average scores indicated no depressive symptoms in either gender subgroup (Table 5).

Table 5
Average Depression Scores in the Studied Groups

First Group		Second Group		Third Group	
Men	Women	Men	Men	Women	Men
4.59 ± 1.51	8.81 ± 7.06	6.22 ± 5.45	8.92 ± 10.38	6.77 ± 5.07	6.86 ± 4.24

When studying the indicators of depression in groups with high and low intensity of fear, a pattern was established: the higher the intensity of the respondents' existential fears, the higher the recorded level of depression, it was also found that in boys with high intensity of fear, the average values of this indicator are at a level corresponding to mild depression, in girls these values are at the upper limit of the norm. It was found that the values of the depression index in people with low and high intensity of fear significantly differ: in girls, depression reaches 131.02 ± 79.32% ($p \leq 0.05$), in boys 463.17 ± 231.74% ($p \leq 0.01$). In this subgroup, a strong direct relationship was established between the values of depression and indicators of the intensity of fear in males $r = 0.41$, $p \leq 0.01$, in females $r = 0.32$, $p \leq 0.05$ (Table 6).

Table 6
Significant correlation (r) between depression and the intensity of fears in different gender and age groups

First Group		Second Group		Third Group	
Men	Women	Men	Men	Women	Men
$r = 0.41^*$	$r = 0.32^{**}$	$r = 0.31^{**}$	$r = 0.41^*$	$r = 0.32^{**}$	$r = 0.31^{**}$

Note: *correlation is significant at 0.01, ** correlation is significant at 0.05

We also studied the indicators of personal anxiety and depression in this subgroup for the presence of a connection, as a result, we established a positive correlation between these indicators in women ($r = 0.51, p \leq 0.01$) and men ($r = 0.62, p \leq 0.01$) (Table 7).

Table 7

Significant correlation (r) between depression and personal anxiety in different gender and age groups

First Group		Second Group		Third Group	
Men	Women	Men	Men	Women	Men
$r = 0.51^*$	$r = 0.62^*$	$r = 0.63^*$	$r = 1^*$	$r = 0.65^{**}$	$r = 0.59^{**}$

Note: *correlation is significant at 0.01

Studies of the second age group did not reveal depressive manifestations in female and male individuals according to the average data (Table 5). The average values of depression in women and men with high intensity of fear correspond to a state of mild depression. When studying the relationship between the recorded intensity of fears and indicators of depression, a significant positive correlation was obtained with values in women ($r = 0.41, p \leq 0.05$) and men ($r = 0.31, p \leq 0.05$) (Table 6). In the older age group, the average values also did not show the presence of depressive manifestations in the subgroup. An increase in depression values was noted in persons with high intensity of fear, as well as in the first and second groups, for women the increase was up to $131.02 \pm 79.32\%$, for men $189.09 \pm 113.49\%$, the reliability of differences in indicators between these subgroups was established ($p \leq 0.05$). Just as in the two younger groups, a direct relationship was obtained between the values of depression and the intensity of fears in both gender subgroups (in men $r = 0.32, p \leq 0.05$; in women $r = 0.31, p \leq 0.05$) (Table 6). A significant correlation was obtained between personal anxiety and depression ($r = 0.65, p \leq 0.01$; $r = 0.59, p \leq 0.01$) in the subgroup of women and men.

Discussion

The obtained data indicate that existential fears of high intensity are widespread across different age groups, and their prevalence decreases with age, which is consistent with the findings of Russo-Netzer and Davidov (2019), who discussed the increase in existential anxiety during periods of various threats, including pandemics and worsening geopolitical situations, as well as personal tragedies (Linley & Joseph, 2004; Calhoun & Tedeschi, 2006).

In all studied age groups, similar results were observed for average personal anxiety levels, with higher values noted among women. This result is most likely related to the characteristics of female socialization, as well as innate physiological differences between men and women. Similar results were obtained when studying situational anxiety, and a relationship was found between these indicators, consistent with the research of Chand, Marwaha, and Bender (2022), which revealed the mechanisms behind the development of personal anxiety.

Average depression scores in all subgroups indicated the absence of depressive conditions or the presence of only mild depressive symptoms within the sample, reflecting the prevalence of depression within the population. Depression leads to the actualization of negative memories and psychological maladjustment, likely exacerbating and intensifying personal fears.

Consequently, the existence of reliable correlations between the growth of fear intensity and stable emotional states suggests that anxiety and depression influence the experience of fear and control over its intensity. This is especially pronounced in male adolescents aged 15–17, who exhibit a lower frequency of high-intensity fears compared to the other two age groups. This could be indicative of an immature perception of objective reality, including geopolitical, economic, and social threats.

Conclusion

The study demonstrated that a person's psychological status plays a significant role in experiencing existential fears, regardless of age or gender. The research results showed that depression levels in each subgroup are within the normal range or indicate rare cases of depression. The increase in depression levels was reliably confirmed in groups with higher fear intensity. Across the entire sample, the results confirmed the relationship between depression and anxiety, suggesting the existence of an anxious-depressive emotional status. This status, given the relationship between the increase in existential fear intensity and the increase in anxiety and depression indicators, actualizes and intensifies existential fears. Further research aims to develop a preventive program aimed at reducing the intensity of personal fears, taking into account the individual's psycho-emotional state.

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Self-Esteem and Self-Attitude among Military Conflict Personnel Who Were Physically Injured and Traumatized

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Abstract

Introduction. In a person's life, a traumatic life situation or incidental life experience may lead to various dysfunction on both physiological and psychological levels. The aim of the study is to identify the specifics of self-esteem, self-attitude and attitudes towards life in people who were physically injured as a result of a traumatic event. **Methods.** The study involved 220 men with a variety of physical injuries and traumas. We used Sacks Sentence Completion Test, SSCT by J. Sacks, S. Levy and The Twenty Statements Test (TST) ("Who Am I?") by M. Kuhn, T. McPartland. **Results.** Individuals who had undergone amputations showed normal, healthy levels of self-esteem, while individuals with severe, life-threatening body injuries showed low levels of self-esteem. There are statistically significant differences in self-attitude and attitude towards different aspects of life among people with varying degrees of physical traumas and injuries. Men with severe, life-threatening body injuries showed the most pronounced feelings of guilt; they also had flashbacks to past experiences within the experience of the traumatic situation. **Discussion.** Researches of self-esteem and self-attitude in individuals who have suffered various physical injuries and traumas confirm our results. Studies confirm that people with injuries of moderate and severe forms have different attitudes towards various aspects of their lives and specifics of guilt feeling formation compared to people who have experienced amputation surgeries.

Keywords

incidental life experience, self-attitude, self-esteem, physical traumas and injuries, amputations, varying degrees of physical traumas

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Introduction

Self-attitude in psychological perspective

Self-attitude is a substructure of the fundamental psychological category, self-consciousness. Self-attitude is a person's disposition regarding self.

The P.I. Sardzhveladze's concept describes three components of self-attitude (Sardzhveladze, 2003). V.V. Stolin wrote about three emotional self-attitude axes: sympathy-antipathy, respect-disrespect, intimacy-estrangement (Stolin, 1983). Self-attitude is a hierarchical and dynamical system that has a complex structure (Pantileev, 2001). In modern psychological research, the concept of "Self-attitude" is related to "Self-consciousness", "Self-image", "Self-concept".

"Self-consciousness unit" is "*conflict personal meaning that reflects the confrontation of different subject's life relations, the confrontation of his motives and activities*" (Stolin, 1983, p. 152). This confrontation is "*realized through actions that triggers the development of contradictory attitudes toward the Self*". In turn, the "Meaning of Self" triggers further activity of self-awareness that takes place in the cognitive and emotional spheres (Stolin, 1983). This author's position is closest to the context of the present study. We will examine the self-esteem and self-attitude in the different studied groups.

S. R. Pantileev, considering the concept of self-attitude, is largely relying on V.V. Stolin's concepts of self-consciousness as a "conflicting personal meaning".

Self-attitude transformation due to physical trauma

In the current phase of research on the impact of physical trauma, researchers are consistent with the view that enduring physical changes can deeply affect one's sense of Self, thus leaving an imprint on the cognitive and somatic fields of the individual's self-image, self-esteem and self-attitude (Bonkalo, 2022; Lanius et al., 2020; Masaeva, 2008; Potapov., Kipiani, 2011;).

Bonkalo T.I. conducted an empirical study on the transformation of the image of the "bodily Self" in the structure of self-consciousness and self-attitudes of individuals with musculoskeletal disorders. The conclusion was that the transformation of the image of the bodily Self of individuals with severe physical traumas is guided by the laws of self-organization and happens nonlinearly, through the overcoming of certain crisis periods associated with the perception of body (Bonkalo, 2021).

Trufanova S.I. obtained that *"in patients with amputations and major physical traumas, the difference between attitudes to the transformation of the Self-image is based on personal characteristics of respondents: self-attitudes, life style index, coping behavior and expectation to receive an improved or impaired version of their physical self"* (Trufanova, 2017, p. 173).

Each person forms the image of the bodily Self in accordance with the subjective reflection of the appearance, structure and state of one's body. The image of the bodily Self is evolving in the process of self-knowledge, and is connected with the ideas about the specifics of the reflection of one's body in the consciousness of Others. The concept of bodily Self is necessary for studying the transformation of self-attitude in the conditions of physical injuries.

Based on the study of self-attitude and self-esteem, including our previous study (Romanova, 2024), we find it important to study self-attitude and self-esteem in individuals who have experienced a traumatic situation that resulted in severe body injuries and amputation surgeries.

Aim of the study

The aim of the study is to identify the specific features of self-esteem and self-attitudes in people who have experienced physical traumas and injuries of various degrees of severity.

Hypotheses of the study

1. There will be differences in self-esteem and self-attitude among people with varying degrees of physical traumas and injuries;
2. People with injuries of moderate and severe forms will have different attitudes towards various aspects of their lives and specifics of guilt feeling formation compared to people who have experienced amputation surgeries.

Methods

The study involved 220 military personnel aged 23 to 41 years.

Comparison groups:

3. Group 1. 74 men who underwent different types of amputations;
4. Group 2. 79 men who suffered moderate physical injuries (wounds, deep lacerations, bone fractures);
5. Group 3. 67 men with severe, life-threatening body injuries.

The respondents were interviewed by questionnaire. In the questionnaire we asked to state their age, describe the specifics of the received physical injuries that were a form of incidental life experience. Respondents were divided into a certain group according to the severity of their physical injuries and traumas. All respondents were offered standardized blanks for testing and questioning. Participation in the study was anonymous and voluntary.

We used the following psychological tools to explore self-attitude and the personal system of attitudes:

- Sacks Sentence Completion Test, SSCT by J. Sacks, S. Levy (1950) in Russian adaptation by G.G. Rummyantsev;
- The Twenty Statements Test (TST) ("Who Am I?") by M. Kuhn, T. McPartland (1954) in Russian adaptation by V.I. Yurchenko.

To analyze the primary data, we used Microsoft Excel. To examine the statistically significant differences in the groups, we applied the Kruskal-Wallis test. Statistical processing was made using the JASP 0.16 program.

Results

Sacks Sentence Completion Test

The results of quantitative analysis of the obtained data are presented in Table 1.

Table 1

Self-attitude and attitudes to the immediate environment in people with incidental life experience

Domains	Group 1 (participants with amputations)	Group 2 (participants with moderate physical injuries)	Group 3 (Participants with severe physical injuries)
Attitude toward father	0.08	0.4	0.07
Attitude toward own abilities	0.07	0.06	0.07

Domains	Group 1 (participants with amputations)	Group 2 (participants with moderate physical injuries)	Group 3 (Participants with severe physical injuries)
Goals	0.1	0.05	0.1
Attitude toward people supervised	0.08	0.08	0.03
Attitude toward future	0.04	0.01	0.03
Attitude toward superiors	0.06	0.12	0.07
Fears	0.08	0.06	0.1
Attitude toward friends	0.06	0.06	0.03
Attitude toward past	0.02	0.075	0.1
Attitude toward women	0.09	0.063	0.15
Attitude toward heterosexual relationship	0.1	0.12	0.07
Attitude toward family unit	0.05	0.05	0.1
Attitude towards colleagues at work	0.1	0.1	0.4
Attitude toward mother	0.06	0.05	0.4
Guilt	0.4	0.56	0.7

The feeling of guilt ("Guilt") is the most pronounced among other studied parameters in all groups of participants. The feeling of guilt is most pronounced in the Group 3 (respondents with severe, life-threatening body injuries) (0.7), that is reflected in their psychological well-being. Specificity of attitude towards colleagues at work is characteristic for all three groups, this sphere is most expressed in numerical equivalent in Group 3 (respondents with severe, life-threatening body injuries) (0.4).

For the Group 1 (men who underwent different types of amputations), the scale with the lowest values of expression was "Attitude toward past" (0.02). The "Attitude toward future" scale reached the lowest values (0.01) for the Group 2 (participants with moderate physical injuries), and the following scales reached the lowest values in the Group 3 (participants with severe physical injuries): "Attitude toward future" (0.03), "Attitude toward friends" (0.03), and "Attitude toward people supervised" (0.03). The majority of respondents gave as answers the value "0", showing a neutral attitude to what the sentence is about, as well as the lack of any pronounced emotions about the existing phrasing. Sometimes respondents answered with +1 and -1 values, giving us a small range for assessing emotional intensity in relation to the spheres of self-attitude and attitudes toward the closest environment.

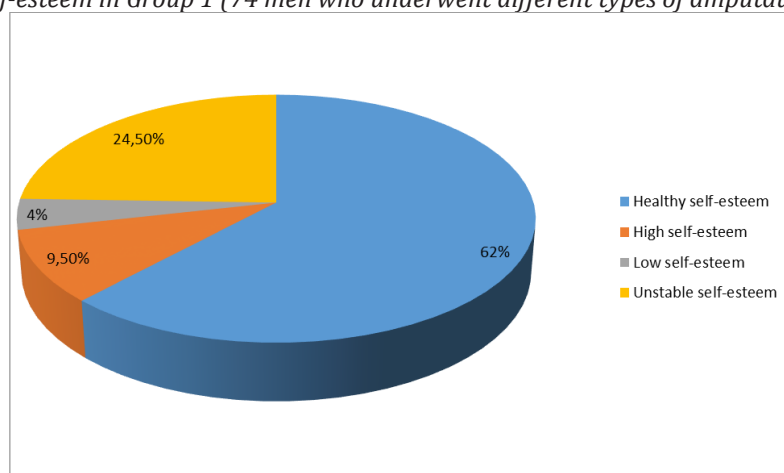
Feelings of guilt ("Guilt") are common to all three groups of military personnel. However, there are differences in attitudes toward various aspects of lives among the groups of military personnel with various types of physical traumas and injury severity.

The Twenty Statements Test

The Russian adaptation of the methodology "The Twenty Statements Test" allows us to present the results of the three groups quantitatively in terms of the 4 self-esteem options (Fig. 1–3), and then in terms of the dominant type of emotional response.

Figure 1

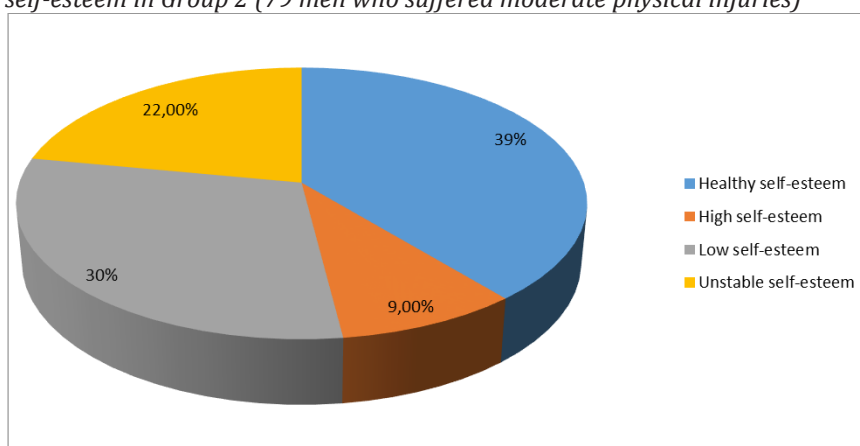
Types of self-esteem in Group 1 (74 men who underwent different types of amputations)



The group of persons who underwent amputations is inherently characterized by healthy self-esteem (62%). However, unstable self-esteem is characteristic of 24.5% of respondents with amputations. It is likely that they regularly change positions when evaluating themselves. High self-esteem was 9.5% and low was 4% of respondents with amputations.

Figure 2

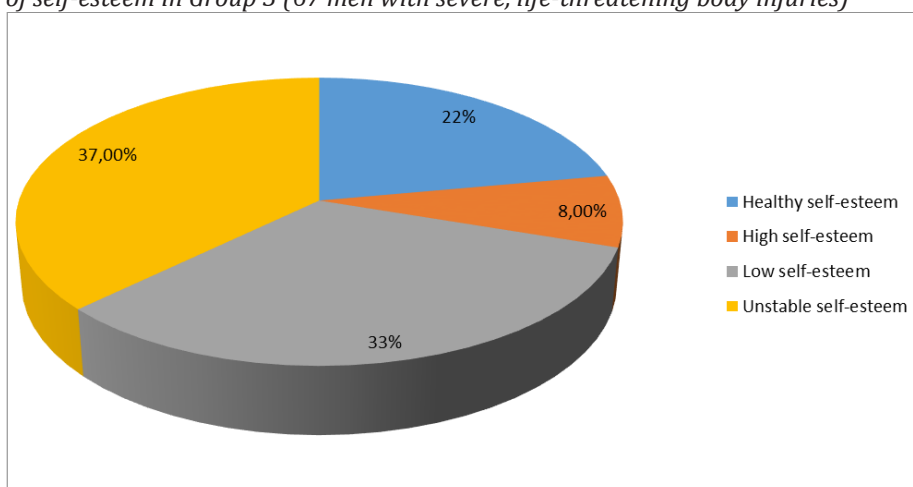
Types of self-esteem in Group 2 (79 men who suffered moderate physical injuries)



In Group 2 (men who suffered moderate physical injuries) healthy self-esteem was revealed for 39% of respondents. Unstable self-esteem is inherent in the 22% of respondents. Only 9% of respondents have high self-esteem. 30% of respondents have low self-esteem, thus indicating a negative attitude towards themselves. In Group 2 the proportion of healthy and low self-esteem is almost equal.

Figure 3

Types of self-esteem in Group 3 (67 men with severe, life-threatening body injuries)



In Group 3 (men with severe, life-threatening body injuries) unstable self-esteem tends to prevail and is characteristic of 37% of respondents. 33% of respondents assessed their self-esteem level as low. Only 22% of respondents have healthy self-esteem. High self-esteem is inherent in 8% of respondents with severe life-threatening body injuries.

Summarizing, we can conclude that negative parameters of self-esteem are most expressed in the group of persons with severe, life-threatening physical injuries. The most favorable analysis on the expression of self-esteem characteristics is presented for the group of men who underwent different types of amputations.

The second part of the methodology "The Twenty Statements Test" allows to present the distribution of emotional response (*incident response scenarios*) types to the incident situation in groups (Table 2).

Table 2

Types of emotional response in Groups with incidental life experience

Type of emotional response	Group 1 (participants with amputations)	Group 2 (participants with moderate physical injuries)	Group 3 (participants with severe physical injuries)
Emotional polarization	34%	29%	34%
Balanced	61%	51%	48%
Unbalanced	5%	20%	18%

The majority of all respondents have a balanced type of emotional response. Emotional polarization is characteristic for 34% of the Group 1 (participants with amputations) and Group 3 (participants with severe physical injuries) and for 29% of respondents of Group 2 (participants with moderate physical injuries). Emotional polarization characterizes individuals who have a dichotomy of thinking and affective response depending on the situation.

The unbalanced type of emotional response is inherent in 20% of respondents of Group 2, 18% of respondents of Group 3 and only 5% of respondents of Group 1. These respondents may be undergoing a crisis in their lives due to physical injuries and trauma.

The differences in the self-esteem and self-attitude parameters

We used the Kruskal-Wallis test to verify the hypothesis that there are statistically significant differences in the self-esteem parameters in people with varying degrees of physical traumas and injuries. The results of Kruskal-Wallis H-criterion calculations are presented in Table 3.

Table 3

Results of Kruskal-Wallis test to determine the differences in the self-esteem parameters among people with incidental life experience

Score	Group 1 (participants with amputations, N = 74)	Group 2 (participants with moderate physical injuries, N = 79)	Group 3 (Participants with severe physical injuries, N = 67)
Mid rank "Healthy self-esteem"	46.71	31.35	25.50
H Kruskal-Wallis		7.821	
p		0.020 (< 0.05)	
Mid rank «Unstable self- esteem»	17.45	15.83	34.23
H Kruskal-Wallis		8.634	
p		0.013 (< 0.05)	

So, there are statistically significant differences in the self-esteem parameters in people with varying degrees of physical traumas and injuries ($p < 0.05$). Healthy self-esteem was revealed in group of men who underwent different types of amputations, unstable self-esteem was revealed in group of men with severe, life-threatening body injuries.

The results of hypothesis testing that there are statistically significant differences in the expression of self-attitude parameters in people with varying degrees of physical traumas and injuries are presented in Table 4 (Kruskal-Wallis test).

Table 4

Results of Kruskal-Wallis test to determine the differences in the self-attitude parameters among people with incidental life experience

Score	Group 1 (participants with amputations, N = 74)	Group 2 (participants with moderate physical injuries, N = 79)	Group 3 (Participants with severe physical injuries, N = 67)
Mid rank "Guilt"	0,4	0,56	0,7
H Kruskal-Wallis		3.546	
p		0.017 (<0.05)	
Mid rank "Attitude toward past"	0.02	0,075	0,1
H Kruskal-Wallis		2.819	
p		0.011 (<0.05)	

So, there are statistically significant differences in the self-attitude parameters in people with varying degrees of physical traumas and injuries ($p < 0.05$). Men with **severe, life-threatening body injuries have the strongest feeling of guilt and are often disturbed by memories of past experiences.**

Discussion

As a result of the study, we can confirm that there are differences in self-esteem and self-attitude among people with varying degrees of physical traumas and injuries. Attitudes to various aspects of lives and the specifics of guilt will differ between people with moderate, severe physical injuries, and amputations.

The image of the bodily Self includes certain subsystems. The subsystems reflect the external and internal characteristics of the body and consist of four components: 1) cognitive (perceptions, beliefs, knowledge), 2) emotional-judgmental (assessment and attitude), 3) value-meaningful (self-importance), and 4) behavioral (activity in body characteristics transformation) (Bonkalo, 2021).

The study of the essence and structure of the image of the bodily Self in people with various physical traumas has shown that there is a connection between the level of distortion in the perception of their bodily characteristics, the level of their acceptance, the relevance of their claims and activity to change them, and the indicators of the individual's self-attitude, self-esteem and self-confidence (Bonkalo, 2021; Rabon et al., 2019; Salo et al., 2015; Steen et al., 2021).

The conclusions reached by Trufanova S.I. are in line with the results of the study. Thus, she notes 5 main types of manifestations aimed at the expression of a certain attitude to bodyness and its transformation: 1) boundaries and functions of the body; 2) subjective satisfaction of the body, self, life and well-being; 3) attitude to one's body (attention, interest, etc.); 4) attitude to body transformation; 5) image of the body. Each type presents three components of attitudes toward bodyness: cognitive, emotional-behavioral and conative, identical to theoretical foundations (Trufanova, 2017)

The results of other authors validate our results. So, Kelley, Bravo, Davies, Hamrick, Vinci & Redman (2019) consider that from the cognitive perspective, trauma survivors are often haunted by thoughts that reflect highly negative underlying beliefs about themselves, causing the formation of a negative self-image. Trauma can cause lasting somatic disturbances that significantly affect a person's sense of self, self-image, and self-attitude (Kelley et al., 2019). Kelley et al. (2019) found that two-thirds of cases of transformational processes of self-esteem in the presence of posttraumatic stress disorder (PTSD) among military personnel are missed because the checklist of PTSD manifestations for diagnostic and statistical evaluation is DSM-5 compliant. Most military personnel with PTSD report somatic-related changes in self-concept, and related identity disorders (Forkus et al., 2019). In the context of our study, these data highlight the importance of exploring the transformation of self-perception after trauma, both cognitive and somatic, as 90% of military personnel report experiencing these changes (Bonkalo, 2023a, 2023b; Lanius et al., 2020; Daneshvar et al., 2020; Meyer et al. 2019).

There is a correlation between satisfaction with one's body and the level of severity of depressive states, anxiety and subjective feeling of loneliness, the level of hope for recovery, life activity and the degree of experiencing existential problems caused by the trauma. This was found out as a result of the study of the transformation of the image of the bodily Self as a factor of adaptive resource of the personality of athletes who received severe physical injuries (Kartashev, Goltsov, Ivanova & Semiryazhko, 2021). Studying the attitude to various aspects of their lives and the specifics of guilt formation in military personnel with various types of physical traumas, we found related studies confirming the patterns identified at the empirical level (Kartashev, Goltsov, Ivanova & Semiryazhko, 2021; Polushina, Ramazanov, 2022; Sklyanko, 2020; Baksanova, Obedin, Karpov, 2022; Maslyakov, Polidanov, Sidel'nikov & Kokareva, 2023; Kadyrov, Rodnikova, 2022; Saraiya, Lopex-Castor, 2016; Faccini, Gazzillo, Gorman, De Luca, Dazzi, 2020; Li, et al. 2019).

The study by Serkin V.P. provides a descriptive characteristic of the transformation of the image of the world and lifestyle in military personnel who suffered traumatic and incidental life experience (Serkin, 2016). The author points out the irreversibility of changes in these spheres and suggests that they should be considered as basic concepts in the development of rehabilitation programs (Serkin, 2023).

Trauma-damaged body image has a negative impact on quality of life, a fact that also supports the findings of our study (Vildgrube, Kramarenko, Firsova, 2020, p. 45; Woodfin, Molde, Dundas, Binder, 2021; Braun, Park & Gorin, 2016; Gawande & Schuman-Olivier, 2022).

Conclusion

For war survivors and participants, life is divided into two phases: "before" and "after". Often a significant part of people who experienced traumatic experiences have both physical and psychological trauma.

Self-esteem and self-attitude are basic targets of rehabilitation measures and psychological support of individuals who have experienced a traumatic life situation and incidental life experience.

We have statistically confirmed that there are differences in self-esteem and self-attitude in persons with varying degrees of physical traumas and injuries. Attitude to various aspects of lives and the specifics of guilt will differ between people with moderate physical injuries, severe physical injuries and people who undergone amputations.

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Victim Personality Types in Elderly People

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Abstract

Introduction. Legal psychology rarely examines elderly crime victims, which limits the effectiveness of psychological crime prevention strategies for elderly people. **Methods.** The study included 50 participants aged 55 to 74. Biographical interviews, court case materials, and judicial and investigative practice documents were used for data collection. We analyzed instances of victim and anti-victim behavior among elderly participants, including behaviors not typically disclosed in autobiographical accounts. The data were processed using content analysis, descriptive statistics, and Student's t-test. **Results.** The hypothesis that victimization is not directly caused by the personality type of older individuals was partially supported. Depending on the circumstances, the same personality type can both contribute to victimization and prevent it. Victimization is not solely determined by personality traits, as characteristics such as *aggressiveness*, *passivity*, *activity*, *initiative*, and *neutrality* can contribute both to victim and anti-victim behavior. However, the hypothesis was not supported for one personality type in D.V. Rivman's victim typology: the non-critical type. **Discussion.** In our view, an *anti-victim personality* is one that exhibits specific behavioral responses and is able to choose an appropriate reaction to a pre-crime situation, one that aligns with the criteria for victimization, regardless of how they typically respond in other social contexts.

Keywords

elderly people, victim personality, anti-victim personality, victim typology, crime situations, pre-crime situation, D.V. Rivman's victim typology

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Introduction

The elderly people are at risk of victimization (from the Latin 'victima' – victim, and 'victimology', the study of victims) (Denisov & Kharlamov, 2022). As a result, the personality of elderly people has become an important topic in both theoretical and practical legal psychology. However, the psychological characteristics of elderly individuals who have been victimized have only been partially studied, posing a challenge for developing psychological guidelines to prevent crime victimization in this population.

Victim Typologies

The study of victim typologies has historically followed two main lines of enquiry.

The first line of inquiry concerns the study of crime genesis and the Victim-Offender relationship and Victim-Offender Overlap. Along these lines, two types of victims are distinguished: the 'victim-offender' and the 'offender-victim'. A 'victim-offender' is a primary victim who is provoked into committing a crime through unlawful or immoral behavior by a secondary victim (e.g., committing murder in response to severe humiliation). An 'offender-victim' is a secondary victim – an offender who has been victimized as a result of their immoral or criminal behavior (Corbi et al., 2012; McCarthy, 2021; Repetskaya, 2010). This typology reflects the psychological mechanisms behind the crime but does not account for other possible scenarios (e.g., when the victim does not seek revenge). In general, the described typology includes legal criteria, specifically the legal status of the participants in the crime (*offender, victim*) and their roles in the crime's mechanism, but it only nominally addresses the psychological characteristics of the participants. The same is true of other typologies of victimization, which tend to use either legal or sociological characteristics as a theoretical basis for identifying victim types (Mironenko, 2022). In these studies, the elderly people were considered a distinct group of victims and were more likely to fall prey to crime (Varchuk & Vishnevetsky, 2019).

The second line of inquiry concerns the study within victim typologies is **criminal psychology**. This field focuses on examining the characteristics of individuals who are

more likely to become victims of crime (*victim profile*). Researchers have identified several characteristics of victim proneness, including low self-esteem, lack of self-control and self-regulation, and a tendency toward engaging in high-risk behaviors and making impulsive decisions (Gottfredson & Hirschi, 2019; Nakagawa, 2019). Other characteristics include dominance of negative emotions, such as angry rumination, which reduce self-control (Denson et al., 2011), and a short-term mindset – "an orientation toward the here-and-now at the expense of considering the future" (Kübel, Deitzer, Frankenhuis, & Ribeaud, 2023, p. 1). In their research, these scientists identified specific categories of victims but did not construct a typology. For example, the 'short-sighted victim' is characterized by a predominant short-term perspective. The term 'short-sighted victims' can apply to individuals who fall victim to financial frauds driven by the pursuit of immediate benefits (Kübel et al., 2023).

Psychological Characteristics of Elderly Victims

Research has focused on the psychological characteristics of elderly victims, particularly their cognitive abilities. Studies have explored how difficulties in situation assessment might contribute to victimization (Yaroslavtseva & Dorokhina, 2016). Some personality traits become more pronounced with age, which in turn contributes to the victimization of older individuals in late ontogenesis. Therefore, research has examined character traits and personality factors among the elderly. According to Dimitrakopoulou (2023), feelings of pity make older adults more vulnerable to victimization.

In criminal psychology, 'elderly victims' have been widely studied. However, the variety of types and typologies of elderly victims remain unexplored. Researchers identified the conditions that are most predictive of victimization among older people. For example, researchers have examined elder abuse in nursing homes (Schiamberg et al., 2011; Griffiore et al., 2009) and victims of domestic violence (Schiamberg & Gans, 2000; Zhu et al., 2000). In the context of these studies, the term 'Shaken Elderly Syndrome' (Bugelli et al., 2023) is used to describe a consequence of victimization, not an inherent personality trait. It refers to older individuals who have required mental health care after abuse.

Certain studies on older adults use Eysenck's personality model, which categorizes individuals based on extraversion/introversion and neuroticism. Nevertheless, this model is predominantly utilized in the context of borderline mental disorders among the elderly, which may not capture the subtleties of typical personality traits in this age group (Su et al., 2018).

D.V. Rivman's Victim Typology

In the Russian scientific community, the investigation of victim personalities has primarily been conducted within the field of victimology, a branch of law. In the field of victimology, a wealth of research has been directed towards the delineation of the psychological

profiles of victims of criminal acts. These studies take a distinctive approach, using generalized empirical descriptions to construct psychological types. Nevertheless, these typologies provide a fundamental framework for research in the field of the psychology of security (Malkina-Pykh, 2022).

The most widely known psychological typology of crime victims in Russian science was proposed by victimologist D. V. Rivman. D. V. Rivman described six types of crime victims: 'aggressive', 'passive', 'initiative', 'active', 'non-critical', and 'neutral'. The psychological capacity of an 'aggressive' type to engage in victimization is realized as a result of the conflicting behavior exhibited by the victim. A 'passive' type may become a victim due to a lack of willingness to engage in conflict with a perpetrator, thereby avoiding confrontation. An 'initiative' victim demonstrates socially justified behavior, but becomes a victim as a result of external pressure to act in accordance with legal or moral prescriptions. An 'active' victim responds to danger without fully realizing the risks. A 'non-critical' type of victim is unable to accurately assess the potential danger and risk associated with the situation (minor victims, mentally disabled victims, elderly victims, etc.). In terms of Rivman's victim typology, elderly victims tend to fall into one of two categories: passive or uncritical (Rivman, 2002).

Victimology research in Russia often uses sociological and statistical methods, particularly when investigating criminal victimization among the elderly. Psychological profile of elderly victims is often determined based on a victim's statistical profile, which describes sociological characteristics such as gender, occupation, family status, and place of residence (Repetskaya, 2010). This is insufficient to provide effective crime prevention for elderly victims. As P.A. Kabanov (2016) notes, there is a need to intensify research on elderly victims and to initiate the development of a distinct victimization theory called "criminal victimology of gerontology". Further study of psychological personality types in late ontogenesis is required in order to develop this theory.

Anti-victim Personality Type

The concept of the ***anti-victim personality*** has been proposed as an alternative to traditional victimization theories that dominate criminal psychology and victimology. This theory suggests that a person who has experienced victimization may not be psychologically prepared to effectively resist crime and other adversities. An anti-victim personality is someone who possesses the psychological capacity to neutralize potential threats of victimization (Budyakova, Baturkina & Nizhnik, 2023). Additionally, the characteristics of anti-victim personalities in elderly individuals and older adults warrant further investigation.

D. V. Rivman's victim typology describes the victimized personality types. Although D. V. Rivman did not use the term 'victimized' in his typology, we suggest that the psychological characteristics that formally distinguish types of victimized personalities can also potentially serve as indicators of an anti-victim personality, if properly implemented

in a pre-crime situation.

The **objective** of this study is to identify deficiencies and inconsistencies in the D.V. Rivman's psychological typology of crime victims (D.V. Rivman's victim typology).

The main objective of the **empirical** study is to identify **anti-victim strategies for resisting victimization** in older adults across different victim profiles defined by D. V. Rivman's typology.

Methods

Sample. A total of 50 individuals participated in the study. They were comprised of 10 males and 40 females, all within the age range of 55 to 74 years.

Hypothesis of the study. Victimization is not directly caused by the personality type described in D.V. Rivman's typology. In different contexts, a single personality type may either facilitate or prevent victimization. Individuals with an anti-victim personality may use each behavioral pattern identified by D. V. Rivman to avoid victimization.

Rationale for the Study. To identify the behavioral characteristics of victim and anti-victim personalities among the elderly people, our research design relies on the victim typology developed by D.V. Rivman (2002). The typology is built on a psychological foundation and discerns psychological criteria for behavioral identification. The specific behavioral criteria are based on the prevailing personality trait, which can be defined as aggressive, passive, initiative, active, or non-critical. These traits categorize behaviors that occur in a pre-crime situation.

Our study investigated whether victimization is type-dependent or situation-dependent. We assumed that victimization is not determined by the type of victim, but by the conditions of the pre-crime situation. The pre-crime situation can evoke anti-victim or victim responses. A potential 'aggressive victim' may avoid victimization if the offender is unprepared for complications caused by the victim's resistance. In specific contexts, aggressiveness can be conceptualized as an anti-victim personality trait. The 'passive victim' in the event of a hostage situation, for example, is able to avoid further harm. 'Passive victims' do not engage in conflicts with the hostage-takers and do not encourage them to commit crimes against themselves. It can be assumed that passive victims in this scenario have a greater probability of survival.

The **anti-victim personality**, as defined by the approach we are developing, is a type of personality that is able to choose an appropriate response to a pre-crime situation. In some cases, aggression is appropriate. In others, a neutral stance is best. Sometimes activism is the most effective approach.

Methods. A qualitative case study and biographical interview. In the course of the biographical interviews, respondents were asked to recall situations in their past when they had been victims of crimes when they were elderly, regardless of whether or not they had sought assistance from law enforcement agencies. Furthermore, we

inquired about instances in their biographies where they had successfully avoided being victimized in elderly age, i.e. they had not become victims of a crime despite the potential for such an event to occur. We conducted a psychological analysis of the biographical facts stated in the interviews and identified the dominant behavioral type exhibited in pre-crime situations. In some cases, this analysis revealed that this dominant type allowed individuals to avoid becoming victims. In other cases, however, the dominant behavioral type resulted in individuals being victims of crime.

In addition, the empirical study included cases derived from legal and investigative practices in which an elderly individual was the victim of a criminal act.

By employing content analysis of the interview texts and cases from legal practice, we were able to discern the type of victim behavior observed in a pre-criminal situation. This analysis also enabled us to identify the dominant character trait of the victim that resulted in either victimization or its neutralization.

Results Processing. Data analysis included descriptive statistics, Student's t-test, and qualitative content analysis.

Results

Figures 1–2 present the results of the biographical interview.

Figure 1

The dominance of elderly people's personality traits in situations of victimization

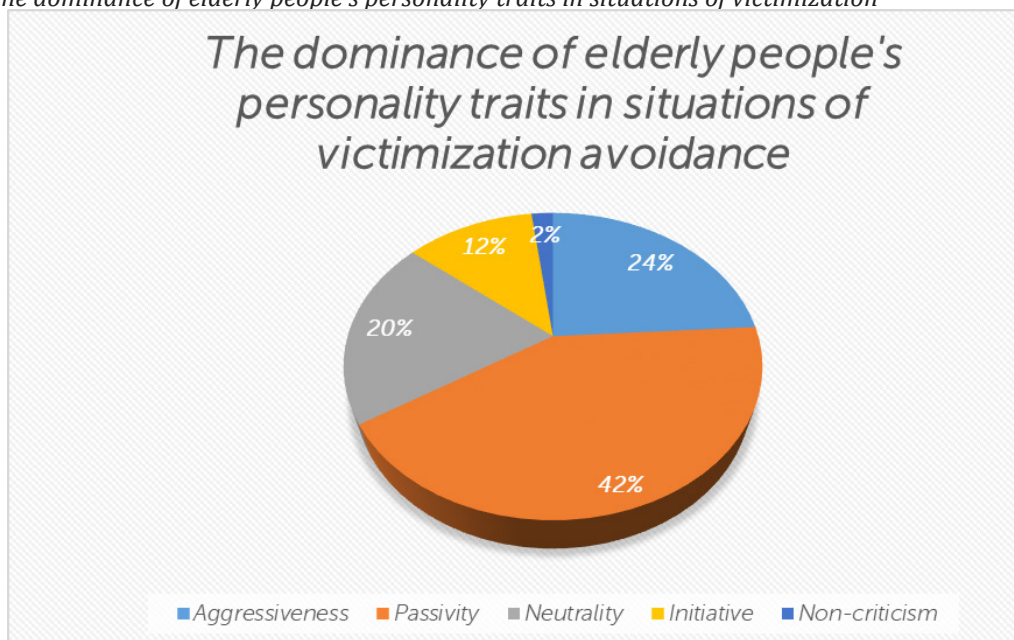
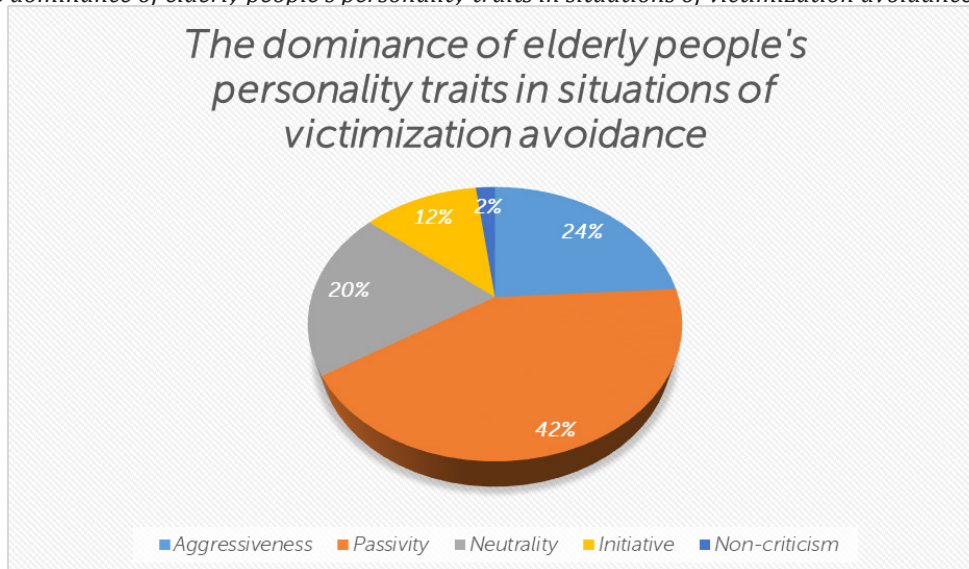


Figure 2

The dominance of elderly people's personality traits in situations of victimization avoidance



According to the data obtained, passivity (30% of cases) and aggressiveness (25% of cases) were the most typical traits that contributed to victimization in the sample. However, passivity acted as a barrier to victimization in 52.5% of cases, and aggressiveness did so in 30% of cases.

A comparative analysis using the Student's t-test revealed no statistically significant differences in the way elderly people respond to situations of victimization and avoiding victimization (Table 1).

Table 1

Comparison of the dominant types of behavior in victimization and victimization-avoidance situations

Indicators	Respondents exhibiting victimization	Respondents exhibiting anti-victimization	d	d ²
Aggressiveness	10	12	-2	4
Passivity	12	21	-9	81
Neutrality	11	10	1	1
Initiative	8	6	2	4
Non-criticism	9	1	8	64

Note. $t_{emp.} = 0$, $t_{crit 0,01} = 4,6$, $t_{emp.} < t_{crit 0,01}$

Therefore, our hypothesis that victimization is not directly caused by the elderly person's personality type is validated. In this case, the level of significance is 0.01.

Table 2 presents illustrative cases of both the victim and the anti-victim behavior of aggression-based responses to a pre-crime situation.

Table 2

Dominance of the aggressiveness personality trait in a pre-crime situation

Cases (victim behavior)	Cases (anti-victim behavior)
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The elderly woman was angry at the loud music coming from her neighbors' apartment. She approached their door and began knocking loudly, shouting and threatening to call the police if they did not turn down the music. In response, the neighbors later secretly glued the keyhole of her door. This is considered property damage (*obtained from the biographical interview*).

The family moved to another house because of a retired neighbor who continually wrote complaints about their violation of silence at night and actively judged their behavior with other neighbors (*obtained from the biographical interview*).

Two girls broke into the house of an elderly man and tried to rob him, claiming his valuables. The elderly man resisted aggressively, so the girls beat him and tied him to a bed. The elderly man lived alone and was unable to free himself from the ties. By chance, he did not die from hunger and thirst, as the mailman came by and called the police (*obtained from court case materials*).

A young man kicked an elderly man's car. The elderly man jumped out of the car and started hitting the young man, who was afraid of his aggression and did not want to escalate the conflict further (*obtained from the Internet, URL: https://youtu.be/kq6tMexMoyo?si=vMVYt_aN4uL5vUBe*).

Cases (victim behavior)	Cases (anti-victim behavior)
<p>An elderly woman was indignant because children, playing in the yard, threw a ball onto the flowerbed that she was caring for. She loudly and sharply criticized the children's behavior. The children complained to their parents. Their father, with insults, tried to break down the door of the elderly woman's apartment (<i>obtained from the biographical interview</i>).</p>	<p>An elderly man with a crowbar prevented a truck from driving on the road near his home because he believed that large transportation was destroying the road. The truck driver wanted to get out and beat up the elderly man, but was afraid that the elderly man would cripple the car with a crowbar (<i>obtained from the Internet, URL: https://www.youtube.com/watch?v=8HRCeUyPFw8</i>).</p>

As evidenced by the findings, the elderly person's aggressive behavior, in some instances, served as a contributing factor in the escalation of the conflict, while in other instances, it played a role in its de-escalation.

Next, we examine passivity as a dominant character trait in the context of elderly victimization (Table 3).

Table 3
Dominance of the passivity personality trait in a pre-crime situation

Cases (victim behavior)	Cases (anti-victim behavior)
<p>The son systematically robbed his elderly parents of their pension and they starved. At the same time, they did not go to the police because they did not want to "air their dirty linen". Later, they died from the torture inflicted by their son (<i>obtained from court case materials</i>).</p>	<p>The robbers targeted an elderly woman working alone in a store located far from any houses. They stole her garden produce cart. She didn't resist and only cried, so they left her unharmed.</p>

Cases (victim behavior)	Cases (anti-victim behavior)
The son brought noisy groups of friends to his elderly mother's home, and when she objected, he threatened to rape her. Out of shame, the mother did not complain to the neighbors. Later, the son caused serious damage to her health (<i>obtained from court case materials</i>).	Two young men robbed an elderly man in a cemetery, taking his valuables and forcing him to undress. The man offered no resistance and followed all their commands, which ultimately spared his life (<i>obtained from court case materials</i>).

In the cases of anti-victim behavior shown in Table 2, the victims consciously chose passive behavior, although it was not their typical psychological trait according to the case materials. Two respondents, a man and a woman, shared that although they had strong tempers, they made a conscious effort to act non-confrontationally to avoid permanently damaging their relationships with those who had harmed them.

Active victims may intentionally provoke situations that lead to self-harm, according to D. V. Rivman (2002). Typical examples include victims of criminal abortions, deserters, and criminals who have been injured while arrested. In our survey, we found no instances of an active victim type. This may be because respondents were unwilling to acknowledge any involvement in unlawful behavior. However, there are cases reported in operational and investigative practice (Table 4).

Table 4

Dominance of the activity personality trait in a pre-crime situation

Case (victim behavior)	Case (anti-victim behavior)
An elderly man was harassing young women at a public transportation stop. When the women tried to push back, he responded with insults or attempted to hit them. In the end, young men intervened to defend the women and ended up assaulting the elderly man (<i>obtained from operational and investigative practice</i>).	Drivers intentionally ignored the "reduce speed" rule at a specific point on the road. Those who followed the rule and slowed down became targets for road robbers (<i>obtained from operational and investigative practice</i>).

Initiative victims, according to D. V. Rivman (2002), are victims who become victims in the performance of their duties and in cases where their active social position compels them to defend legal or moral norms. As our study showed, older adults can become initiative victims in dealing with others and family strife when trying to raise their adult children. In such cases, anti-victim behavior involves limiting the duration of parental influence and demonstrating respect toward the child or educated individual. Table 5 presents cases of both victim and anti-victim behavior types in the situation of initiative personality trait dominance.

Table 5
Dominance of the initiative personality trait in a pre-crime situation

Cases (victim behavior)	Cases (anti-victim behavior)
An elderly woman saw a group of teenagers beating up a peer in the hallway of her house. She began to scold them and tried to stop them. However, the teenagers beat her, and she was hospitalized for several months after that (<i>obtained from a biographical interview</i>).	An elderly woman described how she had developed a technique for maintaining a good relationship with her daughter. After "parenting", without waiting for a response, she said: "Let's make peace!" (<i>obtained from a biographical interview</i>).
The elderly man reproached his son for not finding steady work and criticized him for taking care of him. After a lengthy reprimand, the son caused serious harm to his father's health (<i>obtained from court case materials</i>).	An elderly man had a conflict with his son. To avoid being victimized or violence by his son, he asked his daughter to resolve the conflict, effectively choosing a suitable mediator (<i>obtained from a biographical interview</i>).

Non-criticality has never been identified as a personality trait that contributes to an anti-victim response, according to data from judicial practice. Non-criticality has always only contributed to victimization (for example, see Table 6, Column 1). To prevent victimization, anti-victim behavior must overcome a person's lack of critical thinking. For instance, some elderly people adopt a protective mindset such as, "Never let strangers into your apartment under any circumstances". The victimization of a non-critical individual can be prevented by more critical family members who, for example, manage the elder's finances (see Table 6, Column 2).

Table 6

Dominance of the non-criticality personality trait in a pre-crime situation

Case (victim behavior)	Case (anti-victim behavior)
<p>A 64-year-old woman told the police that an intruder had stolen her money. The intruder had knocked on her door, claiming to feel unwell and asking for a glass of water so she could take some medicine. As the woman went into the kitchen to get the water, the intruder took all the money from her purse and left (<i>obtained from court case materials</i>).</p>	<p>The robbers called the elderly woman, informing her that her daughter had been arrested and was being held at the police station. They told her that in order for her daughter to be released, she needed to send 300,000 rubles with a courier. The pensioner responded that she couldn't provide the money, as she always gave her money directly to her daughter and didn't know where she kept it (<i>obtained from a biographical interview</i>).</p>

Discussion

Our theoretical and empirical research findings contradict D.V. Rivman's (2002) assertion that the aggressive victim type is not a typical characteristic of elderly people. Psychological studies by other authors also show that aggression can be typical of elderly individuals. As observed by S. G. Ravyts et al. (2021), aggression in the elderly is not a trivial phenomenon. It often leads to elder abuse, including incidents in nursing homes (Josefsson & Ryhammar, 2010).

I. G. Malkina-Pykh (2022) critically assessed all the victim types described in D. V. Rivman's typology, categorizing them as individuals with unproductive behavior. She proposed adding a new type to this typology – the 'socially acceptable' victim, who is capable of engaging in productive behavior in a pre-conflict situation and thereby avoids victimization. This idea is noteworthy; however, it was not theoretically developed, as there was no theoretical justification for the rules that would govern the behavior of the 'socially acceptable' type. The analysis of the questionnaire used to determine behavior types in conflict, as published in I. G. Malkina-Pykh's book (2022), which proposes socially acceptable reactions to pre-conflict situations, leads to the conclusion that a socially acceptable type can also become a victim under certain circumstances, such as an unforeseen incident. We believe that the concept of the 'socially acceptable' type of victim is underdeveloped theoretically.

Our research suggests that exhibiting 'socially unacceptable' behavior in critical situations can help prevent victimization. First and foremost, this applies to the behaviors typical of both aggressive and passive victim types. Depending on the context, both active

and passive behaviors can either contribute to victimization or serve as protection against it. We believe that an anti-victim personality is capable of exhibiting various behavioral responses and selecting the most appropriate reaction to a pre-crime situation from a victimological perspective.

The findings suggest that non-critical behavior should not be viewed as a characteristic of an anti-victim personality in elderly people, as this trait significantly weakens the protective potential associated with anti-victim personality. Furthermore, some studies indicate that uncritical behavior is a key factor that provokes criminal activity against elderly people (Smolík & Čeněk, 2017).

The social perception of older adults is often characterized by the assumption that they are passive victims and generally passive individuals (Imran & Bowd, 2023; Weicht, 2013). One characteristic of passive victims is that law enforcement agencies often learn about crimes committed against them by chance. For instance, information about abuse or beatings typically comes to light only when elderly victims seek medical help. However, as our study suggests, passivity can, in some cases, also be a trait of an anti-victim personality. The same is true for active victims. The results of our study are corroborated by the findings of other researchers. For instance, elderly criminals who employ this type of behavior for self-protection have been documented. These elderly criminals have guaranteed their safety through their criminal histories (Pageau et al., 2023).

The outcome of the study was the identified deficiencies and inconsistencies in the D.V. Rivman's psychological typology of victims of offenses. The primary inconsistency of this typology lies in the conflict between the postulate of panvictimization, which is implicitly embedded in its conceptualization, and the principles of crime prevention focused on victimization. The postulate of panvictimization asserts that victimization is inevitable, regardless of the victim's behavior. Even socially acceptable behavior in some cases, according to D.V. Rivman (2002), can still victimize a person. This postulate contradicts his own requirement to justify various prevention methods, as, in the case of fatal victimization, psychological prevention becomes meaningless. Therefore, the gap in D. V. Rivman's theoretical justification of psychological types of crime victims can be seen in the lack of discussion about the need to develop a range of alternative character traits to protect oneself from victimization. Psychological personality traits are formed throughout life and can be flexible, changing under the influence of circumstances or training. Another inconsistency in this typology is the unsubstantiated claim that older victims are exclusively non-critical or passive types of victims. Aggressiveness and activity of elderly victims is empirically confirmed.

Another contradiction in D. V. Rivman's typology can be seen in the inconsistency between the identified types and the general principles for constructing typologies. The 'non-critical' category is defined by a different set of criteria. While all types are defined by the dominance of certain character traits, the non-critical type is described by the ability to rationally assess a dangerous situation. However, it is precisely the limitations on

rationality that prevent the non-critical victim from developing anti-victim behaviors. A review of the literature reveals numerous Russian studies that use D. V. Rivman's typology. However, even those studies that attempt to refine this typology mostly propose additional victim categories, rather than fundamentally revising the existing typology (Artemyev & Polishchuk, 2007).

The fundamental premise of the 'ideal victim' concept is that a victim of a particular status is entitled to respectful treatment and trust. A review of studies conducted within this paradigm shows that drug victims are treated with disdain, while the elderly are treated with paternalistic neglect (Inzunza, 2022). Due to the expectation of unfair treatment, elderly victims, like other 'non-ideal' victims, are less likely to seek protection of their rights from law enforcement (Brady, 2023). This suggests that the primary focus of crime prevention for the elderly should be the potential victims themselves, achieved through the development of their anti-victim traits. This extends the general theory of self-defense, placing the responsibility for protection not only on the government but also on the elderly themselves (Allen, 2013).

Conclusion

Research on older adults within the concept of self-care highlights the need to develop self-care practices in this population. However, previous studies typically refer only to physical self-care (Imaginário et al., 2018; Backman & Hentinen, 2001). Our study demonstrates that self-care for older adults should also encompass caring for their own safety.

The hypothesis of our study was confirmed. It was found that there is no clear distinction between victim and anti-victim behavior in pre-crime situations. The same type of behavior in conflict, except for the non-critical type, could, in some cases, victimize the elderly person, while in other cases, it helped avoid victimization. At the same time, having different ways of reacting to conflict and choosing the most appropriate one was an indicator of an **anti-victim personality**.

Anti-victim personality traits can be considered part of the human capital of the elderly. Studies on human capital have shown that psychological achievements and social experiences are its key components. These studies showed that personal well-being can have both economic and non-economic origins. At the same time, non-economic benefits contribute to personal development (Tokas et al., 2023). Our study revealed that part of human capital involves having various behavioral responses in pre-crime situations and consciously choosing the appropriate response based on the characteristics of those situations to ensure personal and financial security effectively.

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Tatyana P. Budyakova developed the research design, conducted the study, and wrote the "Introduction," "Methods," "Results," and "Discussion" sections of the article. **Ekaterina V. Mikheeva** conducted the study, processed the data, performed the statistical analysis, and prepared the "Results" and "Literature" sections of the article.

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Psychological Well-Being and Resources of Mothers of Children with Autism Spectrum Disorder in Forced Migration

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Abstract

Introduction. This article analyzes various aspects of psychological well-being and resources for mothers of children with autism spectrum disorder (ASD) who have been displaced from their permanent residence. **Methods.** Mothers of children with ASD, the main group (N = 18, mean age 39.9 years) who live with their children in a temporary accommodation center (TAC) and the control group (N = 18, mean age 32.9 years) participated in the study. The abbreviated *Depression, Anxiety, and Stress Scale* (Lovibond, Lovibond, 1995), *Multidimensional Scale of Perceived Social Support* (Zimet et al., 1988), *Frequency of seeking help in different categories* (Ushkov et al., 2020), *Modified Semantic Differential methodology* (Molchanov, Almazova, Poskrebysheva, 2023), *Coping Ways Scale*, *Single-item assessment of general life satisfaction* were used. **Results.** Forced migrants demonstrated lower life satisfaction, weaker perception from friends and in general from different sources, more often ready to seek help from "secondary support" groups, and less often from partners and friends compared to the control group. No differences were found between the groups in measures of depression, anxiety, and stress, but the levels of depression and stress were significantly higher in

both groups compared to the population data. Differences in time perspective were found: forced migrants perceive the world in the future as less complicated compared to the control group. **Discussion.** The peculiarities of psychological well-being (increased levels of stress and depression) due to the presence of children with ASD, characteristic of both groups, and differences between groups determined by forced migration were revealed. Important resources for migrants may be a positive image of the world in the future, readiness to rely on support from family and "secondary support" groups, and some sociodemographic characteristics (presence of other children, age). **Conclusion.** The results obtained will make it possible to pay special attention to those categories of forced migrants who were previously in risk groups, including mothers of children with mental developmental disabilities.

Keywords

mothers of children with autism spectrum disorder, depression, stress, anxiety, psychological well-being, social-psychological support, coping strategies, perception of attractiveness and complexity of the world at different times

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Introduction

Children with autism spectrum disorder (ASD) face many challenges related to communication, behavior, expressing and understanding emotions, self-care, and accessing various types of services, including health care and education (Crowell, Keluskar & Gorecki, 2019). Clearly, there is a tremendous burden on the close environment of these children to nurture the child and provide for their needs on a variety of levels.

Studies conducted in different countries and cultures have revealed a reduced level of psychological well-being in parents of children with ASD, which is manifested in feelings of helplessness, frustration, feelings of fear, anxiety and depression (Nesterova & Kovalevskaya, 2015; Padden & James, 2017; Russell et al., 2020; Efstratopoulou et al., 2022;

Zovko, Šimleša, Olujić Tomazin, 2024), as well as high levels of general stress (Pisula & Porebowicz-Dörsmann, 2017). The siblings of children with ASD have also been found to be also characterized by increased anxiety and frustration and impaired communication skills (Guseva, 2017), which in turn can affect the psychological well-being of parents. Compared to parents of normally developing children, parents of children with ASD often feel isolated from others and deprived of meaningful communication, and lack social-psychological support that would allow them to cope with problems different from those of parents of normally developing children (Karst & Van Hecke, 2012; Yesilkaya & Magallón-Neri, 2024).

Regardless of gender, parents of children with ASD experience higher levels of parental stress not only compared to parents of neurotypical children, but also compared to those whose children have other developmental disabilities (Rodriguez et al., 2019). A study by Hou et al. (2018) showed that more than a quarter of mothers of children with ASD exhibit moderate to severe symptoms of depression, compared to only 15.6% of mothers of children with other developmental delays. In a comparative qualitative and quantitative study of parental stress and coping strategies of parents of children with ASD and parents of children with attention deficit disorder and learning problems, it was shown that despite similar sources of stress and generally higher levels of stress in both groups, it was higher in parents of children with ASD who also had sleep problems (Chad-Friedman et al., 2022).

Whereas fathers' levels of parental stress depend on the severity of the child's disorder, mothers of children with autism, regardless of the severity of the child's disorder, generally experience greater parental stress (Soltanifar et al., 2015) and are also more prone to rumination (Pervushina et al., 2021) compared to fathers. In those rare studies that do not find significantly elevated levels of stress in mothers of children with ASD (e.g., a study conducted by Croatian researchers (Zovko, Šimleša, Olujić Tomazin, 2024), it is likely that this may be due to sample characteristics (eg, a study conducted by Croatian researchers (Zovko, Šimleša, Olujić Tomazin, 2024), it is likely that this may be due to sample characteristics. For example, specifically in this study, it was found that mothers had sufficient levels of support from their environment and other protective factors were identified that helped them cope with stress.

To provide adequate psychological assistance and effective social support to children with ASD and their environment, an active search and study of factors contributing to parental improvement of psychological state, as well as risk factors affecting their psychological well-being, primarily mothers. Special attention in research is paid to individual and personal characteristics of parents, sociodemographic factors (age of parents and child, gender, level of education, income level, marital status) (Rosenbrock et al., 2021; Samadi & McConkey, 2014), environment (presence of close family members, support from society), severity and peculiarities of the course of the disease in the child (Enea & Rusu, 2020).

Different studies have demonstrated a mixed association of different aspects of psychological well-being of mothers of children with ASD with the same sociodemographic characteristics. For example, when it comes to education, some studies have shown that mothers with higher levels of education exhibit fewer symptoms of depression (Dembo et al., 2023) and lower levels of stress (Efstratopoulou et al., 2022), while others have found that mothers with higher levels of education exhibit lower coping skills, in particular lower scores on the reframing scale of the F-COPES questionnaire (Ntre et al., 2022). Regarding characteristics such as maternal age and marital status, there is more similarity between the results of different studies: young mothers are more stressed (Pakenham et al., 2005), single or divorced mothers are found to have higher levels of stress, depression, and anxiety compared to those with a spouse or permanent partner (Russell et al., 2020). At the same time, some studies have not found any association between basic socio-demographic characteristics (mother's age, education level, employment and marital status) and parental stress (see, for example, Zovko, Šimleša, Olujić Tomazin, 2024).

It has been noted that one of the key factors influencing various aspects of psychological well-being of mothers of autistic children is the characteristics of their social environment and relationships with others (see e.g. Sim et al., 2018; Ludlow, Skelly & Rohleder, 2012). A wide social circle and especially its diversity create favorable conditions for maintaining their mental health in the long term (Dembo et al., 2023), and lack of support from friends is a predictor of more pronounced parental stress (Zovko, Šimleša & Olujić Tomazin, 2024). Informal social-psychological support from various sources acts as the most important source of support related to the psychological well-being of mothers of children with ASD (Efstratopoulou et al., 2022; Zovko, Šimleša & Olujić Tomazin, 2024), and the predominance of women in their social environment contributes to their depression (Dembo et al., 2023).

In turn, among the risk factors that aggravate the psychological state of the mother of a child with ASD, the most studied are the severity and specificity of the symptomatology of the child's disorder and the peculiarities of the mother's interaction with the child. Thus, the increase in the time spent daily by the mother on child care and treatment reduces her ability to rethink the situation (Ntre et al., 2022). It is legitimate that the severity of the disorder's symptomatology leads to higher levels of parental stress (Enea & Rusu, 2020; Reed et al., 2017; Yesilkaya & Magallón-Neri, 2024), and the feeling of being unable to support the child and the inability to establish contact with him or her leads to the mother's emotional exhaustion, up to depersonalization (Kuzmina & Krivoshey, 2024). Although the severity and behavior of the child's problem are significant predictors of maternal depression, these relationships become insignificant when maternal satisfaction with interpersonal relationships is added (Weitlauf et al., 2014), again highlighting the critical role of relationships with the social environment in maternal psychological well-being.

A special place in the research of the psychological well-being of parents of children with ASD is occupied by the study of its relationship with various coping skills. For example, it has been shown that a low ability to rethink leads to an increase in the level of parental

stress (Ntre et al., 2022). Among destructive coping strategies, reluctance to take care of yourself, bad habits, overeating, or malnutrition have been identified. Among adaptive coping strategies, parents of children with ASD cite the ability to self-organize, have fun, participate in mindfulness practices, and seek support from parents of children with similar difficulties (Chad-Friedman et al., 2022; Picardi et al., 2018). Coping strategies that are specific to particular sociocultural contexts have also been identified. For example, a systematic review by Chinese researchers of published work on this topic in China showed that parents of children with ASD who rely on Confucian and Taoist philosophies are less susceptible to parental stress (Ng et al., 2021).

Purpose of the study

The present study aimed to: 1) compare different aspects of psychological well-being and available resources to cope with the negative emotional state of mothers of children with ASD in a situation of forced migration and in the control group; 2) compare the perception of the world in the past, present, and future in mothers of children with ASD in a situation of forced migration with the control group on two parameters: its valence (attractiveness) and complexity.

The following hypotheses were tested:

1. The level of psychological well-being is lower in mothers of children with ASD who found themselves in a forced migration compared to those whose life situation is quite stable.
2. Resources for coping with negative emotional state, including sources of sociopsychological support, will differ between the two categories of respondents.
3. The perception of the world in the past, present and future will be different depending on whether you are in a situation of forced migration or in a more familiar environment.

Methods

Sampling

Based on voluntary informed consent, 36 mothers of children aged 2 to 17 years of age with autism spectrum disorders (ASD) participated in the study and were grouped into 2 subgroups. The main group included mothers of children from Belgorod Oblast who live with their children in a temporary accommodation center (TAC) located in Moscow Oblast (N = 18, mean age 39.9, standard deviation 5.42) (hereafter referred to as the TAC subgroup). The mean age of the children with ASD was 9.44 years (standard deviation 4.9), and the number of children in the family ranged from 1 to 4 (4 mothers had two,

2 had three, and 1 had four). At the time of the study, the mothers had been living with their children in the TAC for three to four months, away from husbands and other family members for an indefinite period of time. Contact with family members was limited to remote communication and, in some cases, rare visits from family members to the TAC. An educational program was organized for children in the TAC for the first ten weeks of their stay in the TAC, after which, due to the onset of summer vacations, the rehabilitation program was limited to online developmental classes for children and a number of cultural, creative and recreational activities for children and adults. At the same time, there was an opportunity to organize additional online or offline classes with children in the city closest to the TAC. The control group included mothers of children undergoing rehabilitation at the State Budgetary Institution 'Scientific and Practical Center for Child Psychoneurology of the Department of Children's Health' (SPC DP) in the city of Moscow (N = 18, mean age 32.9, standard deviation 6.2) (hereafter referred to as the subgroup of the NPPC DP). The mean age of the children with ASD was 7.06 years (standard deviation 4.53) and the number of children in the family ranged from 1 to 4 (8 mothers had two, 3 had three, and 1 had four children). The mothers accompanied their children during a planned hospitalization of two weeks, which included rehabilitation procedures for the child.

Methods

Depression Anxiety Stress Scales (DASS-21): short version (Lovibond & Lovibond, 1995). This scale measures negative emotional states (depression, anxiety, and stress). The short version of the scale includes 21 items: 7 items for each subscale.

Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988). The method is used to assess the perceived importance of three sources of support - significant others, family, and friends - and also allows us to assess the overall level of perceived social-psychological support.

Frequency of seeking help from different categories of people from the respondents' social environment in case of emotional problems (Ushkov et al., 2020). The list includes categories related to sources of primary support (parents, close relatives, spouses) and groups related to sources of secondary support (colleagues, doctors, psychologists, etc.). Responses ranged on a 4-point scale from 1 (never) to 4 (constantly).

Modified Semantic Differential methodology (Molchanov, Almazova, Poskrebysheva, 2023). Respondents were asked to characterize the "world" in different periods of their life: at present, five years ago, and in five years, using ten pairs of adjectives with opposite meanings (bipolar semantic differential): unpredictable - stable, unfair - fair, unreliable - reliable, chaotic - manageable, hostile - friendly, fragmented - holistic, anxious - calm, useless - valuable, passive - active, complex - simple. In processing the results, the nine pairs of adjectives, except for the pair of "complex - simple», were combined into one integral scale (Cronbach's alpha >0.8) assessing the valence of the world.

The specially developed *Scale of Constructive and Destructive Ways of Coping* includes 14 items rated on a 5-point scale (from "never helps" to "always helps"), reflecting behavior aimed at adapting to life conditions and helping to distract from negative emotions.

To assess life satisfaction, respondents were given a *one-item 11-point scale* and asked to answer the question "To what extent are you satisfied with your life in general, taking into account your living conditions and personal circumstances?" (0 - absolutely not satisfied, 10 - completely satisfied).

The sociodemographic data block included the following information: age, gender, education, occupation, profession, number of children and their age, marital status.

Data analysis

The study data were analyzed in Jamovi software (version 2.3.21). The Wilcoxon test for comparing the obtained data with the results of other studies, the Mann-Whitney test for pairwise comparisons between subgroups were used (the coefficient of rank biserial correlation was calculated as an effect size, hereinafter denoted by "R"), two-factor analysis of variance with repeated measures for processing the results of the semantic differential, and the Spearman correlation coefficient (denoted by R_s) of the parameters studied with sociodemographic data was calculated.

Results

The respondents in the main group showed less life satisfaction than representatives in the control group, while no differences were found between the groups for the parameters of depression, anxiety, and stress (Table 1).

Table 1

Descriptive statistics and comparison results on dimensions of psychological well-being

Parameter	Main group	Control group	Mann-Whitney criterion values
Depression	11,412 ± 11,040	11,667 ± 9,994	U = 147.5, p = 0.868
Anxiety	7,178 ± 9,436	6,778 ± 7,519	U = 144.5, p = 0.786

Parameter	Main group	Control group	Mann-Whitney criterion values
Stress	17,176 ± 10,150	15,667 ± 11,024	U = 136.0, p = 0.585.
Satisfaction with life	6,056 ± 1,765	7,778 ± 1,555	U = 63.5, p = 0.002, R = 0.608

Note. Cells of individual groups show the mean and standard deviations.

The comparison showed that the study participants in the main group perceived significantly less support from friends and significantly less support from all sources in general compared to mothers of children with ASD in the control group (Table 2). At the same time, the comparison did not reveal significant differences between the level of perceived support from significant others (U = 105.0, p = 0.111) and the support of the family (U = 126.0, p = 0.377) in the study groups.

Table 2

Descriptive statistics and comparison results by source of perceived psychosocial support

Parameter	Main group	Control group	Mann-Whitney criterion values
Significant others	5,382 ± 1,644	6,236 ± 1,100	U = 105.0, p = 0.111
Family members	5,882 ± 1,031	6,250 ± 0,647	U = 126.0, p = 0.377
Friends	4,529 ± 1,548	6,042 ± 1,033	U = 67.5, p = 0.005, R = 0.559
General level of support	3,949 ± 0,650	4,632 ± 0,601	U = 63.5, p = 0.003, R = 0.585

Note. Cells of the individual groups show the mean and standard deviations.

Regarding the perception of the effectiveness of different coping methods, it was found that respondents in the main group were less likely to be helped to cope with negative emotions by browsing the Internet or smoking: while respondents in the control group were sometimes helped, respondents in the main group were not helped at all (Table 3).

Table 3

Coping styles and sources of support differ between respondent groups (only parameters with significant differences identified are given).

Parameter	Main group	Control group	Mann-Whitney criterion values
Viewing information on the Internet	3,000	4,000	U = 74.5, p = 0.005, R = 0.540
Smoking	1,000	3,000	U = 70.5, p = 0.004, R = 0.510
Spouses/partners	3,000	4,000	U = 86.0, p = 0.009, R = 0.469
Friends	2,000	3,000	U = 70.0, p = 0.002, R = 0.568
Doctors	2,000	1,000	U = 67.0, p = 0.001, R = 0.586

Parameter	Main group	Control group	Mann-Whitney criterion values
Psychologists	2,000	1,000	U = 73.5, p = 0.002, R = 0.546
Casual acquaintances	2,000	1,000	U = 67.5, p < 0.001, p = 0.583

Note. Medians are given as a measure of central tendency for the groups because indicators are measured on ordinal scales.

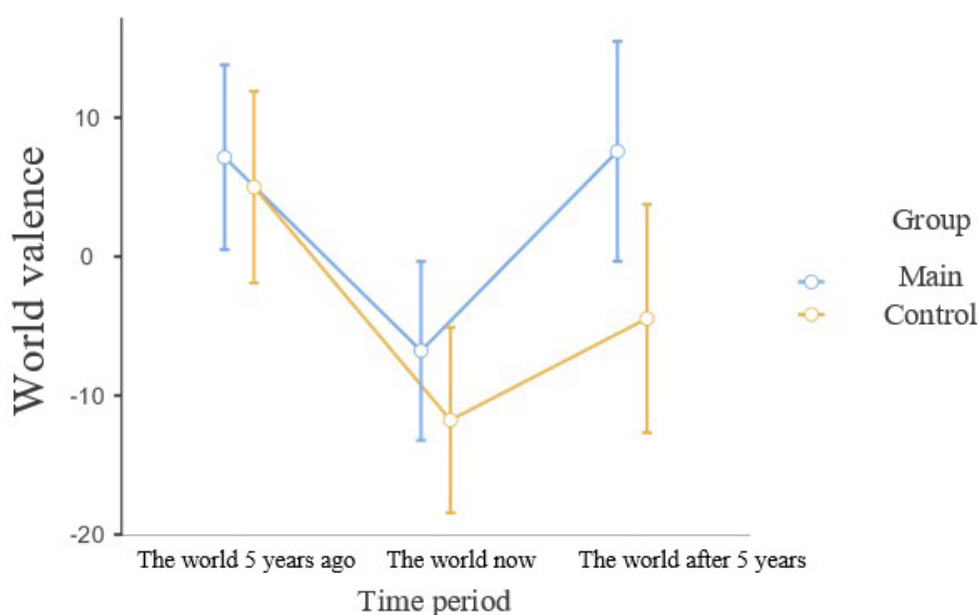
The differences were not significant for coping behaviors such as socializing with family members (U = 129.5, p = 0.257), socializing with friends (U = 142.5, p = 0.516), reading books and magazines (U = 117.0, p = 0.143), pets (132.5, p = 0.941), immersion in work or study (U = 136.0, p = 0.408), drinking alcohol (U = 100.0, p = 0.108), eating (U = 161.5, p = 1), playing sports (U = 153.5, p = 0.795), walking (U = 152.0, p = 0.986), watching movies and TV series (139.0, p = 0.447), music (U = 115.0, p = 0.126), sleeping (U = 144.0, p = 0.553).

Regarding the significance of the frequency of seeking help from different categories of social environment, it was found that respondents from the control group are more willing to seek help from spouses/partners and friends, while respondents from the group of forced migrants are more willing to seek help from doctors, psychologists, and casual acquaintances (Table 3). Although these categories are less significant for all respondents compared to the frequency of seeking support from spouses/partners and friends, women in the control group do not consider them as a source of support at all. No differences were found between the two subgroups in the frequency of seeking help from parents (U = 117.5, p = 0.137), close relatives (U = 137.0, p = 0.416), coworkers (U = 125.0, p = 0.285), social workers (U = 116.0, p = 0.123) and clergy (U = 150.5, p = 0.665).

Analysis of the results of the semantic differential, namely the integral world valence scale (Fig. 1), indicated the presence of an effect only for the factor of time period (F(2, 50) = 15.488, p < 0.001, η^2 = 0.383), while the effect of the subgroup factor of the respondents (F(2, 50) = 1.614, p = 0.209) and the interaction effect of the factors (F(1, 25) = 3.028, p = 0.094) were insignificant. Respondents from both subgroups have a more positive evaluation of the world 5 years ago and the world 5 years from now compared to evaluating the world now.

Figure 1

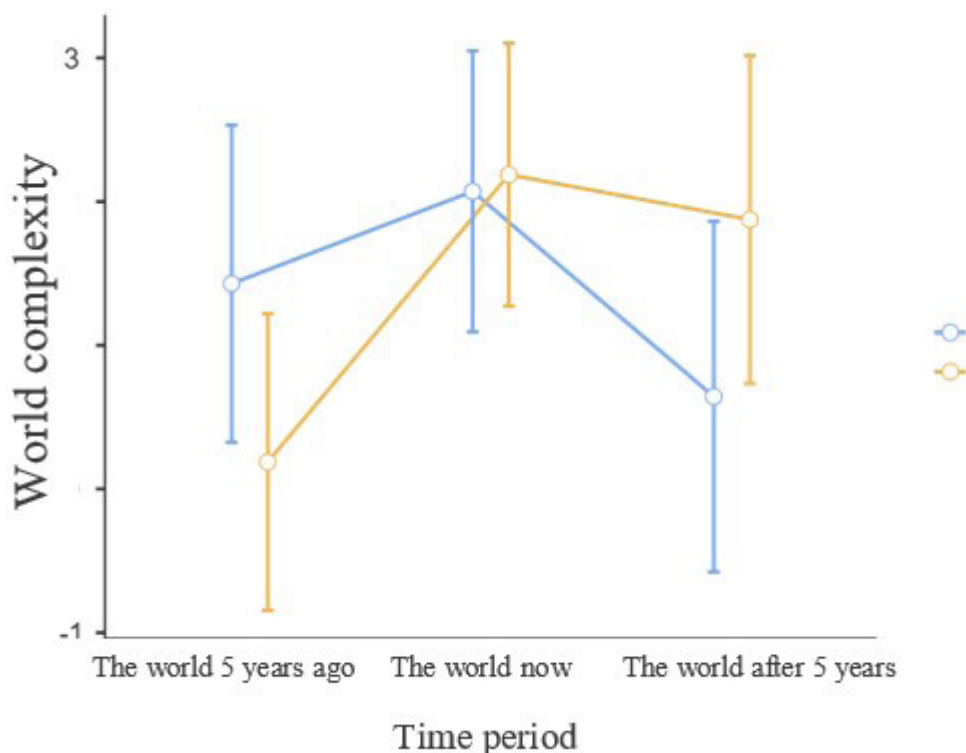
Valence of the world in different time periods in two subgroups



Note: the higher the values on the ordinate axis, the more positive respondents are about the world; the ranges of the 95-% confidence interval are indicated on the graph.

In relation to the results for the integral world valence scale, analysis of the results of the world complexity scale (Figure 2) revealed the effects of the time period ($F(2,56) = 5.837, p = 0.005, \eta^2 = 0.173$) and the factors of interaction of the time period with the respondents' subgroup factor ($F(2,56) = 4.961, p = 0.010, \eta^2 = 0.151$). The separate effect of the subgroup factor was found to be insignificant ($F(1,28) = 0.004, p = 0.952$). It was found that both subgroups perceived the world at present as the most complex, but forced migrants assessed the complexity of the world 5 years ago comparable to the perception of the world at present and believed that the world would be much simpler in 5 years. In cont ASDt, respondents of the control group perceive the world five years ago as relatively simpler and expect that in five years the world for them will be as complex as it is in the present.

Figure 2
Complexity of the world in different time periods in two subgroups



Note: The higher the values on the ordinate axis, the more complex the respondents perceive the world to be; the ranges of the 95-% confidence interval are plotted.

Analysis of the results also revealed relationships between several sociodemographic characteristics of the sample respondents as a whole and the parameters studied. Therefore, the level of perceived support from significant others ($R = -0.545$, $p < 0.001$), from friends ($R_s = -0.372$, $p = 0.028$) and, accordingly, the integral level of perceived support ($R_s = -0.543$, $p < 0.001$) decreases with age, while no relationship was found between age and the level of perceived support from the family ($p = 0.503$). Also with age, the respondents tended to evaluate the world in the future more positively ($R_s = 0.419$, $p = 0.026$), but age was not related to evaluations of the valence of the world in the present ($p = 0.054$) or in the past ($p = 0.446$). The association of age with world complexity was not found for perceptions in the past ($p = 0.102$), present ($p = 0.352$), or future ($p = 0.058$). The number of children in the family was inversely related to maternal stress levels ($R = -0.349$, $p = 0.041$) and directly related to perceptions of the complexity of the world 5 years ago ($R_s = 0.414$, $p = 0.026$). Regarding the level of education, no significant relationships were found with the variables under study (in all cases $p > 0.1$).

Discussion

The situation of forced migration, when the main reason is the threat to life and health due to ongoing military actions, can cause severe and long-term damage to the mental health and psychological well-being of any individual (AlRefaie & Dowrick, 2021; Girardi, Modesti & Del Casale, 2023). Parents of children with ASD and without this additional factor are at risk due to high levels of stress and severity of depression symptoms (Nesterova & Kovalevska, 2015; Russell et al., 2020; Efstratopoulou et al., 2022; Zovko, Šimleša & Olujić Tomazin, 2024; Pisula & Porebowicz-Dörsmann, 2017), which was confirmed by the results of our study. Although the comparison of the results obtained in the main and control samples did not reveal any differences between them on the DASS-21 subscale, the indicators comparison of the obtained with the results of studies conducted in different populations through this scale, presented in the comprehensive review by Zolotareva (2020), revealed significantly higher depression and stress scores in the respondents to our study in general, while the revealed anxiety level did not differ significantly from the results of other studies (see Appendix A).

The revealed differences between the subgroups, presumably caused by the situation of forced migration and its associated consequences (long-term living away from home in a temporary accommodation center, isolation from family members and the immediate environment, uncertainty of the near future) manifested themselves in the level of overall life satisfaction, reliance on various resources, and specific features of time perspective. Therefore, it is natural that women who live in TAs with children with ASD demonstrate significantly lower overall life satisfaction compared to those whose life situation is relatively stable, feel a lack of support, and feel more isolated from the nearest social environment. For women in the control group who have been hospitalized with their children for a short period of time, the support of spouses (partners) and friends remains particularly relevant due to its availability and regularity. In the presence of support from the immediate environment, seeking help from other categories (doctors, psychologists) and expanding the circle of social interaction is not a necessary resource.

The greater willingness of women in the group of forced migrants to seek help from their extended environment, including not only doctors and psychologists but also casual acquaintances, revealed in the analysis of the results, was also noted through personal observation of AMs during the research. Mothers of children with ASD living in the TAC actively seek consultation with specialists with inquiries of interest. This proactive expansion of social networks and acceptance of support and assistance from the wider environment (the so-called "secondary group") in case of long-term isolation from the immediate environment (the "primary group") acts as an essential resource that ensures stable levels of stress, anxiety, and depression in the situation of forced migration for women with children with autism. Despite the fact that, compared to the results of other population studies, the levels of depression and stress are significantly higher in the forced migrants, they do not differ from the same indicators in mothers of children

with ASD from the control group, whose life situation is quite stable, suggesting that such high indicators are due to experienced difficulties associated with the special needs of a child with ASD, rather than the forced migration. In studies of the influence of different sources of support on psychological well-being, it has been shown that in different life situations, support from different sources can be critically important: in some, from the "primary group" (family, friends, close relatives) and in others, from the "secondary group" (colleagues, neighbors, acquaintances, teachers, etc.) (Ushkov et al., 2020; Pierce & Quiroz, 2019; Thoits, 2011). Therefore, in a study by Ushkov et al. (2020) involving juvenile offenders also in long-term isolation from family and immediate environment, a significant direct relationship was found between seeking help from categories belonging to the "secondary group" of support (psychologists and teachers) and better emotional well-being.

As for the ways of coping with negative emotional state, despite the fact that no significant differences were revealed for the overwhelming majority of the assessed types of activities that help in a difficult life situation, which, among other things, can be explained by the peculiarities of the methodology with an insufficiently differentiated scale of answer selection and a small sample size, the revealed differences between the groups concern, nevertheless, coping behaviors that are more likely to be destructive - Internet browsing and smoking. These coping methods are significantly less frequently used by women living in TACs. Less dependence on destructive coping strategies can become an additional resource for this category, allowing them to better cope with the negative emotional state, which, in turn, can have a positive impact on the condition of children.

Time perspective features have a profound and prolonged impact on human behavior, health, and happiness (Daugherty & BASDe, 2010; Drake et al., 2008); therefore, it is highly relevant to study the perception of the world in different periods of life in categories whose psychological well-being is threatened by the presence of chronic stressors. Analysis of the perception of the valence and complexity of the world in the temporal perspective by both subgroups revealed a common trend for all study participants. Respondents in both subgroups perceived the world most negatively in the present, showing more positive perceptions of the world in the past (5 years ago) and the future (5 years from now). The more positive perception of the past compared to the present may be determined both by global factors related to a calmer geopolitical environment and, in the case of our sample, by individual life situations, for example, by the fact that the autistic child was much younger 5 years ago, and the diagnosis may not have been made yet, and relationships in the family and with other close environment may have been stronger and more regular at that time. This more positive attitude toward the future compared to the present may be an important resource for mothers of children with ASD to cope with the challenges of raising and meeting the needs of a child who requires significantly more care and presence than neurotypical children. Studies have found, among other things, that a positive outlook is associated with a better ability to self-regulate and implement

plans (Baird et al., 2021). Furthermore, fixation on a positive past and a positive future as opposed to a relatively negative perception of the present becomes an important support for self-regulation in a wide range of life situations, as shown, for example, in a study involving diabetic patients who, if they have a more positive perception of the past and future than the present, tend to monitor their blood glucose levels more regularly and thus take greater responsibility for their health (Baird et al., 2021). Kurt Lewin, in his classic work on time perspective, points to examples in history where a positive perception of the future by "a small group of people with high morale" not only helped them survive a difficult present, but also became an example for the general public (Lewin, 1997, p. 81).

A slightly different trend is observed with regard to the assessment of the world on the second scale (simplicity-complexity of the world in the past, present, and future). What unites the two subgroups of respondents is that they both assess the world in the present as complex, but the subgroup of forced migrants perceives the world in the future as simpler, whereas respondents from the control group perceive the world as complex as in the present. This discrepancy can be explained by different attributions of the reasons for such complexity. Probably, for mothers living with their children in TACs, the key factor complicating the perception of the present is the situation of forced migration rather than the peculiarities of the child's mental development. The hope that in 5 years the situation will change and living conditions will be more stable allows them to hope that the world will become easier for them in the future. While for moms in the control group, the main reason for perceiving the complexity of the world is most likely the condition of their child. And since they on average do not expect a radical change in this condition, or more precisely, an improvement in the conditions for child care and development, the world in the future is perceived as complex as in the present. At first glance is the paradoxical fact is that there are differences between the two groups in the perception of the complexity of the world in the past. Thus, for the forced migrants, the world in the past is perceived to be about as complex as in the present, while women in the control group perceive the world in the past to be simpler. One explanation could be that children of mothers from the control group are on average younger (7.06 years) than children from forced migrant families (9.44 years). Although the differences are insignificant ($U = 95.0$, $p = 0.143$), this may be because there may not be enough power to produce meaningful differences due to the small sample size. If this explanation is true, then respondents from the control group 5 years ago may not have faced the difficulties of raising a child with ASD that they have to live with in the present and which at that time could have already been faced by mothers from the sample of forced migrants whose children are older on average. The differences can also be explained by the peculiarities of the family situation (presence of a spouse, older children, support from close family members 5 years ago), but the available data are insufficient to confirm this explanation.

The association of various aspects of psychological well-being of mothers of children with ASD with sociodemographic characteristics was tested for the entire sample. The analysis of relationships allowed us to obtain two significant results, which deserve

verification in larger samples: 1) the index of stress is inversely related to the number of children in the family and 2) the perception of sociopsychological support in general, and especially from significant others and friends is inversely related to age. The observed protective role of the number of children in the family in regulating maternal stress levels may have various explanations, the most likely of which is that having other children who are not mentally impaired and who are successful at school and other activities allows them to distract themselves from caring for a child with ASD who has specific needs and requires special attention and perhaps hope that, when needed, other children will be able to share the burden of lifelong care for a child with autism with them. Other studies also emphasize the presence of a healthy child in the family as a powerful supportive resource for mother psychological well-being (Dorosheva, Grabelnikova, 2018).

The decrease in perceived support with age from a broader social environment beyond the family found in our study is consistent with the findings of other studies. A limited social circle is characteristic of parents of children with ASD throughout their life (Dembo, 2022) and is associated with a particular rhythm of life dependent on their children's specific needs, but as they age, their social environment narrows even more markedly compared to other parents, and the risk of isolation increases (Marsack & Perry, 2018; Seltzer et al., 2011). On a positive note, the direct relationship found in our study between maternal age and positive perceptions of the future may indicate increasing optimism due to experience, gaining competence in raising a child with autism, coping with crises and difficult life periods, or accepting one's special situation as it is. This connection may be a reflection of the phenomenon of so-called posttraumatic growth characteristic of parents of children with ASD (Tsioka et al., 2022) identified in a number of studies, positive changes in the psychological state of parents over time due to certain coping strategies and other resources involved.

Thus, each of the three hypotheses was confirmed: differences were found between the main and control subgroups on a number of indicators of psychological well-being, differences in the level of perceived support and willingness to seek help from different categories from the social environment, as well as in the perception of the valence and complexity of the world in different periods of time.

Limitations of the study

In conclusion of the discussion of the results, it is necessary to recognize a number of limitations of the research conducted. First, we are talking about the small sample size, which is explained by the high specificity of the respondents, especially representatives of compactly residing forced migrants with autistic children. In this sense, the absence of a number of effects may be due to the insufficient power of the study rather than the real absence of differences between subgroups or relationships between the variables under study. Therefore, the discussion of the results focused mainly on the effects found and the differences between subgroups, and less on the absence of differences. It is

important to emphasize that most studies conducted with parents of children with ASD are conducted in small sample sizes, with the exception of telephone and online surveys, whose value is inevitably reduced compared to individually conducted studies, or long-term studies that span several years. In our case, in order to exclude the influence of the rapidly changing social and geopolitical context on the psychological well-being of the respondents, the study was carried out over a short period of time, almost simultaneously with all participants.

Conclusion

This study has made some contribution to understanding the specifics of psychological well-being and available resources in a special category of forced migrants, women whose children suffer from autism spectrum disorder, living in a temporary accommodation center for a long time and staying there indefinitely.

The differences between the two groups of respondents, the main group and the control group, regarding various aspects of psychological well-being and available resources, revealed even with a small sample size, indicate the need to pay special attention to those categories of forced migrants who were at risk before they left their permanent place of residence, including mothers of children with peculiarities of mental development. Additional research is necessary in this area, which will make it possible to develop targeted and effective measures to prevent psychological well-being of this category, including for parents of children with autism spectrum disorder.

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Conflict of Interest

The authors have no conflicts of interest to declare that are relevant to the content of this article.

Supplementary Materials

Appendix 1

Differences between published DASS-21 population means (Zolotareva, 2020) and current study results

Study	Depression	Anxiety	Stress
Alfonsson et al., 2017	W = 473,0, p = 0,010	W = 389,0, p = 0,226	W = 556,0, p < 0,001
Asghari et al., 2008	W = 535,0, p < 0,001	W = 389,0, p = 0,226	W = 571,0, p < 0,001
Bottesi et al., 2015	W = 535,0, p < 0,001	W = 446,0, p = 0,031	W = 556,0, p < 0,001

Study	Depression	Anxiety	Stress
Coker et al., 2018	W = 473,0, p = 0,010	W = 292,0, p = 0,711	W = 556,0, p < 0,001
Gomez et al., 2014	W = 535,0, p < 0,001	W = 389,0, p = 0,226	W = 571,0, p < 0,001
Henri, Crawford, 2005	W = 560,0, p < 0,001	W = 474,0, p = 0,009	W = 588,0, p < 0,001
Jafari et al., 2017	W = 504,0, p = 0,002	W = 389,0, p = 0,226	W = 571,0, p < 0,001
Le et al., 2017	W = 504,0, p = 0,002	W = 368,0, p = 0,387	W = 556,0, p < 0,001
Lee et al., 2019	W = 535,0, p < 0,001	W = 446,0, p = 0,031	W = 588,0, p < 0,001
Lu et al., 2018	W = 560,0, p < 0,001	W = 446,0, p = 0,031	W = 602,0, p < 0,001
Musa et al., 2007	W = 504,0, p = 0,002	W = 338,0, p = 0,711	W = 542,0, p < 0,001
Nanthakumar et al., 2017	W = 535,0, p < 0,001	W = 446,0, p = 0,031	W = 571,0, p < 0,001
Notron, 2007	W = 504,0, p = 0,002	W = 389,0, p = 0,226	W = 556,0, p < 0,001
Osman et al., 2012	W = 504,0, p = 0,002	W = 389,0, p = 0,226	W = 571,0, p < 0,001
Pezirkianidis et al., 2018	W = 504,0, p = 0,002	W = 389,0, p = 0,226	W = 542,0, p < 0,001
Szabó, 2010	W = 504,0, p = 0,002	W = 389,0, p = 0,226	W = 571,0, p < 0,001
Tully et al., 2009	W = 504,0, p = 0,002	W = 389,0, p = 0,226	W = 571,0, p < 0,001
Vasconelos-Raposo et al., 2013	W = 535,0, p < 0,001	W = 389,0, p = 0,226	W = 571,0, p < 0,001

Note. Significant differences are bold. Expected p-value level for null hypothesis rejection is corrected by splitting 0,05 by the number of comparisons (0,05/18 = 0,0028).

Research article

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Hardiness and Time Perception as Personality Resources of Self-regulation

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Abstract

Introduction. Today's world is facing increased uncertainty and new geopolitical risks. In crisis conditions of society development it is necessary to study personal resources of conscious self-regulation among people who are in a difficult life situation. Our study aims to explore the personality resources of conscious self-regulation of people living in the zone of local armed conflict. **Methods.** The sample was 230 people. We used Zimbardo Time Perspective Inventory, Hardiness Survey by S.R. Maddi, Conscious Self-Regulation Profile Questionnaire by V.I. Morosanova, Action Control Scale J. Kuhl, U-Mann-Whitney statistical test, r-Spearman correlation coefficient. **Results.** "Past Negative" time perspective is correlated with low hardiness; Future orientation provides high levels of hardiness and the capacity to project and planning. Action orientation and an ability to realize one's intentions are associated with high hardiness and resilience, future orientation, the ability to be flexible, and to correct the program of actions. **Discussion.** Time perception and hardiness are significant resources of self-regulation that influence its functional, operational-technical and psychological components.

Keywords

hardiness, conscious self-regulation, time perspective, personality resources, action control, past negative, commitment, challenge, planning, future orientation

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Introduction

In today's world there are many challenges, information overload, growing uncertainty. To cope with these challenges, a person needs to be self-organized, independent, flexible and responsible in decision-making. Psychological research focuses on the study of personal and adaptive resources and features of personality transformation in the situation of uncertainty of the environment.

Hardiness and Intentionality

Hardiness is the foundation of an individual's resistance to an uncertainties of the future. Hardiness (Maddi, 2004) is a psychological phenomenon, a person's ability to be open to new experiences, to be involved in current life activities and to act without guarantees of success; to take responsibility and manage situations that are within one's control. A hardy person makes decisions and acts in accordance with one's goals, values, desires, and overcomes environmental resistance.

"Intensity of life experience" is connected with the human ability to act. Rollo May writes about this in his analysis of the will and intentionality (2016). Both will and intentionality are related to a person's determination to act in a certain way. The future becomes an identity-related time through the attitude "I will make it that way". A person finds individuality in intentionality. Intentionality is the ability of the consciousness to have an intention, to be continuously directed towards something. "Constructive" anxiety is related to the awareness of one's capabilities and capacity for action. Expressed fears and anxiety disrupts the connection with the world. Loss of direction, inadequate reactions, lack of "intentionality" are related with "meaningful contents of knowledge or will" (Tillich, 1995, p. 37). Intentionality is the ability to establish connections with the world and to carry out creative activity. Intentionality reveals a person's vitality.

Conscious self-regulation

The problem of self-regulation is actively developed in modern psychology (Banshchikova, Sokolovskii, & Korosteleova, 2022; Morosanova, 2022). "Conscious self-regulation is a controlling meta-resource including universal and special regulatory competencies that provide the conscious setting of goals and managing their achievement" (Morosanova, 2022, p. 1). Regulatory personal properties (autonomy, ability to overcome difficulties, creativity) are predictors in the formation of individual self-regulation style. Conscious self-regulation allows to manage voluntary activity in order to achieve goals (Morosanova, 2022; Konopkin, 2004, 2006; Kadyakina, 2009). Conscious self-regulation determines success in learning new activities and a person's ability to develop themselves and realize their individual potential.

Action control: action orientation and state orientation

Obstacles to the realization of intentions and actions are (Kuhl, 2000): first disposition, action orientation (developed intention, involuntarily performed action without willpower); the second disposition, state orientation (action is hampered by excessive concentration on thoughts and states). Emotion and motivation, attention control (focusing on meaningful information and ignorance of distracting factors); perceptual control, failure control, and behavioral control provide action control (Kuhl, 2000). Will through action control keeps the intention active under favorable conditions and stops the activity under unfavorable conditions (Kormacheva, Dontsov & Mashkova, 2021).

Time perspective

Time perspective is a subjective image of one's life path (Golovaha & Kronik, 2008; Nuttin, 2004).

Time perspective is expressed in life position; lifeline (vector of movement) and life perspective (opportunities for self-realization) (Abulkhanova, 2001), it is a filter that a person looks at the world through (Zimbardo, 2010).

Personality resources in the context of a social crisis

Hardiness, self-regulation, action control and time perspective are significant personal resources that are especially important to study in times of social crisis. Stressfulness, uncertainty, situations of trauma and deprivation can be resources for growth and can "mobilize a person to change the pattern and increase the quality of self-regulation of one's life activity in a compensatory way" (Leontiev, 2016, p. 24), and can be universal resources for self-regulation. Universal resources restructure connections of interaction with the world and allow individual mobilize and adapt to changing environments.

Stress, life losses reorganize the system of self-regulation, activate compensatory mechanisms and provide high quality of self-regulation processes.

Aim and hypotheses of the study

Aim of the research is to study personal resources of self-regulation (time perspective, hardiness, action control) in people who live in the zone of local armed conflict.

Hypotheses of the study:

1. Time perspective, hardiness, action control can be can be resources for self-regulation;
2. Hardiness, time perspective, self-regulation characteristics of action-oriented and state-oriented people will have differences.

Methods

There were 230 people (higher education teachers living in the zone of local armed conflict). The age ranges from 23 to 45 years. The sample consists of 109 men and 121 women.

Research methods:

1. Zimbardo Time Perspective Inventory, ZTPI;
2. Hardiness Survey – Personal Views Survey III-R (2001) – by S.R. Maddi in Russian adaptation by D.A. Leontiev;
3. Self-Regulation Profile Questionnaire – SRPQM – by V.I. Morosanova;
4. Action Control Scale (ACS-90) by J. Kuhl in Russian adaptation by S.A. Shapkin.

We used U-Mann-Whitney statistical test, r-Spearman correlation coefficient to process the results.

Results

Specifics of volitional control

At the first phase of the study, we examined the specifics of volitional control (Action Control Scale (ACS-90) by J. Kuhl).

We categorized the respondents into two groups based on the results:

- Group 1. 51 participants with high scores on the "Action orientation" scale;
- Group 2. 58 respondents with high scores on the "State orientation" scale;
- Group 3. 121 respondents with mid-range values.

We will compare the results of the first and second groups. So, groups with high values on the "Action orientation" scale (hereafter – Group 1, N = 51 people) and "State Orientation" (hereafter – Group 2, N = 58 people).

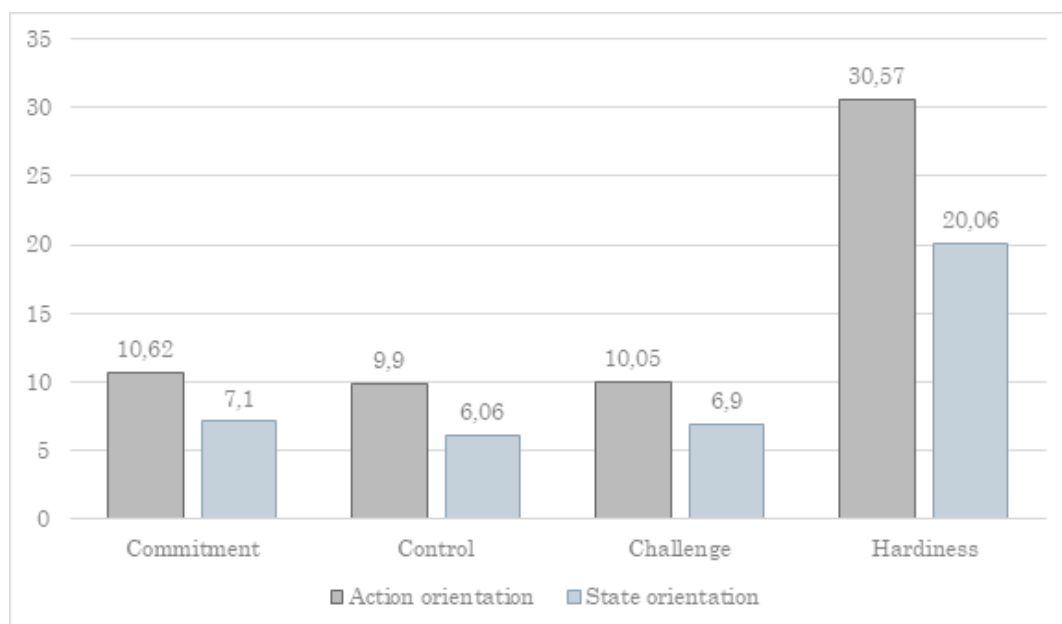
Hardiness

Figure 1 represents the values of respondents in the "Hardiness Survey". Group 1 (action-oriented) compared to Group 2 (state-oriented) has higher values on all scales of the "Hardiness Survey" methodology: "Commitment" (10.62 & 7.10), "Control" (9.9 & 6.06), "Challenge" (10.05 & 6.9) and "Hardiness" (30.57 & 20.06). Differences between groups are statistically significant and tested by the U-Mann-Whitney statistical test.

Action orientation can be associated with the ability: to take risks, to act in terms of unguaranteed results, to be involved in lively activities, to believe in the possibility to influence events and to make conscious decisions.

Figure 1

The results of the study in scores ("Hardiness Survey" by S.D. Maddi» Russian adaptation by D.A. Leontiev)

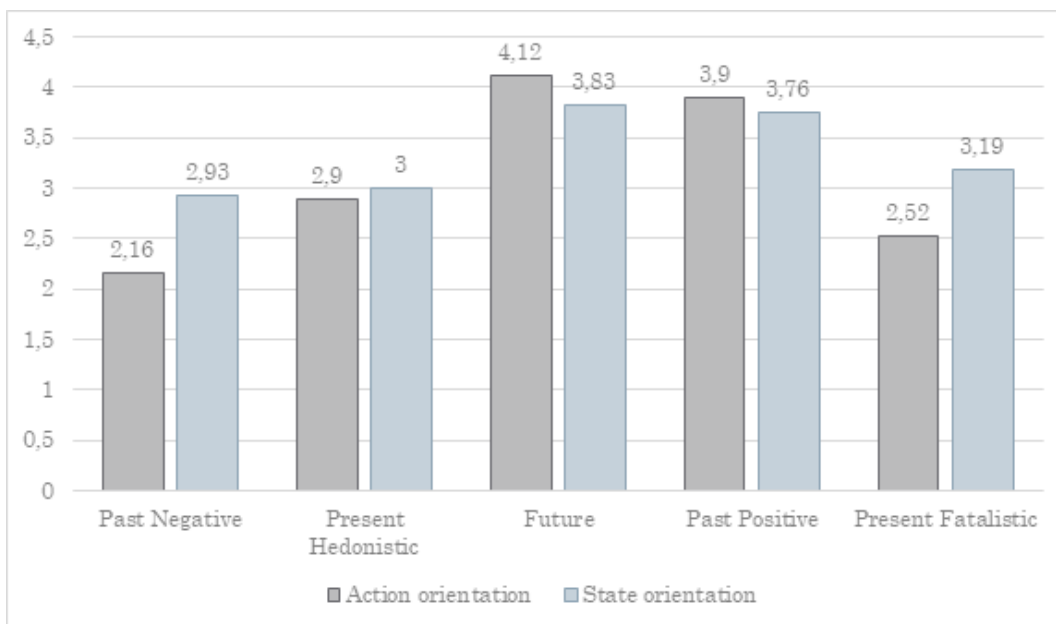


Time perspective

At the next stage, we analyzed the findings of the time perspective study in respondents with action/state orientation. Figure 2 shows the results of Zimbardo Time Perspective Inventory, ZTPI.

Figure 2

The results of the study in scores (Zimbardo Time Perspective Inventory, ZTPI)



Group 2 (state-oriented) has higher values on the "Past Negative" scale than Group 1 (action-oriented) (values of 2.93 and 2.16). Respondents in Group 2 (state-oriented) are less inclined to perceive their past as useful and meaningful experience. They focus more on the negative aspects of the past, and are more likely to interpret the past as a traumatic experience.

On the "Past Positive" Scale, the results in Group 1 (action-oriented) (3.9) were significantly higher than Group 2 (state-oriented) (3.76). Action-oriented people have a greater acceptance and meaningfulness of past experiences, they have a tendency to perceive the past as useful no matter the circumstances.

On the scale "Present Fatalistic" (2.5 and 3.19) higher results are in Group 2 (state-oriented) than in Group 1. Group 2 is more characterized as fatalists, believing in fate; as opposed to having a pronounced belief in themselves.

On the scale "Future" we can also record statistically significant differences in Group 1 (action-oriented) (4.12) and Group 2 (state-oriented) (3.83). Respondents with action orientation have highly formed life goals and the ability to construct the image of future.

So, attitudes toward time might be a resource that allows a person with positive past experiences to rely on their past and view it as a source of helpful coping skills to deal with life's challenges. Negative perception of the past is associated with being "frozen" in the present state, with the inability to predict the future and construct the image of the

future, with difficulties associated with overcoming external circumstances. A high focus on the future allows a person to become more resilient and prepared to cope with life's challenges.

Conscious Self-Regulation

We analyzed the features of self-regulation of respondents living in the zone of local armed conflict ("Self-Regulation Profile Questionnaire – SRPQM" by V.I. Morosanova).

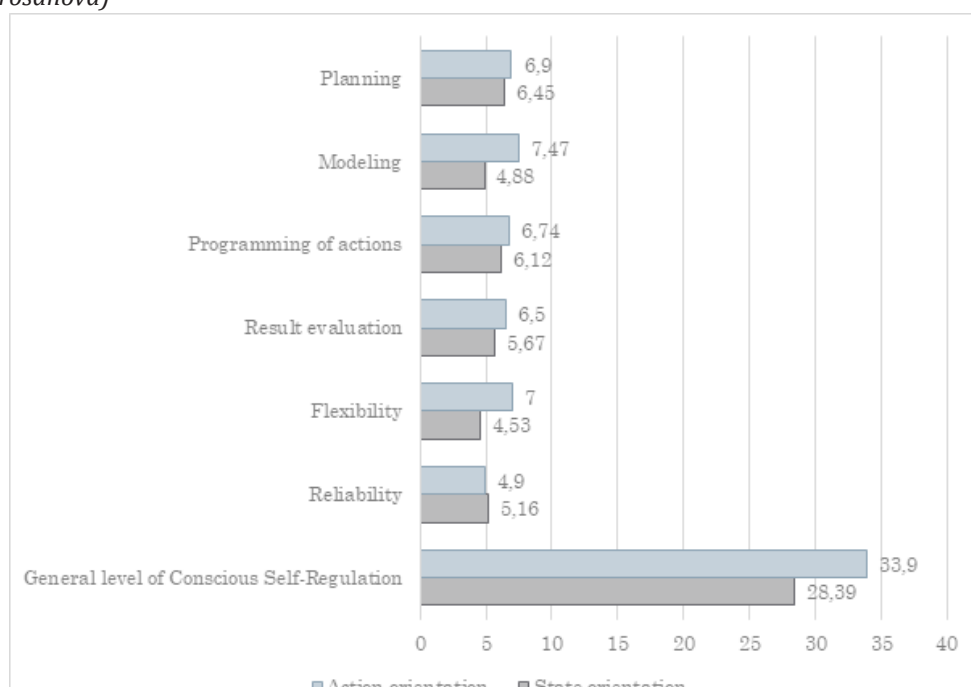
Group 1 (Action orientation) has higher scores on the scales than Group 2 (State orientation): "Planning" (6.9 & 6.45), "Modeling" (7.47 & 4.88), "Programming of actions" (6.74 & 6.12), "Result evaluation" (6.5 & 5.67) and "Flexibility" (7 & 4.53). Respondents with action orientation are tend to plan, predict results, evaluate the current condition and correct the ways of action if it is necessary. Respondents of this group are flexible, able to quickly assess current changes, highlight the most significant conditions and correct their own programs of action. In a situation of uncertainty action-oriented respondents may be more adaptable and successful.

The obtained data is statistically significant and summarized results are presented in Table 1.

Figure 3 shows the self-regulation profile of the two groups.

Figure 3

The results of the study in scores ("Self-Regulation Profile Questionnaire – SRPQM" by V.I. Morosanova)



In respondents living in the zone of local armed conflict, high and mid-range values with a tendency to high values prevail in all self-regulation scales (Figure 3). A developed system of conscious self-regulation may be a personal resource for adapting to ever-changing situation, especially in situations of long-term stress.

High values on "Planning", "Modeling", "Programming of actions" and "Result evaluation" scales let us to mention opportunities for self-regulation: the ability to consciously set goals, to observe and understand the conditions necessary to achieve goals ("Modeling"), to detail executive actions, to build an algorithm for their realization, to rely on specific environmental conditions to construct actions ("Programming of actions"); the ability to correctly assess the results of one's actions ("Result evaluation"). An important indicator for the studied sample is high values on the scale "Flexibility". People living in the zone of local armed conflict are able to take into account the factors affecting the achievement of goals, quickly react to current changes, and modify the program of behavior in accordance with new environmental conditions.

We found no age and gender differences in the results. The results of group comparison are summarized in Table 1. We applied the Mann-Whitney criteria.

Table 1

Summary table of research results in two groups (mid-range values, in scores)

Scales	Action orientation (Group 1)	State orientation (Group 2)	Significance level, p
Hardiness Survey			
Commitment	10.62	7.10	0***
Control	9.90	6.06	0***
Challenge	10.05	6.90	0***
Hardiness	30.57	20.06	0***

Scales	Action orientation (Group 1)	State orientation (Group 2)	Significance level, p
Zimbardo Time Perspective Inventory			
Past Negative	2.16	2.93	0***
Present Hedonistic	2.90	3.00	0.243
Future	4.12	3.83	0.001**
Past Positive	3.90	3.76	0.087
Present Fatalistic	2.52	3.19	0***
Self-Regulation Profile Questionnaire			
Planning	6.90	6.45	0.33
Modeling	7.47	4.88	0***
Programming of actions	6.74	6.12	0.006**
Result evaluation	6.50	5.67	0.003**
Flexibility	7.00	4.53	0***
Reliability	4.90	5.16	0.551

Note: * – empirical r_s values at $p < 0.05$; ** – empirical r_s values at $p < 0.01$; *** – empirical r_s at $p < 0,001$.

The data in Table 1 reflect the significance of group differences in hardiness, time perspective, self-regulation and allow us to suggest that action control can also act as a personal self-regulatory resource.

Correlation analysis

The final stage of the study is to use the r-Spearman correlation criteria to reveal the links among hardiness, self-regulation and time perspective in the groups of respondents (Table 2).

Correlation analysis in the Group 2 (state-oriented) showed negative correlations of the scale "Past Negative" and scales "Commitment" (-0.502**), "Control" (-0.311**), "Challenge" (-0.742**), "General level of Conscious Self-Regulation" (-0.381**), "Modeling" (-0.377**).

Table 2

Correlation analysis in the Group 2 (state-oriented) (Spearman criteria)

	Commitment	Control	Challenge	General level of Conscious Self-Regulation	Past Negative	Present Hedonistic	Future	Present Fatalistic
General level of Conscious Self-Regulation							0.393**	
Past Negative	-0.502***	-0.311*	-0.742***	-0.381**				
Present Fatalistic	-0.399**	-0.409**	-0.418**	-0.386**				
Planning		0.339*		0.66***	-0.294*		0.6***	-0.279*
Modeling	0.411**	0.492***	0.425**	0.547***	-0.377**	-0.368**		-0.472***

	Commitment	Control	Challenge	General level of Conscious Self-Regulation	Past Negative	Present Hedonistic	Future	Present Fatalistic
Program- ming of actions	0.284*		0.296*	0.713***			0.344*	
Result evaluation	0.414**			0.519***	-0.36**	-0.289*		-0.409**
Flexibility			0.316*	0.449***				

Note: * – empirical r_s values at $p < 0.05$; ** – empirical r_s values at $p < 0.01$; *** – empirical r_s at $p < 0,001$.

In state-oriented behavior, fixation on the negative past significantly decreases a person's adaptive capabilities and resilience. Results presented at Table 1 empirically prove the correlation between hardiness (vitality and resilience) and time attitude, as well as our hypothesis that time attitude is a resource of self-regulation. The more negatively a subject view their past experiences, the lower their level of resilience. Therefore, the inability to reframe and accept one's past experiences can significantly reduce an individual's resources in coping with stressful situations in the present and the ability to project the future.

"Present Hedonistic" scale correlates with the scales "Commitment" (-0.399**), "Control" (-0.409**), "Challenge" (-0.418**), "General level of Conscious Self-Regulation" (-0.386**), "Modeling" (-0.368**), "Result evaluation" (-0.289**), "Reliability" (0.416**). Thus, respondents' orientation towards pleasure in the present is negatively related with resilience: the more a person seeks pleasure and enjoyment in the present, the less able a person is to demonstrate readiness for risk and the ability to manage the events of life.

Perhaps for Present Hedonistic oriented people emotional balance is very important. The tendency to receive positive emotions "here and there" often excludes the possibility of a conscious attitude to the events and circumstances of own life that can negatively affect the possibilities of conscious self-regulation. It was confirmed in our study.

The general level of self-regulation of respondents with state orientation and high desire for pleasure in the present is negatively correlated with the ability to model actions, evaluate performance outcomes. "Future" scale is positively related with the scales "Programming of actions" (0.344*) and "Planning" (0.6***), which reflects the cognitive-behavioral component of future orientation.

Table 3
Correlation analysis in the Group 1 (action-oriented) (Spearman criteria)

	Control	Challenge	Planning	Model- ing	Pro- gram- ming of actions	Result evaluation	Flexibility	Reli- ability
Commitment	0.498***	0.64***						
Control		0.621***					0.325*	
Challenge								
Hardiness			0.689***	0.411**	0.67***	0.572***	0.456***	0.297*
General level of Conscious Self- Regulation	-0.399**	-0.423**					-0.286*	
Present Hedonistic						-0.288*		0.336*
Future	0.317*	0.376**	0.431**					

In Group 1 (action oriented) (Table 3), we obtained that: "Past Negative" scale is negatively correlated with the scales "Control" (-0.399**), "Challenge" (-0.423**), "Flexibility" (-0.286**). This is consistent with the results of the study and allows us to draw a general conclusion for the whole sample about the connection between negative attitudes to

past and features of hardiness, resilience, and self-regulation. The ability to correct the programs of behavior under the impact of changing conditions ("Flexibility" scale) in case of negative evaluation of the past experience also decreases and the person becomes more rigid to changes. "Future" scale is positively correlates with the scales "Control" (0.317*), "Challenge" (0.376**), "Planning" (0.431**). Respondents in this group are the more likely to exhibit hardiness the more they are directed towards future.

Discussion

The problem of resilience and attitude to time as personal self-regulation resources is widely presented by world researchers. Conscious self-regulation, in general, has been studied in relation to time perspective and hardiness (Anisimova, 2022), time perception and time perspective (Baranova & Yakovleva, 2020; Baird et al., 2022; Chen, Liu & Cui, 2021; Klamut & Weissenberger, 2023), reflection (Godunov & Komerova, 2023), gender (Selezneva & Komerova, 2023). Meng et al. (2023) have described the links between procrastination, self-control and future time perspective. Witowska, Zajenkowski & Wittmann (2020) described the role of self-control and neuroticism in the integration of a well-balanced time perspective and time perception. S.V. Rusakov in the study of resilience and time perspective in prisoners who are serving a sentence in a high-security colony, it is shown that the higher the respondents' values on the scale "Past Negative", the lower the level of hardiness, which is in agreement with the results of our study (Rusakov, 2022).

Nowadays attitude to time is studied as part of the individual's psychological resources. So, Dukhnovsky S.V. notes that the attitude to time can be considered as a personal resource that increases adaptability in a crisis situation (Dukhnovsky, 2022). According to the author, time attitude (management of one's time) is a personal resource characteristic that determines the self-realization opportunities and efficiency in overcoming difficulties. Similar views can be found in G. Y. Martyanova, who states that "...a time perspective is part of a person's regulatory experience and time perspective may act as a conscious co-operative resource for coping with life's difficulties" (Martyanova, 2020, p. 40).

Self-regulation and self-control are predictors that influence the link between attitudes toward time and procrastination (Wang & Sun, 2023). Positive expectation of future results (attitude to time) when making decisions allows to regulate one's current behavior (self-control) in order to achieve long-term goals and reduce the risk of procrastination (Wang & Sun, 2023; Goschke & Job, 2023). Moreover, individual differences in time perspectives influence people's attitudes toward healthy lifestyle. People with a high future orientation are more health conscious, focused on the long term rather than on momentary pleasures (Guo, Lou & Zhang, 2023; Makarova, Makarova & Korovin, 2022).

The results of other researchers' studies are consistent with our results in the part of the correlation between attitude to time and hardiness as personal self-regulation resources. Thus, Molodozhnikov I.A., Guseinov A.Sh., studying capoeira athletes, empirically prove that capoeira predominantly develops a self-regulation system through agent qualities

(constructive coping strategies, personal maturity, personal harmony) with the growth of sports qualifications. Thus, with an increase in professional skill, a self-regulation system develops through the development of the general potential of the individual (Molodozhnikov, Guseinov, 2024). These findings are consistent with the results we obtained regarding the relationship between the characteristics of self-regulation and personal potential (resilience and attitude to time).

Conclusion

D. A. Leontiev divided personality resources into psychological resources of resilience (values, self-esteem, decision-making right); psychological resources of self-regulation (control over life circumstances, strategies of interaction with uncertainty, flexibility, action or state orientation (J. Kuhl), risk-taking); motivational resources (coping strategies) and instrumental resources (individual features).

Psychological resources of self-regulation are related to a person's attitude to time, hardiness and self-control. Perception of time perspective determines the ability of a person to act in a situation of uncertainty, to be involved in life, to perceive any experience as meaningful and important, to actualize personal potential and to be ready to take risks, to act in conditions of unguaranteed results. Thus, the "Past Negative" time perspective is related to low hardiness scores according to the results of our study; Future-orientation, on the other hand, provides high hardiness scores (challenge & control) as well as the ability to project and planning. The General level of Conscious Self-regulation is positively related to all scales of the Hardiness Survey and the scale "Future" of the Zimbardo Time Perspective Inventory. At a high level of Conscious Self-regulation a person is more capable to take decisions autonomously, analyze the external and internal conditions of the environment, and change the strategy of behavior if necessary. We found significant negative correlations on the "Past Negative" scale with all scales of the Hardiness Survey, with the General level of Conscious Self-regulation and the "Modeling" scale. The perception of one's past as negative significantly reduces the ability of a person to develop proper programs of action based on internal and external conditions. This tendency is especially pronounced in situations of uncertainty and stress, where flexibility in decision-making directly affects the successfulness of socio-psychological adaptation. All scales of the Hardiness Survey («Challenge», «Control», «Commitment») have significantly negative correlation with the scale "Present Fatalistic".

Results allow us to consider attitude to time, hardiness and action control as personal resources of self-regulation, that greatly determining a person's ability to cope with stress and to build productive strategies of behavior.

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Study of Value Foundations of Place Identity: A Subject Approach

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Abstract

Introduction. Study of place identity phenomenon, its structure and influence on different aspects of human life is a relevant scientific problem. The goal of our research is to reveal the value bases of urban identity within the framework of the subject approach. **Methods.** The survey sample consisted of 447 respondents, residents of Krasnodar-city. The toolkit included the Droseltis & Vignoles scale in the author's translation, the B. Kaigorodsky method in the author's modification, "Personality questionnaire for the individual values study". Descriptive statistics, analysis of variance, correlation and regression analyses were used to process the data. **Results.** The research findings showed that the length of residence is an influential factor of place identity: respondents, born and grown up in the conditions of the city under study significantly higher estimate both their deep connection with the city and personal empowerment. In the group of native Krasnodar dwellers, the predictors of the urban identity aspects "Person authenticity in the urban environment" and "Self-actualization in the urban environment" are values of social focus – Conservation and Self-Transcendence, the value basis of the identity parameter "Self-actualization in the urban environment" is value of Openness to change. For respondents who consciously chose Krasnodar as the place of residence, the value of Self-Transcendence was identified as the value basis of the parameter "Authenticity in the urban environment", at the core of Self-actualization in the urban environment as a factor of place identity, the value of Self-Enhancement was found in this group. For respondents who consider living in the city as temporary, the value predictor of identity with the city is Openness to change, Authenticity in the urban environment is influenced by the value of Conservation extent. **Discussion.** The results of the study enhance the subject approach, place identity can be considered as a manifestation of personal agency, as a special case

of the development of the individual's existential spaces. The research findings can be used to develop programs aimed at integrating the urban community.

Keywords

place identity, urban identity, identity, values, personal meaning, subject approach

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Introduction

The identity of a modern person is becoming a dynamic phenomenon: it is formed and transformed in rapidly changing social and cultural conditions, which poses a threat of erosion of the value-sense foundations of personal self-identity. In this regard, the problem of person's searching and acquisition value-semantic bases of one's existence, the desire to understand oneself, one's motives, goals, and life values is becoming more relevant. Place identity is one of the main sources for constructing the axiological personality organization, since it is this locus of being that forms the basis of a person's lifeworld (Apollonov, Tarba, 2023).

Place, space, and residence area in modern science are considered not only as physical constants, but also as a sphere of personal meanings formation, values, and life goals of a person (Muravyova et al., 2017). As a number of studies show, place identity is a predictor of a person's social activity, environmental behavior, as well as the characteristics of his or her relationships with the inner circle. (Manzo, & Perkins, 2006; Dono et al., 2010; Bals et al., 2011; Neyaskina, Burova, 2015; Bogomaz, Litvina, Muravyova, 2016). Accordingly, the study of the phenomenon of place identity, its structure, and the impact of the given type of identity on various aspects of human life becomes a crucial applied research task.

Category "place identity" in modern science

In modern research, there is a wide variety of terms used to describe the processes of the relationship between a person and his or her place of residence. The most frequently

used concepts are "place identity" and "local identity" (Bernardo & Palma-Oliveira, 2016; Lemée et al., 2019; Ujang, 2017). Together with this term, the concepts of "sense of place" (Shawket, 2018), "place attachment" (Ujang, Zakariya 2015) and "local identity" (Shao, Binyi, 2018) are used. In their studies Russian scientists also use many concepts and interpretations to define a person in the living environment: "territorial identity", "local identity", "urban identity", "place attachment", "local community", etc. Currently, there are attempts to arrange these concepts in a hierarchical system – from the most general to the particular ones. For example, it is noted that the most general and fundamental term is "identity in landscape". In Russian-language studies, the concept of "cultural landscape" or "landscape identity" may be used as an analogue (Dredge, Jenkins, 2003). According to the scientists, this concept reflects not so much the physical characteristics of the territory scale, but rather the cultural aspect. In foreign studies, this construct includes such phenomena as regional, urban, local identities ("local identity"), but does not cover all the current diversity of the concepts (for example, "territorial identity").

The conceptual boundaries between these notions remain a subject of debate: place attachment is considered as a component of place identity (Lalli, 1992), place identity is included into the "sense of place" (Shamai, 1991), place identity is equated with attachment, the criterion for which is the desire to live in or to return to a given place (Hidalgo, Hernández, 2001; Giuliani, 2003; Manzo, 2006).

In recent years, there has been a trend to view place identity as a multidimensional construct that includes attachment (affective component), identification with a given place (cognitive component), and place dependence (behavioural component), while also incorporating social bonds (Belanche et al., 2017).

One of the important factors of local identity, according to researchers, is the duration of residence, which is a predictor of the emotional and cognitive aspects of place identity (Altman & Low, 1992; Nientied et al., 2019), but this relationship is nonlinear and is conditioned by a number of factors (Rollero & De Piccolo, 2010). The most significant factor is the individual's goals and values, determining the extent he or she is focused on developing a given place as a personal pace (Fomenko, 2018). In social sciences, the categories of "native" and "non-native" places of residence are differentiated (Schütz, 2003). "Native" places of residence are characterized by a link with the past, a certain experience (both in the emotional and symbolic senses). "Non-native" places of residence refer to "places of refuge", non-places (Auger, 2017), which mainly have a utilitarian and functional meaning. "Non-native places are involuntary places where we go as if to a Outland: to work, to study, to emigrate, to exile" (Boronev, Tkhakakhov, 2021, p. 99).

In terms of the subjective approach, taking into account the subject's activity in the urban space, the living space of an individual within a certain locality, where the daily implementation of one's needs, the formation of goals and personal meanings takes place, is a significant existential space for him/her. Manifesting his/her subjectivity in the space of a given place, realizing the key modality of the subject - "the ability to transform

the external according to the laws of the internal" (Ryabikina et al., 2023, p. 62), a person not only develops the urban space, endowing it with new meanings, but also changes one's attitude towards it, one's beliefs and mindsets, life goals. Accordingly, in studies of place identity, it is necessary to take into account not only the length of a person's living in a certain place, but also his/her attitudes, life goals in relation to this place.

One of the main problems of research on place identity is the lack of methodological tools for empirical studies. Thus, the methods of investigating urban identity in foreign studies are mainly based on the M. Lalli questionnaire and its modifications (Belanche et al, 2017; Nientied et al, 2019). Place attachment is also investigated by multidimensional scales with such dimensions as: knowledge of place, belongingness, satisfaction, social bonds, place dependence, rootedness, place identity (Scannel & Gifford, 2010; Lewicka, 2011; Shamai & Ilatov, 2005).

The construct of «urban identity» is an ambiguous category and is considered, on the one hand, as belonging to a certain community («community identity»), and on the other - as an attachment to the urban space, understanding its attractiveness, historical and cultural features («place identity») (Ozerina, Timofeeva, 2019). In a number of papers, urban identity is positioned as a set of various factors (social, visual and spatial, communicative and spatial, historical and cultural, psychological), being studied by means of interviews or questionnaires, using psycho-semantic and projective technique, association experiment (Timofeeva et al., 2021; Fedotova, 2017; Filep et al., 2014).

Place identity is a multidimensional construct, encompassing the connections between the tangible objects of the place given and the personal meanings of the inhabitants, therefore, many researchers consider it necessary to combine the methodologies and research techniques for this phenomenon investigation and place it in a broader social context. (Moulay et al., 2018; Araújo de Azevedo et al., 2013; Nientied et al., 2019).

In this study we will use the term «urban identity», understanding it to mean an intrapersonal construct as a result of a person's comprehension and experience of belonging to a certain city with its cultural, historical and geographical features.

Urban identity, reflecting the perception and understanding of oneself as a personality in the context of a particular environment, the key point of which is the personal experience of mastering cultural and social space, is the object of research based on the Droseltis, O. & Vignoles, V.L. scale of place identity (Droseltis, Vignoles, 2010). On the one hand, this scale is universal, since it allows to study the features of the local identity, and on the other hand, is flexible, since it can be used to study the specific place identity.

Since the conceptual structure of a person's everyday world is based on a number of significant, "anchor" points of orientation in his social and cultural space, the place an individual feels attached, constructs his/her values and meanings (Boronoev, Tkhakakhov, 2021). In a number of works, the findings of the study of civic, ethnic, and religious identity revealed that they can be determined by different values (Roccas et al., 2010;

Lepshokova, 2021; Galyapina, 2021; Fedotova, 2024). The study of the value aspects of urban identity showed that the subjective assessment of the feasibility of values in the urban environment is a significant factor in urban identity (Lalli, 1992; Muravyova et al., 2017; Bogomaz et al., 2016).

The study of identity value determinants rests upon the theory of basic human values by W. Schwartz (Schwartz et al., 2012), who identified 19 values, each distinguished by their underlying motivation or goal, combining them into four meta-values:

- Openness to change, which characterizes the readiness for new or transformative ideas, actions and experiences and includes values of Self-direction, Stimulation and Hedonism;
- Self-Enhancement that focuses on gratification for oneself and consist of the values of Power, Achievement and Reputation;
- "Conservation", which is focused on avoiding change (stability), self-restraint and order, includes the values of Conformity, Security and Tradition;
- "Self-Transcendence", which is focused on enhancement of others and transcendence of selfish interests, and includes Benevolence, Care and Universalism.

According to the subject approach, the person "self-actualizes by reorganizing the objective spaces of his life in accordance with the structure of personal meanings and transforming them into the space of his/her being" (Ryabikina et al., 2023, p. 62). The study of place identity value determinants of respondents with different periods and attitudes to living in the city from the perspective of the subject approach provides this phenomenon to be considered as a manifestation of the personal agency, as a special case of the individual's development of his existential spaces.

Purpose and objectives of research

The study aims at identifying the value basis of urban identity in the context of the subject approach.

Research objectives:

1. Comparative analysis of the urban identity expression in the groups of respondents with different periods and attitudes to living in the city.
2. Identification of urban identity value determinants in these respondents' groups.
3. Qualitative research of the semantic content of the urban identity parameters (personal and semantic aspects of identity).
4. Consideration of urban identity value basis of the respondents with different periods and attitudes of city residency from the perspective of the subject approach.

Methods

Sample

The study sample comprised 447 respondents, Krasnodar dwellers, aged from 16 to 70 years ($M = 22.6$; $SD = 8.29$);

- gender: female – 225 people (50.3%), male – 222 people (49.7%);
- academic background: academic degree (higher education) – 25%, undergraduate education – 58.8%, secondary vocational education – 16.3%;
- ethnic majority (Russians) – 83.7%, ethnic minority (the Armenians, the Adighe, the Ukrainians, the Tatars, the Greeks) – 14.3%.
- The sample was divided into three groups according to the periods and circumstances of city residence (Table 1).
- The first group included respondents who were born and lived in Krasnodar all their lives (or most of their lives), for whom the city is their “small homeland”;
- The second group was those who moved to the city for permanent dwelling as a result of their choice or by a fortuitous coincidence at a conscious age;
- The third group – respondents who are temporarily residents in Krasnodar-city.

Table 1

Gender and age profiles of the sample

Respondents groups	N, %	Age profiles			gender	
		M	Min-Max	SD	male (N, %)	female (N, %)
Group 1	190 (42,5)	23,3	16-70	8,9	90 (47,4)	100 (52,6)
Group 2	143 (32)	20,7	18-55	6,1	73 (51,1)	70 (48,9)
Group 3	114 (25,5)	20,3	16-47	4,8	59 (51,7)	55 (48,3)

Note. *N* – total sample amount; *M* – mean value; *Min* – minimum age; *Max* – maximum age; *SD* – standard deviation.

Techniques (diagnostic tools)

The toolkit included the Droseltis & Vignoles scale in the author's translation. This methodology was translated into Russian, adapted to Russian cultural characteristics using an expert survey, and tested for scale reliability on a 431 respondents sample (Tuchina, 2024).

As a result of methodology adaption, two factors were identified: "Authenticity in the urban environment" and "Self-Actualization in the urban environment". The first one reflects the sense-making characteristics of urban identity, enabling a person to feel his/her authenticity, congruence with this place. The second factor characterizes the city as a space of realization, professional, financial and personal, allowing a person to feel calm and confident.

As a diagnostic tool for studying the personal and semantic aspect of urban identity we used the B. Kaigorodov's methodology of self-understanding research in the author's modification. The results were processed by the method of content analysis.

To study values, we used an abridged version of the Portrait Values Questionnaire-Revised (PVQ-R) (Schwartz et al., 2012).

Data processing

Descriptive statistics, analysis of variance (to compare the extent of the empirical groups parameters studied), correlation and regression analyses (to investigate the relationship of values with the urban identity expressiveness) in SPSS 22.0 were used for mathematical and statistical data processing.

Results

Analysis of identity aspects

At the first stage, a comparison of the expressiveness of the urban identity aspects selected was conducted in the groups of respondents with different periods of residence in the city using the single-factor Analysis of Variance (ANOVA). The study revealed that the indicators "Authenticity in the urban environment (A)" ($p \leq 0.001$) and "Self-Actualization in the urban environment (SA)" ($p \leq 0.01$) are significantly more expressed in the group of respondents who have lived in the city for a long time compared to the groups of respondents who have recently moved or are living in the city temporarily. The

differences in these indicators for respondents in the second and third groups are non-significant (Table 2).

Table 2

Results of the urban identity study in groups of respondents with different length of residence in the city

Parameters of urban identity under study	Group 1		Group 2		Group 3		F
	M	SD	M	SD	M	SD	
Authenticity in the urban environment	3,6	0,86	3,1	0,85	2,98	0,91	26,7***
Self-Actualization in the urban environment	3,75	0,80	3,57	0,73	3,46	0,79	5,1**

Note. *M* – mean value; *SD* – standard deviation; *F* – Fisher LSD; * – effects significant at $p < 0,05$ level; ** – effects significant at $p < 0,01$ level; *** – effects significant at $p < 0,001$ level.

A comparative analysis of the extent of meta-values according to S. Schwartz ("Openness to Change", "Self-Enhancement", "Conservation", "Self-Transcendence") in the groups under study did not reveal any significant differences. In all groups, value "Self-Transcendence" was found to be the most pronounced, and value "Conservation" – the least expressed one (Table 3).

Table 3

Results of the meta-values study in the groups of respondents with different length of residence in the city

Meta-values according to S. Schwartz	Group 1		Group 2		Group 3		F
	M	SD	M	SD	M	SD	
Conservation	4,02	0,81	3,96	0,74	3,91	0,89	0,661
Openness to Changes	4,27	0,82	4,33	0,69	4,32	0,80	0,269

GENERAL PSYCHOLOGY, PERSONALITY PSYCHOLOGY, PHILOSOPHY AND PSYCHOLOGY

Meta-values according to S. Schwartz	Group 1		Group 2		Group 3		F
	M	SD	M	SD	M	SD	
Self-Enhancement	4,38	0,91	4,28	0,93	4,18	0,97	1,543
Self-Transcendence	4,56	0,82	4,58	0,75	4,69	0,75	1,032

Note: M – mean value; SD – standard deviation; F – Fisher LSD; * – effects significant at $p < .05$ level; ** – effects significant at $p < .01$ level; *** – effects significant at $p < .001$ level.

We then analyzed the relationship between individual higher-level values identified among respondents in the groups studied and urban identity factors using correlation analysis. To study values effects on urban identity components using regression analysis, meta-values with a statistically reliable correlation level were taken as independent variables. In the final regression models, values whose influence coefficient demonstrated the reliability of the relationship detected ($p \leq 0.05$) are presented; the model parameters being indicated in the bottom lines (Table 4).

Table 4

Results of the urban identity value determinants study

Meta-values according to S. Schwartz	Urban identity parameters under study					
	Group 1		Group 2		Group 3	
	A	SA	A	SA	A	SA
Conservation	0,211*	0,160*			0,336**	
Openness to Changes		0,175*			0,242*	0,306**
Self-Enhancement				0,224*		
Self-Transcendence	0,222**	0,251**	0,193*			

Meta-values according to S. Schwartz	Urban identity parameters under study					
	Group 1		Group 2		Group 3	
	A	SA	A	SA	A	SA
R	0,382	0,438	0,193	0,224	0,336	0,418
R ²	0,137	0,179	0,030	0,047	0,104	0,158
Adj. R ²	-0,005	-0,007	-0,016	-0,011	-0,023	-0,007
F	16,38***	15,12***	5,13*	7,01*	12,6**	10,39**

Note. *F* – Fisher LSD; *R*² (*R*-squared) – determination coefficient; * – effects significant at *p* < 0,05 level; ** – effects significant at *p* < 0,01 level; *** – effects significant at *p* < 0,001 level.

Semantic content of Identity

According to the concept of our study, the quantitative examination of the respondents with different residence period distinctions in the expression of different aspects of urban identity needs to be supplemented by qualitative research on the semantic content of these identity parameters. As a research tool for the study of urban identity narratives specifics the B. V. Kygordov's methodology in the author's modification was applied (Tuchina et al., 2023). Respondents were asked the question: "What does it mean for you to be a Krasnodar resident (dweller)?" The respondents' answers were processed using the content analysis procedure, which was described earlier (Tuchina et al., 2023). The main categories of urban identity, which were identified by the agreed assessments of three independent experts (a psychologist, a sociologist and a linguist), were considered as a unit of analysis.

Processing of the research results by content analysis method allowed to identify the following semantic units of urban identity.

1. Denial of the urban identity importance.
2. Formal component of identity, including the following semantic units: residency registration (on the territory of the city), living in the city.
3. The emotional component of urban identity: positive (sense of pride, love for this place, sense of comfort) and negative (identity as a manifestation of urban stress).
4. Motivational component of urban identity describes the opportunities of a person in the urban environment (natural and climatic conditions, economic and cultural and educational opportunities; understanding of advantages over other places of residence).
5. Activity component of urban identity: activity for the benefit of the city (economic, environmental), activities to conserve and hand on traditions, establishing and sustain a positive image of the city.
6. Urban identity as a part of personal history and a factor of personal development implies comprehension of the city in the context of autobiography, awareness of the influence of the urban environment and urban history on the personality and his/her life path.
7. Urban identity as an opportunity to become a part of the community, "urban organism", history of the city.
8. Urban identity as a factor of the formation of certain personal attributes and behavioral patterns that distinguish city residents, a special mentality and way of life.

The number of respondents in each group was then calculated according to the categories selected. Using the non-parametric Mann-Whitney U-criterion, the frequency of using descriptive characteristics by category was analyzed.

The results of the study showed a significant difference in urban identity narratives in the groups studied. Denial of the urban identity importance is far more common among natives of Krasnodar and temporarily residents than among newcomers (recently moved) ($p \leq 0.01$). The formal part of identity is more often recorded in the responses of temporary residents than those who have recently moved ($p \leq 0,05$). No significant differences in the responses of respondents, characterizing emotional and motivational constituents of urban identity, were revealed. The following aspects of urban identity are significantly more frequently found in the responses of native residents and those who moved at a conscious age than in the responses of temporary residents: activity component ($p \leq 0.05$), identity as a part of personal history ($p \leq 0.05$), identity as an opportunity to become a part of the "urban organism" ($p \leq 0.05$), identity as a factor of personal and behavioral characteristics formation ($p \leq 0.05$) (table 5).

Table 5
Results of the personal and semantic aspects of urban identity study

Personal and semantic aspects of urban identity	Respondent feedback (%)		
	Group 1	Group 2	Group 3
denial of the urban identity importance	10	1,3	14
formal part of identity	6,8	4,2	8,7
emotional component of identity: positive/ negative reactions	28,4/5,8	21/1,4	20/9,6
motivational constituent of identity	16,3	19,7	21,9
activity component of identity	14,6	14,9	2,6
identity as a part of personal history	9,4	6,8	1,7
identity as an opportunity to become a part of the "urban organism"	14,7	14,9	5,2
identity as a factor of personal and behavioral characteristics formation	17,3	12,4	7

Discussion

The results of the investigation of the revealed aspects of urban identity expression showed that the length of residence is a significant factor of place identity. Respondents

who were born and grew up in the conditions of the city under study, significantly higher estimate both their deep connection with the city and self-fulfillment in it, which generally corresponds to research data (Altman & Low, 1992; Nientied et al, 2019), noting that urban identification occurs through attachment to it on the basis of "habitualness", proximity, security (Muravyeva et al, 2017).

However, according to the results obtained, the expression of the urban identity aspects under examination among those who came to the city at a conscious age, having made a choice in favor of this place, and those who consider the city as temporary residence, does not differ significantly. This can be explained by insufficient developing of the city as an existential space by this group of respondents. In addition, it confirms the phenomenon detected by the researchers that in the period of 6-10 years of residence in the city a "crisis of urban identification" as well as transvaluation of one's attitude toward it and one's place in the urban environment occur (Muravyeva et al., 2017).

As the results of the study have shown, the motivators of behavior in all respondent groups are the values of social focus that refers to the Self-Transcendence unit, which corresponds to the data of intergenerational studies of Kuban respondents' values (Galyapina, 2021). At the same time, the results of the quantitative and qualitative research of the urban identity value determination have revealed that the groups under examination have different value bases of this type of identity.

In the group of native Krasnodar residents, the value predictors of both aspects of urban identity are the values of the social focus - Conservation and Self-Transcendence, i.e. the basis of these respondents' urban identity is the desire to preserve traditions and the tendency to sacrifice their interests for the sake of others. In addition, the value basis of the identity parameter "Self-Actualization in the urban environment" is the value of Openness to Change, accordingly, the willingness to embrace the new, to change their lives and environment contributes to the increase in the individual's assessment of self-fulfillment within the city.

Respondents who consciously chose Krasnodar as their place of residence, the value basis of the parameter "Authenticity in the urban environment" is the value of Self-Transcendence, respectively, the greater the willingness of a person to compromise their desires for the sake of community, the more they feel their correspondence to this place, feel it as "their own". And in the basis of self-Actualization in the urban environment as a factor of place identity, this group has identified the value of Self-Enhancement. It can be said that the more respondents esteem the independence of their own thoughts and actions, social equality and tolerance, the more they are oriented to dominance and obtaining resources, the higher they evaluate their chances for successful advance.

For the group of respondents who consider living in the city as temporary, the value predictor of urban identity is Openness to Change, that is, the willingness to accept and develop the new contributes to the active formation of place identity. The authenticity in the urban environment in this group is also affected by the expression of the meta-value

of Conservation: the higher the respondents' desire to preserve traditions and follow the rules, the more they feel the city as their own, as having accepted them. As studies show, active development of urban space by a person enhances his/her adaptability to urban conditions, contributes to an increase in his/her reflexive attitude towards him/herself and the environment, strengthens emotional and personal bonds with the urban environment, and ultimately contributes to an increase in subjectivity (Nientied et al., 2019; Tuchina, 2023). At the same time, for better adaptation in the urban environment, it is necessary to accept its traditions, comply with norms and rules; values associated with the preservation of traditions determine both self-esteem and life satisfaction (Galyapina, 2021).

The comparative analysis of the results of personal and semantic features of urban identity also revealed a significant difference in the groups under examination. Thus, the denial of the importance of urban identity is characteristic of both the group of native Krasnodar residents and those temporarily residing. But in the first case it is a consequence of the absence of a reflexive position: "I've never thought about it, I've always lived here, it's been normal" (male, 22 years old), and in the second case it is a manifestation of immature urban identity: "It doesn't mean anything, I've only been here for a year, I haven't managed to become a Krasnodar resident yet" (male, 19 years old).

The emotional component of urban identity is the most pronounced in each group, but in the first and second groups it has mostly a positive connotation: a sense of pride, love for this place, a sense of comfort: "I am proud of the city where I was born, grew up and lived, it is the best" (female, 23 years old), while in the third group it is more often considered as a manifestation of urban stress associated with long distances, urban logistics, the environmental and economic situation: "Being a resident of Krasnodar means spending hours in traffic jams and constantly thinking about where to find cheaper housing, but so as not to get stuck in traffic jams" (male, 32 years old).

The motivational component of urban identity, which includes the idea of human improved capabilities in the urban environment, is also often found in the responses of all the groups studied, and certain semantic nuances were revealed. Those who moved to the city emphasize natural and climatic conditions, economic, cultural and educational opportunities: "Living in a warm climate, in a good city, where everyone wants to move to" (female, 44 years old).

Understanding the urban identity of native Krasnodar residents is associated with the description of advantages over other places of residence "Here is the best climate, one can always find job" (female, 28 years old), and the city in addition is considered as a starting point for further development, career, self-actualization: "This means getting an education and skills here, and moving to Moscow or abroad" (male, 20 years old); "This is an opportunity to grow up in a good climate, with good health, which will then be a competitive advantage" (female, 20 years old). Respondents temporarily residing in the city focus on those features of the urban sphere that meet or fail to meet their current

needs: "There is always a job here, even for a student" (male, 20 years old); "There are many colleges and universities, it is realistic to qualify for free tuition" (male, 17 years old), "Too long distances, a resident of Krasnodar is always travelling somewhere" (female, 25 years old).

The activity component of urban identity, including various types of activity for the benefit of the city, is noticeably more pronounced among native residents and those who have consciously moved to the city, who are ready to contribute to the improvement of urban space and the lives of city residents. This is also observed in the manifestation of urban identity as an opportunity to become the part of the community, "urban organism", the history of the city, as well as urban identity as a factor in the formation of certain personal and behavioral characteristics: "To be active, ambitious and ready for competition" (female, 25 years old); "Krasnodar residents are considered very emotional, energetic and smiling, but we also make a lot of fuss and are often in a hurry" (male, 42 years old). Thus, as an individual develops and "appropriates" the urban space, his/her position towards the city changes: from considering the city as a way of satisfying needs to understanding it as a part of his/her life and striving to make it better.

Understanding urban identity as a personal history and a factor of personal development is actively manifested among the native urban residents: "The place that makes me the way I am, where my friends and teachers are" (male, 30 years old), "This is the place of growing up, understanding the world, first love" (female, 50 years old). Respondents note the sacred meaning of local identity: "It is the place of strength" (male, 27 years old), "it is a place where I get energized, revive" (female, 22 years old), "the place where I come back to myself, pick the wheat from the chaff, understand how to move on" (male, 44 years old).

Identity is considered as a "home feeling": "a place where I feel comfortable, where my sisters were born, the best part of the big wide world" (male, 40 years old), as a connection with one's family, with one's roots: "This is my ancestral land" (male, 18 years old), "This is the place where my family, my roots originate from" (male, 21 years old), as a place connecting with family and relatives: "This is where my family is" (female, 26 years old), as "everything that is associated with myself and my loved ones" (female, 19 years old). Respondents who moved to the city quite a long time ago note in their answers how attachment to the city has been formed: "At first I always compared Krasnodar with Voronezh, thinking where it was better, but now such a comparison no longer comes to mind" (male, 27 years old); "I feel like I've become a true Krasnodar resident when I go away for a long time and miss the city" (male, 32 years old).

Accordingly, considering the urban identity from the perspective of the subject approach, taking into account the subject's activity in the urban space, it can be argued that the place of residence is primarily a subject- and person-centered space of the individual, since a person feels an emotional bond with this place, the urban community, its history and cultural features. When a person's desire to influence the urban space, to

make it more comfortable, aesthetic, environmentally friendly (objective- and person-centered space) is formed, this becomes the next step in the development of the city as an existential space of the individual.

Conclusion

Thus, the length of residence is an influential factor of place identity: respondents, born and grown up in the conditions of the city under study significantly higher estimate both their deep connection with the city and personal empowerment.

Investigation of the urban identity value bases revealed different value determinants of urban identity in the groups of respondents with different experience of living in Krasnodar. In the group of native Krasnodar residents, the basis of urban identity is the desire to preserve traditions and the willingness to help others. For respondents who consciously chose Krasnodar as a place of residence, the value basis for feeling their accord with the place of residence is the willingness to sacrifice their interests in favor of the community, whereas the orientation towards self-direction and dominance contribute to a high assessment of their chances for successful self-actualization in the urban environment.

For respondents who consider living in the city as temporary, the value predictor of urban identity is paradoxically two meta-values in equal measure, Tradition and Openness to Change: readiness to accept and develop new contributes to the active formation of place identity, whereas the desire to preserve traditions and follow the rules contributes to formation the perception of the city as their own, as having accepted them, among these respondents.

Accordingly, the results of the study expand the application of the subject approach: place identity, examined using an abridged methodology, allows us to consider this phenomenon as a personal agency manifestation as a special case of the individual's development of his or her existential spaces, urban space becoming an ontologically significant part of the personal "Ego" of the city dweller.

The research findings can be used to develop programs aimed at integrating the urban community, through a focus on value-based unity, common social identities and positive cultural attitudes.

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Diagnosics of Subjective and Objective Uncertainty Stress: Development and Validation of a Questionnaire

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Abstract

Introduction. Researching stress becomes more and more relevant due to a sharp increase in the stress level among population. There is enough evidence that this phenomenon is caused by the increasing uncertainty of existence in the 21st century, due to the rapid and non-predictable changes in various spheres of human and social life. Yet, in domestic psychology one can observe a lack of works focusing on the stress of uncertainty, as well as the absence of valid and reliable methods for its measurement. The presented study had its purpose to create a new questionnaire for assessing the degree of perceived uncertainty stress, to provide its validation and psychometric evaluation. The total study sample consisted of 1411 people including 1130 college students (mean age 17.64; 43.5% - girls) and 281 university students (mean age 19.14; 76.3% - girls). **Methods.** Validation methods: V. Morosanova's "Self-Regulation Profile Questionnaire - SRPQM" (Morosanova, Kondratyuk, 2020); "Scale of Perceived Stress (SPS-10)" (Zolotareva, 2023). **Results.** The authors presented results of testing and validation of the questionnaire "Subjective and Objective Uncertainty Stress - SOUS" on the Russian sample. The technique is proved to be a reliable and valid tool for measuring the uncertainty stress in adolescents. The questionnaire includes two scales to assess the stress severity in situations of subjective and objective uncertainty as well as the integral scale indicating the general level of uncertainty stress. **Discussion.** The indicators of stress severity obtained on the scales of subjective and objective uncertainty are predictably positively associated with perceived distress and moderately negatively - with general level of conscious

self-regulation, which shows the construct and convergent validity of the developed questionnaire. **Conclusion.** The proposed questionnaire can be used in psychological and pedagogical practice in order to assess the level of perceived uncertainty stress in adolescent students, as well as the degree of its severity in subjectively uncertain life situations and in relation to objective global stressors (situations) of uncertainty.

Keywords

stress of uncertainty, perceived stress, stressful situations, subjective and objective uncertainty

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Introduction

The problem of studying perceived stress, its manifestations and impact on the human behavior gains far more importance in modern conditions of a sharp increase in the objective uncertainty of existence (Zinchenko, 2021; Massazza et al., 2023). During the COVID-19 pandemic, humanity for the first time faced an unprecedented increase in the level of uncertainty in all areas of life, work, leisure, nutrition, sports (Stankovska et al., 2020). The situation was aggravated by fears for life and health, the inconsistency of huge flows of information about the disease, methods of its treatment and prevention, the possibilities of medicine and the victims of the pandemic.

It is no coincidence that during this peril it is no coincidence that during this period the experts stated that, as a result of the coronavirus pandemic, we can talk about a pandemic of psychological uncertainty stress (Sweeny et al., 2020). This was confirmed by the data on the rising level and prevalence of stress somatic symptoms during the COVID-19 pandemic. Thus, the worldwide increase in anxiety disorders by 76.2 million cases, compared to previous years, was recorded already in the first year of the pandemic (Santomauro et al., 2021; Zolotareva et al., 2022). Every second person during this period

complained of at least one manifestation of negative stressful psychophysiological states (muscle tension, insomnia, changes in eating habits, etc.) (Zolotareva et al., 2022).

The situation of objectively high uncertainty during the pandemic and the data on its impact on the people actualized the interest of psychologists in researching not only stressful somatic symptoms, but also the characteristics of perceived stress, which gave rise to the problem of assessing the degree of stressfulness of situations that stimulate it (McCarty et al., 2023; Zolotareva, 2023). In modern studies of uncertainty situations, they are considered in objective and subjective aspects (Chernousova, 2022). Most researchers agree on the need to distinguish between subjective and objective uncertainty (Diev, 2010; Solntseva & Smolyan, 2009).

Objective uncertainty takes place in objectively difficult life situations, when a person does not have enough information to decide how to act in order to use individual resources or overcome their limitations. It should be noted that in the modern world the situations of objective uncertainty are associated with the global challenges characterized not only by limitations, but often by a complete lack of information about their nature, dynamics, and consequences (Bityutskaya, 2011; Butenko, 2008; Diev, 2010; Solntseva and Smolyan, 2009; and others).

Subjective uncertainty stress arises when everyday situations become stressors, provoking varying degrees of psychological tension and negative experiences, and at the same time individual resources for overcoming it (life experience and obtained cognitive, personal and regulatory competencies) are not entirely sufficient to achieve current goals. Among the sources of the life stress are health problems, dissatisfaction with interpersonal relationships, difficulties in learning and work, financial troubles, etc. (e.g., Tarabrina et al., 2018).

Thus, subjective uncertainty stress can be overcome if a person can actualize psychological and other resources to solve a problematic life situation. In contrast, objective uncertainty stress arises in response to a subject's encounter with an objectively unpredictable situation which is not provided with sufficient and relevant information and which cannot be coped with by means of resources available to the subject (Diev, 2010; Krieger, 2014). In essence, we are talking about the fact that situations of global uncertainty, unlike everyday life situations, are objectively not provided with information resources to overcome them not only at the individual, but also at the civilizational level, due to their unpredictable nature, objectively insufficient structuring, vagueness, instability of situational conditions.

The routine stressful situations can cause psychological tension and, as a result, a decrease in a person's psychological well-being, whereas situations of objective global uncertainty can be perceived as a threat to the human existence. That is why the stressogenicity of this type of uncertainty is extremely high, which can cause the whole spectrum of somatic stress symptoms in the population. The objective uncertainty of global challenges is aggravated by modern mass media, instantly distributing a stream

of, first of all, emotionally charged news, causing the actualization of negative attitudes, up to catastrophic ones, the influence of which is difficult to resist for all strata of the population.

Empirical research has linked the perception of uncertainty to decreased mental health (Phillimore & Cheung, 2021) and increased distress (Massazza et al., 2023). Uncertainty stress has been shown to reduce the ability to effectively cope with various life tasks, negatively affect self-esteem (Peng et al., 2021), and contribute to the development of negative emotional states (Wise et al., 2023). This problem is especially acute in late adolescence and young adulthood, since young people need not only to successfully respond to modern life and global challenges, but also to solve all-important task of professional self-determination in conditions of a high degree uncertainty, closely associated with the experience of stress (Morosanova et al., 2024).

It is no coincidence that a large number of recent studies fix an increase in the level of anxiety and distress in the college and university students (Saleh et al., 2017; Yusufov et al., 2019). Researchers attribute this increase to individual characteristics of students' perception of uncertainty, to demographic and socio-economic aspects of their lives (Wuthrich et al., 2020), as well as to global external factors, such as, for example, climate change (Clayton, 2020), the COVID-19 pandemic (Wang et al., 2021; Zinchenko, 2021; Hamaideh et al., 2022) and, in general, increasing uncertainty of the future (Zinchenko, 2021).

To study the simultaneous and combined influence of everyday (subjective) situations of uncertainty and global (objective) stressors, it is necessary to develop specific tools for evaluating these aspects of stress. An analysis of recent publications shows that in foreign psychology, the researchers in this area have developed and actively use the survey methods (questionnaires) to assess life stress in everyday situations and uncertainty stress in the situations of global challenges (Yang et al., 2017; Wu et al., 2020; Freeston et al., 2020). Popular tools include T. Yang's questionnaire "The Student Daily Stress Questionnaire" (SDSQ) and its various modifications, which allow measuring the severity of life stress and uncertainty stress in students (Yang et al., 2019; Wu et al., 2020). It should be noted that they are mostly aimed to measure academic and everyday stress (Wu et al., 2020).

In the domestic literature, the concept of "uncertainty stress" is practically not used. Some authors attempt to conceptualize this phenomenon as "uncertainty in the context of stress" (Mospan, 2023). As for empirical studies, the researchers examine either aspects of attitudes towards uncertainty (e.g. Sachkova and Semenova, 2024; Dolgova et al., 2022) using, for example, the well-known questionnaire "Scales of Tolerance and Intolerance for Uncertainty" (Kornilova and Chumakova, 2014), or various aspects of subjective life stress (Sultanova et al., 2021; Zolotareva, 2023). T. Yang's questionnaire was translated and tested in a study of the ethnic and regional specifics of the resource role of students' conscious self-regulation in overcoming stress (Banshchikova et al., 2023). It should be

noted, however, that psychometric evaluation of this questionnaire and its structure verification has not yet been conducted on a Russian sample.

Thus to study the simultaneous and cumulative influence of uncertainty stress, it is not enough to distinguish between ordinary uncertain life situations and more global stressors. Therefore, there is a need for specific tools that allow assessing uncertainty stress in a set of grades distinguishing severity of perceived stress in subjective and objective situations of uncertainty.

The purpose of this study was to create a questionnaire "Subjective and Objective Uncertainty Stress - SOUS", as well as its validation and psychometric evaluation.

The sample of the study consisted of 1411 people including 1130 college students (mean age 17.64; 43.5% - girls) and 281 university students (mean age 19.14; 76.3% - girls). Data collection was carried out using the "Testograf" platform (<https://www.testograf.ru/>).

Methods

The new author's questionnaire "Subjective and Objective Uncertainty Stress - SOUS" is developed for measuring the perceived stress of uncertainty and includes 14 statements related to situations that can cause stress reactions (7 of them form the "Subjective Uncertainty Scale" and 7 - the "Objective Uncertainty Stress"). In contrast to the T. Yang questionnaire, the SOUS scales are equal in the number of points, which makes it possible to compare the severity of subjective and objective uncertainty stress without standardization. The respondents are asked to rate the degree of perceived stress in these situations on a 4-point scale, where 1 is "no stress" and 4 is "excessive" stress. The integral scale assesses the general level of uncertainty stress by summing up the scores obtained on the two scales. The statements were created being based on the clarification of theoretical concepts about the subjective and objective aspects of uncertainty stress, as well as the analysis of existing scales of perceived stress (Mitchell et al., 2008; Yang et al., 2017; 2019; Zolotareva, 2023, etc.). The instructions, list of statements, and the questionnaire keys are provided in the Appendix.

The following methods were used to validate the developed questionnaire:

1. V.I. Morosanova's questionnaire "Self-Regulation Profile Questionnaire - SRPQM" (Morosanova and Kondratyuk, 2020) including 7 scales: "Planning" (PL), "Modeling" (M), "Programming" (PR), "Evaluation of results" (OR), "Flexibility" (F), "Independence" (I), "Reliability" (R), as well as the integrative scale "General level of self-regulation" (SRGL), calculated as the sum of scores on all scales. This technique was used to test the validity of the new questionnaire based on our previously obtained data on the resource role of conscious self-regulation in coping with uncertainty and stress (Kondratyuk and Morosanova, 2021), as well as the data indicating that conscious self-regulation can serve as a resource for overcoming uncertainty stress (Banshchikova et al., 2023).

2. The questionnaire "Scale of Perceived Stress SPS-10" (Zolotareva, 2023) including the subscales "Distress" and "Coping", as well as an integrative scale of the general level of perceived stress (sum of points). In this study we considered the correlations between the scales "Distress" and "General Level of Perceived Stress" and the scales of the questionnaire "Subjective and Objective Uncertainty Stress".

Results

Before proceeding directly to the analysis of the questionnaire structure and its validity evaluation, we have checked the possibility of combining the samples of college and university students. For this purpose, 294 people were randomly selected from 1130 college students for comparison with university students (N=281). The comparison was carried out by the indicators of subjective and objective uncertainty stress, as well as the general level of conscious self-regulation using the Mann-Whitney criterion. Table 1 presents the descriptive statistics and criterion values for each of the above indicators.

Table 1

Comparison of mean values of uncertainty stress and general level of self-regulation (SR) among college and university students

	Group	N	Mean	St. dev.	W
Subjective uncertainty stress	0	294	12.44	4.348	28382.5***
	1	281	15.08	4.901	
Objective uncertainty stress	0	294	11.58	3.769	27853.5***
	1	281	13.82	3.996	

GENERAL PSYCHOLOGY, PERSONALITY PSYCHOLOGY, PHILOSOPHY AND PSYCHOLOGY

	Group	N	Mean	St. dev.	W
	0	294	88.91	14.096	
General SR level					35925.0**
	1	281	92.27	14.557	

Note: 0 – college students, 1 – university students, ***- $p < 0.001$, **- $p < 0.01$

According to the obtained results, there are significant differences between the two compared groups. In particular, the university students have significantly higher levels of both uncertainty stress and general SR level compared to the college students. Due to the discovered differences, we used the college students' data for considering the questionnaire structure and verifying its validity. Table 2 presents descriptive statistics as well as the results of testing the distribution of uncertainty stress indicators for normality using the Shapiro-Wilk criterion.

Table 2

Descriptive statistics and Shapiro-Wilk test for subjective and objective uncertainty stress indicators

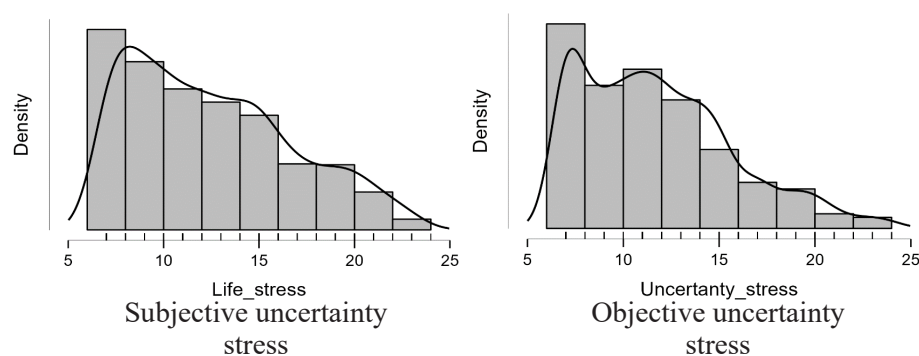
	Subjective uncertainty stress	Objective uncertainty stress
Mean	12.555	11.825
Standard deviation	4.271	3.964
Min.	7.000	7.000

	Subjective stress	Objective stress
Max.	24.000	24.000
Shapiro-Wilk criterion	0.937***	0.929***

Note: *** - $p < 0.001$

Figure 1

Distribution of indicators of subjective and objective uncertainty stress



According to Table 2, the distribution differs significantly from the normal (the significance of the Shapiro-Wilk criterion < 0.05), and for this reason the nonparametric methods of analysis were further applied. It should also be noted that distribution is shifted towards low values (Fig. 1), which is generally characteristic of stress and negative emotional states.

Reliability of the questionnaire "Subjective and Objective Uncertainty Stress". The α -Cronbach and ω -McDonald coefficients were calculated on the sample of college students in order to analyze the degree of internal consistency of the questionnaire scales. The results of the analysis are presented in Table 3.

Table 3
Internal consistency of the scales of "Subjective and Objective Uncertainty Stress- SOUS"

Scales	McDonald's ω	Cronbach's α
Subjective Uncertainty Stress	0.823 [0.807; 0.839]	0.819 [0.803; 0.834]
Objective Uncertainty Stress	0.833 [0.818; 0.848]	0.829 [0.813; 0.843]
General Level of Uncertainty Stress	0.887 [0.877; 0.897]	0.885 [0.875; 0.895]

Note: *the boundaries of the 95% confidence interval are given in square brackets.*

According to the obtained results, all three scales demonstrate a fairly high internal consistency: both Cronbach's alpha and McDonald's omega exceed 0.8.

Next, the structure of the questionnaire was analyzed by means of exploratory (EFA) and confirmatory (CFA) factor analysis. To this end, the total sample of college students was randomly divided into 2 equal subsamples (N = 565 for EFA and N = 565 for CFA).

Exploratory factor analysis

Since the data are not normally distributed, the principal component analysis was used for factor analysis as it is more preferable in case of distribution normality violation (Fabrigar et al., 1999) and more powerful for studying a relatively simple factor structure (DeWinter & Dodou, 2012). Direct oblimin was used as a method of component rotation, since there was a possibility of correlation between the factors. Checking compliance of the correlation matrix for factor analysis by means of the Bartlett test and Kaiser-Meyer-Olkin test showed the applicability of the factor analysis procedure ($X^2 = 2884.512$, $df=91$, $p<0.001$). The results of the exploratory factor analysis are presented below, in Table 4.

Table 4

Factor loadings and cumulative percentage of explained variance for the identified factors

Model: $X^2 = 431.349$, $df=64$, $p<0.001$			
	Factor 1	Factor 2	Cumulative variance
Point_6	0.852		
Point _7	0.737		
Point _3	0.682		
Point _5	0.658		0.270
Point _4	0.622		
Point _2	0.592		
Point _1	0.493		
Point _10		0.885	
Point _11		0.656	
Point _12		0.599	
Point _13		0.592	0.500
Point _14		0.583	
Point _8		0.550	
Point _9		0.483	

As a result of exploratory factor analysis, 2 factors are distinguished, which meaningfully correspond to the scales of the questionnaire and jointly explain 50% of the variance. Questionnaire items 1–7 demonstrate high loadings on the first factor (“Subjective uncertainty stress”), while items 8–14 – on the second factor (“Objective uncertainty stress”). The obtained result is consistent with the assumption about the questionnaire structure. Note that, according to the obtained results, reducing all the questionnaire items to one factor was not informative, as well as increasing the number of factors. Besides, the explained percentage of variance was quite low. In this regard, it seems appropriate to test a more complex model, with the presence of a common second-order factor, by means of the confirmatory factor analysis.

Confirmatory factor analysis.

According to the EFA results presented above, three models were tested: model 1 with two latent variables (subjective and objective uncertainty stress scales), model 2 with one latent variable (integrative scale of general uncertainty stress level), model 3 with two first-order factors and one second-order factor (subjective and objective uncertainty stress scales and general uncertainty stress scale). Since the data are measured on an ordinal scale, but at the same time demonstrate a low deviation from normality (asymmetry and kurtosis did not exceed 1 in absolute value), and there was a fairly large sample, the unweighted least squares method was used as a method for assessing the fit of the model. Table 5 below presents the fit indices of all three models. CFI> 0.95, TLI> 0.95, RMSEA <0.06, SRMR <0.06 were accepted as acceptable values.

Table 5
Indicators of compliance of the models under study

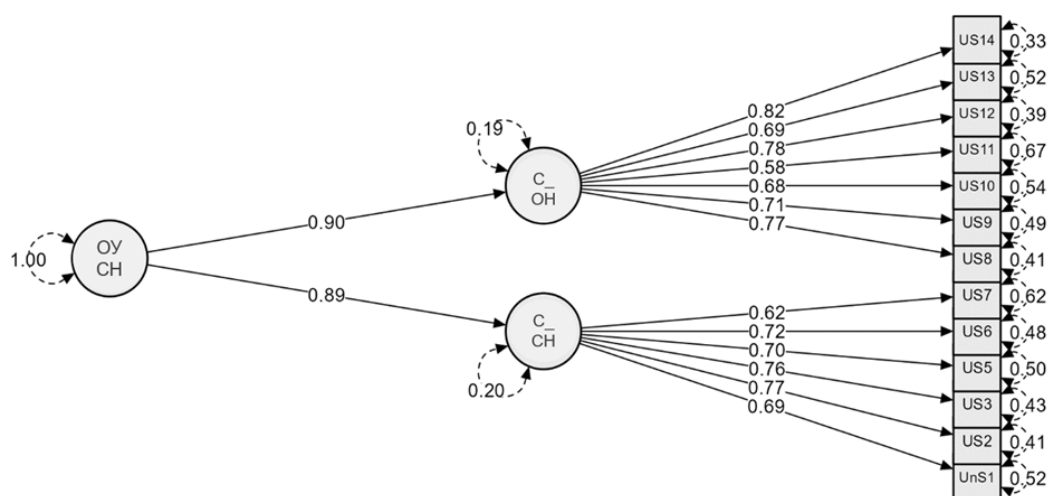
Model Number	χ^2	Df	CFI	TLI	RMSEA	RMSEA _p	SRMR
Model 1	201.501	76	0.988	0.985	0.056	0.130	0.060
Model 2	339.151	77	0.976	0.971	0.078	<0.001	0.076
Model 3	172.990	63	0.988	0.986	0.056	0.166	0.058

According to the obtained data, the best fit indices are observed in models 1 (two latent factors) and 3 (two latent factors and one second-order factor), and their values are almost identical. Nevertheless, since model 3 best fits our theoretical concepts, it was accepted as the final one. Figure 2 shows model 3 indicating the factor loadings of the

items on the scales, as well as the contribution of the common factor to explaining the covariance between the first-order latent factors.

Figure 2

Final model based on the results of confirmatory factor analysis



Note: *C_CH* – stress of subjective uncertainty, *C_OH* – stress of objective uncertainty, *OYCH* – general level of uncertainty stress.

Thus, the results of the exploratory and confirmatory factor analysis have acknowledged the assumed structure of the questionnaire, namely, its two scales: "Subjective uncertainty stress" and "Objective uncertainty stress" and an integrative scale reflecting the general level of uncertainty stress.

Validity of the questionnaire "Subjective and Objective Uncertainty Stress - SOUS"

Further, on the sample of college students (N=1130), the validity of the questionnaire was checked by conducting a correlation analysis of its indicators with indicators on the "Distress" scale, the general level of perceived stress ("Scale of Perceived Stress"), as well as the general level of conscious self-regulation ("Self-Regulation Profile Questionnaire"). Since it was previously found that distribution differs from normal,

the correlations were calculated using the Spearman ρ coefficient. The results of the analysis are presented in Table 6.

Table 6
Correlations of "Subjective and Objective Uncertainty Stress - SOUS" indicators with general level of conscious self-regulation (SRPQM) and general level of perceived stress (SPS-10)

Variables	1	2	3	4	5	6
1. Subjective uncertainty stress	—					
2. Objective uncertainty stress	0.675***	—				
3. General level of uncertainty stress	0.923***	0.902***	—			
4. Distress	0.531***	0.569***	0.602***	—		
5. General level of perceived stress	0.362***	0.339***	0.388***	0.612***	—	
6. General level of conscious self-regulation	-0.243***	-0.260***	-0.279***	-0.415***	-0.151***	—

Note: *** - $p < 0.001$

The analysis revealed moderate significant correlations of the indicators of "Subjective and Objective Uncertainty Stress - SOUS" questionnaire with those of conscious self-regulation and perceived stress. In particular, the general level of uncertainty stress positively and moderately correlates with general level of perceived stress, which may be due to the fact that in the "Scale of Perceived Stress" its general level reflects both the severity of distress and the perceived ability to cope with it. This assumption is confirmed by the high and positive correlation of "Distress" values with all indicators of "Subjective and Objective Uncertainty Stress - SOUS" questionnaire. Thus, we can say that presented

questionnaire demonstrates good indicators of construct validity. It should also be noted that the questionnaire indicators correlate poorly and negatively with general level of conscious self-regulation.

Discussion

The presented study had its purpose to validate and psychometrically evaluate the developed survey method "Subjective and Objective Uncertainty Stress - SOUS" on a sample of young people. The psychometric evaluation of the questionnaire was carried out on a sample of college students, since, according to the data obtained, university students who took part in the survey differed significantly from the college students both in terms of uncertainty stress and in the level of conscious self-regulation. This result may be associated with age characteristics: the sample of university students is, on average, older than the sample of college students, although it includes the same age group (16-25 years). In addition, this difference may be due to the specifics of educational systems and strategies of students choosing these diverse educational trajectories. Thus, the choice of studying in a college is often part of the educational strategy "to get to university through college", which is associated with less risk, since it allows to avoid the Unified State Exam (Aleksandrov et al., 2015; Cherednichenko, 2017). This fact may explain the lower stress levels and lower levels of conscious self-regulation in the college students. However, the revealed differences and their causes require further empirical research.

The reliability analysis of the method demonstrated its high internal consistency - Cronbach's α and McDonald's ω were above 0.8 for all questionnaire indicators. The obtained result is consistent with both the reliability data of original Yang's method (Yang et al., 2019) and the internal consistency data of this questionnaire translated into Russian (Banshchikova et al., 2023). The analysis of our questionnaire structure by means of exploratory and confirmatory factor analysis, on the one hand, confirmed the existence of two latent stress factors (Yang et al., 2019), and on the other hand, supported the assumption about the presence of a higher-order factor - an integrative indicator of uncertainty stress. Thus, according to the results obtained in this work, the studied construct has a more complex structure, and our modified version of the Yang's questionnaire allows for measuring uncertainty stress with a high degree of reliability.

The validity of the proposed modification of the Yang's questionnaire was checked using a correlation analysis of its indicators with those of the "Scale of Perceived Stress" and "Self-Regulation Profile Questionnaire". As a result of the analysis, it was revealed that the indicators of our version of the questionnaire positively and moderately correlate with general level of perceived stress, positively and highly - with distress level, which is consistent with the results of studies on the relationship between uncertainty and perceived stress (Wu et al., 2021; Reizer et al., 2021). Low negative correlations were found between the questionnaire indicators and the general level of conscious self-regulation,

which is consistent with the concept of conscious self-regulation as a resource for coping with stress (Morosanova, 2021; 2022; Kondratyuk and Morosanova, 2021). Thus, we can talk about sufficient construct validity of the questionnaire "Subjective and Objective Uncertainty Stress - SOUS".

Conclusion

1. As a result of testing on a Russian youth sample, a new Russian-language version of T. Yang's survey method was created, called "Subjective and Objective Uncertainty Stress - SOUS". The new version not only allows for measuring the stress indicators of subjective and objective uncertainty, but also has an integral scale reflecting the general level of uncertainty stress.
2. The new adapted version of the method demonstrates high rates of internal consistency and is a sufficiently reliable and valid tool for measuring the uncertainty stress in adolescent samples.
3. The results of the validity check demonstrated that indicators of subjective and objective uncertainty stress are significantly positively associated with perceived distress and moderately negatively associated with general level of conscious self-regulation. The data obtained are consistent with theoretical concepts of uncertainty stress, as well as with the results of studies demonstrating the resource role of conscious self-regulation in coping with uncertainty and stress.
4. The proposed questionnaire can be used in psychological and pedagogical practice to diagnose the level of uncertainty stress in adolescent students, as well as the severity of stress concerning life and global stressors.
5. It seems promising to use the developed questionnaire for comparing the severity of objective and subjective uncertainty stress in students depending on their age, gender, region of residence, as well as the level of development of their personal, cognitive, and regulatory resources and reserves. A pressing issue awaiting study is the impact of various aspects of uncertainty stress on academic success, subjective well-being, personal and professional development in adolescence.

Limitations

At present, the developed questionnaire is applicable to studies on the samples of adolescents (16-25 years old). Future studies can be aimed at validating the questionnaire on the samples of other ages, as well as developing normative indicators depending on gender and age.

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Conflict of Interest Information

The authors have no conflict of interests to declare.

Appendix

Instructions, statements, and key to the questionnaire "Subjective and Objective Uncertainty Stress"

Instructions

You will be given some statements related to situations that can cause negative stress reactions. Please, evaluate the extent of possible stress in each of these situations on a scale: 1 - no stress, 2 - slight stress, 3 - significant stress, 4 - excessive stress.

Statements	No stress	Slight stress	Significant stress	Excessive stress
Difficulties in studies	1	2	3	4
Unsatisfying relationships with peers	1	2	3	4
Conflicting relationships with teachers	1	2	3	4
Dissatisfaction with romantic relationships	1	2	3	4

GENERAL PSYCHOLOGY, PERSONALITY PSYCHOLOGY, PHILOSOPHY AND PSYCHOLOGY

Statements	No stress	Slight stress	Significant stress	Excessive stress
Regular financial difficulties	1	2	3	4
Lack of support from family members	1	2	3	4
Threats to life and health	1	2	3	4
A rapidly changing world	1	2	3	4
Flow of negative news	1	2	3	4
In today's world it is difficult to identify what is the truth and what is the lie	1	2	3	4
Climate change and natural disasters	1	2	3	4
Difficulties in projecting professional plans under conditions of uncertainty	1	2	3	4
It is difficult to understand who are the enemies and who are the friends	1	2	3	4
Growing uncertainty about the future	1	2	3	4

Key

The scales indicators are calculated by summing up the scores on the following items: subjective uncertainty stress - items 1-7; objective uncertainty stress - items 8-14. The indicator of the integral scale of the general level of uncertainty stress is calculated as the sum of the values on both scales of the questionnaire.

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Young people's Interpretation of Ethically Loaded Situations: Dependence on Subject Context and Individual-typological Characteristics

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Abstract

Introduction. A research approach to identifying individual determinants of moral reasoning is proposed as an intellectual process that ensures the application of moral injunctions in the changing substantive contexts of ethically loaded situations. **Methods.** The study was conducted on a sample of students of K.E. Tsiolkovski KSU, studying in the first and second courses of socio-humanitarian training directions (n = 90 people). The specificity of variability of productivity of interpretation of moral contradictions on the material of constructed ethically loaded situations in the conditions of change of their subject context was to be revealed. The procedures of one-factor analysis of variance and its variant (ANOVA with repeated measurements) were applied to establish the strength of the influence of the variable "subject context" on the completeness, essential relevance, and problematization of the interpretation of ethically loaded situations under the influence of subject-level variables. **Results.** It was found that the completeness, relevance, and problematization of interpretation of ethically loaded situations in different subject contexts do not remain unchanged, and the boundaries of such variability are associated with the variability of indicators of formation of cognitive and personal characteristics of students. With the inclusion of moral content in the legal context, the completeness of its components is increased, and this trend is determined by the effect of variables such as the level of intellectual development and the formation of ethical categories. When interpreting an ethically loaded situation in a worldly context, the relevance of substantiating a moral contradiction is limited by the formation of collective and personal reflection. In the legal context, the level of problematization increases with the degree of

formation of ethical categories, and in the worldly context, the problematization of moral contradictions increases in those subjects who demonstrate the dominance of moral guidelines in their social behavior. **Discussion.** Identification of the limits of variability in the productivity of interpreting moral contradictions in contextually heterogeneous ethical situations in individuals who differ in their cognitive and personal characteristics allows us to establish how moral norms function in individual consciousness and how they are actualized in the form of a moral prohibition.

Keywords

moral reasoning, ethically loaded situation, subject context, interpretive productivity, individual characteristics, moral injunction, subject of moral choice

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Introduction

Essential for understanding moral thinking is the idea of how the process of recognizing moral contradictions, structuring, and interpreting them is carried out. The study of the determinants of this process allows us not only to obtain the necessary information about the representation of moral prohibitions in individual consciousness, but also to reconstruct the ways of orientation in ethically loaded situations (hereinafter - ELS), which are used by its solvers (moral agents). In such situations, individuals appeal to their potentially opposite personal and professional values, for example, with regard to what constitutes quality of life or human dignity, performing a multidimensional interpretation of the grounds for socially responsible behavior (Arutyunova and Aleksandrov, 2019; Gorbunova, 2010; Machekkhina, 2018; Bartels et al., 2016; Tassy et al., 2013).

Ethically loaded situations are situations in which people's interests, needs, desires contradict the interests, needs, desires of others, and it is required to apply a moral

prohibition in resolving the contradiction or to propose or articulate available conventional norms of settlement that would be recognized by the conflicting parties. The moral injunction actualized by the subject involves a certain way of interpreting normative situations, explaining the reasons for one's own and others' behavior, and evaluating their correctness (Nichols, Mallon, 2006; Skitka et al., 2021). Evaluating a proper action from one's own position and from the position of another person is a contextual determinant that affects the imperativeness of applying moral obligations.

The assumption that there are specific features of moral decision making in different substantive contexts of ethical situations is based on the recognition of differences in systems of social relations. In these systems, "...incentives addressed to individuals or groups are not universal but always correspond to a particular type of regulation of social relations" (Fiske, 1992). From this perspective, the rule of law (in the legal system) and moral judgment (in the system of everyday interactions), although they fulfill the same function, still carry different information for making a moral decision.

Moral prohibitions in the context of social interactions are realized not directly, but indirectly, in correlation with norms and rules encoded in the logic of regulation of subject-legal or any other context (Luhmann, 2007). Such subject "codes" reflect the contextual specificity of ELS. In this capacity, they serve as identifying markers in the process of correlation of their moral content.

The specifics of making moral judgments and interpreting moral contradictions when solving different types of tasks are widely discussed in works and at the moment constitute a whole corpus of research (Yenikolopov, Medvedeva, Vorontsova, 2019; Carpendale & Krebs, 1995; Greene et al., 2008; Sobral & Fraguela, 2018). The need to take into account the context in which moral reasoning is produced has been demonstrated in different substantive tasks: disseminating advances in genetic engineering, exposing criminal behavior, behaving honestly in sports, and ensuring the appropriate quality of medical services (Craft, 2013). However, in current research, the substantive context of moral injunctions is not considered as a contextual variable that has an advancing or, on the contrary, leveling influence on the problematization of moral contradictions and their interpretation.

The fundamental point in considering the interpretation of ELS is that it includes both the evaluation component itself ("right" or "wrong" "necessary" or "not necessary") and the justification, which is the proof of the acceptability of such an evaluation. Interpretation requires analyzing the selected content in the entirety of the connections and relations represented in it, including its correlation with other content, similar or different. Accordingly, interpretation can be difficult due to the multitude of possible directions of analyzing and structuring the included normative contents.

It is still relevant to discuss the basis of interpretation of moral decision in terms of completeness of coverage of all its structural elements - both subjective (motivation, values) and objective (result, circumstances, consequences). Representatives of consequentialist ethics, e.g., eudaemonism, Machiavellianism, and utilitarianism, attach

the main importance to the results of actions and their consequences, while values and motives are relegated to the periphery of moral reasoning. In contrast, representatives of the theory of "autonomous morality" determine the place of results depending on values and motives. The functional role of each of the ELS components in its productive interpretation in specific subject contexts has not yet been adequately considered.

Depending on which components of ELS are fixed by individuals as a semantic center, the dominant view of moral contradiction and its comprehension is established. Fixing this contradiction acts as problematization. Following the tradition coming from Michel Foucault, problematization is necessary when "...a certain complex of attitudes or behavior enters the field of thought on condition that a certain number of factors related to these attitudes or behavior becomes uncertain, loses its "recognizability" and ordinariness, creates a number of "difficulties" around itself, i.e. becomes problematic" (Foucault, 2006, p. 66).

The ELS is an intellectual task in which the interpretation of its content precedes a decision. But, as Dewey observes, this decision is not self-evident. "There are conflicting desires, there are alternative and unquestionable kinds of good. All that is required here is to choose the proper mode of action, the proper good. So the subject of inquiry is clarified: one must review in detail how the situation is constructed; analyze its various factors; clarify what is incomprehensible; distrust what is most conspicuous and distracting; consider the consequences of the most varied modes of action that come to mind; consider the solution reached as hypothetical or tentative until the foreseen or assumed consequences, because of which it was taken, coincide with the consequences actual. Such an inquiry is rational understanding" (Dewey, 2003, p. 106).

As was shown earlier, the process of interpreting such situations should involve cognitive characteristics of individuals, associated, firstly, with the actualization of ethical categories, ways of logical reasoning as means of recognizing the moral content of a social task, its structuring as a situation of moral choice, and, secondly, with ways of detecting and problematizing the contradiction between proper moral and extramoral judgments about the components of an integral situation (Gorbacheva et al., 2018; Malyugin, 2007).

The identification of moral content can be carried out not only by means of abstract thinking and reflexive reasoning, but also determined by the predisposition to moral evaluations and corresponding actions. In the interpretation of ELS, a moral agent can be guided both by situational affective evaluation guided by moral feeling and by stable personal characteristics, moral orientation and conscious attitude to moral norms (Lebedeva, 2023).

When choosing research procedures and diagnostic techniques adequate to the problem under discussion, it is important to take into account that moral agents demonstrate variable ways of interpreting ELS (Molchanov et al., 2019; Beißert, Hasselhorn, 2016; Reynolds, 2006). Despite the fact that the requirements of morality

can acquire a "convex" character and be rigidly imposed on participants in the form of a moral rule, in accordance with "their vision" of the situation, moral agents prefer to be guided in reasoning not only by moral norms proper but also by other norms irrelevant to the moral sphere. In this case, it is legitimate to assume that the cognitive and personal characteristics of individuals play a mediator role in making moral decisions in the changing subject contexts of ELS.

Methods

A one-factor design of the empirical study with randomized presentation of tasks was chosen. The independent variable in the study was the context of situations that actualize moral contradictions (law, life practices) and the dependent variable was the productivity of interpreting the components of the moral choice.

Sample

The study involved junior students of K.E. Tsiolkovski Kaluga State University aged 18-19 years (a total of 90 people).

Methodology

The constructed research tasks included ELSs that arise in the area of legal and everyday life practices. The main series of tasks consisted of four descriptive texts. The nature of moral contradiction in the tasks did not differ, while only their subject context, legal and everyday life - was changed. This requirement was ensured by a preliminary evaluation by an expert. The project participants (four people) acted as experts, and the high degree (at least 95%) of coincidence of structural homogeneity assessments was an indicator of the compliance of the research tasks with the specified requirements.

In order to balance the power of possible influence on the productivity of interpretation of the factors of "familiarity" or "typicality" of the content of the situations analyzed by the students, all of them were generated on the basis of the material presented in the media environment, which equally corresponded to the sociocultural awareness of the students.

The first group of situations, "Divorce" and "Separation", reflected moral conflict in the sphere of everyday practices: 1) preserving family unity in the context of changing cultural norms and preserving tradition, and 2) maintaining child-parent relationships, contrary to cultural stereotypes and values of individual well-being. The second group of situations "Exposure" and "Obliteration" were realized in the legal sphere: 1) reflecting the contradictions between the interests of preserving family ties and responsibility before the law and 2) reflecting the contradictions between the interests of preserving family and corporate ties (both ties with a narrow radius of trust) and the legal norms of society.

To analyze the productivity of situation interpretation, we used a procedure specially developed and tested by Machekhina procedure of content analysis of protocols, the units of which were statements (words and phrases in the texts of protocols) relating to the main components of the situation. The main indicators in assessing the productivity of interpreting the situation of moral choice are: completeness, which is characterized by the coverage of all components of the situation: participants, their motives and values, conditions of moral decision; and essential relevance, which includes the moral dimensions of the situation, where the leading role is given to the problematic reflection by an individual of the conflict of interests, opinions, and expectations of participants in a situation that requires moral evaluation, recognition of freedom, and responsibility of the individual as a subject of moral behavior. An indicator of the problematization of moral contradiction served as statements on the expansion of the analysis of the situation in the direction of predicting its consequences in terms of violation of moral prohibition (Machekhina, 2015; Machekhina, 2018).

Example of ELS and interpretation

Here is an example of a legal situation with a description of indicators of productivity of its interpretation.

Situation Description "Disclosure": "The father of a young female lawyer, a Hungarian immigrant, is accused of war crimes committed during World War II. The prosecutor suspects that he is most likely "Bear," a former death squad commander of the fascist and racist Crossed Arrows of Hungary party." During the siege of Budapest, Miska and his unit tortured and murdered dozens of Hungarian Jews, Roma, and many others. For a young woman, these accusations are absurd. The affectionate single father who raised her and now cares for her son, in her opinion, could not have committed such crimes. She decides to act as the father's public defender and initially succeeds in proving that he is not involved in the crimes of which he is accused, but as she investigates, she comes across photographs that confirm the prosecutor's suspicions. She decides to inform her father and write a letter to the prosecutor, to which she attaches documents proving his guilt.

The interpretation of the presented moral choice situation was considered complete if all components were mentioned in the subject's protocol:

- participants (a father suspected of committing nationalist crimes, loving his daughter and grandson; his daughter, a lawyer investigating his involvement in these crimes, loving her father and son);
- motives (an elderly man (suspected of Nazi crimes) wants to live with his daughter and raise his grandson; his daughter wants to find out whether or not her father is guilty of the crimes of which he is accused);
- values (the father of the female lawyer - maintaining his status as a caring

father and grandfather; his daughters - love for her father and justice;

- conditions (a former Nazi was on trial, accused of committing war crimes (shooting civilians - old men, women, children). At the trial, sufficient evidence of his guilt was not presented, and he was released. However, as a result of her own investigation, his daughter finds irrefutable evidence that convinces her of his guilt).

The interpretation of the presented situation of moral choice was considered relevant if the subject's protocol revealed the moral contradiction underlying the considered ELS: a female lawyer finds herself in a situation of conflict between civil humanistic values (justice) and utilitarian morality, making a choice between acting justly and handing over to the court the evidence of her father's guilt in war crimes that she found, or concealing the truth and leaving everything as it is; for her father, love for his daughter and grandson and preserving his father's rights; for her father - love for his daughter and grandson and preserving his father's rights.

Psychodiagnostic techniques

The empirical research plan was supplemented with the use of psychodiagnostic techniques. A package of methods was selected to identify cognitive and personality characteristics. The level of intellectual development, including awareness and formation of thinking actions, was determined using the "Adult Intellectual Development Test" (Akimova, Gorbacheva et al., 2012). The measure of mastering ethical categories that allow one to orient in the sphere of moral codes of social interaction was checked by means of the methods of forming ethical categories "Definition of "categories" and "Proverbs" (Zhidkova, 2013). To verify the assumption about the mediating role of reflexivity of thinking and types of reflection in the identification, problematization, and interpretation of moral contradiction, the "Methodology of diagnostics of reflexivity of thinking" (Anisimov, 1994) was used. To establish the degree of expression of moral orientation, the research methodology "Types of Orientation in Social Interaction" (Machekhina, 2015) was used.

Hypothesis of the study

The main hypothesis of the study was that the productivity of ELS interpretation will vary depending on its subject context, and the boundaries of this variability will be conjugated with the variability of indicators of the formation of cognitive and personal characteristics.

Results

Table 1 shows how the interpretation of ELS changed in terms of completeness, relevance, problematization, and overall productivity (defined as a summary measure of completeness and relevance).

Comparisons of the results of the interpretations of situations and its components presented in different subject contexts (using the nonparametric Wilcoxon T-criterion for comparing related samples) showed that their structuring was more fully realized in the legal context ($T = 246.0$; $p = 0.000$). This was also confirmed with respect to a more extended analysis of the actions ($T = 338.5$; $p = 0.04$), their motives ($T = 89.0$; $p = 0.000$) and values ($T = 85.0$; $p = 0.000$). The differences between the relevance scores for the interpretation of the components of situations in worldly and legal contexts were even more pronounced (except for the conditions), all of which were significant at the level of at least $p = 0.01$.

Table 1
Indicators of completeness, relevance and overall productivity of ELS interpretations depending on changes in their subject contexts

Indicators of interpretation of situations	Worldly context	Legal context	Statistical validity of the influence of subject matter context (n = 90)	
	average value	average value	T-criterion	Significance level
Completeness				
Participants	1.44	1.62	338.5	0.04
Motives	0.91	1.25	89.00	0.000
Values	1.09	1.38	85.5	0.000
Terms and conditions	0.73	0.80	108.5	no differences
Problematization	0.44	0.45	159.5	no differences
Completeness (total score)	4.61	5.5	246.0	0.000

Indicators of interpretation of situations	Worldly context	Legal context	Statistical validity of the influence of subject matter context (n = 90)	
	average value	average value	T-criterion	Significance level
Relevance				
Participants	0.49	0.83	183.5	0.000
Motives	0.47	0.66	95.0	0.013
Values	0.56	0.73	196.0	0.031
Terms and conditions	0.27	0.30	113.0	no differences
Problematization	0.28	0.26	144.5	no differences
Relevance (total score)	2.07	2.78	233.5	0.000
Productivity				
	6.68	8.28	317.0	0.000

Using a one-factor analysis of variance (ANOVA for related samples), the trend of variability in interpretation productivity was confirmed under changing subject contexts (Table 2).

The completeness of the components of the description of ELS realized on legal material is significantly higher compared to the indicators demonstrated in situations with worldly ($F = 12.74$; $p = 0.000$). The legal context of a moral choice situation also contributes to its relevant substantive interpretation, in contrast to its inclusion in a worldly one ($F = 14.77$; $p = 0.000$). At the same time, students work out the moral characteristics and motives in the participants of situations are worked out by students more deeply on the material of worldly practices ($F = 8.07$; $p = 0.007$). Under the conditions of including the situation in the legal context, the level of its problematization also increases ($F = 15.45$; $p = 0.0000$), significantly distinguishes the influence of this gradation of the variable from other variants of its change (everyday practices).

Table 2

Changes in completeness, relevance, and problematization of ELS in different subject contexts using single-factor analysis of variance

Interpretation productivity indicators	Type of situation (subject context)	F-statistic	Significance level (Sig)
Completeness of the validity of the moral contradiction	Legal	$F = 12.74$	$p = 0.000$
	Worldly	$F = 10.04$	$p = 0.002$
Relevance	Legal	$F = 14.77$	$p = 0.000$
	Worldly	$F = 13.90$	$p = 0.000$
Problematization	Legal	$F = 15.45$	$p = 0.000$
	Worldly	$F = 8.07$	$p = 0.007$

The analysis of the correlation between the expression of cognitive characteristics and indicators of the productivity of interpreting situations (which was conducted using the Spearman rank correlation method) indicated the ambiguous nature of the intellectual

mediation of the processes of structuring and interpreting moral contradictions. It was found that the relevant reconstruction of worldly ELS is based on student cognitive characteristics, among which awareness of cultural and sociopolitical phenomena ($r_s = 0.53$; $p = 0.000$), thinking reflexivity ($r_s = 0.28$; $p = 0.02$), and formation of ethical categories ($r_s = 0.32$; $p = 0.004$) play a significant role. The completeness of structuring and interpreting a life situation was also supported by reflexivity of thinking ($r_s = 0.27$; $p = 0.02$) and such type of reflection as collective reflection ($r_s = 0.31$; $p = 0.003$). The composition of cognitive and personality characteristics that mediate the productive interpretation of ELS given in a legal context appeared to be similar: Both completeness and relevance of interpretation were positively correlated with the general indicator of the level of intellectual development ($r_s = 0.58$; $p = 0.000$), the formation of different types of reflection, personal ($r_s = 0.34$; $p = 0.002$), collective ($r_s = 0.31$; $p = 0.003$) and general reflexivity of thinking ($r_s = 0.36$; $p = 0.001$), and what especially distinguished the tasks with a legal context, a sufficiently high level of mastering ethical categories ($r_s = 0.41$; $p = 0.000$).

The data obtained required further correction and specification. This was determined by the fact that the study was built as an intragroup design and, according to it, the action of the independent variable could be paired with the action of the subject-level variable. Therefore, another variant of one-factor analysis of variance was applied for related samples (ANOVA with repeated measures).

Let us present the most indicative and significant results (according to Fisher's minimum value criterion) results of testing the main hypothesis. Thus, it was revealed that when ELS is included in the context of decision-making in the legal sphere, the completeness of its components is increased. But this variability is determined by the effect of such subject variables such as the level of intellectual development ($p = 0.008$) and the formation of ethical categories ($p = 0.03$). Transfer of the analyzed situation into a worldly context determines a more complete consideration of it, provided that the students have a general level of reflection ($p = 0.05$), as well as a level of intellectual development ($p = 0.007$).

Any change in the subject context of a moral choice situation affects the indicators of reconstruction completeness, and the increase in these indicators is associated with an increase in collective reflection ($p = 0.004$), which is expressed in the ability to recognize the actions, thinking, and deeds of others in joint activities (according to O.S. Anisimov). When considering the situation of moral choice in the everyday context, the increase in relevance is limited by the effect of the subjective level variable: the formation of collective ($p = 0.01$) and personal ($p = 0.01$) reflection.

With the transfer of the analysis of the situation of moral choice into the legal sphere, the essential relevance of its reconstruction will increase; this regularity is manifested in more reflexive subjects ($p = 0.002$). In this connection, the influence of the formation of ethical categories and the moral orientation of the personality on problematizing the content of moral choice in the conditions of changing the subject context of social interaction

was concretized. With the introduction of the legal context, the level of problematization increases with the increase in the degree of formation of ethical categories ($p = 0.03$). In the conditions of daily life, the sensitivity to the identification of moral contradictions increases (at the level of tendency) in those subjects who demonstrate the dominance of moral guidelines in their social behavior ($p = 0.08$).

Regardless of the context in which the ELS was set, those subjects characterized by high indicators of collective reflection ($p = 0.04$) demonstrated substantial relevance of their interpretation. As we have revealed earlier, the special influence of this variable is determined by the ability to overcome the "pressure" of the subject context in highlighting the components of the situation of moral choice that are significant for the analysis of social interaction tasks (Gorbacheva et al., 2018).

Determination of the specifics of the impact of the studied factors on the variability of the indicators of completeness, relevance, and problematization in the ELS of moral choice in groups differing in cognitive and personality characteristics, as well as the identified cases of interrelation between the levels of expression of these characteristics and the indicators of interpretation allowed us to assume that in groups differing in the overall productivity of interpretation of moral content, there will be different, characteristic of these groups, holistic patterns of cognitive and / or personality. The identification of such patterns could be regarded as evidence of the existence of stable predispositions in the form of certain individual characteristics and their combinations in the processes of moral thinking.

To solve this task, we applied the frequency-configural analysis developed by G.A. Linert (Linert, 2000), which makes it possible to identify such configurations of subjects' traits that distinguish one type of subject (competent in moral aspects of social interaction tasks) from another (lacking moral competence). We tried to find out whether the level of the overall productivity of ELS interpretation (the total indicator of completeness and relevance for all six tasks) correlates with cognitive and personal characteristics as the level of intellectual development, moral orientation, the level of reflexivity of personality, and the peculiarities of manifestation of reflexion types in thinking. In other words, it was necessary to establish whether a certain configuration of cognitive and personal characteristics distinguishes the subjects demonstrating a high level of productivity in interpreting situations of moral choice from the subjects with a low level of productivity by this indicator, or whether the distinguished groups have no differences (null hypothesis).

The analysis carried out on a sample of 40 subjects belonging to contrasting groups in terms of interpretation the level of productivity (the total score of completeness and relevance) showed that the assumed presented was not confirmed. This concerns the level of productivity of interpreting the situation of moral choice in the tasks of social interaction in the sphere of daily life practices and law.

A holistic pattern of these characteristics (all low indicators conjugated with each other) was revealed in a single group (low productivity of interpretation) in three subjects. However, it would be hasty to refer them to a special type representing a certain unity

and to speak about the configuration of traits corresponding to it. Rather, they are distinguished by moral detachment, which is especially noticeable in the nature of their problematization of moral contradictions - answers to some questions in the protocols were absent or one-word answers, and where there was an opportunity not to answer (for example, when answering the question: "If you had the opportunity to ask a question to the hero..."), they did not offer any options or they were of an extra-moral nature ("How old is he?", "Does he live alone?", etc.).

Such patterns were not found in the group of subjects with high interpretation productivity. The absence of holistic patterns of cognitive and personal characteristics in the compared groups pointed to the "flexible uncertainty" of mediating ELS interpretation under the conditions of changing its subject context. The same subjects, interpreting the moral aspects of a situation and identifying its components in different subject contexts, actualized different cognitive and personal characteristics, and the variants of their combinations were reconstructed each time the subject context varied.

Discussion

The proposed research approach focuses on the indicators of productivity of ELS interpretation and meets the objectives of the study of the essence and regularities of moral thinking as an intellectual process that ensures the application of universal values in the management of one's behavior, as well as the distinction between "right" and "wrong" in a variety of interaction contexts.

As the perceived risks of not making moral choices for the characters in the interpreted legal situation increased, similar interpretations were no longer predictive of application of the moral prohibition to the everyday situation. In the legal context, the nonapplication of a moral prohibition more clearly posed a threat to public safety or undermined social harmony. The students' support for the positive functioning of society was justified with less inconsistency than recognizing or diminishing the moral dignity of an individual. This determined the greater completeness of reproduction of all components of the legal situation.

Increased contradiction in the choice between harming an individual/group of individuals and socially significant positive consequences leads to a decrease in the relevance of applying moral prohibitions, but an increase in alternative moral justifications. The results predict that when an action is implemented in the direction of asserting some larger and more valuable possibility (greater good for society, organization), the alternative of deciding in favor of the good of the individual will be seen as (relatively) "wrong." At the same time, in the everyday context, students carried out the problematization of the decisions made by the characters mainly in the direction of recognizing the necessity of moral prohibition. Here, the pattern confirmed in experimental studies of moral behavior was manifested: the more familiar the subject is with details from the lives of the actors, the more likely he or

she is to attribute to them "moral responsibility and... even when under the pressure of insurmountable circumstances" (Edmonds, 2016, p. 124).

The completeness of identification of the components presented in situations of moral choice, and the relevance of their interpretation, emphasizing the attitude to the Other as an equal participant in the interaction, and evaluation of decisions made on the basis of the ratio of "the greatest good and the least evil", are based on similar configurations of cognitive characteristics. The role of ethical categories was particularly manifested: the indicators of their formation in students determined the stability of a complete and meaningfully relevant analysis of moral conflict in varying contexts of situations. The function of an ethical categories is considered here not so much in terms of generalization of knowledge but as a means of recognizing a situation, selecting features relevant to its subject qualification, and developing meaning (Jordaan, 1996).

It should be noted that the level of general intellectual development did not act as a critical resource in varying individual outcomes of completeness and relevance of interpretations of moral conflict, but contributed to its problematization in all situations, regardless of their context. This can be explained by what we know about the evidence that making rationally "weighted" judgments does not in itself yet determine imperative application of the norms to which they appeal (Nichols et al., 2016). The role of intellectual processes is not so much to make the more 'moral' judgment as to strike a balance and compromise between competing moral obligations and to find a common condition for relating them and ways of satisfying each (Brandt, 1992, pp. 40-41).

Interpretation, which ensures the identification of the structure and components of ELS, places high demands on subjects in terms of the formation of reflexive mechanisms that ensure the restructuring of thought analysis in the direction of harmonizing the differing social contexts of normative regulation (Landy & Kupfer, 2023). The development of reflexivity of thinking and its forms in the form of personal and communicative reflection is associated with a comprehensive consideration of the components of the situation, with understanding the conditions and consequences of the resolution of moral contradictions regardless of their subject contexts, including everyday practices. The role of collective reflection in following a moral prohibition becomes especially evident when the social context of interaction between participants in a situation of moral choice and moral decision making in the legal field of joint action changes. And in this regard, it is important to take into account that "moral judgments represent not a product, but a tool with the help of which a person defends and argues his position" (Zaikin, 2017, p. 36). In reconciling their own judgments of the proper with the judgments of imagined others, the study participants received a kind of independent support for the principles that gave additional substantiating power to the moral injunction.

The stable "coupling" between the levels of expression of certain cognitive and personal characteristics and, as a consequence, the consistency of moral interpretation could expectably be evidence of the determinability of students' use of moral prohibition, which is manifested regardless of the subject contexts in which it is realized. But such a position contradicts the essential characteristic of the autonomy of the moral agent. That is why it would be legitimate to conclude that successful orientation in contextually variable ELS and their productive interpretation require flexible and adaptive functioning of cognitive and personal characteristics, actualization of their various combinations and forms of conjugate action.

Conclusion

The study substantiated the position that the processes of identification, structuring, and interpretation of moral contradictions serve as active manifestations of thinking in the sphere of morality. An important step in the process under consideration is the assumption that moral prohibitions as grounds for productive interpretation do not appear in their immanent essence but are embodied in the subject logic of normative requirements. From this point of view, the completeness and relevance of the interpretation of the moral contradiction in the tasks modeling an ethically loaded situation is carried out through the "reformatting" of its components in relation to the specifics of normative regulation and its application in specific spheres of social interaction. The law and the everyday context of life (everyday practices) were considered as such.

The hypothesis about the mediating role of cognitive and personal characteristics in the application of moral prohibition was confirmed. Individual (cognitive and personal) characteristics of the subjects were involved in the process of interpreting ELS to a different extent: 1) with the selectivity of selection and productivity of thought processing of moral content (the formation of ethical categories, the level of intellectual development) and 2) with the ways of detecting and problematizing the contradiction between moral and extra-moral judgments about the components of an integral situation under the conditions of changes in its subject context (the level of development of thinking reflexion and its types - intellectual and collective personal reflexion; the degree of expression of moral orientation of the personality).

Theoretical and practical significance of the conducted research consists of the fact that due to the conceptualizations and methodological developments carried out in it, opportunities are opened for studying general psychological regularities of thinking, implemented in the moral sphere, taking into account psychologically substantial operationalization of indicators of interpretation of moral contradictions in situations with a high risk of social responsibility.

Limitations of the study

The study was carried out on a sample of junior students who are not characterized by the depth of immersion in the subject-professional context of ethically loaded situations. The inclusion of undergraduate students as participants in the study could be a factor that enhances the impact of the situations subject context of the analyzed on the productivity of their interpretation.

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The Association Between COMT Gene Genotypes and EEG Activity in Assessing the Emotional Valence of Visual Scenes

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Abstract

Introduction. The recognition of emotional context in visual scenes plays a crucial role in an individual's successful socio-psychological adaptation to various conditions in both real and virtual life. However, the current understanding of genetic factors related to the neurobiological mechanisms of spatio-temporal patterns of brain electrical potentials during the differentiation of emotional valence in visual scenes is limited. The catechol-O-methyltransferase ferment, COMT, is linked to the duration of monoamine presence in the synaptic cleft and influences the duration and intensity of emotional reactions. Genotypes for the Val158Met polymorphic locus (rs4680) are associated with various characteristics in the emotional and cognitive domains of carriers, such as anxiety and cognitive control. Consequently, our study aimed to explore the spontaneous electrical activity of the brain in carriers with different genotypes of the COMT gene when tackling challenges related to determining the emotional valence of visual scenes. **Methods.** To achieve this objective, we employed several methods, including genotyping (on DNA extracted from buccal epithelial cells), electrophysiological techniques (EEG recording in 128 leads), behavioral assessments (evaluation of accuracy in recognizing the emotional valence of visual scenes), and statistical analyses (spectral and coherence EEG analyses, ANOVA, Kruskal-Wallis Test, Dunn's Post Hoc Comparisons for behavioral data). **Results.** The EEG data analysis, categorized by genotypes, revealed a correlation between COMT gene genotypes and spectral characteristics of the EEG. Additionally, we found

associations between different COMT gene genotypes and the accuracy in assessing the emotional valence of visual scenes. **Discussion.** These findings contribute to and broaden existing knowledge regarding the link between the catechol-O-methyltransferase gene, spontaneous electrical brain activity, and the proficiency in tasks involving the determination of emotional valence in visual scenes.

Keywords

EEG, scenes, emotions, COMT, functional connectivity

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Introduction

Scenes, defined as sets of visual patterns, hold particular scientific significance owing to their natural prevalence in everyday life. Additionally, scenes carry evolutionary importance, serving as stimuli that convey information not only about depicted objects but also about their relationships and contextual placements (Ermakov et al., 2022). The categorization of scenes is a fundamental challenge in computer vision. Following Xiao J. and his colleges, who view a scene as a spatial location where a person can potentially or actually position themselves and take action (Xiao et al., 2010).

Despite extensive research into the neurophysiological aspects of perceiving emotionally charged stimuli, interest remains robust. Spatio-temporal patterns of electrical potentials in the brain, specific to each emotional state, are currently harnessed to advance human-computer technology, particularly Brain-Computer Interfaces (BCI). Utilizing deep neural networks, including artificial neural networks like autoencoders, researchers have compiled databases of physiological signals indicative of emotion recognition based on electroencephalographic indicators (Liu et al., 2020). Studies are also exploring the influence of physical parameters of visual stimuli on the success of recognizing emotional context and the corresponding reflection of these processes in EEG parameters (Babenco et al., 2022; Rodionov, Yavna, Babenko, 2023).

Over the past years, EEG indicators related to the intensity (arousal/intensity) and valence of human emotional reactions in both health and disease, as well as electrophysiological correlates of the motivational significance of emotionally charged stimuli, have been extensively documented. According to Frantzidis C. A. et al.'s study (2010), the reliability of classifying emotional states from EEG signals is approximately 80%.

In contemporary studies special attention has been paid to the EEG microstates, which reflect the temporal dynamics (by millisecond) of the processing of complex emotionally charged stimuli. These states are viewed as neurophysiological correlates of socio-affective mind (Schiller, 2023). There are also some progress in improving the approaches to mathematical processing of the EEG data (for example, the InvBase method, including baseline power removal) (Ahmed, 2023).

Undoubtedly, the physiological response to the presentation of emotionally charged stimuli is a complex phenomenon involving various physiological changes across cardiovascular, respiratory, endocrine, and other bodily systems (Lapin & Alfimova, 2014). Contemporary research increasingly embraces an interdisciplinary approach, leading to the development of multimodal databases that incorporate a range of psychological and physiological parameters. These parameters encompass personality traits, physiological indicators, and success in recognizing emotionally charged stimuli. Notable examples of such databases include the ASCERTAIN database (Subramanian et al., 2018), K-EmoCon (Park et al., 2020), DREAMER (Katsigiannis & Ramzan 2018), DEAP (Koelstra et al., 2012), GAMEEMO (Alakus et al., 2020), and others (Liu et al., 2020; Seal et al., 2020).

At the same time, there is currently insufficient data on genetic factors influencing the determination of the emotional valence of stimuli. At the same time, within the framework of the stated topic, among others, the gene of the monoaminergic system, expressed in the limbic and striopallidal structures, as well as the prefrontal zones of the cerebral cortex (Arnsten et al., 2015), which is responsible for cognitive processes, emotional reactions, exploratory behavior, may be of interest: COMT (rs4680) affects the activity of enzymes that break down monoamines (Tunbridge et al., 2006; 2019) and is interrelated with the functioning of hormonal systems (Jacobs & D'Esposito, 2011; Louis et al., 2023). The Val allele is found in people with greater cognitive flexibility, allowing the integration of new relevant stimuli; the Met allele is associated with stable and focused attention, as well as with features of functional connectivity within the limbic system (hippocampus, amygdala) and the prefrontal cortex (Morris et al., 2020). At the physiological level, this influence extends to the processes of excitation and inhibition in the central nervous system.

Based on the above, the purpose of our study was to study the spatiotemporal EEG patterns recorded when solving problems to determine the emotional valence of visual scenes in carriers of different genotypes of the COMT gene.

Methods

A visual stimulus bank comprising 360 images was established through expert assessments, categorizing images sourced from the internet into three emotional valence groups (120 stimuli each): neutral, positive, and negative. The visual stimuli were standardized for angular size, average brightness, and RMS contrast.

The study involved 87 participants (Europeans, 63% women, average age 20.44 ± 2.6 years), recruited from the Southern Federal and Don State Universities. Prior to the experiment written confirmation of voluntary participation and declarations of the absence of neurological or mental diseases were obtained. All participants were informed of the study objectives and were familiarized to the experimental task. The research adhered to the SFU Ethics Commission's requirements, approved by the local ethics committee, and conducted in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki).

During the experiment, participants were exposed to 360 stimuli (visual scenes with varying emotional valence) that were presented in a random sequence. Each stimulus was displayed for 700 ms, during which participants had to determine the scene's valence and select one of three response options (positive, neutral, or negative scene). The images used in trials were not used in the main experiment. Throughout the experiment EEG was recorded from 128 leads, covering a frequency range of 0.5 to 35 Hz.

Artifact removal using independent component analysis (ICA) was performed in the preprocessing of each subject's EEG recording for subsequent analysis. After this procedure, recordings from 2 subjects had to be excluded due to substantial EEG noise, resulting in data from 85 individuals for further processing.

In the subsequent EEG preparation stage, epochs were segmented with durations ranging from -1000 ms to +1000 ms relative to the stimulus. Epochs containing artifacts, even after artifact removal, were eliminated through visual inspection. The remaining EEG segments were categorized into three sets based on the stimulus valence.

To facilitate further analysis, two continuous epochs were generated for each subject within each category, comprising pre-stimulus and post-stimulus segments. The entire preparatory phase utilized the EEGLAB function package version 2022.0 in MATLAB version R2021a (The MathWorks Inc.: Natick, MA, USA). Data export for EEG processing in other software was executed using MATLAB scripts developed in the SFU laboratory.

Overall study involved electrophysiological and behavioral data analyses for each genotype of the COMT gene. EEG processing encompassed spectral and coherence analyses conducted in four frequency ranges: 0.5-4 Hz (delta), 4-8 Hz (theta), 8-13 Hz (alpha), and 13-25 Hz (beta).

Statistical analyses comprised pairwise comparisons using one-way analysis of variance with repeated measures (one-way ANOVA) at a significance level of $p \leq 0.01$.

Data processing for statistical analysis was carried out using the Statistica 12 program (TIBCO).

Spectral analysis involved determining amplitude spectra in pre-stimulus and post-stimulus intervals on EEG for each valence, calculating difference spectra in four frequency ranges across 128 leads, and subsequently conducting statistical comparisons.

Coherence analysis aimed to determine the correlation of EEG spectral power in each frequency range across 19 leads, corresponding to the standard 10x20 design. The topographic distribution of coherent connections was calculated separately for pre-stimulus and post-stimulus EEG, followed by the determination of differences between the maps.

Both spectral and coherence analyses utilized a Hann window function (4-second analysis epoch with 50% overlap) to minimize leakage at the boundaries of connected EEG segments.

For behavioral data processing, the number of correct recognitions and "false alarms" for stimuli of each valence were calculated. The sensitivity index (d') was calculated using the PAL_SDT_1AFC_PHFtoDP function from the Palamedes toolbox (Prins & Kingdom, 2018). Intergroup comparisons of sensitivity indicators in carriers of different COMT gene genotypes were carried out using the Kruskal-Wallis test with Dunn's test and Holm's correction for multiple comparisons as a post hoc procedure. Statistical analysis of results was performed using JASP Computer software package (Version 0.16, 2021).

Genetic analysis, conducted at the Laboratory of Medical Genetics of Rostov State Medical University, involved DNA extraction from buccal scraping cells and PCR. The Val158Met polymorphic locus of the COMT gene (472A>G, rs4680) was examined, and genotypes were determined as Val/Val, Val/Met, Met/Met. The frequency distribution of genotypes aligns with the Hardy-Weinberg equilibrium.

Results

Characteristics of spontaneous electrical brain activity in task of determining the emotional valence of visual scenes were examined in individuals with different genotypes of the COMT gene

In this section, we discuss the results of spectral analysis, with the genotype of the COMT gene serving as the grouping variable. The difference spectra, derived for the entire sample, were categorized into three groups based on the COMT gene genotype: Val/Val, Val/Met, and Met/ Met. Pairwise comparisons (ANOVA) were conducted between these groups for values obtained in recognition of scenes with specific valences. The outcomes of the comparison of difference spectra are presented in Tables 1-3.

Table 1
Comparison of Difference Spectra in recognition of Neutral Scenes by Carriers of Val/Met and Met/Met Genotypes of the COMT Gene

Leads	Beta Range			Means	
	F-ratio	p-level	η^2	M_{VM}	M_{MM}
FC1	7,446	0,008	0,093	-0,062	-0,242
CP1	10,273	0,002	0,124	-0,153	-0,371
P3	9,369	0,003	0,115	-0,185	-0,388
Pz	8,917	0,003	0,110	-0,206	-0,450
CP3	9,001	0,003	0,111	-0,141	-0,331
P1	9,208	0,003	0,113	-0,188	-0,420
CPP3h	7,616	0,007	0,095	-0,159	-0,360
PPO1h	7,379	0,008	0,093	-0,216	-0,419
FCC1h	6,959	0,010	0,088	-0,070	-0,257
CCP3h	9,836	0,002	0,120	-0,125	-0,337
CPP1h	10,326	0,002	0,125	-0,171	-0,413

Note. Here and in subsequent tables, only statistically significant differences are presented.

Tables 1 and 2 reveal differences observed in the spectral analysis in recognition of neutral and positive scenes. These differences are characterized by a more pronounced decrease in the amplitude spectrum in the beta range, particularly in the parietal and central leads of the left hemisphere, within the group of carriers with the Met/Met genotype.

Table 2
Comparison of Difference Spectra in recognition of Positive Scenes by Carriers of Val/Met and Met/Met Genotypes of the COMT Gene

Leads	Beta Range			Means	
	F-ratio	p-level	η^2	M_{VM}	M_{MM}
FC1	7,068	0,009	0,090	-0,022	-0,211
T8	7,324	0,008	0,093	-0,004	-0,121
CP1	7,320	0,008	0,093	-0,087	-0,255
CP6	8,143	0,005	0,102	-0,053	-0,19
P3	6,939	0,010	0,089	-0,118	-0,275
Pz	9,348	0,003	0,116	-0,118	-0,328
CP3	7,273	0,008	0,092	-0,089	-0,238
P1	7,722	0,007	0,098	-0,105	-0,278
PO3	7,776	0,006	0,098	-0,081	-0,262
PPO1h	8,134	0,005	0,102	-0,109	-0,293

As indicated in Table 3, the differences between Val/Met and Val/Val are less prominent, emerging solely in delta range for recognition of the positive scenes. The amplitude spectrum in Val/Val carriers is decreasing and an increasing (in the same leads) in Val/Met carriers.

Table 3

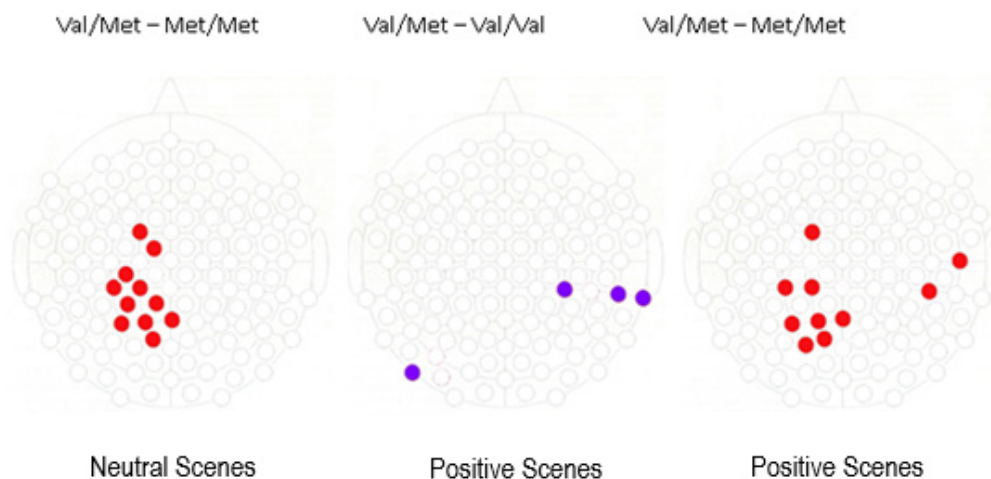
Comparison of Difference Spectra in recognition of Positive Scenes by Carriers of Val/Val and Val/Met Genotypes of the COMT Gene

Leads	Delta Range			Means	
	F-ratio	p-level	η^2	M_{VV}	M_{VM}
TP10	8,865	0,004	0,132	-0,531	0,114
CP4	7,883	0,006	0,119	-0,444	0,191
TP8	9,175	0,003	0,136	-0,583	0,072
PO9	7,616	0,007	0,116	-0,55	0,102

The differences in EEG activity, recorded during tasks to determine the emotional valence of visual scenes, are observed between the Val/Met group and the other groups in recognition neutral and positive scenes. Figure 1 illustrates that more substantial differences are noticeable between carriers of the Val/Met and Met/Met genotypes.

Figure 1

*Comparison of the Difference in Amplitude Spectra between Pre-stimulus and Post-stimulus EEG during the Perception of Scenes with Different Emotional Valence in Carriers of Different Genotypes of the COMT Gene**



Note. * This figure displays leads where statistically significant differences were identified. On the left, leads show a more pronounced decrease in the spectrum in the beta range in carriers of the Met/Met genotype during the perception of neutral scenes. In the center, leads depict multidirectional changes in the delta range for the Val/Met (increasing spectrum) and Val/Val (decreasing spectrum) groups during the perception of positive scenes. On the right, leads show a more pronounced decrease in the spectrum in the beta range in carriers of the Met/Met genotype during the perception of positive scenes.

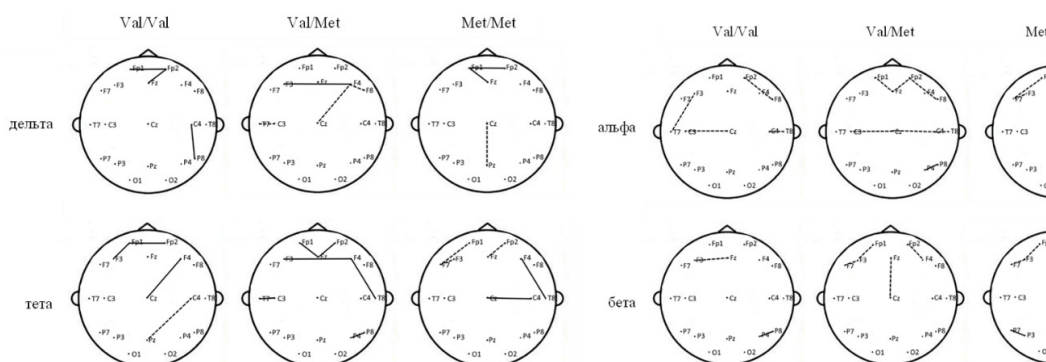
In summary, groups with homozygous genotypes of the COMT gene (Val/Val and Met/Met) exhibit greater similarity in the nature of EEG changes during the transition from stimulus anticipation to the recognition of visual scenes with different emotional valences. Conversely, the Val/Met group demonstrates distinct EEG characteristics compared to both the Val/Val and Met/Met groups.

Results of Coherence Analysis with the Genotype of the COMT Gene as the Grouping Variable

In the coherence analysis, difference coherence maps were constructed and compared for three genotypes of the COMT gene. Notably, for negative scenes (Fig. 2) an increase in synchronization between some leads in the delta and theta ranges was observed in the Val/Val and Val/Met groups. In all other instances, a decrease in the correlation of EEG spectral power was noted during the transition from the stimulus anticipation phase to its analysis.

Figure 2

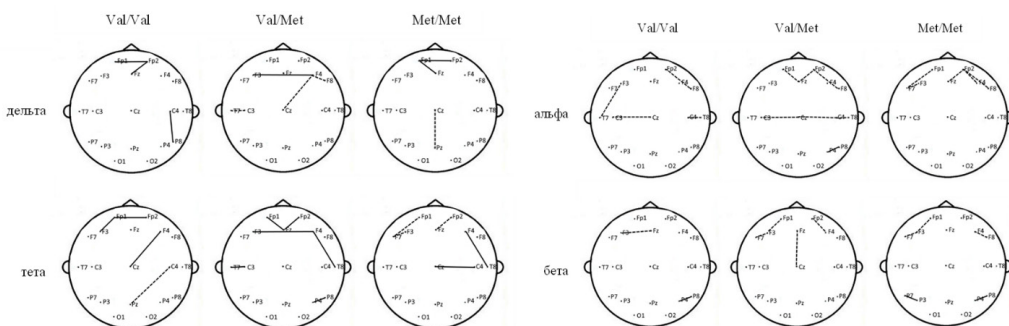
Difference Coherence Maps (showing difference between Pre-stimulus and Post-stimulus EEG Coherence Maps) for Carriers of Different COMT Genotypes in recognition of Negative Scenes



During the perception of neutral scenes (Fig. 3), the most significant differences between genotypes were observed in the beta range. These differences were characterized by the formation of new functional connections in the Val/Val and Met/Met groups, while the Val/Met group exhibited a decrease in EEG correlation between frontal leads.

Figure 3

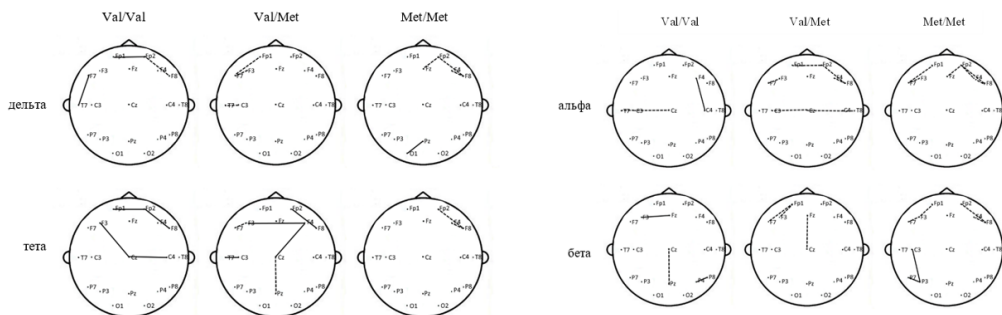
Difference Coherence Maps (showing difference between Pre-stimulus and Post-stimulus EEG Coherence Maps) for Carriers of Different COMT Genotypes in recognition of Neutral Scenes.



In the perception of positive scenes (Fig. 4), differences between the groups were evident in both the beta and delta ranges. Similar to the analysis of neutral scenes, the Val/Met group displayed a decrease in functional connectivity among frontal leads without the formation of new connections.

Figure 4

Difference Coherence Maps (showing difference between Pre-stimulus and Post-stimulus EEG Coherence Maps) for Carriers of Different COMT Genotypes in recognition of Positive Scenes.



Consequently, the most substantial differences in coherence maps were identified between the Val/Met group and the other groups when perceiving neutral and positive scenes, particularly in the delta and beta bands.

Analysis of Behavioral Data: Recognition of Emotional Valence in Carriers of Various COMT Gene Genotypes

To assess the recognition of emotionally charged and neutral visual scenes in carriers of different genotypes of the COMT gene, a thorough behavioral data analysis was conducted. The results highlight an association between the Val158Met polymorphic locus of the COMT gene and the evaluation of the emotional valence of visual scenes (Table 2).

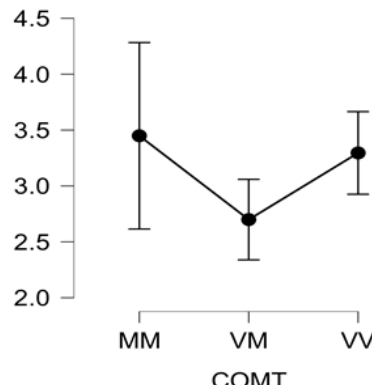
Table 2

*Results of Assessing the Reliability of Differences in Sensitivity to the Emotional Valence of Presented Visual Scenes in Carriers of Different Genotypes of COMT Genes (Kruskal-Wallis Test, * - $p < 0.05$)*

Genotypes of the COMT gene	Total Sensitivity	Scenes		
		Negative	Neutral	Positive
Val/Met	38,52	40,29	37,37	39,75
Mean ranks for COMT (Val158Met, rs4680)				
Met/Met	45,80	43,98	48,22	44,72
Val/Val	60,91	57,00	60,64	57,77
H	7,548	4,051	9,088	4,782
Kruskal-Wallis test				
p	0,023□	0,132	0,011□	0,092

The Kruskal-Wallis Test revealed significant differences in the success of recognizing neutral scenes among carriers of different COMT gene genotypes ($H=9.1$, $df=2$, $p=0.01$). Dunn's Post Hoc Comparisons indicated that carriers of the heterozygous Val/Met genotype exhibited the poorest performance in recognizing neutral images. Moreover, the accuracy of recognition of neutral scenes in Val/Met carriers was statistically significantly lower than in Val/Val carriers ($VM - VV$, $z = -2.798$, $pholm = 0,008$) (Fig.5).

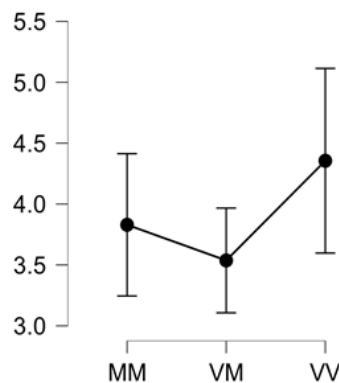
Figure 5
Accuracy of Recognition of Neutral Scenes by Carriers of Different Genotypes of the COMT Gene



Note: Y-axis represents sensitivity (d'), and X-axis denotes genotypes for the COMT gene: MM – Met/Met, VM – Val/Met, VV – Val/Val.

Significant differences among carriers of different COMT gene genotypes were also observed concerning sensitivity to the emotional content of scenes ($H = 7.458$, $df = 2$, $p = 0.02$). Dunn's post-hoc analysis revealed that carriers of the Val/Val genotype generally outperformed others in recognizing the emotional valence of stimuli. Specifically, the accuracy of recognizing the emotional valence of scenes in Val/Val carriers was statistically significantly higher than in Val/Met carriers ($VM - VV$, $z = -2.692$, $pholm = 0.011$) (Fig. 6).

Figure 6
Accuracy of Recognition of the Emotional Valence of Scenes by Carriers of Different Genotypes of the COMT Gene



Note: Y-axis represents sensitivity (d'), and X-axis denotes genotypes for the COMT gene: MM – Met/Met, VM – Val/Met, VV – Val/Val.

Discussion

The study reveals an association between the Val158Met polymorphism of the COMT gene and differences in amplitude spectra of EEG rhythms during the visual recognition of emotionally charged scenes.

The Met/Met genotype is associated with a changes of the amplitude spectrum in the beta range primarily in the left hemisphere's parietal and central areas. In recognition of neutral and positive scenes we found a stronger spectrum decrease in the beta range, comparing to the Val/Met carriers. This, aligning with prior research, could be associated with alterations in the functional state of the cerebral cortex that are specific to Met/Met genotype and do not occur in carriers of one or two Val allele, and potentially indicate reduced focus of attention and subjective insignificance of stimuli (Nikishena et al., 2004).

The Val/Met and Val/Val genotypes are associated with characteristics in the delta range amplitude spectrum in the central and temporal-parietal part of the right hemisphere, as well as in the parietal-occipital part of the left hemisphere. In recognition of positive scenes Val/Val carriers exhibit stronger amplitude spectrum decrease, while Val/Met carriers show an increase. These findings align with existing data suggesting that Met allele carriers show higher performance rates in cognitive tasks, while Val allele carriers may demonstrate higher brain structure activation during cognitive load (Alfimova & Golimbet, 2011; Barnett et al., 2008). The absence of a decrease in activation (beta band power) during the recognition of negative scenes in Met/Met genotype carriers aligns with previous research linking this genotype to a pronounced neural response to unpleasant stimuli, increased limbic system and prefrontal cortex activation, and lower resistance to negative mood (Drabant et al., 2006). Wherein Val allele is associated with an increase in delta/theta Pz–Fz at rest (the posterior–anterior distribution of resting EEG), suggesting its role in the dopaminergic basis of extraversion (Wacker et al., 2010).

Coherence analysis reveals the formation of new functional connections in carriers of Val/Val and Met/Met genotypes in recognition of neutral scenes in the beta range and for positive scenes in both beta and delta ranges. In contrast, carriers of the Val/Met genotype exhibit a decrease in EEG correlation between frontal leads. This suggests greater functional connectivity of the cerebral cortex in carriers of homozygous genotypes in tasks for differentiating stimuli varying in emotional valence. In comparison, carriers of the heterozygous genotype show reduced connectivity of different cortex areas and independent frontal region activity during the categorization of emotionally charged and neutral scenes. These findings present variations compared to those reported in previous research, particularly the study by Liu et al. (2010), where a stronger connectivity was observed in carriers of the heterozygous genotype between specific nuclei of the prefrontal cortex, posterior cingulate cortex, retrosplenial and right inferior temporal cortex, and cingulate cortex. In contrast, carriers of the homozygous Val/Val genotype exhibited weaker connectivity between these regions. Wang et al. (2015) also found no

connectivity differences in the striatum and primary visual cortex between carriers of the Val/Val and heterozygous genotypes. Dang et al. (2013) confirmed a greater functional connectivity between the medial prefrontal cortex and the default mode network (DMN) in carriers of the heterozygous genotype. Additional studies, including Wang et al. (2018), have corroborated increased connectivity between the prefrontal cortex and limbic and striopallidal systems in carriers of the heterozygous genotype. However, there are conflicting data regarding the association of homo- and heterozygous genotypes of the COMT gene with functional connectivity. Lee et al. (2011) found that carriers of the Val/Val genotype exhibited the greatest functional connectivity of left-lateralized network of neurons in the delta/theta frequency ranges, with reduced connectivity for each Met allele. Damoiseaux et al. (2016) showed significantly greater connectivity between the posterior hippocampus and posterior cingulate cortex, as well as the retrosplenial cortex, in carriers of one or two Met alleles compared to Val/Val genotype carriers. A systematic review by Kim A. Morris et al. (2020) highlighted a general tendency associating the Val allele with greater functional connectivity at rest, and the Met allele with increased connectivity during tasks related to emotionally charged stimuli processing, various memory types (including working memory), executive functions and reward-based learning. Thus our findings contribute to our understanding of how genetic factors, specifically the Val158Met polymorphism of the COMT gene, influence neural responses during the perception of emotional scenes. The specificity of the current study's results may stem from the characteristics of the stimuli (emotionally charged and neutral scenes). It contributes to an enhanced understanding of the nuanced functional connectivity patterns between different brain structures in carriers of distinct COMT gene genotypes during diverse cognitive tasks.

The study identified a reduced accuracy in categorizing visual scenes by emotional valence in carriers of the Val/Met genotype of the COMT gene. This reduction in accuracy was found to be accompanied by less pronounced changes in the amplitude spectrum in the delta and beta EEG ranges during the transition from stimulus anticipation to analysis. Differences in the nature of coherent connections in the same frequency ranges were also observed.

These variations might be linked to the duration of monoamines in the synaptic cleft, regulated by the COMT gene. Carriers of Met alleles are characterized by a longer stay of monoamines in the synaptic cleft (Chen et al., 2004; Lotta et al., 1995) and increased dopamine content in the cortex (Zareyan et al., 2021). At the same time, the greater sensitivity of carriers of the Val/Val genotype of the COMT gene to the emotional content of visual scenes may be associated with a more rapid breakdown of monoamines (including dopamine) in the synaptic space, with a lower concentration of dopamine in the prefrontal cortex. A number of studies have found that the Met allele of the COMT gene in a group of healthy people is associated with greater efficiency of executive functions (Barnett et al., 2007), including greater performance of working memory (Weinberger D. R., & Scarabino T., 2006), while

the Val allele is associated primarily with the processing of emotionally charged information (Mier et al., 2010).

The study contributes novelty by describing spectral and coherent characteristics of spontaneous electrical brain activity in carriers of various COMT gene genotypes during the assessment of emotional valence in visual scenes. Behavioral data analysis, specifically the accuracy of recognizing emotionally charged and neutral visual scenes, was also a novel aspect of the study. Overall, the findings expand our understanding of the role of the COMT gene in evaluating the emotional valence of visual scenes by providing insights into both electrophysiological and behavioral correlates.

Conclusions

Obtained results underscore the intricate interplay between genetic factors and cognitive-emotional processing, specifically tied to the COMT gene polymorphism. In terms of amplitude spectra differences, the Val/Met COMT group exhibits distinct EEG patterns during the transition from stimulus anticipation to scene analysis, setting it apart from the Val/Val and Met/Met COMT groups. Specifically, the Met/Met COMT group displays a more pronounced decrease in the amplitude spectrum in the beta range in certain brain regions when perceiving neutral and positive scenes compared to the Val/Met COMT group.

The Val158Met polymorphism of the COMT gene plays a pivotal role in the accurate assessment of the emotional valence of visual scenes. Notably, carriers of the Val/Val genotype demonstrate superior success in recognizing the emotional connotation of stimuli compared to individuals with other genotypes, emphasizing the influence of this genetic variation on emotional processing.

Implications and Future Directions

The observed differences in EEG patterns and emotional valence assessment suggest potential ways for targeted interventions or personalized approaches based on an individual's genetic profile. Future research probably should delve deeper into COMT gene variations, advancing our understanding of their impact on cognitive and emotional functions and contributing to the evolving fields of neuroscience and personalized medicine.

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The authors have no conflicts of interest to declare.

The Effect of Self-Reflection on Electrophysiological Activity of the Brain Depending on the Level of Anxiety

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Abstract

Introduction. High levels of anxiety are often associated with abnormal activity in the brain areas involved in emotional processing, cognitive control, and reduced connectivity in the default mode network (DMN). Studies also show that the activation of the DMN increases during self-reflection processes, especially positive self-reference, suggesting the possibility of using self-reflection to reduce anxiety. This study aims to test this hypothesis on the basis of EEG dynamic data before and after tasks that engage in self-reflection. **Methods.** The study population comprised 127 participants (mean age 25 ± 8 years). The sample was divided into low- and high-anxious groups and into experimental and control subgroups. Experimental subgroups were subjected to an Imaginary and Self-Reflective Resource (ISRR) technique developed by the author to engage participants in self-reflection. The control groups completed tasks in a disciplinary academic field – a standard cognitive load. EEG recordings were made before and after the tasks were completed. **Results.** The results showed that high levels of anxiety tend to lead to cognitive fatigue when completing typical cognitive tasks. At the same time, the self-reflection process combined with high levels of anxiety does not lead to a serious cognitive fatigue, but rather reflects the attention process. Low anxiety is generally associated with lower cognitive fatigue. In low-anxious subjects, the completion of self-reflection tasks involves a significant brain activation that characterizes attention processes. **Discussion.** The results obtained are consistent with those of other researchers and generally confirm

the hypothesis of the study. Positive self-reflection can reduce high levels of anxiety due to the DMN activation.

Keywords

self-reflection, anxiety, self-reference, EEG, electroencephalogram, alpha rhythm, theta rhythm, cognitive processes

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Introduction

Under modern conditions, the search for new ways to cope with stress and anxiety continues. Attention to self-reflection possibilities is a relatively new direction of research. The need to confirm the validity of self-reflective methods is undisputed. Knowledge of psychological and physiological reactions of the body to self-reflection helps to apply methods that help reduce anxiety and organize the conditions for the self-reflection process more correctly.

Anxiety is an experience of emotional discomfort associated with an expectation of trouble and imminent danger (A Dictionary of Psychology, 2008). The difference between anxiety and fear is that anxiety is associated with uncertain threats, and fear arises as a response to specific dangers. An optimal level of anxiety is necessary to adapt effectively to reality. However, excessively high or low levels of anxiety can lead to maladaptive reactions.

Anxiety is the basis for any mental state and behavior related to stress experiences. The following factors are most often distinguished as stress resistance: "The individual's energy potential; the level of development of intuition; the level of development of logical abilities; the individual's emotional maturity; the level of emotional stability and emotional control; the plasticity (flexibility, individual willingness to change); a strong type of temperament (according to I. P. Pavlov); the high level of self-reflection, etc." (Grekhov, Suleimanova, & Adamovich, 2017, p. 62). A stress resistance factor such as a high level of self-reflection has been highlighted in recent decades in research on the role of self-reflection in self-regulation, self-organization and individual self-development (Karpov,

2012; 2018; Maslova & Pokatskaya, 2019; Lysenko, 2022; Yasko et al., 2023).

Anxiety is a predictor of the development of stress-related states: "... More anxious people have fewer adaptive capabilities and are therefore more vulnerable to the stressful effects of extreme situations. <...> The impact of a traumatic event weakens personal adaptability and, consequently, contributes to increasing the level of personal anxiety" (Bykhovets & Padun, 2019, p. 80).

According to a number of neurological studies, high anxiety levels are often associated with abnormal activity and hypoconnectivity in the brain areas involved in the processing of emotions (including the limbic system, especially amygdala), cognitive control, and the so-called default mode network (DMN) (Imperatori et al., 2019; Saviola et al., 2020; Wang et al., 2021; Xu et al., 2019). The latter is named because the medial prefrontal cortex (Brodmann area 10 or MPFC/BA 10) exhibits coherent activity when the brain is not engaged in specific tasks, for example during long rest periods or short breaks between experiments (Damoiseaux et al., 2006; Fox et al., 2005; Fransson, 2005). People with high levels of anxiety often lack the DMN functional connectivity during rest, which is normally observed (Imperatori et al., 2019; Wang et al., 2021).

A number of studies have also shown an increase in the DMN activity during self-reflection and self-reference processes (Beer et al., 2010; D'Argembeau et al., 2007; Hu et al., 2016; Kim & Johnson, 2015a; Kircher et al., 2002; Morin, 2007; Mu & Han, 2010a; Ochsner et al., 2005; Shi et al., 2011a). This region is activated when participants reflect on their identity ((Jenkins & Mitchell, 2011), reflect on their emotions (Ochsner et al., 2005), reflect on their personal problems (Kuiken & Mathews, 1986), reflect on the objects that they own (Kim & Johnson, 2015b), present possessive words such as "me" or phrases that contain them (Shi et al., 2011b), and imagine themselves in the past or future (Araujo et al., 2013; Spreng & Grady, 2010). The DMN is sensitive to increased self-awareness periods throughout a person's life (Pfeifer et al., 2009; Sebastian et al., 2008; Somerville et al., 2013).

Self-reference is understood as focusing on personality traits, especially certain characteristics or physical properties. Thus, self-reference is regarded as an aspect of self-reflection (Sizikova et al., 2024).

In the context of our work, studies that show the positive relationship between the characteristics of self-reference (e.g., positive self-reference versus biased negative self-reference) and the level of anxiety are of particular interest (Abraham et al., 2013; Tracy et al., 2021). These results may indicate that an appropriately structured self-reflection or self-reference process can be associated with a lower level of anxiety. Furthermore, studies showing the link between the reflective process (self-reference, meditation, etc.) and electrophysiological parameters (e.g. the synchronization of the alpha and theta rhythms) are important (Aftanas & Golocheikine, 2001; Aftanas et al., 2001; Asada et al., 1999; Fossati et al., 2004; Knyazev, 2013).

This hypothesis suggests that self-reflection can affect brain electrophysiological dynamics differently depending on the level of anxiety.

Methods

Participants

The study population comprised 127 participants (mean age 25 ± 8 years). The sample was divided into a "low-anxious group" and a "high-anxious group" depending on the measures of trait anxiety and state anxiety and the integrated assessment of the level of anxiety (Table 1). The average level of anxiety was excluded from the experiment. No significant differences were found in trait anxiety and state anxiety scores in each group. This enabled an integrated assessment of the level of anxiety – high and low.

Both groups were also divided into experimental and control subgroups (Table 1). The experiment was carried out during a standard university class and lasted 1.5 hours. During this period, the participants in the experimental group were subjected to the Imaginary and Self-Reflective Resource (ISRR) technique (Sizikova, 2018) aimed at engaging them in self-reflection. The control group completed assignments in the academic discipline. At the beginning and end of the class, the two groups recorded background EEGs with closed and open eyes.

Table 1

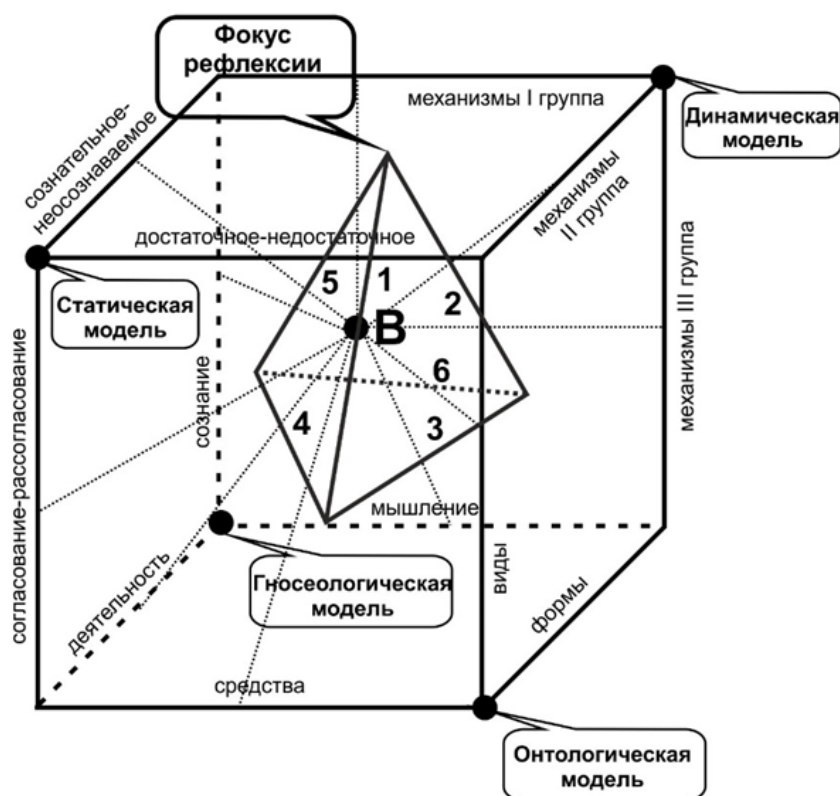
Descriptive characteristics of the subject groups

	Experimental group	Control group
	Group 1	Group 2
Low-anxious group	N = 25 (mean age 24 ± 9)	N = 29 (mean age 28 ± 9)
	Group 3	Group 4
High-anxious group	N = 35 (mean age 24 ± 7)	N = 28 (mean age 24 ± 8)

Conditions for the self-reflection process

In the meta-model of reflection (Sizikova, 2018), self-reflection is one of the types of reflection. For the act of reflection, any distinction is conditional. The scientific concepts of the whole paradigm enable us to consider an element as a whole, in which the larger whole is the whole object. Self-reflection reflects all other types of reflection, including its forms, means, mechanisms, etc. The meta-model is a certain constructor – a centaur of five models, four of which are built within the framework of the non-classical paradigm, the fifth corresponds to the post-non-classical paradigm (Fig. 1. Sizikova, 2018, p. 23).

Figure 1
 Meta-model of reflection in meta-ontology



Note: 1 – Focus of reflection on self and another person, 2 – Focus on development or “staying stuck”, 3 – Focus on creativity, 4 – Type of processing information, 5 – Types of work with information, 6 – Self-development of reflection.

The reflection model, in the form of a cube, reflects the potential state of reflection, and in the form of a tetrahedron reflects the actual state. The current situation is recorded on 12 faces of the cube. When choosing (in the figure, a tetrahedron), a decision is made, which is extended to action. The direction of reflection (intentionality) is the characteristic of the whole object. The focus of reflection on self (in the model, focus of reflection on self and another person), the content of personality that is removed from attention and becomes the object of reflection we call self-reflection.

The Imaginary and Self-Reflective Resource (ISRR) technique developed by the authors refers to projective methods. Its task is to create conditions for self-reflection aimed individual understanding of self and the world. The imaginal layer of consciousness is actualized with the help of tasks for associations of abstract pictures related to archetypal images, the reflective layer – with the help of tasks for transferring the analysis of associations to personal life. The path from the general to the particular enables the individual to expand his/her boundaries. The main purpose of the focus of self-reflection is to make a choice. Association creates a field of possibilities, the choice narrows them down to a solution. The solution is transferred to self-analysis. The self-analysis of personality is performed in writing. Written speech structures internal speech.

The ISRR technique can be analyzed from the perspective of the meta-model of reflection. We attribute this analysis to the epistemological aspect of reflection, as well as to the ontological aspect, the basis of which is the modal idea of the psyche and reflection (Sizikova, 2019; Sizikova & Durachenko, 2020 (a, b); Sizikova & Kudryavtsev, 2023 (a, b)).

The experimental procedure. In the first phase of the study, the experimental group participants were asked to look at cards showing abstract archetypes, such as the Fire Spirit, the Water Spirit, the Smell Spirit, the Mountains Spirit, the Earth Spirit, the Air Spirit, the Nature Spirit, and the World Tree Spirit (the cards and the procedure are presented in: Sizikova, 2018). The names of archetypes direct consciousness and perception into the realm of mythology. The appeal to archetypes refers to the symbolic regulation of personality and its behavior. L. S. Vygotsky (Vygotsky, 1982; 1984) argued that the selection of symbols is the mastery of the universal in specific terms, and defined their nominal functions in the development of language and thought, forming a complex and the symbol becoming an equivalent of the universal in an object class. Abstraction refers to a higher form of thought development; the symbol acquires the alienated individual as a universal content. Then the analysis of the association restores its connection to personality. The ranking of archetype picture cards from “like” to “dislike” includes analysis, and the combination series from 1 to 5 associations present the personal world in duality. The procedure for distributing rows in blocks according to the proposed criteria (fundamental – not fundamental, dynamic – not dynamic, realistic – imaginative, resourceful – not resourceful, neutral) enabled respondents to structure associations and transfer this structure to their real world by performing self-analysis, which is the main task of the technique. A characteristic of self-analysis is to write it as a recommendation to a friend, in which in addition to describing life, an answer to the question “How to

make life more interesting and productive?” is given. The use of decentration in self-analysis enabled respondents to take two positions in self-reflection, which facilitates the transition from personal participation in experiences to their objectification.

In the second phase of the study, all procedures were repeated, but the stimulus material changed. The respondents worked with picture cards with philosophical and metaphysical content – life, love, spark of creativity, light, and flow.

The third phase of the study was the last one. The subjects were asked to choose the most resourceful card from all the pictures and to think about how this resource could be applied in life. Therefore, the logic of the ISRR technique allowed for the use of the entire meta-model of reflection.

The State-Trait Anxiety Inventory. To determine the level of anxiety, the Spielberger State-Trait Anxiety Inventory (STAI) was used (Spielberger Ch. D. & Khanin Yu. L., 2000). The questionnaire was developed by Ch. D. Spielberger and modified by Yu. L. Khanin. It is an informative way of self-assessing the level of anxiety at the moment (reactive anxiety as a state) and trait anxiety (as a stable characteristic of a person).

Trait anxiety is a persistent individual characteristic that manifests itself in the tendency of the subject to worry and see many situations as threatening. This characteristic is activated when perceiving stimuli that may damage self-esteem. State anxiety is an emotional state characterized by stress, anxiety, and nervousness in response to a stressful situation. The intensity and dynamics of this state may vary. Anxiety diagnosis is necessary when conducting research using projective self-reflection methods in order not only to determine the state but also to reduce the high levels of anxiety during the experiment. The subject answers questions and, through understanding his/her state, has the opportunity to regulate his/her stress caused by new experimental conditions.

EEG recording

The electroencephalogram (EEG) recording was performed with the BOSLAB-14 hardware and software system (Novosibirsk) monopolarly from the Pz-lead. An ear electrode was used as a reference. The location of the Pz was chosen because the characteristics of alpha activity in the parietal-occipital region are the most stable and reproducible in repeated measurements, as well as the least variable (Thatcher et al., 2008; Bazanova, 2011; Balioz, 2012). EEG recordings were performed in a resting state with eyes closed (2 min) and eyes open (30 seconds). To monitor eye movements, electromyograms (EMGs) were recorded from the forehead muscles. The analysis of electroencephalographic data included artifact-free EEG epochs, which were divided into four-second segments and rapidly subjected to Fourier transforms at a bandwidth of 3–20 Hz with the Hann window. The output data were analyzed using a specialized Win EEG program (Mitsar, St. Petersburg), compiled with accepted signals analysis standards, and presented as a 1Hz EEG spectral power table. To analyze electrophysiological characteristics, the absolute

and relative power values of the main EEG rhythms were used: theta rhythm (4–8Hz), alpha rhythm (8–13Hz), and beta rhythm (13–20Hz).

Data analysis

The comparative analysis was carried out using Jamovi 2.4.1. The Shapiro-Wilk test for normality showed that in some EEG parameters the sample was not characterized by a normal distribution. Therefore, we decided to use the non-parametric Wilcoxon test ($\alpha=0.05$) for intragroup comparisons within each subgroup.

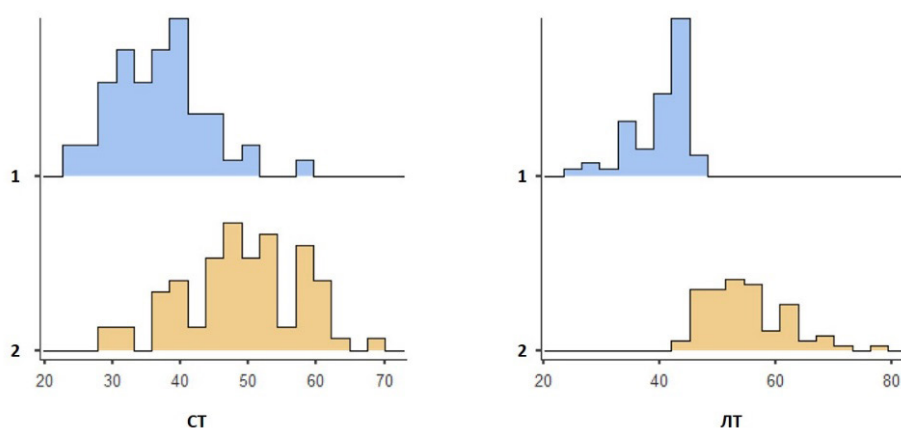
Results

Anxiety study

The sample was divided into a “low-anxious group” and a “high-anxious group” depending on trait and state anxiety scores, based on an integrated assessment of the level of anxiety. Figure 2 shows histograms of the distribution of state anxiety (SA) and trait anxiety (PA) scores in the low-anxious (top) and high-anxious (bottom) groups.

Figure 2

Histograms of the distribution of anxiety levels (trait anxiety and state anxiety)



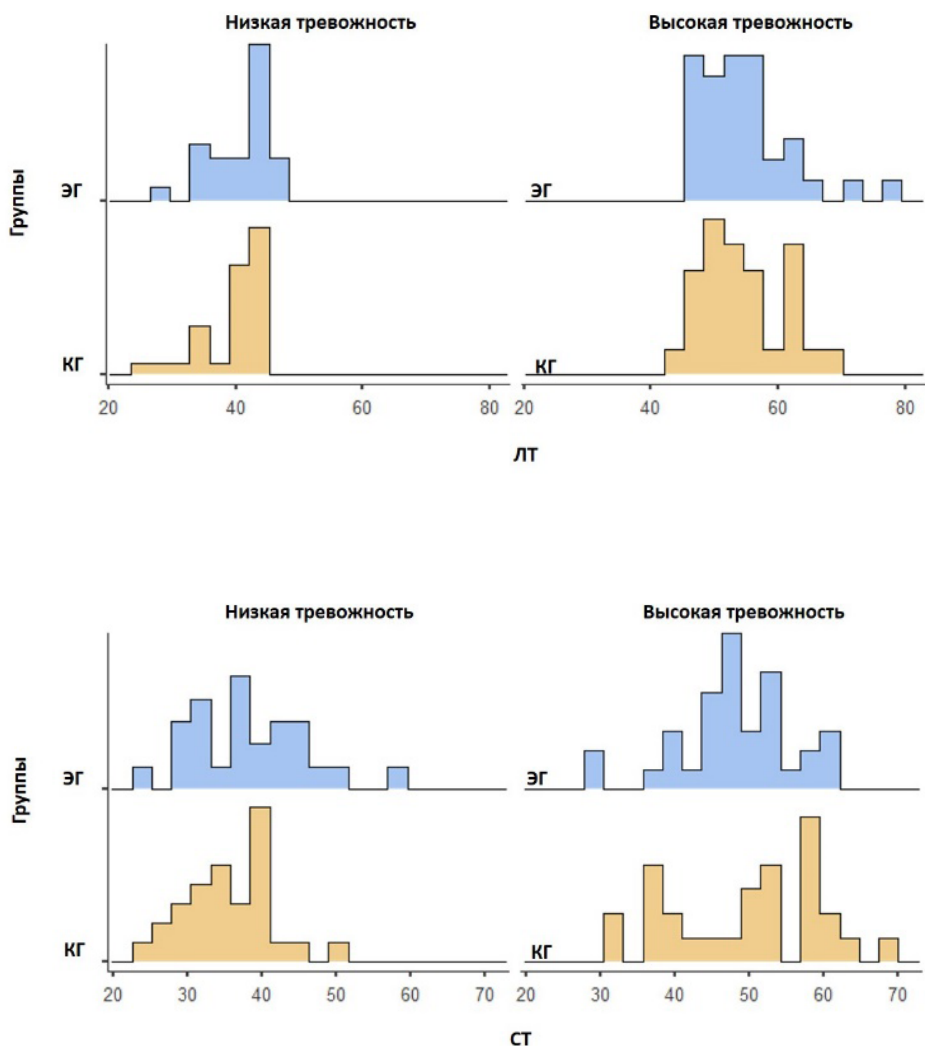
Note: 1 – low anxiety, 2 – high anxiety, SA – state anxiety, TA – trait anxiety.

PSYCHOPHYSIOLOGY

The groups were also divided into experimental and control subgroups. Figure 3 shows the histograms of the levels of anxiety in four groups. The distribution into EG and CG according to the anxiety level is generally the same.

Figure 3

Histograms of the distribution of anxiety levels (trait anxiety and state anxiety) for experimental and control groups



Note: EG – experimental group, CG – control group, SA – state anxiety, TA – trait anxiety

Indicators of brain electrical activity

Significant statistical differences in the dynamics of electrophysiological indicators before and after completing the self-reflection task for groups with high anxiety levels are shown in Table 2.

Table 2

Statistical analysis of comparison of electrophysiological indicators before and after completing the self-reflection task (high-anxious group)

		BEFORE		AFTER		p	Cohen's d
		median	SD	median	SD		
EG	Absolute alpha power (8-9.5 Hz), eyes closed	25.64	34.53	32.04	39.61	0.002	-0.6**
	Relative alpha power (8-9.5 Hz), eyes closed	16.22	10.57	19.90	14.24	0.004	-0.56**
	Absolute alpha power, eyes closed	51.35	48.12	64.07	47.91	0.011	-0.62*
	Absolute alpha power (8-9.5 Hz), eyes closed	18.44	25.34	23.73	31.46	0.022	-0.57*
CG	Absolute alpha power (9.5-11 Hz), eyes closed	18.25	17.29	26.16	21.68	0.003	-0.71**
	Relative alpha power (9.5-11 Hz), eyes closed	18.78	13.65	23.5	15.15	0.01	-0.63*
	Relative alpha power (9.5-11 Hz), eyes open	8.43	4.5	10.83	4.79	0.006	-0.66**
	Relative theta power (4-5.5 Hz), eyes closed	11.81	5.56	9.63	4.62	0.007	0.65**
	Relative theta power (7-8 Hz), eyes open	12.16	6.77	15.01	4.61	0.005	-0.49**

Note. EG – experimental group, CG – control group, BEFORE – EEG recordings before completing the task, AFTER – EEG recordings after completing the task. * $p < .05$, ** $p < .01$, *** $p < .001$

PSYCHOPHYSIOLOGY

The experimental group with high anxiety showed a significant increase in alpha (8-9.5 Hz) frequency band, both for absolute and relative power. At the same time, the control group was characterized by a larger dynamic change after completing the self-reflection task in both alpha and theta frequency bands. At the same time, in alpha frequency band, power (absolute and relative) in all alpha sub-bands was significantly increased, except in a high-frequency band (11-13 Hz). A decrease in relative power was observed in theta band.

Significant differences in the dynamics of electrophysiological parameters before and after the self-reflection task for low-anxious groups are presented in Table 3. Low-anxious CG showed a significant reduction in a high-frequency alpha band (11–13 Hz) with open eyes. Low-anxious EG also showed a significant decrease in alpha band (11–13 Hz) with closed eyes and a significant increase in absolute and relative power in alpha band (8–9.5 Hz). In addition, the group showed a significant reduction in relative power in a low-frequency theta band (4–5.5 Hz).

Table 3

Statistical analysis of comparison of electrophysiological indicators before and after completing the self-reflection task (low-anxious group)

	BEFORE		AFTER		p	Cohen's d	
	median	SD	median	SD			
EG	Absolute alpha power (8-9.5 Hz), eyes closed	17.45	19.31	24.26	27.43	0.014	-0.6**
	Relative alpha power (8-9.5 Hz), eyes closed	15.65	12.15	18.62	15.77	0.035	-0.52**
	Relative alpha power (11-13 Hz), eyes closed	17.38	16.12	15.88	15.96	0.046	0.5*
	Relative theta power (4-5.5 Hz), eyes closed	11.37	7.32	8.51	4.24	0.029	0.54*
CG	Absolute alpha power (11-13 Hz), eyes open	8.44	10.20	6.20	6.86	0.006	0.59**

Note. EG – experimental group, CG – control group, BEFORE – EEG recordings before completing the task, AFTER – EEG recordings after completing the task. * $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

We initially assumed that the control group – CG (with high and low levels of anxiety) – performing a relatively standard cognitive load would show EEG dynamics close to cognitive fatigue (CF). CF is usually characterized by an increase in power in alpha and theta bands (Polikanova & Leonov, 2016). The dynamics of electrophysiological parameters in CG with a high level of anxiety generally correspond to the literature data. Particularly we observed an increase in power in all alpha sub-bands except for a high-frequency band (11–13 Hz), and also an increase in power in a high-frequency theta band (7–8 Hz) (Aftanas & Golosheikine, 2001; Aftanas et al., 2001; Asada et al., 1999). At the same time, a decrease in power was observed in a low-frequency theta band. Lower values in theta band indicate worse memory processes (Klimesch et al., 1999). There are also suggestions that a decrease in power in theta band correlates with cognitive aging (Cummins & Finnigan, 2007).

In the high-anxious experimental group, much less shifts in the EEG were observed after the self-reflection task was completed, indicating that this process is first and foremost significantly less associated with the development of cognitive fatigue. In addition, the increase in power in a low-frequency alpha band (8–9.5 Hz) during the self-reflection process (in our case, the completion of the self-reflection task) or self-reference as one of the manifestations of self-reflection indicates that the attention processes are more involved (Doppelmayr et al., 2002).

In low-anxious groups, the results showed other patterns.

The low-anxious EG showed greater changes in the EEG after the completion of the ISRR technique, partly overlapping with the results of the CG (although this pattern is observed only with open eyes in the CG), namely, a decrease in power in high-frequency alpha band (11–13 Hz).

Literature data show that spectral power in the upper alpha band (10.5–13 Hz) contains information about where attention is turned – outwards or inwards (Doppelmayr et al., 2008; Klimesch, 2012). This alpha band identifies internal and external attention (Salvador et al., 2020). In particular, it is known that when a person watches an external object carefully, his high-frequency alpha power decreases; α -blockade is observed (Benedek et al., 2014; Klimesch, 2012; Ray & Cole, 1985). There is evidence that α -blockade is observed in various tasks requiring external attention, such as sentence processing (Bastiaansen et al., 2002; Bastiaansen, Hagoort, 2006) and social tasks such as observing other people's behavior (Perry et al., 2011; Salvador et al., 2020).

An increase in power in a low-frequency alpha band indicates the involvement of attention processes in self-reflection. A decrease in power in a high-frequency theta band may indicate the reciprocal nature of the relationship between alpha and theta rhythms previously described during cognitive load (Klimesch, 1999).

Conclusion

Therefore, our research shows that after completing the self-reflection task (in our case, the ISRR technique), the level of anxiety has a significant impact on the dynamics of electrophysiological parameters. Low anxiety is mainly associated with a lower development of cognitive fatigue; the low-anxious control group showed minimal changes in EEG. After completing the self-reflection task, the low-anxious group (group 1) showed EEG shifts that characterize the external rather than internal attention process (reduction in high-frequency alpha power (11–13 Hz) and reduction in low-frequency alpha power (8–9.5 Hz), reduction in high-frequency theta activity (7–8 Hz). This is due to the fact that the tasks of the ISRR technique were completed in writing and involved decentration. These results are consistent with previous results (Sizikova, Leonov, Polikanova, 2024).

High levels of anxiety are associated with more significant EEG changes associated with cognitive fatigue in the context of cognitive load (group 4). Implementing the ISRR technique (even in high levels of anxiety) significantly reduces the development of cognitive fatigue. The main shifts are associated with an increase in low-frequency alpha power associated with the attention process.

It is clear that our hypothesis has been confirmed that, depending on the level of anxiety, self-reflection has different effects on the dynamics of brain electrophysiological activity. Furthermore, positive self-reflection has a significant therapeutic value in reducing the level of anxiety due to the activation of the DMN – a brain network characterized by the absence of a coherent activation in people with high levels of anxiety.

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The authors have no conflicts of interest to declare.

Text Interestingness: Approaches to Study and Methods of Assessment in Psychological and Educational Research

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Abstract

Introduction. Text interestingness is often considered a standalone motivational factor in education, making it a popular subject in psychological and educational research. The purpose of this review is to structure the information on the methodology for assessing text interestingness, identify the limitations, and highlight the intersections of various methods. **Theoretical justification.** Existing studies on text interestingness mainly stem from the linguistic approach, appraisal theory of interest, and individual interest theory. Using grounded theory as a method of literature analysis allowed us to identify three approaches to interestingness in research: (1) interestingness based on text characteristics, (2) interestingness based on reader characteristics, and (3) interestingness as a perceived characteristic of the text by the reader. Analysis of assessment methods revealed that each approach prioritizes its specific methods. The text-based approach describes the most objective linguistic (formal and discourse-content) assessments. In the reader-based approach, knowledge tests and self-reported assessments of individual and subject-specific interests are common. The approach to interestingness as a perceived characteristic of the text mainly utilizes subjective scaling and rating methods. **Discussion.** Each approach has advantages and disadvantages, and although their methods differ, they are sometimes interconnected. There is an increasing number of constructs related to interestingness. It is not so much

the variety of methods, but the proliferation of synonymous constructs that may hinder the integration of research results on text interestingness.

Keywords

text interestingness, interest assessment, reader characteristics, text characteristics, perceived interestingness

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Introduction

The interestingness of a text, like any other stimulus or object, is its ability to attract or hold someone's attention. The interestingness of educational texts is generally understood as their ability to retain a student's attention, motivate further reading, and potentially encourage reading texts on similar topics. The study of text interestingness in the literature on educational psychology has a long history (Asher, Hymel & Wigfield, 1978; Asher, 1980; Hidi, Baird & Hildyard, 1982; Hidi & Baird, 1986; Renninger, 1989; Alexander & Jetton, 1996). However, there are relatively few reviews on the topic of text interestingness, and they unfortunately do not provide guidance on existing methods for assessing interestingness, their interconnections, and limitations. For example, a relatively recent review (Su, 2020) summarizes empirical data on the effects of interest and other motivational constructs on learning outcomes but does not provide an analysis of research methodologies. The review by Schraw & Lehman (2001), focused on situational interest, also does not offer insights into methods of assessing text interestingness. Another review by Schriver (1989) is dedicated to text quality assessment in general. While this review contains many useful insights into

text assessment approaches, the author primarily considers them in the broader context of text comprehension as a whole.

Research Aim

The aim of this study is to systematize the methodological approaches to studying text interestingness, their interconnections, and limitations. Additionally, we clarify that the terms "interest in a text" and "text interestingness" in this article refer to the same phenomenon, though from different perspectives. In the first case, interest is attributed to the reader, while in the second, it is attributed to the text itself. However, it is clear that one cannot imagine text interestingness without the reader's interest in it, and conversely, interest in a text cannot exist if the text does not seem interesting. Therefore, we will use both terms interchangeably unless otherwise specified.

Theoretical Justification

Theories of Interest

Early theories of interest primarily focused on textual characteristics that elicit interest. Berlyne (1960) was one of the first to compile a list of characteristics that evoke interest: novelty, surprise, incongruity, complexity, variability, and ambiguity. Later theories suggested that these characteristics alone are insufficient to generate interest due to the intra-individual and inter-individual variability of interest. Intra-individual variability implies that what interests a person today may not interest them tomorrow or next month. Inter-individual variability indicates that what is interesting to one person may be uninteresting to another (Silvia, 2008). Schraw & Lehman (2001) expanded the list of determinants of text interest by distinguishing between personal interests (i.e., long-term interests) and situational interest (i.e., short-term interest), where the latter results from the interaction between text characteristics, task context, and the reader's knowledge. A good summary of such "list-based" approaches is the linguistic theory of emotions by Shakhovskiy (Shakhovskiy, 2008). According to this theory, language has an emotiveness—an ability to convey emotional states, which makes the text a complete communication tool. Emotiveness is expressed through specific speech means, including all of the aforementioned textual characteristics.

According to appraisal theory (Ellsworth & Scherer, 2003; Silvia, 2008), experiencing interest depends on several evaluations that a person makes concerning the text (stimulus), the task at hand (context), and themselves. The importance of the stimulus, its attractiveness, and predictability are related to the assessment of one's ability to handle the task and understand the text. The balance between "predictability" and "complexity" determines the emergence of interest: if the text is perceived as new but too difficult or too predictable and insufficiently complex, interest does not arise.

The theory of individual interest (Hidi & Renninger, 2006; Renninger & Hidi, 2015), which focuses more on the development of interest, distinguishes between situational interest—comparatively immature and based on specific circumstances—and individual interest, which is more stable and characteristic of the person. Situational interest is associated with a positive emotional response that stimulates attention to the material being studied and can potentially lead to the formation of lasting individual interest (Mitchell, 1993; Schiefele & Rheinberg, 1997). Conversely, existing individual interests can shape situational interests. If interest in a text is a form of situational interest triggered by a specific situation, and individual interest is a personality-oriented focus on a particular field of activity, then there is also the category of thematic interest, i.e., interest in the topic covered by the text (Hidi & McLaren, 1991; Schiefele, 1996, 1998; Schiefele & Krapp, 1996).

Literature Review Procedure

To systematize the existing literature where interestingness and interest were measured, we used the grounded theory method (Strauss & Corbin, 2001). The idea behind this method is that theories and hypotheses regarding the data can be derived from the data itself, reflecting the experiences of study participants. The grounded theory method is widely used to study social phenomena, processes, and interactions, especially when investigating a relatively unknown or underexplored area.

We applied this method to published literature concerning the assessment of text interestingness, using publications as data sources instead of respondents. This method also allowed us to stop searching for new publications once the approaches and methods began repeating, and we no longer found novel information.

The analysis of the publications was conducted in line with the stages described by Strauss and Corbin (Strauss & Corbin, 2001; Charmaz, 2006), albeit with some modifications to suit our objectives. Instead of coding sections of respondents' answer protocols and grouping similar codes into subcategories and categories, we recorded researchers' approaches to interestingness and assessment methods and then grouped similar approaches into larger components. For example, groups of methods emerged that were focused on quantitative and qualitative text characteristics associated with generating interest. These methods were primarily used in linguistic research. Instead of hypotheses, which grounded theory traditionally aims to generate, we sought to structure the research field, ensuring that structural elements did not overlap but remained interconnected. At the same time, we were able to systematize the limitations of each approach and its associated methods. The publication analysis continued until each category was saturated, and no new data appeared that required new categories.

Search Query

The process began with a search query that consisted of the following steps:

Step 1:

All publications that mentioned "Individual interest" or "Text interestingness" in their titles, abstracts, or keywords were gathered. The search period was 2003 to 2023.

Step 2:

Next, we narrowed down the number of publications related to interest by focusing on those indexed in the Web of Science (WoS) database under research categories associated with psychology, including "Psychology," "Psychology Multidisciplinary," "Psychology Experimental," "Psychology Social," "Psychology Applied," and "Education & Educational Research."

Step 3:

The search queries from steps 1 and 2 were merged into one query as follows: TS= "(Individual interest) OR TS = (Text interestingness)." It was further refined by the following Web of Science categories: "Psychology OR Psychology Multidisciplinary OR Psychology Experimental OR Psychology Social OR Psychology Applied AND Education AND Education & Educational Research."

Step 4:

All collected data were analyzed based on the following characteristics: year of publication, the main journal in the field, h-index, impact factor (IF), and citation count.

In total, we analyzed 83 articles.

Text Interestingness: Approaches to Assessment

In fact, text interestingness is assessed according to the theoretical positions we outlined above, even if authors do not explicitly refer to a particular theory. Ultimately, the methodology for assessing text interestingness and interest in a text was structured as follows:

First, interestingness is considered a characteristic of the text itself, so formal quantitative text parameters or discourse-content methods are used to assess it. These methods classify the text by certain parameters (genre, type of information, etc.) that presumably contribute to generating interest.

Second, interestingness is considered dependent on reader characteristics, so individual predispositions are assessed, which (potentially) influence the emergence of interest in the text. In this approach, interestingness is viewed as a direct result of the text aligning with the reader's knowledge and interests (Renninger, Hidi & Krapp, 1992; Sansone & Thoman, 2005; Draijer, Bronkhorst & Akkerman, 2022).

Finally, in the third approach, interestingness is seen as a perceived characteristic of the text, and subjective self-reports or behavioral indicators are used to assess it. This approach includes dynamic assessment methods.

It should be noted that we do not aim to cover all the methods for assessing text characteristics, reader characteristics, and interest in a text presented in the literature. Similarly, we did not set out to describe empirically established determinants of interest or the consequences of its emergence. Our goal is to structurally present the entire methodology of this field, pointing out the advantages and disadvantages of different methods discussed in the literature.

Evaluation of Textual Characteristics Related to Text Interest

Formal Characteristics of Text and Methods of Evaluation

In linguistics and natural language processing (NLP), a text is considered an independent reality that contributes to a reader's impression of it, including its interest level. Over more than half a century of text evaluation, there has been a proliferation of "interest formulas" (Hilderman & Hamilton, 1999; McGarry, 2005) as well as various textual characteristics associated with interest. Interest indices can either be directly based on textual characteristics or derived from other indices. In the former case, interest is determined based on the frequency of specific words, their combinations, patterns, etc., in the assessed text compared to these same parameters in thematically similar text corpora. In the latter case, interest is considered a function of other textual parameters. For example, psycholinguistic theories of information processing conceptualize interest as a function of complexity and comprehensibility (Van der Sluis et al., 2014).

Complex models of evaluation now enable the creation of numerous indices potentially related to text interest: readability (Benjamin, 2012; O'Sullivan et al., 2020), coherence (Boscolo & Mason, 2003; Boscolo et al., 2011; Xia, Kochmar & Briscoe, 2016), comprehensibility (Baur & Prue, 2014; Friedrich & Heise, 2022), informativeness (González-Gallardo et al., 2020), difficulty (Fulmer et al., 2015), semantic noise (Lee et al., 2021), and others. All these methods are formal in that they do not require qualitative assessment of the text's content and are objective in that the index value depends only on the text or the text corpus.

Content-Discursive Characteristics of Text and Methods of Evaluation

In addition to objective measures, the approach to interest from the text's perspective also considers content-related and discursive characteristics. Historically, this approach can be seen as more contemporary, largely displacing formal indices (Bisiada, 2017).

In the approach that considers content-related and discursive characteristics of a text, it is assumed that the type or genre of information itself can determine the interest

level of the text. For instance, types of information such as conceptual (defining a phenomenon and describing its main characteristics), event-based (describing human actions), discursive, and evaluative (comments on certain phenomena) are presumably expected to evoke different levels of interest regardless of reader specifics (Boscolo et al., 2011; Lepper et al., 2022; Mardasari, 2017).

In educational research, the so-called seductive details have received attention. These are parts of a text that are not critical to the key idea but are more interesting compared to the rest of the text due to their vivid or non-trivial aspects. Although researchers have experimented with the "seductive details effect" in relation to memory or comprehension of educational texts (Hidi, Baird & Hildyard, 1982), this characteristic remains poorly defined (Sadoski et al., 1995). Different studies have used various techniques to make texts more attractive, such as adding biographical details, addressing the reader directly, and describing life-critical events (Hidi & Baird, 1988; Wade & Adams, 1990; Garner et al., 1991).

The vividness of descriptions in a text can also be evaluated as a kind of interest (Wade et al., 1993; Wade, Buxton & Kelly, 1999). Vivid segments are those that create uncertainty, tension, or anxious anticipation (Jose & Brewer, 1984; Iran-Nejad, 1987), intensify the narrative (Bergin, 1999; Folling-Albers & Hartinger, 1998; Hidi & Harackiewicz, 2000), surprise with unexpected plot twists or little-known facts (Hidi, 1990), or contain humorous elements (Dienstbier, 1995).

In essence, the above-mentioned parameters can be generalized as emotion-evoking. Linguistic theory of emotions (Shakhovsky, 2008) can serve as a good means of generalizing these characteristics. According to it, a text as a communication tool can express and transmit emotions, so an interesting text is primarily an emotional one (Hidi & Baird 1988; Schiefele, 2009; Soemer & Schiefele, 2019). Therefore, the subject of linguistic analysis also includes emotion-evoking rhetorical techniques. In addition to the aforementioned parameters of "attractiveness," emotion-evoking features also include: contextualization, specification, dialogicity, manifestation of emotions, problematization, identification with the reader (e.g., appeals to their experience) (Piotrovskaya & Trushchelev, 2020; Piotrovskaya & Trushchelev, 2021; Ionova, 2023).

Content-discursive characteristics are usually evaluated by experts. We will not delve into the advantages and disadvantages of the expert method but will note that it is useful when preparing a text for a specific group of readers, such as engineers or computer scientists, and where other reader characteristics can be considered more or less uniform (more on reader characteristics below).

In addition to expert evaluation, scaling methods (subjective ratings) of various parameters related to interest are widely used. More details on these methods are provided below.

Evaluation of Reader Interest in a Text

The reader is an active participant in reading, interpreting the text and focusing on qualities that are mainly explored in educational research. A typical approach to evaluation can be described as follows: the reader possesses characteristics independent of the text that contribute to desired educational outcomes such as memorization, comprehension, engagement, and the emergence of interest in the educational text. As our analysis shows, no study on text interest overlooks the reader's prior knowledge, stable individual interests, and situational thematic interest. Whether a text is interesting to a particular reader or not depends on at least three of these characteristics.

Researchers also consider other individual characteristics of the reader: intrinsic and extrinsic motivation, need for new knowledge, attitudes towards the text and expectations, certain cognitive abilities, gender, etc. Here, we focus on three of these, which are most illustrative in terms of the variety of evaluation methods.

Prior Knowledge

Since prior knowledge can influence the perception of a text as interesting, this characteristic is typically assessed in studies of interest. Generally, prior knowledge is evaluated through several pre-reading questions related to the text's topic. The number of correct responses from respondents on the text's topic is considered an indicator of the level of prior knowledge. For instance, Song (2003) used several questions requiring four short answers regarding key terms of the target text. Similarly, prior knowledge was assessed in the study by Boscolo et al. (2011), except that, in addition to knowledge of terms, respondents were also asked about mechanisms or consequences of specific phenomena.

Individual Interest

Individual interest is usually seen as a mediating factor in the emergence of interest in a text. Most commonly, individual interest is assessed through direct open-ended questions where areas of interest are predefined by researchers, such as interests directly related to school subjects (Alexander, Jetton & Kulikowic, 1995; Dawson, 2000; Ainley, Hillman & Hidi, 2002; Häussler & Hoffmann, 2002; Marsh et al., 2005).

Another common method for assessing individual interest is through questionnaires with subscales representing criteria of developed individual interest as defined by Hidi and Renninger's theory (e.g., Dahl & Nierenberg, 2021). These criteria include values associated with the area of individual interest and achieved competence. Numerous individual interest questionnaires have been developed within this approach: The Individual Interest Questionnaire (IIQ) (Rotgans, 2015), task value and competence belief scales (Eccles et al., 1993), the Student Interest Questionnaire (SIQ) and cognitive competence scale (Schiefele

et al., 1988), parts of the Current Motivation Questionnaire (QCM) (Vollmeyer, Rollett & Rheinberg, 1998; Vollmeyer & Rheinberg, 2000), the Affect and Experience scales (Ely, Ainley & Pearce, 2013), and others (Bathgate, Schunn & Correnti, 2014). Many of these scales were specifically developed for particular domains, such as scales for interest in mathematics, physics, biology (Marsh et al., 2005).

A more flexible method for assessing individual interest is to use open-ended questions. In the simplest case, participants can indicate their interests by selecting from a broad list. Sometimes options are provided related to school subjects (e.g., Bathgate, Schunn & Correnti, 2014), or even specific subtopics like "robots" or "black holes," which brings the method closer to evaluating thematic interests (see also Ainley, Hillman & Hidi, 2002).

An even more flexible approach was implemented in Ely et al.'s (Ely, Ainley & Pearce, 2013) work, where respondents used an interactive program to select their areas of interest from a wide list of topics (60 different interests), not directly related to school subjects, including areas such as fitness and gaming consoles. Respondents could then add specific features of their interests using text comments and rating scales. These scales included assessments of emotions associated with each chosen area of interest: happiness, hope, frustration, anxiety, and so on. As a result, individual interest profiles were constructed for the respondents.

Additionally, behavioral indicators of individual interest have been developed (Renninger, 1990, 1992; Tyumenova, Obukhov & Finogenova, 2020), such as repeated engagement in an activity, the ability to engage in an activity without coercion and supervision, or willingness to spend leisure time or other resources for access to interesting activities.

Thematic Interest

Conceptually, thematic interest is poorly defined and remains more of a working concept that has empirically proven to be a possible mediator between individual interest and interest in the text. As Bergin (1999) argues, it is meaningless to claim that a factor is purely personal or purely situational, as individual factors always interact with situational ones, generating either interest or lack of interest. A similar viewpoint has been presented by other researchers (Wade et al., 1999; Renninger, 2000).

Thematic interest is assessed through ratings of various topics, sometimes exclusively those that will be covered in the target text, and sometimes several, including the topic of the target text (Boscolo et al., 2011). This assessment is usually done using Likert scales such as "Indicate how interested you are in globalization" (Ainley et al., 2002; Carrell & Wise, 1998), or respondents are asked to rate headlines or the general essence of texts, for example, "How interesting do you think a text on [topic] will be to you?" (Graham et al., 2008). Another method involves evaluating respondents' prior knowledge of a particular topic, assuming that thematic interest should be accompanied by deeper knowledge

in the relevant area compared to areas where interest is not expressed. Although this method seems more objective, its use complicates the interpretation of many empirical data, as assessments of thematic interest and prior knowledge are often mixed (Bügel & Buunk, 1996; Uher, 2023).

Perceived Interest in the Text

By perceived interest, we mean the subjective impression of the text that arises in the reader during or immediately after reading, and is directly related to the assessment of the text as interesting or not.

Researchers often attempt to isolate components of interest from the range of impressions, considering interest as a secondary phenomenon, for example, as a function of novelty, narrative vividness, and a certain level of text complexity. In such an approach, researchers might consider each of these components as autonomous "independent" variables. However, the boundaries between all perceived characteristics of the text, if they exist at all, are semantically or phenomenologically permeable. Therefore, it is difficult to seriously consider the autonomy of such emergent impressions from the text, such as "narrative vividness," "engagement," or "interest."

In any case, given that these are subjective impressions of the text, it is quite natural to apply subjective assessment methods. Typically, a rating scale is used to indicate the level of interest the text evokes. This rating can be a global assessment or based on specific aspects of interest (emotional response, usefulness), which are determined by the researchers either arbitrarily or based on previous work (Schraw, Flowerday & Reisetter, 1998; Boscolo et al., 2011). Sometimes, instead of a simple rating scale, questionnaires are used, such as the Perceived Interest Questionnaire, which includes statements like "I find this story very interesting; I would read it again if I had the chance" (Schraw, 1997) (see also Abu-Rabia & Salim, 1996).

One problem frequently discussed in relation to perceived interest in the text is the influence of subsequent reading on the evaluation of the preceding text. Even if participants are instructed to respond based on what they felt at a specific moment, such as when they first started reading the text, subsequent reading experiences may affect their judgments. Thus, perceived interest in the text after reading does not necessarily reflect what happens during the reading process (Schraw, 1997; Schraw & Lehman, 2001).

To assess interest dynamics during reading, researchers often use ratings of individual text segments. For example, in a study conducted by Schiefele (1996), students were asked to rate their activity, emotional state, and concentration at four points in time during reading. These ratings were included in the text between its sections. A similar approach was used in an online reading motivation questionnaire, where participants rated their emotional response to the text and their intention to continue reading (Boekaerts, 1997).

In an effort to make interest assessment during reading more immediate and avoid

distracting respondents with text-based questions, pictograms are sometimes used. For example, during reading, a set of pictograms depicting faces with negative or positive emotions is shown multiple times. Respondents are asked to select the emotion that the read text segment evoked (Ainley, Hillman & Hidi, 2002). Additionally, researchers add behavioral indicators of interest in the text, such as continuing to read when given the option to stop (see also Graham et al., 2008).

Overall, dynamic assessment of interest using behavioral indicators reveals its potential when employing interactive computerized tasks. In this case, real-time tracking of behavioral reactions indicating student engagement with the text is possible. For instance, a special program called "Between the Lines" (Ainley, Hillman & Hidi, 2002) was developed, which, in addition to capturing emotional reactions to the text segments, allowed students to choose which text to read next.

Discussion

The analysis of publications through the lens of grounded theory revealed three approaches to evaluating interest: from the perspective of textual characteristics, from the perspective of reader characteristics (interest in the text), and from the perspective of the reader's perception of the text. The first approach predominantly employs objective or expert evaluation methods; the second uses questionnaires and rating scales; and the third involves rating scales and behavioral indicators (see Table 1).

Overall, when discussing methods for assessing interest as a text characteristic, it is important to emphasize their objectivity, relative independence from the evaluator (with the exception of expert-based methods), and the technical feasibility of creating complex indices. Methods for processing formal text characteristics, especially automatic ones, are quick to use and can handle a large number of texts. They allow for the selection of models (indices) based on the composition and "weight" of each characteristic for the best prediction of reader behavior. This, by the way, explains the predominant focus on these methods by e-commerce and marketing.

The drawbacks of methods for processing formal text characteristics, and the approach in general, include their strong focus on computational strategies at the expense of theoretical grounding. This, in our opinion, hampers the use of these methods in education, where it is difficult to find simple predictive criteria for "interest," especially at the level of individual student behavior.

Methods for assessing interest in the text are primarily subjective self-reports and ratings. Unlike objective methods, they are highly "personalized" and theoretically grounded, although they suffer from issues typical of all survey methods: lower reliability, poor reproducibility, susceptibility to social desirability, etc.

Finally, methods for assessing perceived interest in the text include subjective self-reports and behavioral observation. Despite the drawbacks inherent to self-reports, this approach allows for the most accurate assessment of text interest as a characteristic.

After all, self-reports on personal impressions are the most appropriate way to understand what respondents truly think and feel.

Our analysis of the methodology revealed that the range of constructs related to interest is, on the one hand, very broad, and on the other, largely duplicated across different approaches.

Table 1

Constructs Related to Interest and Methods of Evaluation

Constructs *	Text Metrics	Questionnaires	Subjective Ratings	Methods	Expert Evaluation	Knowledge Tests	Behavioral**
Interest	+	+	+				
Readability	+						
Emotionality	+		+		+		
Individual Interest		+	+				
Thematic Interest		+	+			+	
Prior Knowledge			+			+	
Perceived Interest			+				+

Note. * – List is not exhaustive, ** – Excluding eye-tracking reactions.

As seen in Table 1, the same constructs can be assessed using different methods. For example, "readability" as a formal characteristic can be evaluated using the LIX formula, which relates the number of words in a text, the number of sentences, and the number of words containing more than six letters (Björnsson, 1968; see also Klare, 1984). However, "readability" is also assessed as a perceived characteristic of the text through expert evaluation or readability questionnaires (Friedrich & Heise, 2022).

Moreover, the validity of many linguistic indices is ensured by their comparison with ratings from real readers (Benzahra & Yvon, 2019; Gkikas et al., 2022). Direct questions are typically used for this verification: "How well is this article written?", "How well do the parts of the text fit together?", "How easy was it to understand the text?", "How interesting is this article?", etc. (Crossley, Allen & McNamara, 2011). Without such verification, the use of objectively calculated indices can be misleading, leading to a deterioration rather than an improvement of texts (Swaney et al., 1981). In other words, the interpretation of objective text indicators depends on whether there is a corresponding characteristic in the reader's semantic field and their ability to assess this characteristic.

This dependence of objective measures of interest on subjective ones is inevitable, but it essentially revives one of the main problems in psychology of individual differences—the issue of proliferation of psychological constructs or the "jingle-jangle fallacy," where identical phenomena are given different names or new constructs are invented from descriptions of behavior (Boag, 2011; Cooper, 2024; Hodson, 2021). The fact is, text interest can be described in many ways, leading to numerous text characteristics that can be assessed. Indeed, we see that (both objectively and subjectively) almost synonymous characteristics are assessed: interest, engagement, vividness, ease of understanding, involvement, emotionality (see, e.g., Schraw, Bruning & Svoboda, 1995; Schraw, 2000; Dai & Wang, 2007; Friedrich & Heise, 2022).

A fundamental solution to this problem seems to be the exclusion of synonyms from the studied constructs (the "bottom-up" approach proposed by Raymond Cattell) and a more meaningful minimization of the studied text characteristics, evaluating only the most specific parameters that make the explication of other evaluative values irrelevant (Zadvornaia, 2022).

Conclusion

The presented review and analysis of the literature provide a structured overview of the methodology for studying text interest, the constructs related to "interest," and the intersections and limitations of various evaluation methods. Three approaches to text interest have been identified: from the perspective of text characteristics, from the perspective of reader characteristics, and from the perspective of the reader's perception of the text. Each approach predominantly uses its specific methods, although there is significant overlap among them.

We have noted the wide range of synonymous constructs related to interest, which contributes to the proliferation and fragmentation of this field of research. This issue appears to merit greater attention, as without addressing it, integrating new knowledge about text interest will remain challenging, no matter how much we improve the methods of its evaluation.

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Metacognitive Engagement Skills Development through Teaching Text Comprehension Methods

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Abstract

Introduction. One of the main aspects of text comprehension is going beyond the information actually provided in the text, which needs to be linked with the context, previous knowledge, interpreted and analyzed. This requires a high level of metacognitive engagement in activities, which allows proper planning of one's actions when working with a particular text, reflecting on or evaluating the level of comprehension. Metacognitive engagement consists of metacognitive knowledge (declarative, procedural, conditional) and metacognitive regulation (planning, information management strategies, comprehension monitoring, debugging, evaluation). The purpose of this article is to study the impact of teaching text comprehension methods on students' metacognitive engagement in activities: possession of metacognitive knowledge and strategies.

Methods. The study involved 190 students from the Far Eastern State Medical University of the Ministry of Health of Russia: 95 of them were included in the experimental group that underwent special training in text comprehension methods, while 95 students were included in the control group. In order to determine metacognitive engagement, the "Metacognitive Awareness Inventory" questionnaire by G. Shraw and R. Dennison in adaptation by A.V. Karpov and I.M. Skityaev was used. **Results.** Students in the experimental group who underwent training in text comprehension methods demonstrated better metacognitive skills than those in the control group who did not receive such training.

Discussion. Increasing metacognitive engagement is possible through teaching students text comprehension methods. The methods included in the training program are as follows: creating an illustrative plan for the text, marking the text, asking questions,

creating a conceptual table, searching for associations, creating an oral secondary text, determining the reader's projection, and identifying contradictions.

Keywords

text comprehension, metacognitive engagement, metacognitive engagement in activities, metacognitive knowledge, metacognitive regulation

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Introduction

In the higher education process, the text is a key unit of the educational system, and text comprehension is an important qualitative indicator of learning efficiency. Text comprehension in this study is understood as going beyond the author's written information, connecting it with previous knowledge and experience, identifying problems not mentioned in the text, contradictions not mentioned by the author. The psychological and pedagogical aspect of text comprehension is related to the development of cognitive functions in education. In modern conditions of digitalization, the educational process requires students not only to acquire new knowledge, develop cognitive skills, but also to analyze their cognitive activities (Borzova, Mosunova, 2020; Artelt & Schneider, 2015; Kofeynikova, Nikolaeva, Khukumatshoyeva, 2019; Babaev, Kylychova, 2020). Students should not only evaluate what and how much they have learned or found out, but also how they acquire this knowledge and what else they need to do in order to further understand phenomena and events in the surrounding world (Flavell, 1979; Pushkareva, 2009). The process of text comprehension requires using the metacognitive strategies – "consciously chosen actions aimed at achieving specific goals, which require conscious planning, monitoring, evaluation, and correction of the reading process (Berlin Khenis et al., 2024), which influence learning success, help in making decisions about educational trajectory and self-education (Gabdullina, 2023; Dmitrienko, Ershova, 2022; Perikova,

Lovyagina, Byzova, 2019; Magomedova, 2024; Akopova, 2022; Melnikova et al., 2022). Metacognition is manifested in the ability and readiness for metacognitive engagement in cognitive activities and metacognitive regulation based on metacognitive knowledge and strategies (Hammedin, Sauhan, 2020; Yakin et al., 2024).

The main construct of the study – "metacognitive engagement in activities" – is an integral index of the development of students' metacognitive knowledge and strategies. Metacognitive engagement in activities allows individuals to consciously approach the understanding of educational information and text.

Metacognitive engagement involves having metacognitive knowledge and metacognitive regulation (Schraw & Dennison, 1994). A person's knowledge about their own thinking process is particularly important in the process of psychological self-regulation (Dinsmore, Alexander, Loughlin, 2008). Further, self-regulation is necessary for the development of student autonomy and independence (Schraw & Dennison, 1994).

The relevance of studying the metacognitive engagement in activities while teaching text comprehension methods is determined by the following components:

1. The importance of cognitive development in the context of functional illiteracy, the "inability of a person who is formally able to read and write, understand and analyze texts" as a civilizational risk of the 21st century (Pischalnikova, 2021). The digitalization of education, along with the unlimited possibilities of computer technologies for accessing information, may have negative consequences for the psychological development and socialization of students (Pischalnikova, 2021; Karpov, 2023). Among the negative consequences of digitalization of education is a low level of cognitive development, leading to problems in learning, perception, and understanding of scientific texts as a key educational process unit.
2. The importance of students' metacognitive development in the context of the effectiveness of psychological and pedagogical support in the digital educational space, as well as the need for the development of metacognitive regulation as a condition for integrating students into conscious, reflexive perception of educational and scientific information and activating cognitive functions in the learning process (Melnikova, 2022; Pronenko, Belikova, Skripkina, 2023).
3. The dissonance between the high demands of modern education in the context of the digital civilization, the constantly increasing volume of information required for assimilation, and the low level of metacognitive engagement in activities among students.
4. The need for internal (content-based) rather than external technologization of educational processes using approaches based on the laws and principles of cognitive development of students, for example, differentiated teaching, which allows struggling students to grasp the basics of taught subjects well, and advanced students to acquire information "above the norm."

The metacognitive approach in psychology

The prefix "meta" in epistemology refers to information about "oneself" (Kundin, 2017). Therefore, metacognitive strategy in the educational process involves understanding and changing the structure of cognitive processes itself, rather than just a set of information and knowledge as in cognition. The metacognitive approach in psychology began to be actively developed and applied with the emergence of the works of J. Flavell, who described the structure of metacognition, including knowledge, strategies, and feelings (Flavell, 1979). Subsequently, over the course of a decade, the focus of research on metacognition has shifted towards the study of control and activity strategies (Perikova et al., 2020). Metacognition is a relevant subject of study in various areas of psychology (Table 1).

Table 1
Metacognitive Studies in Different Branches of Psychological Science

Psychology Branches	Subject of Study	Research Objectives	Key Researchers
Development a Psychology	Metacognitive elements at different ages of human life	1. Determining when and how a person starts to think metacognitively.	1. Zimmerman B.J. 2. Kloo D., Rohwer M.
		2. Identifying changes in metacognition throughout life. 3. Qualitative measurement of aspects of metacognition.	3. Brinck I., Liljenfors R. 4. Hertzog C. 5. Chernokova T.E.
Experimental and Cognitive Psychology	Metacognitive feelings	1. Assessment of metacognitive judgments during cognitive activities.	1. Koriat A. 2. Fomin A.E., Bogomolova E.A.
		2. Assessing the degree of confidence in these judgments. 3. Studying processes influencing the success of cognition. 4. Studying metacognitive control and monitoring.	

Psychology Branches	Subject of Study	Research Objectives	Key Researchers
Education Psychology	Learning self-regulation	1. Determining how different aspects of learning interact with each other.	
		2. Identifying factors influencing the degree of involvement in independent learning processes.	1. Pintrich P.R. 2. Zimmerman B.J. 3. Chernokova T.E. 4. Panadero E. 5. Kofeynikova Y.L.
Personality and Social Psychology	Metacognitive beliefs about the intentions of others and oneself	3. Establishing the relationship between metacognition and learning success.	
		4. Identifying factors influencing the development of metacognition.	1. Jost J.T. 2. Bem D.J. 3. Frigth (2012). 4. Holmogorova A.B. 5. Perikova E.I.
Clinical Psychology	Metacognition as a system of specific personality characteristics influencing the development and/or treatment of psychopathology	1. Evaluating self-efficacy, the need for knowledge, control over one's and others' mental states and processes.	
		1. Identifying ways therapists work with the metacognitive component of patients to alleviate their condition.	1. Wells A. 2. Lysaker P.H.
		2. Establishing the relationship between metacognitive components and the patient's existing illness.	3. Sun S. (2017). 4. Provorova A.N.

EDUCATIONAL PSYCHOLOGY

In summary, it can be said that metacognition, metacognitive skills "have universal applicability, they can be subject-specific and vary in different content areas of cognition and activity" (Kashapov, Bazanova, 2021, p. 394). Researchers focus on studying the independence of one's own thinking: not on quantitative, but qualitative cognitive characteristics: how the cognitive process occurs in a person and how they can regulate it themselves (Kharzeeva, 2012).

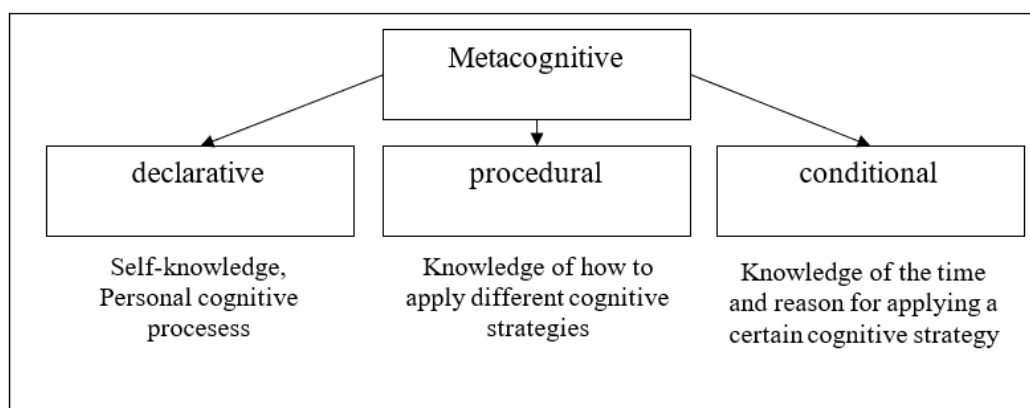
Self-regulation of the cognitive process is crucial in the educational process. In recent decades, the volume of knowledge required for acquisition has been constantly increasing, and students need to independently structure their educational process (Smirnova, 2021). In addition, some industries are now implementing a policy of continuous education, especially in healthcare and education, where adult professionals need to independently plan and control their educational trajectory, accumulate points for certification and promotion. The success of learning directly depends on metacognitive engagement skills (Krebs & Roebers, 2010; Zohar & Dori, 2012; Isaacson & Fujita, 2006; Tobias & Everson, 2000; Schunk & Zimmerman, 2003; Karpovich & Koroleva, 2020).

Metacognitive Knowledge

For the successful education attainment, modern individuals require a high level of developed metacognitive engagement skills, which include various elements of general metacognitive knowledge (Fig. 1).

Metacognitive knowledge involves a reflective understanding of information about a particular process and the role of the individual in it (Yong & Fry, 2008; Byzova, Perikova & Lovyagina, 2019).

Figure 1
Elements of metacognitive knowledge



As shown in Fig. 1, metacognitive knowledge includes declarative, procedural, and conditional knowledge (Karpov, 2005). Declarative knowledge comprises information about oneself, what is easier or harder for the learner, in what form it is easier to perceive, memorize, and process information, which ways of text comprehension are simplest and most effective for them personally. Procedural knowledge allows learners to understand how to apply different learning methods, including methods of understanding educational material, while conditional knowledge helps in selecting them depending on the situation and the complexity of the task, text, or provided information.

Metacognitive Regulation

It is important to note the metacognitive regulation skills that students should possess during the process of text comprehension:

- Planning, through which students organizes their activities;
- Information management strategies, which allow working with the flow of knowledge, selecting necessary data;
- Comprehension monitoring, which enables drawing intermediate conclusions, monitoring the completeness and quality of the completed activities;
- Debugging;
- Evaluation, which allows assessing the quality of the entire educational work.

Research Objective

The aim of the study is to examine the impact of teaching students methods of text comprehension on metacognitive engagement in activities: mastery of metacognitive knowledge and strategies.

To acquire skills of metacognitive engagement in activities during education, students need to be provided with tools that promote greater engagement in educational activities and self-monitoring. We believe that teaching students methods of text comprehension can be such a tool, enabling them to better analyze and understand what they read, plan and analyze their own educational activities.

Methods

Sample

The study involved 190 students from the Far Eastern State Medical University of the Ministry of Health of Russia, with 95 students in the experimental group who underwent special training in methods of text comprehension (48 males and 44 females), and 95 students in the control group (37 males and 58 females). The average age of the students was 19.31 ± 1.67 years.

Research Methods

The assessment of text comprehension levels was conducted using a set of tasks formulated according to the methods of text comprehension (Table 2):

1. Make an illustrative plan of the text.
2. Divide the text into the following blocks: information familiar before reading; unknown but comprehensible information; unknown and incomprehensible information.
3. Formulate questions to clarify incomprehensible information.
4. Identify the main phenomena or processes described in the text and highlight their comparative features.
5. Associate the identified phenomena and processes with facts, phenomena, and events.
6. Briefly retell the text using the illustrative plan of the text.
7. Relate the meaning of the text to your existing knowledge or life experience.
8. Find a contradiction in the text or formulate it based on your existing knowledge or life experience.

Students received 1 to 5 points for each task (where 1 is the lowest score, and 5 is the highest score).

The methodology for studying metacognitive engagement in activities involved the use of the "**Metacognitive Awareness Inventory**" questionnaire by G. Shraw and R. Dennison (1994) adapted by A.V. Karpov and I.M. Skityaeva (2005). Mathematical methods for data processing and analysis included the Student's t-test and Spearman's correlation coefficient.

Research Stages

At the first stage of the study, we assessed the level of text comprehension among students in both the control and experimental groups.

Next, students' levels of metacognitive engagement in activities were evaluated using the "Metacognitive Awareness Inventory" questionnaire by G. Shraw and R. Dennison (1994) adapted by A.V. Karpov and I.M. Skityaeva (2005).

At the second stage, we conducted specialized training for students on methods of text comprehension, analyzing changes in metacognitive engagement indicators. The training was conducted during 15 classes in a face-to-face format. Each class focused on one of the eight methods of text comprehension, as presented in Table 2. For example, the first class, "Creating an Illustrative Plan of the Text," required students to read the text in full, identify its separate sections, and determine the main idea of each section before creating illustrations based on the text. The next class was dedicated to "Text Marking" and "Question Formulation." "Text Marking" allows students to identify familiar and unfamiliar information, as well as what is understood and not understood. The latter is clarified by formulating specific questions. Introduction and training of the eight methods of text comprehension was conducted using one text; subsequently, in each class, students received a new text to practice their comprehension skills.

Emphasis was put on the universality of the proposed methods of text comprehension, i.e., the ability to apply them in organizing self-learning processes and studying various disciplines.

The methods of text comprehension discussed during the training are presented in Table 2 (Kamenyeva-Lyubavskaya & Borzova, 2023).

Table 2
Methods of Text Comprehension

Method	Essence of the Method
Creating an Illustrative Plan of the Text	A plan in the form of drawings reflecting the main sections of the text.
Text Marking	Marking the text during its primary reading: a) information already known before reading; b) unknown but understandable information; c) unknown and unclear information.
Formulating Questions	Formulating specific questions about unclear information.
Creating a Conceptual Table	Creating a comparative table to analyze the characteristics of definitions or phenomena described in the text, and the relationships between them.
Searching for Associations	Creating images based on facts, phenomena, and events.

EDUCATIONAL PSYCHOLOGY

Method	Essence of the Method
Creating an Oral Secondary Text	A brief retelling of the text aimed at highlighting its main idea and key sections.
Defining Reader Projection	Transferring the meaning of what has been read to personal experience and existing knowledge.
Identifying Contradictions	Identifying disruptions in the relationships between components of phenomena or processes presented in the text.

At the third and final stage, the obtained results were processed, and a comparative analysis of the effectiveness of teaching text comprehension methods to students in the control and experimental groups, as well as the identification of differences in the level of metacognitive engagement, was conducted.

Results

For the analysis of text comprehension levels, students worked with various texts using the comprehension methods presented in Table 2, for which we assigned grades from 1 to 5, where 1 is the lowest score and 5 is the highest.

At the beginning of the experiment, all students demonstrated equally low levels of skills and abilities in working with texts, with the average score for all completed tasks being 1.98 ± 0.24 for the control group and 1.96 ± 0.27 for the experimental group. This confirms the calculated Fisher's criterion of 1.34, which is in the zone of insignificance.

The level of metacognitive engagement before the experiment in both groups was below average: 100.17 ± 24.87 in the control group and 97.77 ± 25.54 in the experimental group. The level of metacognitive knowledge was average: 36.28 ± 6.15 in the control group, and 37.34 ± 5.34 in the experimental group. At the same time, there was an average level of declared knowledge (26.34 ± 4.24 in the control group and 23.89 ± 3.21 in the experimental group). The levels of procedural and conditional knowledge were low (below 6 on both indicators in both groups). The level of metacognitive regulation was also average: 65.24 ± 14.34 in the control group and 64.25 ± 15.21 in the experimental group. Low scores were noted in information management strategies, comprehension monitoring, and debugging. The levels of planning and activity evaluation in both groups were above average.

To evaluate the effectiveness of the special training in text comprehension methods at the final stage of the experiment, the mathematical processing of the results using Spearman's correlation coefficient was performed (see Table 3).

The Spearman correlation coefficients calculated in Table 3 show the relationship between the performance in various text comprehension methods, which were evaluated on a scale from 1 to 5, and the fact of participation in special training (where participation in training was coded as 1 and absence as 0). A significant correlation was observed between all indicators (at the significance level of $p \leq 0.05$), and for the "Question formulation" method, the correlation coefficient was 0.74, indicating a significant connection between training and performance. Thus, organized training in text comprehension methods correlates with text comprehension levels.

Table 3

Spearman Correlation Coefficients between Text Comprehension and Participation in Special Training

Text Comprehension Method	Participation in Training (1 – participated, 0 – did not participate)
Creating an illustrative text plan	0,57
Text marking	0,57
Question formulation	0,74
Creating a conceptual table	0,58
Association search	0,53
Oral secondary text creation	0,55
Reader's projection definition	0,56
Contradiction identification	0,49

The research has also involved studying the metacognitive engagement in activities of students in the experimental and control groups using the Metacognitive Awareness Inventory (MAI) developed by G. Shraw and R. Dennison in 1994 and adapted by A. V. Karpov and I. M. Skityaeva in 2005. Metacognitive knowledge in this questionnaire is assessed in terms of declarative, procedural, and conditional knowledge. We compared these indicators in the experimental and control groups using Student's t-test (Table 4).

EDUCATIONAL PSYCHOLOGY

Table 4
Analysis of Metacognitive Knowledge Indicators in Students of the Experimental and Control Groups

Indicator	Metacognitive Knowledge	Declared Knowledge	Procedural Knowledge	Conditional Knowledge
Average Value in the Experimental Group	46,06 ± 6,39	17,98 ± 4,06	10 ± 3,04	14,04 ± 3,96
Average Value in the Control Group	25,84 ± 5,96	17,48 ± 4,34	7,73 ± 2,84	8,07 ± 2,59
Student's t-Criterion*	21,9	2,6	5,4	12,4

***Note:** $p \leq 0.05$

In all types of metacognitive knowledge (except for declared knowledge), the experimental group has higher indicators than the control group. This suggests that, while having equal knowledge about themselves and their own cognitive processes, the experimental group possesses greater knowledge about what to apply and in which cases, as well as what they find easier or more challenging.

Table 5
Analysis of Metacognitive Regulation Indicators in Students of the Experimental and Control Groups

Indicator	Meta-cognitive Regulation	Plan-ning	Information Mana-gement Strategies	Compo-nent Control	Error Correc-tion Structure	Asses-sment
Average Value in the Experi-mental Group	71,22 ± 15,54	14,61 ± 3,52	8,03 ± 1,40	19,49 ± 5,60	14,32 ± 3,80	15,90 ± 2,56

Indicator	Meta-cognitive Regulation	Plan-ning	Information Mana-gement Strategies	Compo-nent Control	Error Correc-tion Structure	Asses-sment
Average Value in the Control Group	54,09 ± 17,67	10,10 ± 3,42	5,44 ± 1,96	12,5 ± 2,78	9,37 ± 3,63	9,62 ± 3,33
Student's t-Criterion*	7,1	9	10,8	12,4	9,2	14,6

**Note:* $p \leq 0.05$

All indicators of metacognitive regulation of students in the experimental group are higher than those in the control group. This suggests that those who underwent specialized training not only became familiar with text comprehension methods but also improved their planning skills and can structure their activities to maximize understanding of information. Additionally, they can assess their own completed work and, if necessary, correct errors, make adjustments, or add information, which is an integral part of metacognitive engagement in activities (Byzova, 2019).

The conducted research allows establishing a connection between the characteristics of metacognitive processes of students in the experimental and control groups. It was determined that students in the experimental group, after specially organized activities for training in text comprehension methods, possess not only higher skills in working with texts but also a higher level of metacognitive engagement in their activities compared to students in the control group.

Discussion

The obtained results do not contradict studies related to metacognitive engagement in activities. Students with a high level of metacognitive engagement demonstrate a high level of text comprehension and possess more developed metacognitive knowledge and strategies (Pressley, Ghatala, 1990). This study revealed a connection between the fact of training in text comprehension methods and improvements in metacognitive engagement indicators, which confirms the findings of Kofeynikova Y.L., Nikolaeva E.S., and Khukumatshoeva Sh. that a "specially organized learning environment aimed at the formation of processes and self-determination and the development of the ability to choose the most optimal strategies for achieving set goals" is necessary for

the development of metacognitive knowledge and strategies (Kofeynikova, Nikolaeva, Khukumatshoeva, 2019). In this case, such a "specially organized environment" is the training in text comprehension methods.

The training conducted in text comprehension methods positively impacts the development of metacognitive cognition skills:

- Academic skills: students who underwent specialized training in text comprehension methods remember and understand educational information better due to the development of metacognitive skills (Gomes et al., 2014). This is supported by the findings of Artelt, C. and Schneider W., who concluded that metacognitive strategies have a significant influence on the level of text comprehension (Artelt & Schneider, 2015). With acquired skills and a higher level of metacognitive knowledge and strategies, they possess a greater volume of information across various fields of science and are also able to retain information in memory for longer periods (Melnikova, Maksimova, Chikova, Bogdanchikova, 2022). Furthermore, students' academic performance, interest, and productivity improve due to purposeful initiation and regulation of their own activities (Tobias & Everson, 2000; Reeve & Jang, 2006; Dmitrienko & Ershova, 2022). This supports the conclusions of Gabidullina A.Sh. that metacognitive skills "enhance the ability to process and retain new information," leading to a higher academic performance (Gabidullina, 2023, 163). Mastery of text comprehension methods provides learners with a degree of independence when mastering new academic or extracurricular material, allowing them to be active participants of this process (Schunk & Zimmerman, 2003). Students can independently manage the learning process and stimulate their own activities (Pushkareva, 2009; Babaev, Kylychova, 2020; Smirnova, 2021; Krebs & Roebbers, 2010).
- Social skills: in the process of training in text comprehension methods, students develop social and communication skills (Bortnikova, Dolzhenkova, 2022). They are able to formulate specific questions effectively when necessary in order to obtain the answers they need. Additionally, these students interact better with one another when engaging in teamwork and project activities.
- Psychological skills: training in text comprehension methods allows students to be more confident in their knowledge, unafraid to ask their mentors questions when needed, and to be more engaged in the learning process (Andreassen & Makarova, 2018; Skinner et al., 2009; Isaacson & Fujita, 2006). A high level of metacognitive engagement should guide learners towards achieving their own goals and create a sense of control over the learning process (Karpovich & Koroleva, 2020). Furthermore, students who have undergone specialized training in text comprehension methods enhance their metacognitive skills, including self-analysis and self-discipline, which are necessary throughout their lives (Glaser, 1991).

Conclusion

The continuously increasing volume of information requires learners to possess developed text processing skills and the ability to analyze their own metacognitive activities. Classes in higher education institutions should include training in management, control, and evaluation tools for their own activities, as well as the development of students' metacognitive engagement in the educational process within the studied disciplines (Zohar & Dori, 2012).

In our study, the increase in metacognitive engagement occurred through training students in text comprehension methods. The methods of text comprehension include creating an illustrative plan of the text, marking the text, formulating questions to the mentor, developing a conceptual table, identifying associations, summarizing, determining a reader's projection, and identifying contradictions. Training students in text comprehension methods enhances their understanding of the material, their ability to draw specific conclusions based on their existing knowledge, and their ability to plan their activities while being aware of what needs to be done to achieve results. It also helps them master cognitive strategies that will be relevant when working with information.

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Psychological and Pedagogical Comparative Diagnostics of Russian and Chinese Students with Different Creative Potential in Music Education

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Abstract

Introduction. Creative potential is what distinguishes gifted students from their mainstream peers, what is subject to further development and will eventually turn into talent. Creativity and talent are inseparably connected. Teachers can use creativity indicators to assess the giftedness of students. The purpose of our study is to identify how creative potential indicators can be predictors of student giftedness. The scientific novelty of the study consists in obtaining the results of comparative diagnostics of the creative potential of Russian and Chinese students in music education for further educational process planning to achieve impressive results. **Methods.** The survey was conducted using a comprehensive methodology designed to identify the level of students' creative potential in music education. The respondents to the study were Chinese students from the Shenzhen College of International Education, Shenzhen, China (50 participants) and Russian students from the Rostov College of Arts, Rostov-on-Don, Russia (62 participants). The age of the college students ranged from 14 to 19 years ($n = 112$). The average age of the respondents was 17.1 ± 1.8 years, and the median age was 17 years. **Results.** The average value of the creative potential (creativity) level of the Shenzhen College of International Education (China) students was 21.67 points, and students of the Rostov College of Arts - 25.05 points, which is comparatively higher. The standard deviation shows the magnitude of the obtained data spread and is 2.74 points for Chinese students and 2.28 points for Russian students. The calculation of Student's t-criterion allows estimating the statistical

significance of the identified differences in the values of the mean values for two unrelated samples. The obtained empirical value $t_{Emp} = 5.2$ ($p \leq 0.01$) is in the significance zone. In addition, the study data showed a relationship between the creative potential of students and emotional intelligence. **Discussion.** The results of psychological diagnostics allow editing the music training program taking into account the choice of instruments and technologies that activate emotional intelligence formation and development in groups and also students' creative potential development.

Keywords

music education, psychological diagnostics, creativity, motivation, musical talent, giftedness, educational environment, creative potential, music teaching, emotional intelligence

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Introduction

The problems of gifted and talented students are attracting more and more attention on the part of psychologists. There are many definitions of this phenomenon, but they all boil down to one thing: these are students with accelerated development in one or more areas, with special abilities. Significant acceleration can be observed in almost all areas of ability manifestation – these may be mathematicians, musicians, poets, chess players, programmers, engineers, athletes...

It is important to remember that gifted and talented students are the ones with special needs, and like students with disabilities, they require special educational conditions to support and develop their talent. Few psychologists have been trained to address gifted and talented students, and even those who have been trained usually neglect gifted students, relying on their independent development and accelerated learning due to their talents. As a result, gifted students are often neglected in their educational environments which has negative consequences for learning and achievement, motivation and personal adjustment. Talented students need their talent to be first noticed, and then teachers should create special conditions to ensure that the spark does not fade and a gifted student develops his or her abilities further.

The group of gifted students is very diverse in their abilities areas and levels, as well as in their personal peculiarities. The most widely accepted definition of giftedness emphasizes "the potential for activity aimed at an extremely high level of achievement, which leads to the need for educational services that are not usually provided" (Makarova, Abrosimova, 2023). Like all mainstream students, gifted and talented students need goals and tasks that are appropriate for their learning pace and level. A differentiated curriculum should use flexible grouping, multi-level tasks, students' independence encouragement; and also replacing simple tasks with more complex work, deepening understanding, establishing connections and applying knowledge in the real world will help gifted students not to lose interest in learning and creatively approach the implementation of educational tasks.

The modern educational environment is multifaceted, and every school and college has students with different creative abilities. The term "gifted and talented" is applied to young people who achieve or have the potential to achieve a level significantly superior to the rest of their peer group (Bogoyavlenskaya, 2019; Leites, 2023; Makarova, Abrosimova, 2023; Nagornova, 2019; Savenkov, 2024; Dikaya, Naumova, 2014). It is important to realize that gifted and talented students are individuals with their own unique abilities, strengths and weaknesses. The terms "gifted" and "talented" have been used interchangeably for a long time, but are now used to refer to different concepts. Gifted students are those who are able to excel academically in one or more subjects, such as English or music; talented students are those who are able to succeed in areas such as creative activities, sports, painting or sculpture (Bozieva, Pashtov, 2018; Shumakova, 2020; Ekzemplarsky, 2006).

Although gifted and talented students may well progress through vocational training to employment, some of them are at risk of losing interest in learning and not achieving the desired goal. Direct intervention by the teacher is especially important for these students, since giftedness can only manifest itself when given the appropriate opportunities. Young people may have a certain predisposition to success in one or more areas, but they can only demonstrate and develop these predispositions or "potentials" if they are encouraged and supported to do so. To ensure that these gifted and talented students do not "slip through the educational net" and get lost among their less talented peers, psychological and pedagogical diagnostics of their creative potential is necessary (Abrosimova, Makarova, 2022; Anisimov, 2004; Schiavi & Benedek, 2020). This is especially true for students studying in creative professions, such as musicians (Kirnarskaya, 2006).

Teachers must act as "talent spotters", recognizing indicators of exceptional ability as soon as they begin to emerge (Subotnik, Olszewski-Kubilius, & Worrell, 2018; Worrell et al., 2021). Gifted and talented students typically self-identify by showing drive and motivation, but there are other, less obvious signs of giftedness, such as a strong interest in a particular subject and "intellectual predictors" that hint at a student who may excel over the years (Worrell & Dixson, 2018). Every teacher needs to know how to recognize and teach gifted and talented students, especially in the field of music education (Luchinina, 2013; Loseva, 2023; Makarova, Abrosimova, 2022; Nadyrova, 2015; Kholopova, 2012). This

assessment forms the basis of a redesigned Gifted and Talented program that enhances learning by raising the expectations of students, parents, and teachers and by creating an environment that values excellence.

Identifying students' creative potential should be an ongoing process that is fair, recognizes the full range of abilities, does not discriminate against particular groups, and is flexible enough to include students who have not yet discovered their creative potential. Teachers should be especially vigilant for "hidden talents" or untapped potential. Talents and abilities often emerge when given the appropriate opportunities, but sometimes students may be excluded (or actually exclude themselves) from these opportunities (Orzhekovsky, Stepanov, & Mishina, 2020; Kibalchenko et al., 2020). Effective diagnosis and subsequent provision of opportunities and conditions for intellectual, emotional, social, and creative development involves going beyond the obvious and meeting individual needs in a way that removes barriers to achievement while engaging, motivating, and inspiring a student (Chatelain et al., 2024). Motivation, high ambitions and good self-esteem are key values to implement creative potential, and a teacher should implicitly promote the development of social and emotional skills that underpin students' with different creative potentials effective learning, positive behavior, emotional health and psychological well-being. Positive feedback is also important for developing and maintaining motivation and self-esteem, as is the assessment of teaching strategies, teaching materials and learning environments.

Research goal

The purpose of this study is psychological and pedagogical diagnostics of the creative potential of music college students, by using which it was possible to identify how creative potential indicators can become predictors of students' musical giftedness.

The scientific novelty of the study consists in obtaining the results of comparative diagnostics of Russian and Chinese students creative potential in music education for further educational process planning using a differentiated educational program with a flexible system of multi-level tasks and encouragement of independence; for more competent students, such a system involves replacing simple tasks with more complex work, deepening understanding, establishing connections and applying knowledge in the real world, which will help talented students not to lose interest in learning and creatively approach the implementation of tasks to develop musical talent, achieve high results and receive satisfaction from creative activity.

Methods

At the experimental diagnostic stage of the study, a comprehensive methodology for psychological and pedagogical diagnostics of students with different creative potential (creativity) in music education was developed.

Sample

The study of the students' degree of giftedness and creativity in the process of learning music was conducted at the Shenzhen College of International Education, Shenzhen, China (50 participants) and the Rostov College of Arts, Rostov-on-Don, Russia (62 participants). The age of college students ranges from 14 to 19 years ($n = 112$). The average age of respondents is 17.1 ± 1.8 years, and the median age is 17 years.

At the first stage of groups of students with different creative potential psychological and pedagogical characteristics study, data were collected on a sample of Chinese students from the Shenzhen College of International Education, Shenzhen (China), and Russian students from the Rostov College of Arts, Rostov-on-Don, Russia.

The implementation of the research objective requires obtaining two main arrays of empirical data. Based on the division of subjects into two groups, the differences analysis between them was conducted according to the studied indicators. The criterion for dividing subjects into two groups was the place of residence, taking into account the professional musical education in perspective:

- 1-st group – Shenzhen, China ($n_1 = 50$ participants);
- 2-nd group – Rostov-on-Don, Russia ($n_2 = 62$ people).

Both samples match on key acmeological indicators, including age, gender, level of education, and musical orientation of the students.

Methodology of students with different creative potential (creativity) psychological and pedagogical diagnostics

To study the psychological and pedagogical characteristics of groups with different creative potential, questionnaires were developed for students in Russian and English, taking into account the mentality of Chinese college students for whom English is a second language.

The first part of the students' questionnaire consists of 8 statements and is diagnostic. Conducting such diagnostics allows finding out the degree of students' involvement in music training in groups with different creative potential.

The second part of the questionnaire includes 5 statements and determines the level of emotional intelligence of the student (see Table 1). Agreement with the statements is determined by choosing from three options: a (1 point), b (2 points) or c (3 points). The sum of the points scored allows you to indicate the level of emotional intelligence taking into account the subjective experience of the participant in the empirical study.

The third part of the study is an adapted questionnaire of motivation for success by T. Ehlers (Rost & Czeschlik, 1994; Makarova, Makarova, Denisov, 2022; Zimina, 2023; Musikhina, 2024), which consists of 20 statements, each of which must be answered

with "yes" or "no". This part of the survey is aimed at the professional self-determination of students; determining the level of motivation for learning music in groups with different creative potential.

The fourth part of the comprehensive study includes 30 statements and is based on foreign studies (Müllensiefen et al., 2013; Lima et al., 2023; Møller et al., 2024) devoted to the psychological diagnostics of students with different creative potential (creativity) in the process of learning music. Agreement with the statements is assessed on a 5-point Likert scale, which allows indicating the correspondence degree of each item to the subjective experience of the survey participant. The selected scale consists of four sections (involvement, perception, vocal data, emotionality) - indicators characterizing the creative potential of students, in particular, in the process of learning music. The "musicality" section is not taken into account when conducting this psychological and pedagogical diagnostics, since all students study music professionally in specialized educational institutions.

Mathematical processing of the obtained empirical data included the determination of the average values of the studied indicators, as well as the procedure for assessing the statistical significance of the identified differences.

Results

At the first diagnostic stage of the study, it was revealed that respondents from the Shenzhen College of International Education, Shenzhen, China and the Rostov College of Arts, Rostov-on-Don, Russia regularly play musical instruments (including vocals) in the period from 1 to 15 years. At the peak of their interest, they practice their main musical instrument (including vocals) up to 10 hours daily. Over the past year, most respondents from both music colleges attended live music events as a spectator. Most respondents can play two or more musical instruments.

At the second stage of the study, a questionnaire was conducted to diagnose the level of emotional intelligence of the student. The sum of the points scored allows indicating the level of emotional intelligence taking into account the subjective experience of the participants from the Shenzhen College of International Education, Shenzhen, China and the Rostov College of Arts, Rostov-on-Don, Russia.

According to the results of the study data analysis, to the question "How often do you communicate with your friends and tell them about your feelings?" the majority of Chinese students (56%) answer "sometimes, when they need help or support", and the majority of Russian students (56.45%) choose the answer "very often", they trust their friends and tell them everything.

Table 1

Diagnostics of the level of emotional intelligence of a student in the process of learning music: a comparative analysis

	Country	Frequency of points selection (number / %)			Average	Dispersion	Standard deviation
		a	b	c			
1. How often do you communicate with your friends and tell them about your feelings?	China	4 /8,00%	28 /56,00%	18 /36,00%	2,28	0,369	0,518
	Russia	6 /9,68%	21 /33,87%	35 /56,45%	2,47	0,450	0,600
2. How do you react to other people's feelings? For example, if someone is sad or happy.	China	3 /6,00%	11 /22,00%	36 /72,00%	2,66	0,351	0,490
	Russia	2 /3,22%	8 /12,90%	52 /83,87%	2,81	0,224	0,325
3. How often do you ask your parents or teachers about something you don't understand or that worries you?	China	6 /12,00%	36 /72,00%	8 /16,00%	2,04	0,284	0,307
	Russia	1 /1,61%	32 /51,61%	29 /46,77%	2,45	0,285	0,513

EDUCATIONAL PSYCHOLOGY

	Country	Frequency of points selection (number / %)			Average	Dispersion	Standard deviation
		a	b	c			
4. How do you react to conflict situations with friends or classmates?	China	2 /4,00%	20 /40,00%	28 /56,00%	2,52	0,336	0,538
	Russia	2 /3,22%	22 /35,48%	38 /61,29%	2,58	0,313	0,514
5. How do you usually react to stressful situations or difficult tasks?	China	9 /18,00%	29 /58,00%	12 /24,00%	2,06	0,425	0,451
	Russia	6 /9,68%	39 /62,90%	17 /27,42%	2,18	0,345	0,451

To the question "How do you react to other people's feelings? For example, if someone is sad or happy" the majority of students from both colleges answered that they try to understand and support others in their emotions, 72% and 83.87% respectively.

To the question "How often do you ask your parents or teachers about something you don't understand or that worries you?", the majority of students from both colleges also answered "sometimes, when I think it's important", 72% and 51.61% respectively.

To the question "How do you react to conflict situations with friends or classmates?", students from both colleges answered that they try to calmly discuss the situation and find mutual understanding - 56% and 61.29% respectively.

To the last question of this section: "How do you usually react to stressful situations or difficult tasks?" the majority of students from both colleges also answered that sometimes

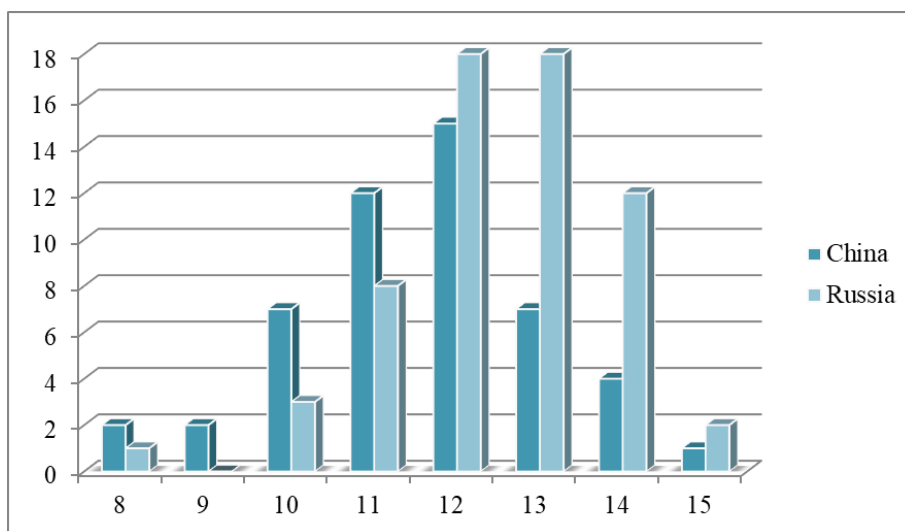
they feel stressed, but try to pull themselves together and solve the problem, 58% and 62.9% respectively.

Figure 1 presents a comparative analysis of emotional intelligence development level of students in China and Russia in percentage terms. By analyzing the overall results of the emotional intelligence development in the sample of two colleges, we can draw general conclusions. Low levels of emotional intelligence were not identified. The average level of emotional intelligence (6–10 points) for students at the Shenzhen College of International Education was 22% and for students at the Rostov College of Arts – 6.45%.

The high level of emotional intelligence (11–15 points) for students of the Shenzhen College of International Education was 78% and for students of the Rostov College of Arts – 93.55%.

Figure 1

Comparative analysis of the emotional intelligence development level of the students (%)

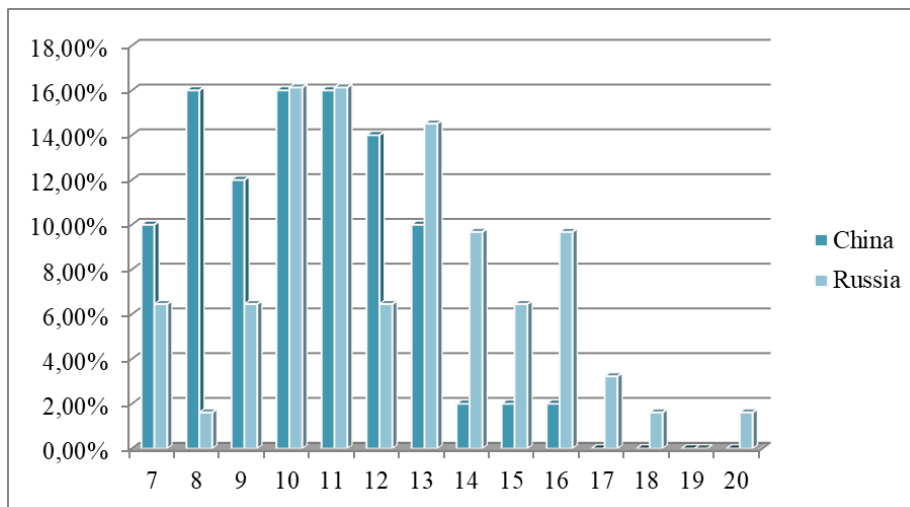


At the third stage of the study, respondents were offered an adapted questionnaire measuring motivation for success by T. Ehlers, aimed at students' professional self-determination and determining the level of motivation for learning music in groups with different creative potential.

Figure 2 presents a comparative analysis of the level of motivation for success in the process of learning music in groups with different creative potential in China and Russia in percentage terms.

Figure 2

Comparative analysis of motivation for success level in the process of learning music in groups of students with different creative potential (%)



A weak level of motivation for success was not identified in either group.

The average level of motivation for success (7-13 points) for students of the Shenzhen College of International Education was the overwhelming majority (94%), and for students of the Rostov College of Arts - 67.74%. The desire to achieve a goal comes to students in the form of ebbs and flows. Sometimes they want to quit mastering music, because they are not sure that the goal of study is achievable.

The high level of motivation for success (14-20 points) for students of the Shenzhen College of International Education was 6%, and for students of the Rostov College of Arts this percentage is much higher - 32.26%. These students have a strong motivation for success in mastering music. They are persistent in achieving the goal and are ready to overcome any obstacles on the way to the achievement of their future profession - the one of a musician.

The fourth part of the comprehensive study is devoted to psychological diagnostics of giftedness (creativity) of students with different creative potential in the process of learning music. The generalized results of the study are presented in Table 2 and Figure 3, respectively.

Table 2

Psychological diagnostics of creative potential (creativity) of gifted students in the process of learning music: a comparative analysis (China and Russia)

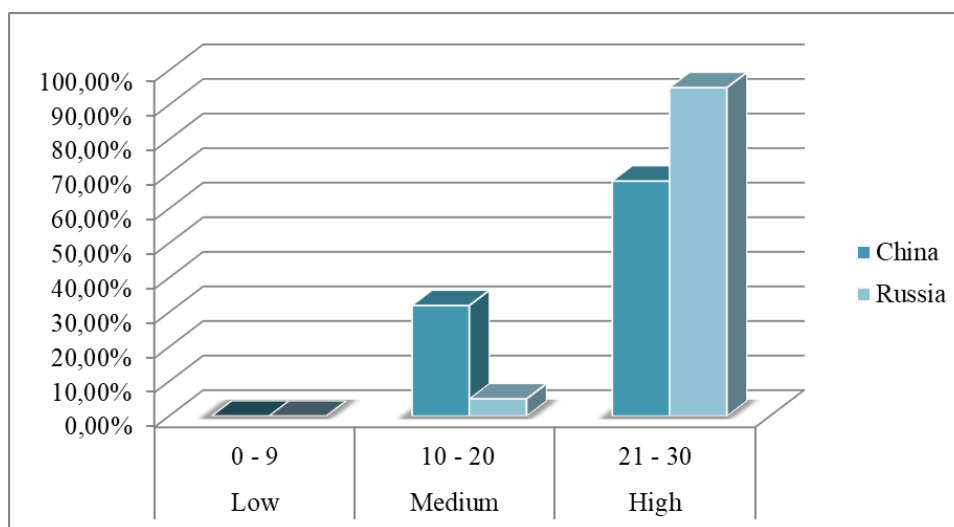
Country	Group size (people)	Min.	Max.	Average	Standard deviation	Dispersion	Creativity level		
							Low	Medium	High
							0 - 9	10 - 20	21 - 30
China	50	9,4	27,2	21,672	2,7434	15,5523	- (0%)	16 (32%)	34 (68 %)
Russia	62	17,6	29,4	25,0516	2,2820	8,2727	- (0%)	3 (5%)	59 (95%)

According to the results of the analysis of the research data, the average value of the level of creative potential (creativity) of students of the Shenzhen College of International Education (China) was 21.67 points, and students of the Rostov College of Arts – 25.05 points, which is comparatively higher. The standard deviation shows the magnitude of the spread of the obtained data and is 2.74 points for Chinese students and 2.28 points for Russian students.

The calculation of the Student's t-test allows estimating the statistical significance of the identified differences in the mean values for two unrelated samples. The obtained empirical value $t_{Emp} = 5.2$ ($p \leq 0.01$) is in the significance zone.

Figure 3

Comparative analysis of psychological diagnostics of creative potential (creativity) of students in the process of learning music (%)



In general, students of the Shenzhen College of International Education (China) subjectively demonstrated an average (32%) and high (68%) level of creative potential (creativity) in the process of learning music. The subjective assessment of the creative potential of students of the Rostov College of Arts, Rostov-on-Don, Russia is significantly higher; the level of creative potential (creativity) of students reaches 95%.

Based on the results of the empirical study, the following conclusions can be drawn:

- when working in groups with different creative potential in the process of learning music, a high level of emotional intelligence ensures good emotional awareness in managing one's emotions;
- strong motivation for success is one of the key aspects of music education, as the respondent is persistent in achieving the goal and is ready to overcome any obstacles, which is important in the process of a student's self-identification as a professional musician;
- a high level of creative potential leads to the student living music, planning a professional musical career, and therefore correctly performing assigned musical works (songs), working through assigned material, being able to independently work creatively on a piece and enjoying it.

Discussion

Compared to other diagnostic procedures, there are no clear definitions of giftedness and talent, students with outstanding abilities often differ from their peers not only in the speed of acquisition of knowledge, but also in personal characteristics. Creative potential is one of the dimensions that allows judging the giftedness of a student, which allows us to offer him a list of educational services that are not usually provided (Makarova, Abrosimova, 2023).

Analysis of the obtained results (Tables 1, 2 and Figs. 1–3) shows that the phenomenon of giftedness is closely related to the creative potential of students and their motivation. The data can also be used to identify talented students so that they do not “get lost” among their peers.

The results obtained in our study correspond to and confirm the conclusions made in previous studies (Bogoyavlenskaya, 2019; Leites, 2023; Makarova, Abrosimova, 2023; Nagornova, 2019; Savenkov, 2024). Along with giftedness researchers (Bozieva, Pashtov, 2018; Shumakova, 2020; Ekzemplarsky, 2006), we recognize that talented students are individuals with their own unique abilities, strengths and weaknesses, who need teacher support to develop their talents and social support from peers and parents to continue their practice.

The data presented in the study are also consistent with the works of Russian and foreign researchers (Abrosimova, Makarova, 2022; Anisimov, 2004; Schiavi & Benedek, 2020) in that psychological and pedagogical diagnostics of the creative potential of gifted and talented students is necessary in order to apply a differentiated flexible teaching system taking into account all the characteristics of gifted students. This is especially true for musicians (Kirnarskaya, 2006).

Existing research (Subotnik, Olszewski-Kubilius & Worrell, 2018; Worrell et al., 2021; Worrell & Dixon, 2018) has shown that aspiration and motivation, level of creativity, and developed emotional intelligence are “intellectual predictors” of future talent. Following these researchers, we examined three aspects of creativity: (a) the relationship between teacher assessments of creativity and students’ subjective assessments assessed by rubrics, (b) group differences in creativity between identified gifted and other students, and (c) potential gender differences evident in teacher assessments of creativity and in creative projects and products.

The next aspect of the analysis of our study results showed how to recognize gifted and talented students and organize their further education, especially in the field of music education (Luchinina, 2013; Loseva, 2023; Makarova, Abrosimova, 2022; Nadyrova, 2015; Kholopova, 2012).

We, following the researchers of the creativity level (Orzhekovsky, Stepanov, Mishina, 2020), argue that effective and timely diagnostics and subsequent provision of conditions for intellectual, emotional, social and creative development, as well as social support

from adults and peers (Chatelain et al., 2024) will allow gifted students to fully realize their potential and achieve high results in their creative activities.

Students' creativity level (creative potential), taking into account the development of emotional intelligence and the presence of motivation, plays a fundamental role in the process of learning music. Teachers who understand that the creativity level and emotional intelligence of students should combine originality and adequacy of the task, find unique opportunities to integrate students with different creative potential into the process of learning music, taking into account their daily curriculum so that it complements, but does not compete with, academic learning.

Teachers can help students develop their creative potential by providing them with informative feedback about the possibilities and limitations of music mastering. Feedback should follow the principle that the information should not be too harsh (suppressing students' motivation) and too soft (out of touch with reality) (Beghetto & Kaufman, 2013). Teachers should provide honest feedback and social support to students that can establish the right balance in groups of students with different creative potentials in the process of learning music and support them in developing creativity.

Conclusion

Thus, the analysis of the research results showed that the initial creative potential of music college students is a predictor of further development of talent. The results of psychological diagnostics will allow editing the music training program taking into account the choice of instruments and technologies that activate the formation and development of emotional intelligence in groups with different creative potential in the process of music mastering. The diagnostics will help to study the trends in the development of the creative potential of Chinese and Russian students in the process of music teaching. An improved program of psychological support for the process of teaching music in groups with different creative potential can significantly increase the effectiveness of this process. In the future, this complex methodology can be used to assess the social support of students themselves, teachers and parents in the process of professional music training, as well as to assess their need to know how emotional intelligence and motivation for success affect the development of creative potential.

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Elena L. Makarova organized the empirical research of the research, analyzed and interpreted the obtained empirical data, designed and edited the manuscript of the article.

Elena B. Abrosimova collected the empirical data of the research, analyzed and interpreted the obtained empirical data, contributed to the manuscript of the article, worked with resources.

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Conflict of interest information

The authors have no conflicts of interest to declare.

Appendix

Appendix 1

Comprehensive methodology of psychological and pedagogical diagnostics of students with different creative potential (creativity)

I. Please answer the following questions:

1. I have practiced musical instruments (including voice) regularly every day for ___ years.

2. At the height of my interest, I practiced ___ hours a day on my main instrument.

3. In the last twelve months, I have attended live music events as a spectator.

4. I have received formal education in music theory for ___ years.

5. I have completed ___ years of formal training in a musical instrument (including voice) in my life.

6. I can play ___ musical instruments.

7. I listen to music carefully _____ times a day.

8. The instrument I play best (including my voice) is _____.

EDUCATIONAL PSYCHOLOGY

II. Please answer the following questions. Select one of the proposed answer options.

1. How often do you communicate with friends and tell them about your feelings?
 - a) Almost never.
 - b) Sometimes when I need help or support.
 - c) Very often, I trust my friends and tell them everything.
2. How do you react to other people's feelings? For example, if someone is sad or happy.
 - a) I usually don't notice what happens to others.
 - b) Sometimes I notice, but I don't always know what to do.
 - c) I try to understand and support others in their emotions.
3. How often do you ask your parents or teachers about things that you don't understand or worry about?
 - a) Almost never, I'm embarrassed to ask.
 - b) Sometimes, when I think it is important.
 - c) I always ask if something bothers or worries me.
4. How do you react to conflict situations with friends or classmates?
 - a) I usually get irritated or angry.
 - b) Sometimes I try to find a compromise or solve a problem.
 - c) I try to calmly discuss the situation and find mutual understanding.
5. How do you usually react to stressful situations or difficult tasks?
 - a) I often worry and don't know how to cope with the situation.
 - b) Sometimes I feel stressed, but I try to pull myself together and solve the problem.
 - c) I usually react calmly to stress and look for solutions.

III. It is necessary to answer yes or no to the following questions:

1. I get easily irritated when I notice that I can't complete a task 100%.	Yes	No
2. When I do not study music for two days in a row, I feel anxious.	Yes	No
3. Some days my progress is below average.	Yes	No

4. When I reject a difficult task, I severely condemn myself because I know that I would have succeeded in it.	Yes	No
5. During the music study, I need short breaks to rest.	Yes	No
6. Critic motivating me better than praising.	Yes	No
7. I feel more motivated from things what challenge me.	Yes	No
8. I am very ambitious.	Yes	No
9. When I study without inspiration, it is usually noticeable.	Yes	No
10. Sometimes I procrastinate	Yes	No
11. You should rely only on yourself.	Yes	No
12. Whenever I have an important task to complete, I don't think about anything else.	Yes	No
13. At the end of the holidays, I am usually glad to return to my studies.	Yes	No
14. When I like the work, I do it better and more qualified than others.	Yes	No
15. It is easier for me to communicate with people who can persistently practice in music.	Yes	No
16. When I have to make a decision, I try to do it in the most efficient way.	Yes	No
17. I usually pay little attention to my achievements.	Yes	No
18. Often I don't finish what I start.	Yes	No
19. I envy people who don't have to study a lot.	Yes	No
20. When I am sure that I am doing the right thing, I will stop at nothing to prove my effectiveness.	Yes	No

EDUCATIONAL PSYCHOLOGY

IV. Please indicate how the following statements may apply to you when teaching in class: 1 - completely disagree, 2 - somewhat disagree, 3 - difficult to say whether you agree or not, 4 - partially agree, 5 - completely agree.

1. I spend a lot of my free time doing music-related activities.	1 2 3 4 5
2. I sometimes choose music that can trigger shivers down my spine.	1 2 3 4 5
3. I enjoy writing about music, for example on blogs and forums.	1 2 3 4 5
4. If somebody starts singing a song I don't know, I can usually join in.	1 2 3 4 5
5. I am able to judge whether someone is a good singer or not.	1 2 3 4 5
6. I usually know when I'm hearing a song for the first time.	1 2 3 4 5
7. I can sing or play music from memory.	1 2 3 4 5
8. I'm intrigued by musical styles I'm not familiar with and want to find out more.	1 2 3 4 5
9. Pieces of music rarely evoke emotions for me.	1 2 3 4 5
10. I am able to hit the right notes when I sing along with a recording.	1 2 3 4 5
11. I find it difficult to spot mistakes in a performance of a song even if I know the tune.	1 2 3 4 5
12. I can compare and discuss differences between two performances or versions of the same piece of music.	1 2 3 4 5
13. I have trouble recognizing a familiar song when played in a different way or by a different performer.	1 2 3 4 5
14. I have never been complimented for my talents as a musical performer.	1 2 3 4 5

15. I often read or search the internet for things related to music.	1 2 3 4 5
16. I often pick certain music to motivate or excite me.	1 2 3 4 5
17. I am not able to sing in harmony when somebody is singing a familiar tune.	1 2 3 4 5
18. I can tell when people sing or play out of time with the beat.	1 2 3 4 5
19. I am able to identify what is special about a given musical piece.	1 2 3 4 5
20. I am able to talk about the emotions that a piece of music evokes for me.	1 2 3 4 5
21. I can tell when people sing or play out of tune.	1 2 3 4 5
22. When I sing, I have no idea whether I'm in tune or not.	1 2 3 4 5
23. Music is kind of an addiction for me - I couldn't live without it.	1 2 3 4 5
24. I don't like singing in public because I'm afraid that I would sing wrong notes.	1 2 3 4 5
25. When I hear a music I can usually identify its genre.	1 2 3 4 5
26. I would not consider myself a musician.	1 2 3 4 5
27. I keep track of new of music that I come across (e.g. new artists or recordings).	1 2 3 4 5
28. After hearing a new song two or three times, I can usually sing it by myself.	1 2 3 4 5
29. I only need to hear a new tune once and I can sing it back hours later.	1 2 3 4 5
30. Music can evoke my memories of past people and places.	1 2 3 4 5

Positive Neuroscience – Analyzing Research Directions of The New Integrative Approach

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Abstract

Introduction. Positive neuroscience is an integrative area that aims to study physiological mechanisms in a positive-psychological context. The research of this field touches the problematics of prosocial behavior, personality strengths (VIA), well-being and altruism. The novelty of this research includes theoretical substantiation of the formation of a new direction for the scientific space in Russia – positive neuroscience. **Theoretical justification.** The main trends of modern positive psychology are positive socialization, well-being and personality strengths (VIA). Three practical areas of application of positive neuroscience are the formation of psychological well-being of the individual, prevention of aggression and stimulation of prosocial behavior of the individual. We analyzed neuroscience researches for its consistency with the positive psychological approach to the study of personality and the possibility of further integrative study of personality at the intersection of three areas of psychological knowledge: positive psychology, personality psychology, and systems psychophysiology, particularly in the aspect of studying aggression and prosocial behavior. Positive neuroscience is both an independent branch of fundamental psychological knowledge and an additional and alternative way of investigating the classical concepts of personality psychology, social psychology and systemic psychophysiology within the framework of the positive-psychological direction, which is confirmed by psychological research. **Discussion.** Positive neuroscience is a highly promising direction both in the theoretical aspect of studying and describing personality, and in the practical aspect of identifying and finding the most effective ways to form psychological well-being and psychological resilience of the individual, its prosocial patterns of behavior and prevention of aggression and destructive behavior.

Keywords

positive psychology, positive neuroscience, social neuroscience, well-being, altruism, prosocial behavior, aggression prevention

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Introduction

One of the contemporary directions in psychology is positive psychology, a large-scale and rapidly developing field of modern psychological science that studies the psychological well-being of individuals, social groups, and society as a whole (Rean, Stavtsev & Shevchenko, 2022; Leontiev, 2012; Seligman, Steen, Park & Peterson, 2005). Positive psychology seeks to explore the positive personality traits that make life "worth living" including the study of the concepts of hope, wisdom, creativity, aspiration for the future, courage, spirituality, responsibility, perseverance, and others (Rean, Stavtsev & Shevchenko, 2022), as well as negative aspects of human psychological functioning (Rean, Stavtsev, 2020). Thus, the positive-psychological concept is based on a number of empirically verifiable statements, such as learned helplessness or the model of personality strengths (VIA) (Curiosity, Optimism, Energy, Gratitude, Love, Fairness, Creativity, etc.). At the same time, many psychological fields have developed a demand for integrative research, e.g., in psychoanalysis, the Association for Neuropsychoanalysis (URL: <https://npsa-association.org/>). Neuroresearch complements existing theoretical concepts of psychological science and can also detail theories, confirm or refute hypotheses.

Positive neuroscience is about integrating neuroscience research into a positive psychological context. Neuroscience studies may be outside of the field of positive direction, but are significant to positive neuroscience. They draw on data from neuroimaging, computational neuroscience, cognitive neuroscience, and other disciplines. Positive neuroscience aims to study physiological functions related to aspects of human life that contribute to well-being (Summer, 2019; Greene, Morrison & Seligman,

INTERDISCIPLINARY BRAIN RESEARCH

2016). Positive neuroscience explores how the brain responds to positive and negative emotions, how it can be modified through neuroplasticity, and what practices promote mental well-being and quality of life. The objects of positive neuroscience include such positive psychological phenomena as altruism and prosocial behavior, flow states, psychological well-being, and others.

The purpose of this article is to summarize the neuroscience research relevant to positive psychology as well as to analyze the prospects and limits of this integrative approach.

Theoretical justification

Trends in modern positive psychology

Speaking about positive psychology and its place in the system of psychological sciences and trends, we should note not only the problem field of positive psychology research, lying in the field of detailed structural and systematic study of positive aspects of personality psychology and social psychology, but also such an important feature of this approach as empirical verification based on a large volume of qualitative and quantitative studies and experiments (Rean, Stavtsev, 2020; Stavtsev, Rean & Kuzmin, 2021). In this regard, it is necessary to emphasize the particular importance of one of the key models within positive psychology, the "VIA" (Values In Action) model or the 24 strengths model of personality (Peterson & Seligman, 2004; Stavtsev et al., 2021). This model was introduced in 2004 as part of Christopher Peterson and Martin Seligman's textbook work CSV (Character Strength And Virtues: A handbook and classification). The book is a structured scientific classification of humanistic ideas and theories, as well as positive personality qualities, theories and approaches to measuring these traits. The book was created in analogy with the Diagnostic and Statistical Manual of Mental Disorders, the "desk book" of psychologists from various fields working with mental disorders. After analyzing a huge amount of scientific, philosophical and artistic literature, scientists have identified 6 core strengths that can be divided into 24 personality strengths. To determine whether a personality characteristic was suitable for inclusion on the CSV list, the authors needed to establish whether the characteristic could be reliably investigated from an empirical perspective. The CSV included personality strengths and characteristics that are positive in a multicultural sense (relevant regardless of nationality, region, cultural background, religion) (Rean, Stavtsev & Kuzmin, 2023). The model of "Personality Strengths" showed high reliability when working with large groups of respondents in the Russian Federation, the personality strengths forming "the quartet of psychological resilience" (Curiosity, Vitality, Optimism, Gratitude) were identified, a predictive model of psychological well-being of the personality in professional activity was built on the example of the profession of sociognomic type (teachers) and a number of other important empirical regularities

consistent with the studies of foreign colleagues were revealed (Rean, Stavtsev, 2021b; Rean, Stavtsev & Kuzmin, 2021, 2022, 2023; Stavtsev et al., 2021).

We should separately emphasize the importance of research at the intersection of positive psychology and neuroscience in the field of Mihaly Csikszentmihalyi's "flow theory" (Csikszentmihalyi, 2015; Rean, Shevchenko & Stavtsev, 2022). The study of psychophysiological characteristics of finding a person in a productive working state is an extremely significant and relevant task of modern science, and makes a significant contribution to the development of modern ways of interacting with information, including education and, in particular, gamification of education (Rean, Shevchenko & Stavtsev, 2022).

At the same time, positive psychology can act as an extremely effective tool in solving the important social challenge of aggression and aggressiveness in society (Rean, Stavtsev, 2020). By aggression in our article, we mean the definition given by R. Baron and D. Richardson: "Aggression is any form of behavior aimed at insulting or harming another living being who does not want such treatment" (Baron, Richardson, 2001, p. 27). By prosocial behavior, we mean behavior that is helpful to fellow human and the society as a whole (Twenge, Baumeister, DeWall, Ciarocco & Bartels, 2007). From an evolutionary biology perspective, it is common to think of aggression as an integral part of human nature: "an instinct like any others" (Lorenz, 1994, p. 6). However, not all evolutionary biologists share this view; here it is worth noting the opinion of Frans de Waal. Thus, de Waal in his book (2014) notes that mammals with a developed social instinct seek harmonious relationships and tend to avoid conflicts. According to the researcher's approach, it is assumed that people learn while interacting with society by modeling their behavior based on observations of others. A. Bandura supposed (2000) that people do not just respond to stimuli from the environment but also actively interact and influence their environment. From this, it can be inferred that humans, as social animals, may be prone to aggression not so much because of their biologic-evolutionary determinants, but because of their individual characteristics and the social characteristics of their environment. What Steven Pinker also mentions is that although violence and aggression throughout human evolution have been inevitable reactions to certain conditions, violent tendencies have undergone significant changes over time and with the development of culture and society. Pinker argues (2021) that due to advances in rights and morality, aspects of our personality such as the capacity for empathy, self-control, moral sense, and reason have suppressed these aggressive instincts over time, resulting in a significant decrease in violence and aggression in modern society.

According to researchers working in the field of positive psychology, prosocial behavior benefits other people or society as a whole, because the aggregate of high personal well-being of individuals benefits society (Peterson & Seligman, 2004). That is, by seeking personal well-being, we gain societal well-being, and here we can speak of selfish altruism as a good for society (Lieberman, 2020). Speaking about the impact of prosocial behavior and aggression on well-being, it is worth mentioning several studies.

INTERDISCIPLINARY BRAIN RESEARCH

Thus, aggression displays are a predictor of a decrease in prosocial behavior (Obsuth, Eisner, Malti & Ribeaud, 2015). To assess the interaction between prosocial behavior and aggression, this study used self-reports from teachers (1325), parents (1191), and children (1334), for a total sample of 3850. Data collection took place in several stages from 2004 to 2010. This study found that aggression measured in one year predicted a decrease in prosocial behavior in the following year. However, it is worth noting that the inverse relationship was not significant, i.e., prosocial behavior in the current year did not predict changes in aggressive behavior in the following year (Obsuth et al., 2015). Based on theoretical and empirical data, it can be assumed that prosocial behavior affects positively the individual's level of well-being, while aggressive behavior predicts a decrease in prosocial behavior, well-being. Thus, a study by Jung & Schröder-Abé (2019), using self-reports of a total sample of 1663 individuals from 10 to 20 years old, demonstrates that the prosocial behavior scale, acting as a moderator between the aggression acceptance and physical aggression scales in children and adolescents, decreases the likelihood of actual aggression, i.e., the higher the prosocial behavior scale, the lower the likelihood of physical aggression, even at high levels of the "aggression acceptance scale". This study also emphasizes that people who lack stable social relationships are particularly susceptible to peer aggression. At the same time, Hu, You, Ling, Yuan & Huebner (2021) found that prosocial behavior is positively related to self-esteem and hope (optimism). These studies highlight the importance of prosocial behavior as an aspect of reducing aggression. By fostering positive, social qualities such as empathy, kindness, and cooperation, we set a trend where people are less likely to engage in aggressive behavior. Programs aimed at preventing aggression should be designed with the importance of encouraging and reinforcing prosocial behaviors, peer attachment, and improving family atmosphere of support and communication (Rean, Stavtsev, 2021a). At the same time, the psychophysiological approach to studying and explaining the relationship between aggression and prosociality, especially in a positive-psychological way, is extremely underrepresented in modern scientific research. Positive neuroscience is useful for searching answers using psychophysiological methods to issues about the nature of the relationship between physiological indicators and such social characteristics of personality as psychological well-being and personality strengths, as well as with such phenomena as prosocial behavior of personality, aggression and aggressiveness, type of personality thinking (analytical and holistic) and many others.

Neurostudies relevant to positive psychological theory

Learned helplessness and depression

As we have mentioned earlier, neuroresearches can expand the understanding of existing theories of personality psychology, both proving and disproving some particular

positions or hypotheses. For example, the concept of one of the founders of positive psychology, Martin Seligman – “learned helplessness” – is a human or animal state in which an individual does not take action to improve his or her condition (does not try to avoid negative stimulus or receive positive stimulus), although he or she has such an opportunity. Generally, this phenomenon manifests itself after several unsuccessful attempts to influence the circumstances of the environment, characterized by passive behavior of the subject, refusal to act to eliminate the negative effects of the environment, despite the availability of such an opportunity (Peterson & Seligman, 2004; Rean et al., 2023). Originally, technically speaking, learned helplessness was formed from the inability to avoid shock caused by uncontrollable unfavorable events (Maier & Seligman, 2016). Thus, the phenomenon of learned helplessness should not occur when the event is controllable. This study also left unanswered the fact of presence of respondents not being susceptible to the learned helplessness effect in the presence of prolonged uncontrollable adverse circumstances.

By the way, it was the study of “unsusceptible” responders that became one of the most important starting points of the direction of positive psychology (Rean et al., 2023). Current psychophysiological research suggests that uncontrollability is not an active component in the formation of helplessness (Baratta, Seligman & Maier, 2023). The neural circuits that underlie learned helplessness show that passivity and increased anxiety are the default response to prolonged adverse events. Downward circuits that descend from the ventromedial prefrontal cortex down to the dorsal column nuclei and other structures are used to suppress this default response. Accordingly, control learning is the creation of a cortical representation that adverse events will be controllable in the future (Maier & Seligman, 2016; Baratta et al., 2023). The authors suggest that the expectation that adverse events will be temporary and controllable is the best natural defense against helplessness, and the “Raphé nuclei” circuit can be viewed as a “chain of hope” (Maier & Seligman, 2016). The authors hypothesize that therapy and prevention of depression in humans can be aimed at the formation of new cognitive representations (Baratta et al., 2023). It is on these regularities that the logic of development of psychological resilience of an individual is based. By developing certain strengths of personality, in particular, curiosity, energy (zest), gratitude and optimism, one can acquire a kind of “immunity” to learned helplessness, and, as a consequence, to many related negative phenomena – depression, anxiety and others (Rean, Stavtsev & Kuzmin, 2022).

An fMRI study on the effects of meditation was also conducted as part of the Positive Neuroscience Project (Greene et al., 2016). Both a positive psychological effect and changes in activation in the right amygdala, hippocampus and medial prefrontal cortex were found, confirming the effectiveness of meditation in the management of anxiety disorders (Hölzel, Lazar & Milad, 2016).

Prosocial behavior, altruism, empathy and love

For example, the book "Positive Neuroscience" by D. Green, I. Morrison and M. Seligman, which is fundamental for this direction, pays special attention to the research of altruism and prosocial behavior as one of the key factors in the formation of well-being. Altruism in the VIA model is most related to the "Sociality" group of traits. This group includes fairness, leadership, and teamwork (Bruce Wan, de Bont, Hekkert & Chow, 2022). One aspect of altruism is the ability for an individual to share information that may be useful to another in a relevant way. The tendency to share information with others can also be related to a person's desire for reward. A study by Zaki & Mitchell (2016) tested the hypothesis that people may sacrifice valuable resources in exchange for information, and the mere opportunity to help another leads to engagement of the dopaminergic system. The results of the study showed that in about 70% of cases, people shared information even if it was not financially beneficial (Tamir, Zaki & Mitchell, 2015; Zaki & Mitchell, 2016). The result of an fMRI study testing whether informing the Other is related to the reward system showed that the opportunity to share information activated the corpus striatum (CS) and ventromedial prefrontal cortex involved in reward processing. The result of this study suggests that the value of being able to help another by sharing knowledge is represented in the same neuronal system that is associated with reward processing and prosocial behavior (Tamir et al., 2015; Zaki & Mitchell, 2016). Thus, the interpretation of the study presented by Zaki & Mitchell in the context of the positive-psychological concept allows us to conclude that altruism at the psychophysiological, neural level is related to the reward system.

One area of positive neuroscience research should be the study of the transition from passive "asthenic" empathy to proactive "stenic" empathy, which is action-oriented and aims to help as soon as possible. There is a difference between asthenic empathy (observing) and directed stenic empathy, which is expressed in the willingness to perform an act aimed at helping the "other". Thus, according to the "perception-action" model, it is assumed that immediate response requires the creation of a perception of an appropriate help behavioral response. This may explain why some people come to help without thinking about the level of danger, while others (non-helpers) do not (Post, 2003; Dovidio, Piliavin, Schroeder & Penner 2006; Buchanan & Preston, 2016). Stenic empathy as a condition for the active action of helping another (altruism), unlike asthenic empathy, requires a certain level of neurohormonal state and response to the situation. This combination of factors provides the motivating neurohormonal state and elicits the altruism response. Altruism requires not only an observer's understanding of the situation, but also a reaction of caring for the threatened (Preston, 2013). Thus, empathy (asthenic) may be present but may not lead to active altruism, which shows the difference between the two phenomena (Buchanan & Preston, 2016). In situations that do not require an immediate response, the individual is able to make decisions more deliberately and by experiencing all of the feelings experienced in relation to the event. When examining the

differences between asthenic and stenic empathy, research related to stressful situations is found. Stress is neurohormonal in nature, involving activation of the hypothalamic-pituitary-adrenocortical axis (HPA), which also results in the release of cortisol (Dickerson & Kemeny, 2004; Mason, 1968; Buchanan & Preston, 2016). From a physiological perspective, the stress response is designed to store the body's energy. Thus, asthenic empathy may be present but not lead to active altruism (stenic empathy), which shows the difference between the two phenomena (Buchanan & Preston, 2016).

Buchanan & Preston (2016) conducted a study testing the hypothesis of physiological stress resonating between individuals by assessing alpha-amylase and cortisol. According to the results, it was found that a group of observers produced cortisol-related responses in response to observing another person's stress situation, and there was a positive correlation between observers' expression of empathic concern and cortisol and alpha-amylase levels (Davis, 1983; Buchanan & Preston, 2016). Observers' cortisol responses were proportional to those of their interlocutors (some experiencing distress, others observing it).

The research team of Singer et al. (2006) also studied empathy and altruism. In their study, in the first stage, respondents were asked to interact with professional actors with "honest" and "dishonest" reputations, and in the second stage, the fMRI method was used to record their reactions to the pain experienced by the actors. The results of the study showed that women experienced empathy regardless of the reputation of the person, while men experienced empathy in relation to a person with a good reputation, and in relation to the "dishonest" one the activity of satisfaction zones was noted (Singer et al., 2006; Znamenskaya, Sozinova, 2013). One of the basic mechanisms of social interaction is affective touch, such sensitive touches that have a socio-communicative orientation. Thus, it was found (Greene et al., 2016) that brain networks involved in affective, "social touch" process stimulus information (predominantly in the insula, as well as in somatosensory areas) and integrate it with other social information (involving the superior temporal sulcus), as well as with reward and decision-making networks, behavior (involving the orbitofrontal cortex). Such affective "social touch" may also be associated with the formation of a sense of well-being (Greene et al., 2016).

There are also Russian psychophysiological studies of prosocial behavior that are relevant to the positive-psychological theory. There was a study by Yu. I. Aleksandrov et al. (2017) on the influence of alcoholization on prosocial behavior. The data obtained by the researchers demonstrate the processes of reversible dedifferentiation (increase in the actualized experience of less differentiated systems) (Aleksandrov et al., 2017, p. 83), which can speak about more unified and predictable behavior of people under alcohol intoxication (Aleksandrov et al., 2017).

An important strength of character in positive psychology is love – the ability to establish and value close relationships with others; the ability to empathize, share, and care for others (Peterson & Seligman, 2004; Rean et al., 2023). A study by Bartels & Zeki

INTERDISCIPLINARY BRAIN RESEARCH

(2004) used fMRI to compare brain areas involved in parental and romantic love. In the first series of the study, respondents were shown pictures of their partners and friends, while in the second series, respondents were shown pictures of their own children and children of acquaintances (Bartels & Zeki, 2000, 2004; Summer, 2019). A comparison of these data showed that both forms of attachment activated the same areas of the reward system and decreased the activity of areas involved in the social judgmental, negative emotion system (Bartels & Zeki, 2004; Summer, 2019). The researchers concluded that there is a push–pull mechanism that reduces the activity of areas mediating negative emotions, avoidant behavior, and social evaluation while simultaneously triggering reward-related mechanisms (Bartels & Zeki, 2004).

Discussion and conclusion

Positive neuroscience is a promising direction of integration of neuro-methods with the positive psychological concept. Within the framework of this direction, integrated studies of learned helplessness, depression, prosocial behavior, etc. are conducted. Thus, neurostudies of learned helplessness complement the existing generally accepted model by emphasizing that the formed cognitive representation of the present and future is important (Maier & Seligman, 2016; Baratta et al., 2023). Extremely relevant research is the study of the correlation between empathy and active altruism, as well as the study of neural mechanisms of prosocial behavior (Singer et al., 2006; Znamenskaya, Sozinova, 2013; Buchanan & Preston, 2016; Greene et al., 2016; Aleksandrov et al., 2017). These studies complement the existing theoretical basis of positive psychology and allow to adjust approaches to prevention and therapy of various psychological disorders (e.g., the effect of meditation in anxiety disorders). At the same time, in-depth understanding of the processes of formation of asocial patterns of behavior, in particular, aggression of personality, together with cognitive techniques of transformation of asocial patterns of behavior into prosocial patterns of behavior through mediation and moderation through the development of personality strengths make it possible to develop new effective programs of socialization, education and re-socialization of the individual.

Moreover, a detailed analysis of the mechanisms of the impact of positive psychology, in particular, positive psychological interventions, with the help of positive neuroscience resources will improve the effectiveness of already existing and practically oriented positive-psychological methods of education, socialization and resocialization of the individual (Stavtsev, 2022).

That is why, in our opinion, positive neuroscience is an extremely promising direction of development of Russian scientific knowledge area.

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INTERDISCIPLINARY BRAIN RESEARCH

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Validation and Reliability Study of the Arabic Version of the Multicultural Personality Questionnaire (AV-MPQ)

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Abstract

Introduction. In the global fight against terrorism and the pursuit of cultural harmony, Saudi Arabia prioritizes fostering cross-cultural understanding amidst ongoing societal change. This necessitates evaluating cultural conflict among youth in Saudi Arabia, justifying the selection of the Multicultural Personality Questionnaire (MPQ) for this study.

Objective. The aim of this study is to identify a suitable multicultural personality scale and translate it into Arabic. Additionally, the study seeks to assess the psychometric properties of the adapted scale, focusing on its validity and reliability in measuring relevant personality traits.

Methods. To investigate the research questions, a survey was administered to a convenience sample comprising 921 participants (380 males and 541 females) from the target population. These individuals were asked to complete the Arabic Version of the Multicultural Personality Questionnaire (AV-MPQ).

Results. The findings suggest the Arabic Version of the Multicultural Personality Questionnaire (AV-MPQ) demonstrates promising psychometric properties within the Saudi context. This is based on evidence indicating good validity and acceptable reliability indices.

Discussion. Our findings suggest the AV-MPQ holds promise as a research tool for investigating multicultural personality within Arabic contexts. However, further research is necessary to solidify its validity and generalizability. Studies employing larger, random samples and exploring the AV-MPQ in diverse populations are crucial. This will enhance our understanding of multicultural personality and its potential role in cultural conflict.

Keywords

Multicultural Personality Questionnaire (MPQ), Arabic Version (AV-MPQ), Cultural Conflict, Psychometric Properties, Confirmatory Factor Analysis, Validation

For citation

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Introduction

Governments worldwide, including Arab nations, have been actively combating terrorism fueled by misguided ideologies and deviant behaviors. These efforts span both security and non-security domains, using systematic, intellectual, educational, and social approaches. Civil society organizations and research entities are encouraged to contribute to counterterrorism efforts. In response, we will conduct a field study aimed at achieving unprecedented scientific objectives in this area.

While these preventive measures are in place, global initiatives are also promoting cultural affinity within and between societies. These initiatives encourage decision-makers and influencers to modify educational curricula to reject violence from cultural conflicts, promote cultural acceptance, and reward actions that foster cultural affinity. Financial and moral support for such efforts is provided in various forums.

The rejection of cultural conflict remains a strong focus in Arab societies, prompting scholars and specialists to explore related issues like prejudice, racism, intellectual deviance, and extremism. The findings have informed rehabilitative programs and laws designed to protect society from challenges arising from a lack of cultural affinity.

Currently, the emphasis on rejecting cultural conflict is evident across Arab countries, impacting security, politics, society, and science. This focus reflects the desire of governments and civil organizations to create environments characterized by security, social coexistence, and political stability. These efforts also aim to attract foreign investment, boosting national income and, consequently, citizens' income.

Saudi Arabia is particularly active in enhancing cultural affinity, undergoing significant cultural, social, economic, security, and political transformations. These changes are reshaping the country and increasing its political and economic influence regionally and globally. A key factor in achieving these goals is improving cultural affinity, enabling citizens and residents to engage with other cultures objectively and flexibly.

Given this context, a field study is needed to measure the level of cultural conflict among Saudi Arabian youth, particularly considering gender differences and academic

disciplines. With a significant portion of Saudi society (about 65%) aged 15 to 34 years (General Authority of Statistics, 2019), there is a need for a multicultural personality scale with strong psychometric properties. The primary research questions will focus on identifying and validating the most suitable scale. The study will adapt this scale to Arabic to assess cultural conflict among university youth in Saudi Arabia, a demographic targeted by terrorist groups, using a survey-based methodology.

The study's significance is evident, especially given the lack of similar research and the absence of Arabic measures for multicultural personality, despite its importance.

The literature review highlights that scholars from various fields have developed multiple models of intercultural competence, which refers to the ability to operate effectively across cultures. These models are relevant across disciplines such as international leadership, business, management, intercultural counseling, communication, psychology, and personality (Leung, Ang, & Tan, 2014). The diverse disciplines involved underscore the broad relevance of intercultural competence.

Different models of intercultural competence take varied approaches. Some focus on specific domains, emphasizing cultural traits (Griffith and Harvey, 2000), attitudes or worldviews (Deardorff, 2006) related to intercultural interactions. Others take an integrative approach, incorporating elements from multiple domains (Ting-Toomey & Kurogi, 1998). These variations reflect differing views on work competence—some see it narrowly as skills for specific tasks, while others take a broader view, including traits, motives, knowledge, and skills. The origins of these models also vary: those rooted in personality traditions emphasize intercultural traits, while others based on intelligence literature focus on capabilities. Some models integrate insights from multiple disciplines, encompassing a wide range of constructs.

For this study, we chose the Multicultural Personality Questionnaire (MPQ), developed by Van der Zee and Van Oudenhoven in 2000, to prioritize personal factors in assessing cultural conflict. The MPQ measures five traits known to predict multicultural effectiveness: emotional stability, social initiative, open-mindedness, cultural empathy, and flexibility. It is based on the idea that stable dispositions, though modest, are reliable predictors of performance. Originally designed to assess expatriates and students, the MPQ has been widely used and has demonstrated strong predictive power for international students' adjustment, outperforming their native counterparts. It also explains variance in students' adjustment beyond self-efficacy (Van Oudenhoven & Van der Zee, 2002). The MPQ has shown consistent factor structures and good internal consistency across cultures. It is strongly linked to sociocultural adaptation, psychological well-being, health, international aspirations, job satisfaction, participation in multicultural events, and academic performance in diverse groups (Leung, Ang, & Tan, 2014).

The Multicultural Personality Questionnaire-Short Form (MPQ-SF), developed by Van der Zee et al. (2013), assesses the same five traits crucial for intercultural success. This version, derived from the 91-item original, optimizes subscale length with the minimum

number of items needed. Initial principal components analysis (PCA) confirmed the five-factor structure across 69 items, and subsequent exploratory PCA reduced it to 40 items, explaining 48.31% of the variance. Confirmatory factor analysis supported the five-factor model's adequacy (Van der Zee, Van Oudenhoven, Ponterotto & Fietzer, 2013).

Further details about the MPQ and its versions will be provided in the following sections.

Methods

This section will furnish thorough information on participants, data collection instruments, the methodology of data collection, and the statistical analysis procedures employed.

Participants

The study aims to validate the Cultural Conflict Scale among Saudi Arabian youth. The target population includes university-aged individuals (18 to 26 years old) of both genders and from diverse cultural backgrounds. A convenience sampling method was used, selecting participants arbitrarily without systematic planning, which is common in humanities research and validation studies.

The sample size, determined according to Al-Subaihi (2003), includes 921 participants (380 males and 541 females). Table 1 provides an overview of their characteristics.

Table 1
Characteristics of The Sample

		N	%
Gender	Male	380	41.3
	Female	541	58.7
	Total	921	100
Age	18 – less than 20	230	30.3
	20 – less than 22	320	43.4
	22 – less than 24	170	22.4
	24 - 26	29	3.8
	Total	921	100
Academic Specializations	Scientific Colleges	492	53.4
	Humanities Colleges	429	46.6
	Total	921	100

Note. *N = Sample Size. % = Valid Percentage.*

The study benefits from a sample of 1076 people, both male and female, who were chosen from Saudi Arabia's youth population and ranged in age from 18 to 26. The determination of sample size adheres to established protocols, demonstrating methodological accuracy. The participants' varied demographic and cultural origins contribute to the study's richer findings and improved generalizability. The study's validity is further enhanced by Table 1's open reporting of participant information.

Measures

The Multicultural Personality Questionnaire

The Multicultural Personality Questionnaire (MPQ) is a personality assessment tool designed explicitly to characterize behavior during interactions with individuals from different societies. The MPQ may be used to predict how smoothly people are likely to adjust to other cultures and develop a sense of comfort and belonging within those cultural settings.

The moderate version of the MPQ consists of 78 items, divided into five factors, each of which measures a separate multicultural personality trait (Van der Zee & Van Oudenhoven, 2001). These factors include: (1) Cultural Empathy (the feelings, thoughts, and behaviors of individuals from a different culture), (2) Emotional Stability (the individual's ability to stay calm under stressful conditions), (3) Flexibility (the ability to switch easily from one behavioral strategy to another), (4) Open-mindedness (unprejudiced attitude toward cultural differences), and (5) Social Initiative (tendency to actively approach social situations, initiating communication rather than waiting and watching) (Hofhuis, Jongerling, Van der Zee, and Jansz, 2020). Each dimension was assessed through distinct number of items, prompting participants to indicate, on a 5-point Likert Scale, the extent to which specific personality traits apply to them based on self-reporting (1 = totally not applicable; 5 = totally applicable).

A 40-item short form of the instrument was developed (MPQ-SF), which has been shown to display strong correlations with the full version of the MPQ (Van der Zee, Van Oudenhoven, Ponterotto, and Fietzer, 2013).

Personal information form

The personal information form was created to collect specific demographic information of the participants such as age, gender, and academic specialization. The demographic information was used to contrast the findings of this study with other MPQ validation studies.

Adaptation of the Arabic Version of the Multicultural Personality Questionnaire (AV-MPQ)

The researchers followed the guidelines for translating and adapting tests reported by Hernández, Hidalgo, Hambleton, & Gómez, (2020) and other studies (such as: Beaton et al, 2000; Tsang, Royse, & Terkawi, 2017; Hambleton, R. K., & Lee, 2013; Brislin, 1976; Hambleton, 1994; Sousa & Rojjanasrirat, 2011).

Four primary procedures were employed for translating the MPQ into Arabic. These procedures include Forward Translation, where three independent translators with strong English proficiency and measurement knowledge translated the original version from English to Arabic. Backward Translation involved the back-translation of the initial translated version by different translators with a solid background in both English and measurement. The Expert Committee Translation consisted of specialists in scale construction, a methodologist, and translators who thoroughly examined all versions to ensure semantic, idiomatic, experiential, and conceptual equivalence between the translated and original versions. Lastly, Preliminary Pilot Testing Translation involved testing the prefinal version of the translated MPQ on a small sample of university students in Saudi Arabia, who were asked to provide detailed explanations of their interpretation of each item and its corresponding response.

Data Collection Process

The data of this study was collected from a sample of college students using the convenience sampling technique, a nonprobability sampling method. Initially, participants were briefed on the study's objectives and subsequently requested to respond to the MPQ questions voluntarily using a 5-point Likert Scale (1 = totally not applicable; 5 = totally applicable). Most of the participants spent between 20-30 minutes to clearly and successfully complete the MPQ scale.

Data Analysis

Data analysis for the study was conducted using SPSS 25.0 and AMOS 24. The structure of the AV-MPQ was confirmed through Confirmatory Factor Analysis (CFA) using AMOS 24.

Given that the adapted scale demonstrates structural validity and reliability, the model's construct validity was assessed through CFA. CFA is a subset of structural equation modeling (SEM), focuses on assessing measurement models, exploring the connections between observed measures (e.g., test items or scores) and factors (Brown, 2015). Prior to conducting CFA for the scale, factor analysis assumptions (Ullman, 2001; Brown & Moore, 2012) were carefully examined. It was confirmed that there were no outliers, multicollinearity issues, or singularity problems. Additionally, no extreme values that could adversely impact the analysis were identified. Cronbach's alpha (α) and Guttman Split-Half Coefficient were computed to assess the scale's reliability. The next section shows detailed information about the AV-MPQ validity and reliability.

Results

This section includes descriptive statistics of the scale as well as findings regarding its validity and reliability.

Construct Validity Studies of the AV-MPQ

CFA plays a crucial role in establishing construct validity by providing a statistical framework to test and confirm the factor structure of a measurement instrument. It helps researchers ensure that their instrument is measuring the intended constructs reliably and validly (Bollen, & Long, 1993). Before conducting the CFA to assess the validity of AV-MPQ's structure, the assumptions, including *outliers*, *multicollinearity*, and *singularity* issues, were reviewed. Outliers refer to extreme or unusual observations that significantly differ from the rest of the data points. Table 1 indicates the absence of *outliers* among participants. Likewise, the summary statistics in Table 2 for participants' scores to the AV-MPQ reveal no instances of outliers.

Table 2
Descriptive Statistics

Factor Name	Min	Mean	Max	S. D.	SEM*
FX	20	37.02	55	5.757	.190
OP	21	48.36	68	7.507	.247
CE	18	51.35	67	6.298	.208
ES	33	64.02	89	8.327	.274
SI	25	54.86	80	8.056	.265
Total Score	144	255.62	330	22.249	.733

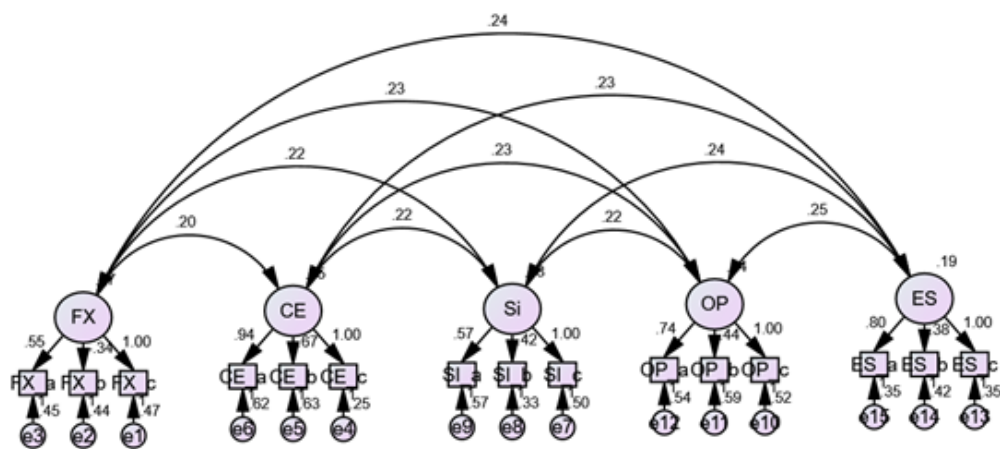
Note. *FX = Flexibility. OP = Open-mindedness. CE = Cultural Empathy. ES = Emotional Stability. SI = Social Initiative. Min. = Minimum Raw Score of AV-MPQ. Max. = Maximum Raw Score of AV-MPQ. SD = Standard Deviation, The SEM estimates the precision of the sample mean as an estimator of the population mean, the smaller value suggests that the sample mean is likely a more accurate estimate of the population mean (i.e., no outliers).*

Multicollinearity occurs when two or more test items are highly correlated with each other (i.e., $r^2 = 0.80$ to 0.90) (Kim, 2019). Multicollinearity isn't simply present or absent; rather, it exists on a spectrum. As the degree of multicollinearity increases, so does the probability of encountering its disruptive consequences. In this study, the descriptive statistics of the pairwise correlation matrix (r) of the scale items are as follows: Min (-0.265), Mean (0.056), Max (0.478), which indicates no problem of multicollinearity

among the items of AV-MPQ. *Singularity* problems arise when there is a flawless linear relationship among AV-MPQ items, causing instability in estimating factor loadings. This occurs when one or more items are accurately predicted by a linear combination of other items. To assess the presence of singularity, an examination of the descriptive statistics of the correlation matrix is conducted. In this case, since no items exhibit a perfect linear relationship, there are no singularity issues.

The CFA was executed using procedure described by Leone, Van der Zee, Oudenhoven, Perugini, & Ercolani (2005). The procedure involved grouping items of the same factor into three sets using an appropriate mathematical function tailored to the scale's nature (median was employed here). The objective was to achieve more stable parameter estimates within CFA models and minimize errors when calculating observed indicators (Bagozzi, 1993; Bentler, 1990). Analyzing all items in CFA leads to less precise outcomes due to measurement error and sample specificity (Leone et al., 2001). The obtained results are detailed below and illustrated in Figure 1.

Figure 1
CFA of the AV-MPQ



Note. *FX = Flexibility. OP = Open-mindedness. CE = Cultural Empathy. ES = Emotional Stability. SI = Social Initiative*

The goodness-of-fit of the model for the CFA confirms the scale's validity. In this study, indices used in (Leone, Van der Zee, Oudenhoven, Perugini, & Ercolani, 2005) reported to compare the results of this study with other MPQ validation studies for similarity. Table 3 shows that the proposed model fits the observed data well (i.e., the construct validity has been achieved).

Table 3
CFA Indices Values

Category Name	Index's Name	Acceptance Level	Calculated Level
<i>Absolute fit</i> (assess overall theoretical model against observed data)	Chi-square Mean	p value > 0.05	0.089
	The Root Mean Square Error of Approximation	RMSEA < 0.08	0.065
<i>Incremental fit</i> (used to evaluate how well a proposed model improves upon a more basic or null model)	Comparative Fit Index	CFI > 0.90	0.856
<i>Parsimonious fit</i> (is finding a balance between model fit and simplicity)	Chi-Square/ df	(χ^2/df) < 2.0	0.792
The minimum sample size required for a given model to achieve statistical significance.	Hoelter's	critical N >200	265

Afterwards, the reliability of both the overall AV-MPQ and each of its sub-dimensions was assessed. The subsequent section will present the specific outcomes of the reliability calculations.

The Reliability of the AV-MPQ

Reliability indicates the extent to which the AV-MPQ produces consistent and accurate results over repeated administrations. In assessing internal consistency reliability, Cronbach's alpha (α) was employed (Cronbach, 1951), considering the commonly accepted guideline that a range of 0.6-0.7 indicates an acceptable level of reliability, while 0.8 or higher signifies a very good level (Downing, 2004; Ursachi, Horodnic, & Zait, 2015; Mohajan, 2017).

The Guttman Split-Half Coefficient is another measure of internal consistency reliability of an instrument commonly used in psychometrics by dividing it into two halves and comparing the responses between the two halves (Guttman, 1945). A Guttman Split-Half Coefficient of 0.70 or higher is often viewed as an acceptable level of internal consistency

reliability in psychometrics (). Although the Cronbach's alpha and the Guttman Split-Half Coefficient common goal is to assess the consistency of items within a measurement instrument measuring the same underlying construct, they diverge in their calculation and evaluation of this consistency. Notably, Cronbach's alpha is frequently preferred for its versatility and robustness.

Table 4 displays that the indices for both internal consistency reliability measures exceeded the designated cutoff values, confirming the reliability of the AV-MPQ.

Table 4
Cronbach's alpha (α) and The Guttman Split-Half Coefficient

Factors	Number of Items	Cronbach's alpha (α)	The Guttman Split-Half Coefficient
CE	14	0.735	0.721
ES	20	0.766	0.759
OP	14	0.750	0.719
SI	17	0.720	0.725
FX	13	0.712	0.747
Total	78	0.818	0.787

Note. *FX = Flexibility. OP = Open-mindedness. CE = Cultural Empathy. ES = Emotional Stability. SI = Social Initiative*

Reliability of the MPQ dimensions were computed for two different societies: Italian and Dutch. In the Italian sample the dimensions showed satisfactory internal consistencies ($\alpha = .76$ for Cultural Empathy; $\alpha = .83$ for Open-mindedness; $\alpha = .86$ for Social Initiative and $\alpha = .85$ for Emotional Stability), the only exception being Flexibility that showed a modest coefficient ($\alpha = .65$). In the Dutch sample, scale reliabilities were $\alpha = .82$ for Cultural Empathy, $\alpha = .83$ for Open-mindedness, $\alpha = .89$ for Social Initiative, $\alpha = .88$ for Emotional Stability, and $\alpha = .74$ for Flexibility (Leone et.al., 2005). The consistency in Cronbach's α values for AV-MPQ, surpassing the accepted threshold of $\alpha = 0.70$, aligns with findings from Italian and Dutch studies, affirming the robust reliability of AV-MPQ.

Discussion

The discussion centers on the construct validity and reliability of the AV-MPQ (Arabic Version of the Multicultural Personality Questionnaire) as indicated by the results presented above.

Firstly, the study utilized confirmatory factor analysis (CFA) to establish construct validity by examining the factor structure of the AV-MPQ as stated by Said, Badru & Shahid (2011). Before conducting CFA, potential issues such as outliers, multicollinearity, and singularity were assessed. The absence of outliers, minimal multicollinearity, and absence of singularity issues suggested the validity of the scale's structure. The results of the CFA confirmed the goodness-of-fit of the model, indicating that the AV-MPQ accurately measures the intended constructs (e.g., cultural empathy, open-mindedness), aligning with the original MPQ structure.

Secondly, reliability assessments were conducted using Cronbach's alpha (Cronbach, 1951) and Guttman Split-Half Coefficient (Guttman, 1945). Both measures demonstrated satisfactory internal consistency reliability, surpassing the designated cutoff values. Additionally, the reliability of the AV-MPQ dimensions was compared across different societies (Italian and Dutch samples), showing consistent results with previous studies, and affirming the robust reliability of the scale.

In summary, the discussion underscores the strong construct validity and reliability of the AV-MPQ, rendering it a dependable instrument for assessing multicultural personality traits among Arabic-speaking populations. The findings align with previous research conducted in various cultural contexts, further validating the efficacy of the AV-MPQ as a cross-cultural measurement tool. The instrument effectively captures the intended personality dimensions within the Arabic cultural context.

Conclusion

The aim of the present study was to assess the psychometric properties of the Arabic Version of the Multicultural Personality Questionnaire (AV-MPQ). This version is an adaptation of the original MPQ scale, designed to gauge five personality dimensions associated with multicultural orientation and adaptation. Due to the lack of studies in literature about validation and reliability of AV-MPQ, it is thought that this adaptation study will make a great contribution to the literature. It is anticipated that this scale will prove useful for conducting studies on multicultural personality, emerging as a novel concept in the realm of cultural conflict. Furthermore, it is believed that the scale will pave the way for future research, focusing on developing models to elucidate the dynamics of multicultural personality dissolution and working towards mitigating cultural conflict among the youth. Considering the significance of assessing cultural conflict, which holds a pivotal role in terrorist operations and poses a threat to both local and international peace, the findings of this study will prove valuable in preventive, and therapeutic psychological counseling. Additionally, the Arabic Version of MPQ will stimulate further academic work in this field.

The original scale, as developed by Van der Zee and Van Oudenhoven in 2000 with 91 items measuring five dimensions of intercultural competencies. These are: cultural empathy (18), open-mindedness (18), emotional stability (20), social initiative (17), and

flexibility (18). Respondents evaluated if each item is applicable to themselves based on a Likert Scale ranging from 1 "totally not applicable" to 5 "totally applicable". The correlations between the main five dimensions and associated instruments aligned with expectations. Additionally, the data affirmed the predictive capability of the multicultural activity instrument, demonstrating its incremental value beyond the Big Five in forecasting international orientation and aspirations for an international career. The MPQ can serve as a tool for selecting expatriates or as a diagnostic instrument to assess additional training requirements.

Then a revised version with 78-item was developed based on exploratory and confirmatory factor analyses of an original set of items. The confirmatory factor analysis (CFA) revealed a five-factor structure consistent with the original scale. The fit indices demonstrated satisfactory results: χ^2/p -value = 0.089, RMSEA = 0.065, CFI = 0.856, χ^2/df = 0.792, and critical N = 265.

Lately, a new 40-item short form, known as MPQ-SF, has been created by (Van Der Zee, Van Oudenhoven, Ponterotto, & Fietzer, 2013). This shorter version proves valuable in situations where time constraints exist, or the likelihood of respondent dropout is high.

The Cronbach alpha internal consistency coefficient of the MPQ scale was calculated as $\alpha = 0.90$ and the different factors show $\alpha = 0.84$ (cultural empathy), $\alpha = 0.82$ (open-mindedness), $\alpha = 0.82$ (social initiative), $\alpha = 0.80$ (emotional stability) and $\alpha = 0.67$ in the flexibility dimension (Sousa et al., 2019). Comparing that with the internal consistency coefficient of the AV-MPQ scale, which is $\alpha = 0.818$ and the different factors show $\alpha = 0.735$ (cultural empathy), $\alpha = 0.750$ (open-mindedness), $\alpha = 0.720$ (social initiative), $\alpha = 0.766$ (emotional stability) and $\alpha = 0.712$ in the flexibility dimension.

The variation in the Cronbach's alpha results between the original scale and the adapted scale can be attributed to cultural and linguistic distinctions (Hambleton, 2005). Given that all Cronbach alpha values are higher than the thresholds mentioned in the literature ($\alpha = 0.70$), this provides confidence to users regarding the reliability of the AV-MPQ scale for utilization.

The evidence supporting the validity and reliability of the AV-MPQ suggests its appropriateness for use not only in Saudi culture but also in similar cultures. The scale proves to be practical and easy to administer and score. Several recommendations arise from the research findings. The study employed a convenient sampling method for participant selection. Future research using a random sampling method and involving a larger sample size could enhance the generalizability of the results. Utilizing the scale in diverse studies and with different samples may further our understanding of its psychometric properties. It is anticipated that future studies may uncover additional factors and structures related to the concept of cultural conflict. As validity and reliability studies are contingent on measurements, it would be beneficial to examine the psychometric properties of the AV-MPQ with data obtained from larger and varied sample groups in the future. Lastly, it is expected that studies exploring different variables associated with

multicultural personality in relationships will contribute new evidence to the scale's validity and reliability, thus enriching the literature on the subject.

Limitations

One limitation of this study is the use of a convenience sample, which entails participants being readily available rather than selected randomly. This raises concerns regarding the generalizability of the findings to the entire population of interest, such as Saudi youth. Additionally, the sample size of 921 participants may be insufficient to conclusively establish the scale's validity and reliability across a larger population.

Another limitation pertains to the study's sole focus on a Saudi Arabian context. Applying the findings to other cultures without further testing may not be accurate.

The final limitation is that while the study assessed the AV-MPQ's reliability and provided initial evidence for validity, further research is required to conclusively confirm these findings.

Ethics Statement

This study followed ethical principles throughout the research process. Informed consent was obtained from participants after providing comprehensive information about the study's aims, procedures, potential risks and benefits, and their right to withdraw at any point. Confidentiality measures were implemented to anonymize and maintain the confidentiality of all participant data, ensuring the security and privacy of the information collected. Additionally, the study design minimized any potential risks or discomfort to the participants.

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Heritage across Horizons: Role of Socializing Entities in Nurturing African Ethnic Identity

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Abstract

Introduction. Emigration by Africans raises important questions about the preservation of cultural heritage and ethnic identity among African diaspora. This study examines the role of familial socialization and social resilience in shaping the ethnic identities of African adolescents born abroad. **Methods.** The study adopted a cross-sectional survey design in which data was obtained via an online survey among adolescents from Nigerian migrant families in the United Kingdom. Data from a sample of 212 college students were obtained via Google forms. Snowballing techniques were adopted in reaching eligible participants for the study. The distribution of participants showed that 57% were female while 43% were male. In terms of the African heritage, majority (47%) of the participants were from Yoruba ethnicities, 34% were from Igbo related tribes while 19% were from Hausa related ethnicities. **Results.** Results obtained suggest that both covert and overt dimensions of familial socialization have a statistically significant predictive relationship with ethnic identity [$F_{(2, 209)}=3.842$; $p<.05$]; with the covert dimension having a slightly stronger predictive strength ($\beta=0.212$; $p<.05$) compared to overt dimension ($\beta=0.203$; $p<.05$). Furthermore social resilience emerged as a significant moderator in the relationship between familial socialization and ethnic identity (ΔR^2 of 4.2%). **Discussion.** These findings underline the importance of both familial and community support in nurturing and preserving ethnic identities within diaspora communities. Recommendations were made towards the production of an 'African Heritage Kit', tailored to teach and recommend familial socialization practices for preserving African cultural heritage across generations.

Keywords

Ethnic identity, Familial socialization, Social resilience, African migrants, Nigeria

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Introduction

The phenomenon of emigration, often colloquially referred to as “Japa” in Nigeria, has taken root as a defining feature of the modern African experience (Okunade & Awosusi, 2023). While the reasons for this mass exodus are complex and multifaceted, it can be traced back to the turbulent decades of the 1970s and '80s when Nigeria faced political instability, military interregnums, and a volatile economy (Premium Times, 2022). During these years, a significant number of young Nigerians embarked on journeys to the Western world, primarily the United States and the United Kingdom, in pursuit of a more secure and prosperous future. Some ventured further afield, even as far as Ukraine. Over time, this wave of emigration has swelled, with more and more Nigerians leaving their homeland to chase their dreams abroad. The Nigerian diaspora is a testament to the resilience, ambition, and adaptability of the Nigerian people (Umukoro & Okurame, 2017). Many members of this diaspora have achieved distinction in various fields, becoming leaders in education, science, technology, business, and more. They also serve as a crucial financial lifeline to their home country, with reports indicating that they remit approximately \$25 billion annually. This financial support plays a significant role in Nigeria's economy and contributes to the well-being of countless families and communities.

However, beneath the surface of this outwardly positive narrative, there exist a host of challenges that have been documented in various studies. These challenges highlight the multifaceted consequences of the “Japa” movement on both the individuals who leave and the societies they leave behind. One of the most poignant and concerning issues is the gradual erosion of African identities, particularly among the generations of children born to African emigrants who have settled in Western countries (Rogers, 2018). This process of identity erosion raises important questions about the preservation of cultural heritage and the long-term impact of emigration on African identity. As a result of this mass movement, questions about cultural assimilation, integration, and the preservation of African heritage have become increasingly relevant (Paolo & Letizia, 2022; Gwerevende & Mthombeni, 2023). The evolving African identity is not only a matter of personal and familial concern but also holds broader implications for African nations and

SOCIAL PSYCHOLOGY

their global standing. Ethnic identity is a multifaceted construct that is deeply rooted in cultural traditions, languages, beliefs, and customs. Ethnic identity is operationally defined as *feelings of belonging to a particular ethnic group*. As the African diaspora continues to expand, it becomes increasingly relevant to explore how these elements of identity are preserved, adapted, or sometimes lost.

One of the central focuses of this study is to examine the role of familial socialization in shaping the ethnic identities of African adolescents born abroad. Families play a crucial role in transmitting cultural values and traditions to the next generation (Umaña-Taylor & Hill, 2020). However, the challenges and opportunities presented by life in a foreign country can exert considerable influence on how these values are transmitted and embraced. The study also focuses on the concept of social resilience which is integral to understanding the ways in which ethnic identities are sustained among this cohort of African adolescents. Social resilience refers to an individual's belongingness and belief in a community with the capacity to support resilience of its members. It highlights the community support received by an individual in adapting to change and adversity while preserving cultural and social bonds. In the context of African identity erosion, it encompasses the strategies and support systems that adolescents, their families, and communities employ to resist the pressures of assimilation and cultural dilution. By understanding the dynamics of these constructs through the lived experiences and perceptions of a holistic view of the preservation-erosion continuum of African ethnic identities within the global diaspora would be unearthed.

From a theoretical perspective, Urie Bronfenbrenner's Ecological Systems Theory provides a holistic framework upon which this study is hinged. The theory suggests that a child's development is affected by the different environments that they encounter during their life, including biological, interpersonal, societal, and cultural factors. Within the immediate family environment, known as the microsystem, familial socialization play a crucial role. Moving to the mesosystem, interactions between the family and other microsystems like schools and peer groups are essential. These external influences can either support or conflict with the family's messages, affecting how an adolescent perceives their ethnic identity. The exosystem introduces the concept of social resilience, serving as an indirect influence. The macrosystem encapsulates the broader cultural, societal, and ideological context. This includes the dominant culture's attitudes towards diversity, multiculturalism, and the traditions of the African diaspora. The interplay between these macro-level factors shapes an adolescent's ethnic identity. Lastly, the chronosystem accounts for changes over time. Shifting societal attitudes, immigration policies, and global events can all impact how these adolescents understand and express their ethnic identity.

Literature Review

Familial Socialization and Ethnic Identity

Familial socialization encompasses the rich tapestry of experiences and influences that families provide to their members. From an early age, children are immersed in the cultural heritage of their ethnic background through interactions with parents, grandparents, and extended family members (Morris et al., 2021). Within the family unit, they learn the language, customs, rituals, and practices that are intrinsic to their cultural identity. Values and beliefs, deeply intertwined with the cultural heritage, are also imparted within the family environment (Ruck et al., 2021). Parents and caregivers instill cultural values, moral principles, and religious beliefs that have been passed down through generations. These teachings help individuals develop a sense of right and wrong, shaping their decision-making processes and behaviors in alignment with their ethnic identity (Huguley et al., 2019). Language is also a cornerstone of familial socialization, serving as a key element of cultural preservation. Families who communicate primarily in their native language at home contribute significantly to the continuation of that language within younger generations. The ability to speak, understand, and write in one's ethnic language is not only a linguistic skill but also a testament to one's connection to their cultural roots (Rogers et al., 2020). Cultural practices and celebrations, often observed within the family, play a crucial role in maintaining and nurturing ethnic identity. Families partake in festivals, traditions, and rituals that are unique to their ethnic group (Phinney, 2006). These events serve as a living link to the past, allowing children to learn about their heritage and develop a sense of belonging within their cultural community.

Beyond the transmission of cultural elements, familial socialization is instrumental in identity development. The way parents and extended family members convey their cultural identity has a profound influence on how individuals perceive themselves and their place within their ethnic group (Atkin et al., 2019). This process of identity formation is deeply interwoven with familial interactions and the messages conveyed within the family unit. However, familial socialization faces unique challenges within diaspora communities. Exposure to the host culture and the need for adaptation can sometimes create tension. Families must navigate a delicate balance between preserving their ethnic identity and integrating into the host culture, a process that is highly individualized and can vary significantly between families (Umaña-Taylor & Hill, 2020). Generational differences further complicate the dynamics of familial socialization. Second and third-generation individuals may experience disparities in how their families transmit culture compared to first-generation immigrants. This generational gap can give rise to distinctive challenges in maintaining and strengthening ethnic identities (Franco et al., 2019). The impact of familial socialization on the well-being of individuals within diaspora communities is substantial. A strong connection to one's cultural identity instilled through family interactions can provide a profound sense of pride and belonging. Conversely, the erosion of ethnic

SOCIAL PSYCHOLOGY

identity within the family unit may lead to feelings of cultural disconnection and identity crisis (Harris et al., 2017). Over the years, several scholars (Mohanty et al., 2007; Umana-Taylor et al., 2013; Truong et al., 2021; Hart et al., 2016; Tram et al., 2023; Jones & Rogers, 2023; Jones et al., 2022) have focused on understanding this intricate relationship.

Using a Web-based survey, Mohanty et al. (2007) examined the relationship between parental support for cultural socialization and its effect on self-esteem of 82 adult international adoptees. Feelings of belongingness and ethnic identity were predicted to serve as mediators between the central variables. The results showed a positive relationship between cultural socialization and self-esteem, which was mediated by a feeling of belongingness and one aspect of ethnic identification (marginality) among Asian born international adoptees. These data suggest that counselors should raise awareness and knowledge of adoptive parents about the importance of cultural continuity in the child's upbringing. Similarly, Umana-Taylor et al. (2013) examined the longitudinal associations between family ethnic socialization and youths' ethnic identity among a sample of Mexican-origin youth. Findings from multiple-group cross lagged panel models over a 2-year period indicated that for U.S.-born youth with immigrant parents, the process appeared to be family driven: Youths' perceptions of family ethnic socialization in late adolescence were associated with significantly greater ethnic identity exploration and resolution in emerging adulthood, while youths' ethnic identity during late adolescence did not significantly predict youths' future perceptions of family ethnic socialization. Conversely, for U.S.-born youth with U.S. born parents, youths' ethnic identity significantly predicted their future perceptions of family ethnic socialization but perceptions of family ethnic socialization did not predict future levels of youths' ethnic identity, suggesting a youth-driven process.

In more recent times Truong et al. (2021) explored differences and similarities in ethnic identity, familial ethnic socialization and, parental ethnic socialization between ethnic majority, minority, and multiracial groups. Their findings showed that ethnic majorities experienced significantly lower ethnic identity than either ethnic minorities or multiracial groups, which was consistent with prior research (Hart et al., 2016). Further outcomes showed that ethnic majorities scored lower of familial socialization compared to ethnic minorities and multiracial groups. In addition, Tram et al. (2023) examined the relationship between ethnic identity, family ethnic socialization, heritage language ability, and desire to learn a heritage language in a sample of 91 U.S. psychology graduate students. Adopting qualitative approaches, Jones and Rogers (2023) invoked a critical macro and micro perspective to fully consider how parent influence necessarily intertwines with macro-system dynamics of anti-Blackness, white supremacy, and monoracism for multiracial Black youth's identity meaning-making in the context of Black Lives Matter. They found that young adults mention parents or familial adults when discussing their racial identity to recount parental guidance on racial identity, illustrate the racial politics of multiracial identification, and expose the nuances of navigating shared and unshared identity spaces within the family; these highlight the relevance of parental socialization in the adulthood years.

Social Resilience and Ethnic Identity

The interplay between social resilience and ethnic identity is a complex and fascinating subject that underscores the dynamic nature of cultural preservation, particularly within diaspora communities. It delves into how individuals and their communities adapt, persevere, and sometimes evolve in response to the challenges of retaining their ethnic identity in the face of external influences. Social resilience, in this context, refers to an individual's belongingness and belief in a community with the capacity to support resilience of its members in preserving their cultural and ethnic heritage (Zaretsky & Clark, 2019). It encapsulates the strategies and support systems that individuals, their families, and their communities employ to resist the pressures of assimilation and cultural dilution. It is an essential aspect of understanding how ethnic identities endure and evolve. Communities within the diaspora often create social networks and organizations that serve as pillars of support for the preservation of their ethnic identity (Clauss-Ehlers et al., 2006). These networks foster a sense of belonging and provide individuals with opportunities to engage in cultural activities, connect with like-minded individuals, and celebrate their heritage. They therefore serve as hubs for maintaining cultural practices, passing down traditions, and reinforcing a sense of ethnic belonging (Cherng, 2015).

Social resilience is not only about maintaining the status quo but also about adapting and evolving. It involves the ability to integrate aspects of the host culture while retaining the core elements of one's ethnic identity (DeSimone et al., 2017). Successful social resilience allows individuals to embrace diversity, bridge cultural gaps, and engage in cross-cultural exchanges while still preserving their unique cultural roots. Challenges, however, are inherent in the process of social resilience. The pressure to assimilate into the host culture can be strong, and individuals and communities must navigate the delicate balance between adaptation and preservation. This balancing act can vary among individuals and communities, leading to diverse experiences and outcomes (Lee & Robbins, 1998). Understanding the dynamics between social resilience and ethnic identity is crucial for the well-being and cohesion of diaspora communities. It highlights the strategies and resources that can be employed to nurture and protect cultural identities while also acknowledging the necessity of adaptation and change. By exploring the multifaceted relationship between these two aspects, one gains valuable insights into the preservation and evolution of ethnic identities in a globalized world, where the forces of cultural integration and diversity continually shape the experiences of diaspora communities as evidenced by previous studies.

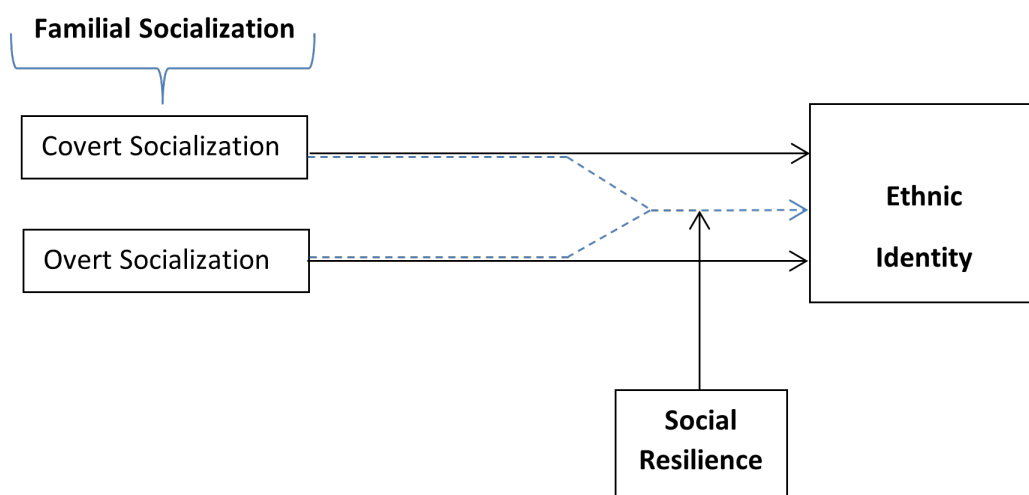
For instance, Zheng (2021) examined the link between ethnic identity and resiliency in White people and ethnic minorities (including Black and Indigenous People of Color). Participants were recruited through the SONA system and instructed to complete two questionnaires. Results showed that White group did not have as strong of an ethnic identity when compared to those in the ethnic minority group. Further correlational analyses showed that ethnic identity and resiliency were highly correlated among the

ethnic minority group, while there was no significant correlation between the two variables among the White people. Similarly, in contextualizing immigrant and refugee resilience, Güngör and Strohmeier (2020) suggested that the provision of opportunities for immigrants to express their ethnic identity and have it recognized within the community can help these groups to build resilience, which is a key factor in immigrant well-being and a non-detrimental process of acculturation. Berding-Barwick and McAreavey (2023) highlighted how immigrants proactively make strategic choices and assume responsibility to preserve their identities – even if that depends on changing underlying structural issues. They showed that, despite a hostile immigration environment, as found in the UK, immigrants were able to utilize their resilient nature in adapting to their environment.

Conceptual Framework and Hypotheses

Based on the review of literature, it is logically expected that dimensions of familial socialization should have an influence on the extent of to which African adolescents born and raised in Western climes can identify with their African ethnicities. Furthermore, their level of social resilience may have a moderating role to play in the link between familial socialization and ethnic identity. Therefore the empiricism of the conceptual framework provided below would be tested via the hypotheses formulated thereafter.

Figure 1
Conceptual Framework



As depicted by the framework in figure 1, the following hypotheses are formulated for testing using appropriate statistics

- Hi: Dimensions of Familial Socialization will have significant joint and independent influence on ethnic identity of African adolescents in Western climes.
- Hi: Social resilience will significantly moderate the relationship between familial socialization and ethnic identity of African adolescents in Western climes.

Methods

Design and Population

The study adopted a cross-sectional survey design in which data was obtained via an online survey among adolescents from Nigerian migrant families in the United Kingdom. Data from a sample of 212 college students were obtained via Google forms. Snowballing techniques were adopted in reaching eligible participants for the study. The distribution of participants showed that 57% were female while 43% were male. Their ages ranged from 18 to 25 years with a mean age of 22.4 years and a standard deviation of 2.1. In terms of the African heritage, majority (47%) of the participants were from Yoruba ethnicities, 34% were from Igbo related tribes while 19% were from Hausa related ethnicities.

Measures

A structured questionnaire for data collection was constructed using standardized scales that measured each of the study variables. The questionnaire was made up of four sections as described below;

Section A of the questionnaire was designed to capture the socio-demographic characteristics of the respondents. The items in this section highlighted variables of age, sex and ethnic affiliation. Age was measured on a ratio scale with respondents expected to insert their actual age as a number in years. Sex was measured on a dichotomized nominal scale as male or female. Ethnic affiliation was measured as a nominal variable using an open ended response format for respondents to write their ethnic affiliations. For descriptive purposes, ethnic affiliation was later categorized into three major traditional ethnic groups in Nigeria based on regional location.

Section B of the questionnaire comprised items from the Ethnic Identity Scale (Umaña-Taylor et al., 2004). The scale assesses *feelings of belonging to a particular ethnic group*, measured across three dimensions; exploration, resolution and affirmation using 7, 4 and 6 items respectively. Sample items for each dimension include 'I have participated in activities that have exposed me to my ethnicity' (exploration), 'My feelings about my ethnicity are mostly negative' (affirmation), and 'I am clear about what my ethnicity means to me' (resolution). The scale comprises of both positively and negatively worded items. Response to the items are scored on a 4-point likert scale which ranges from '1=Does not describe me at all' to '4=Describes me very well'. According to the original authors, the subscales have moderate strong coefficient alphas ranging from .84 to .89 across diverse

SOCIAL PSYCHOLOGY

ethnic samples of adolescents (Umaña-Taylor et al., 2004). In this study a Cronbach alpha of .81 was obtained for the composite scale.

Section C of the questionnaire was made up of items from the the familial ethnic socialization measure (Umaña-Taylor, 2001) which measures the degree to which participants perceive that their families socialize them with respect to their ethnicity. The scale has items measuring covert (7 items) and overt (5 items) dimensions of familial ethnic socialization with respective sample items such as 'Our home is decorated with things that reflect my ethnic background' and 'My family talks about how important it is to know about my ethnicity'. These items are responded to on a 5-point likert scale ranging from '1=not at all' to '5=very much' with high scores indicating higher perception of familial ethnic socialization and low score indicating lower perceptions of familial ethnic socialization. The original author of the scale obtained alpha coefficients ranging from .92 to .94 with ethnically diverse samples (Umaña-Taylor, 2001). In this study, the researcher obtained a Cronbach alpha of 0.84.

Section D of the questionnaire measured social resilience in form of an individual's belongingness and belief in a community with the capacity to support resilience of its members. This was measured using the Transcultural Community Resilience Scale (T-CRS) developed by Cénat et al. (2021). The scale contains 28 items for respondents to indicate their level of agreement with each one, using a Likert scale ranging from '1=strongly disagree' to '5=strongly agree'. Factor analysis as obtained by the original authors highlights three dimensions of community resilience within the scale which include; community strength and support (14 items), community trust and faith (5 items), and community values (9 items). Respectively, sample items from each dimension include 'When I go through hard times, there are people in my community I can talk with', 'I have trust in the social services of my community', and 'In my community, there are important traditions of mutual support'. The 28-item structure of the Transcultural Community Resilience Scale showed excellent internal consistency with a Cronbach Alpha of 0.96. Among this study's population, a Cronbach alpha of 0.79 was obtained.

Procedure

The researcher had access to a contact person (a Nigerian migrant) in the United Kingdom whose assistance was needed to facilitate the data collection process. The contact person was to identify online platforms (e.g. WhatsApp Groups) in Colleges and Universities in the United Kingdom hosting Nigerian students and provide the survey link for eligible participants. The survey link was accompanied with the eligible criteria for potential study participants. Upon clicking the survey link, participants were directed to an information page where relevant details and ethical considerations about the study were provided. Participants who gave their consent to participate in the study were directed to the instrument items; those who declined to participate in the study were directed to the submission page of the instrument. A clause was also inserted in the

participant information page, prompting participants to share the survey link with other acquaintances who were eligible for the study; this provided an avenue for introducing exponential snowballing techniques in obtaining the study sample. All submitted forms were received and collated in form CSV files at the back end of the Google form. After data cleaning processes, a total of 212 participant responses were deemed adequate and downloaded. The CSV data was transferred to SPSS application software for further data analysis. Both linear and moderated regression analysis were used as statistical techniques for the hypotheses testing.

Results

Hypothesis one stated that dimensions of familial socialization will have significant joint and independent influence on ethnic identity of African adolescents in Western climes. This hypothesis was tested using linear multiple regression analysis to identify the predictive roles of the independent variables in the model. A summary of the results obtained are presented in Table 1.

Table 1

Predictive role of familial socialization dimensions on ethnic identity

Model	R	R ²	F	Sig.	Beta	T	Sig.
Cov_FS	.037 ^a	.136	3.842	.023	.212	3.139	.002
Ov_FS					.203	2.368	.019

DV: *Eth_Id*

Results obtained from the table suggest that both covert and overt dimensions of familial socialization have a statistically significant predictive relationship with ethnic identity, as indicated by their p-values (Sig.). The Beta values show that the covert dimension has a slightly stronger predictive strength ($\beta=0.212$; $p<.05$) with ethnic identity compared to overt dimension ($\beta=0.203$; $p<.05$). The R^2 suggest that both dimensions have a significant joint contribution of about 13.6% in the variance of ethnic identity [$F_{(2, 209)}=3.842$; $p<.05$] among African adolescents in Western climes. The hypothesis stated is therefore supported.

Hypothesis two stated that social resilience will significantly moderate the relationship between familial socialization and ethnic identity of African adolescents in Western climes.

SOCIAL PSYCHOLOGY

This hypothesis was tested using moderated multiple regressions to identify the direct and conditional effects of the moderator in the model. A summary of the results obtained are presented in Table 2.

Table 2a
Moderating role of social resilience in familial socialization and ethnic identity

	R ²	F	P	Coeff	T	p
FamSoc				3.907	4.223	.000
ScR	.2993	7.7655	.000	2.296	3.452	.016
FamSoc x ScR				3.726	1.754	.002

DV: *Eth_Id*

Results from Table 2 show that both familial socialization and social resilience have statistically significant relationships with ethnic identity, as indicated by their p-values. Additionally, the interaction term (FamSoc x ScR) also has a statistically significant relationship with ethnic identity. The significant interaction term suggests that the relationship between familial socialization and ethnic identity is moderated by social resilience. In other words, social resilience has a moderating effect on the relationship between familial socialization and ethnic identity in African adolescents in Western settings. The direction and conditional effects of the moderator in the model is presented in Table 2b.

Table 2b
Conditional Effects of Social Resilience in the Model

Social Resilience	ΔR ²	F	Effect	Se	t	p
High			2.621	.947	1.756	.000
	.042	3.077				
Low			1.377	.662	1.885	.000

Table 2b provides information about the effects of social resilience at different levels ("High" and "Low") on the dependent variable (ethnic identity), and it indicates that both levels of social resilience have a statistically significant impact on ethnic identity and produce a significant ΔR² of 4.2%. The effect is however larger for the "High" level (2.621) compared to the "Low" level (1.377). The second hypothesis of the study is supported.

Discussion

Findings from the first hypothesis provide emphasis that both covert and overt forms of familial socialization are important factors in influencing ethnic identity among African adolescents in Western settings. Covert familial socialization involves more subtle and indirect influences, such as cultural nuances and non-verbal cues including celebrating ethnic holidays, playing songs specific to ethnic groups, attending ethnic festivals, decorating the home with items that reflect one's ethnicity etc. Overt familial socialization encompasses explicit and direct communication about cultural heritage, such as teachings about cultural background and histories, encouraging respect for the cultural values and beliefs of ethnic/cultural background etc. Both forms of socialization play a statistically significant role in shaping ethnic identity, with covert dimensions showing a slightly stronger predictive relationship. This suggests that a combination of implicit and explicit familial influences contributes to the development of ethnic identity in this context. Understanding these nuances is crucial for supporting and nurturing the ethnic identities of adolescents within diaspora communities.

The study's findings are in line with prior research that highlights the importance of familial socialization in shaping ethnic identity. Harris et al (2017) agrees that the strong connection to cultural identity instilled through familial socialization can provide a profound sense of pride and belonging. Conversely, the erosion of ethnic identity within the family unit may lead to feelings of cultural disconnection and identity crisis (Harris et al., 2017). Additionally, the studies reviewed in the literature provide further insights into the relationships between familial socialization and ethnic identity. For instance, Mohanty et al. (2007) found that parental support for cultural socialization had a positive impact on self-esteem among international adoptees, with ethnic identity mediating this relationship. Umana-Taylor et al. (2013) examined the longitudinal associations between family ethnic socialization and youths' ethnic identity among Mexican-origin youth, highlighting the importance of family-driven processes. Jones and Rogers (2023) provide critical insights into how parent influence intertwines with macro-system dynamics in shaping multiracial Black youth's identity, emphasizing the continued relevance of parental socialization in adulthood.

It therefore behooves the African family to transmit cultural elements, including language, customs, rituals, and values. This transmission is integral to the development of ethnic identity, as individuals learn and internalize their cultural heritage within the family setting (Morris et al., 2021). The way parents and extended family members convey their cultural identity significantly influences how individuals perceive themselves and their place within their ethnic group. This process of identity formation is closely tied to familial interactions and messages within the family unit (Atkin et al., 2019). For African adolescents in Western settings, the balance between preserving their ethnic identity and integrating into the host culture can be challenging. Familial socialization in such diaspora communities must navigate this delicate balance, which can vary significantly between families (Umaña-Taylor & Hill, 2020).

The second hypothesis reveals that social resilience, the social resource to adapt, endure challenges, and maintain a positive self-concept, also has a statistically significant moderating impact on how familial socialization shapes ethnic identity. The findings imply that the availability and responsiveness of the broader African community within the diaspora is a significant factor that can sustain ethnic foundations laid through familial socialization. In other words, the efforts of the African family as a resource for sustaining ethnic identity is better achieved within a responsive African community in the diaspora. The moderating role of social resilience is further supported by Zheng (2021) whose study suggests that the relationship between ethnic identity and resilience may be more pronounced in contexts where individuals face unique challenges related to their minority status. Similarly, Güngör and Strohmeier (2020) underscores how fostering ethnic identity within immigrant communities can be a critical factor in promoting resilience and well-being, which is consistent with the idea that social resilience moderates the relationship between familial socialization and ethnic identity. The use of resilience by immigrants, in Berding-Barwick and McAreavey's (2023) study, to preserve their identities aligns with the concept that social resilience can influence the relationship between familial socialization and ethnic identity. The ability to maintain ethnic identity despite challenges suggests the moderating role of social resilience.

Conclusion

This study provides a comprehensive understanding of how familial socialization, in its covert and overt forms, along with the moderating influence of social resilience, shapes the ethnic identity of African adolescents in Western settings. These findings underline the importance of both familial and community support in nurturing and preserving ethnic identities within diaspora communities, which can be a source of pride, belonging, and resilience for individuals navigating the complexities of cultural integration and identity development in their new environments. Overall, the study findings align with Bronfenbrenner's Ecological Systems Theory by highlighting the critical role of the microsystem (family and familial socialization) and its connection to the macrosystem (social resilience) in influencing the ethnic identity development of African adolescents in Western settings. Moreover, considering how these familial socialization practices may evolve over time (chronosystem) and interact with other systems (mesosystem) would provide a more comprehensive ecological perspective on ethnic identity development.

Recommendations

The process of migration and assimilation are threats to the sustenance of African ethnic identities among African migrants. It is the duty of Africans to ensure that their cultural heritage is not drowned by Western inventions and innovations. Therefore there is need for practical and proactive measures to be deployed by Africans to enrich and sustain their

cultural heritage across generations, irrespective of time and space. It may be worthwhile for African entities in form of government and non-governmental agencies entrusted with preserving the African heritage to formulate and implement strategies that assist the African family to preserve its cultural heritage through processes of socialization. This can be achieved by introducing interventions in form of handy 'African Heritage Kits' tailored to teach and recommend familial socialization practices for preserving African cultural heritage across generations. The kits should encompass a diverse range of elements, including language, traditions, customs, folklore, and values in multimedia formats. To initiate this endeavor, a dedicated task force could be formed, bringing together government representatives, non-governmental organizations, cultural experts, educators, and community leaders to design the content of the African Heritage Kits.

Leveraging on the expertise and resources of the African Research Universities Alliance (ARUA) Centre of Excellence in Notions of Identity, collaborative workshops and research projects can be launched to deepen the understanding of African identity dynamics in the development of the African Heritage Kits. These kits will integrate Knowledge, Attitude, and Practice (KAP) interventions in promoting active learning and practical application of cultural preservation strategies. Mass production and strategic distribution of these kits will ensure accessibility at key points of departure for African migrants. Community engagement sessions and workshops will play a pivotal role in introducing and training individuals on the effective use of these kits within their families. A robust monitoring and evaluation system will gauge the impact of the initiative, with feedback mechanisms guiding continuous improvement. Advocacy for supportive policies and a sustainability plan will further fortify the initiative, ensuring the perpetual relevance and availability of the African Heritage Kits in the face of evolving challenges.

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Conflict of Interest Information

The author has no conflicts of interest to declare.