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PSYCHOLOGICAL SCIENCE AND EDUCATION

Московский государственный психолого-педагогический университет
Moscow State University of Psychology & Education

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Содержание

Dear colleagues and readers!

The editorial board of the journal "Psychological Science and Education" presents to your attention the fourth issue of 2025.

In the "Educational Psychology" section, research on key issues in education and professional training is presented. One of the studies is dedicated to analyzing everyday psychological perceptions of the learning process and neuro-myths among students of pedagogical universities, practicing teachers, and teacher-psychologists. Special attention in this issue is given to examining students' mental resilience during the initial period of university studies, as well as the impact of anxiety on the activities of students in music faculties. An important topic of this issue is the discussion of research results on the role of cognitive and social factors that determine the educational outcomes of migrant students, as well as the implementation of computer vision and neuroscience technologies to improve the quality of pedagogical practices.

The "Developmental psychology" section covers a wide range of research. In particular, it examines children's perceptions of happiness and their relationship with age, gender, cultural identity, and family structure. The results of a study on the role of humor in regulating the emotional experiences of primary school students are presented. The section also includes the findings of the adaptation of the Russian version of the EPOCH questionnaire for assessing adolescent psychological well-being, as well as an analysis of the formation of worldviews among youth in contemporary socio-cultural conditions.

We are confident that the materials presented will be useful for researchers, educators, and practicing professionals in the fields of psychology and education.

Sincerely,
The Editorial Board of the journal
"Psychological Science and Education"

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EDUCATIONAL PSYCHOLOGY
ПСИХОЛОГИЯ ОБРАЗОВАНИЯ

Научная статья | Original paper

Common psychological conceptions of the learning process and neuromyths among students of pedagogical universities, teachers and educational psychologists

A.A. Margolis, A.A. Shvedovskaya ✉, A.A. Adaskina, A.N. Semiletova, T.V. Ermolova, V.V. Ponomareva, A.S. Radchikov, M.G. Sorokova
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Abstract

Subject of the study. Common psychological conceptions of the learning process, including neuromyths, among students of Pedagogical Universities, teachers and educational psychologists. **Objective.** Comparison of common psychological conceptions of the learning process and neuromyths in various target groups. **Sample**. The study involved 889 respondents from Moscow and the Moscow region: 1st–4th year students and specialists (teachers and educational psychologists) with 1 year or more of work experience. **Methods**. A Questionnaire was developed, and a survey was conducted. "Ideas about Psychological Concepts in Education" (IPCE) Questionnaire included 12 closed statements consisting of common psychological conceptions of the learning process and neuromyths. **Results**. The results showed a high prevalence of common psychological conceptions of the learning process and neuromyths in all groups: up to 90% of the respondents trust false statements. The level of trust in common psychological conceptions and neuromyths does not differ among students either as they move from junior to senior years or for different areas of study. No correlation was found between these conceptions and length of work in the field of education among practicing specialists. When comparing students and practicing specialists (teachers and educational psychologists), significant differences were found only for two statements: students believe less than educational psychologists that school uniforms improve academic performance ($M = 2,26$ vs. $M = 2,95$, $p = 0,0054$); in the myth about using 10% of the brain, students ($M = 2,49$) differ from both teachers ($M = 3,24$, $p < 0,0001$) and educational psychologists ($M = 3,19$, $p < 0,0001$). No significant differences were found between teachers and educational psychologists.

Keywords: common psychological perceptions, neuromyths, teacher training education, students, teachers, educational psychologists, IPCE Questionnaire

Funding. The study was conducted as part of the project “Investigation of the prevalence of neuromyths and lay beliefs about psychological concepts among students of pedagogical universities and schoolteachers” (Reg. No. 125013001043-2), MSUPE, 2024.

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Житейские психологические представления об особенностях процесса обучения и нейромифы у студентов педагогических вузов, педагогов и педагогов-психологов

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Резюме

Предметом исследования являлись житейские психологические представления об особенностях процессов обучения, в том числе нейромифы, у студентов педагогических вузов, педагогов и педагогов-психологов. **Цель.** Сопоставление житейских психологических представлений об особенностях процесса обучения и нейромифов в различных целевых группах. **Выборка.** В исследовании приняли участие 889 респондентов из Москвы и Московской области: обучающиеся 1–4 курсов и специалисты (учителя и педагоги-психологи) со стажем работы от 1 года и более. **Методы.** Разработана анкета и проведен опрос «Представления о психологических понятиях в образовании» (Анкета ПППО), включающий 12 закрытых утверждений, содержащих житейские психологические представления об особенностях обучения и нейромифы. **Результаты.** Результаты показали высокую распространенность житейских психологических представлений о процессе обучения и нейромифов всех групп по выборке в целом — до 90% респондентов доверяют ложным утверждениям. Уровень доверия к житейским психологическим представлениям и нейромифам не различается у студентов как по мере перехода от младших к выпускным курсам, так и для разных направлений подготовки. Связь подобных представлений со стажем работы в сфере образования у практикующих специалистов также не выявлена. При сравнении студентов и практикующих специалистов (педагогов и педагогов-психологов) значимые различия выявлены только по двум утверждениям: студенты меньше верят, что школьная форма повышает успеваемость, чем работающие педагоги-психологи (M = 2,26 vs

M = 2,95) (p = 0,0054), и в миф об использовании 10% мозга — студенты (M = 2,49) отличаются и от учителей (M = 3,24) (p < 0,0001), и от педагогов-психологов (M = 3,19) (p < 0,0001). Значимых различий между педагогами-психологами и учителями не выявлено.

Ключевые слова: житейские психологические представления, нейромифы, педагогическое образование, студенты, педагоги, педагоги-психологи, Анкета ППО

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Introduction

The ongoing reform of teacher education in Russia in recent years aims to improve the quality of education at all stages of the pedagogical process. Achieving this goal is directly linked to the level of training and professional qualifications of teachers, psychologists, and other educational practitioners, as well as their readiness to address professional challenges amid increasingly complex demands on the content and organization of instruction. A critical aspect of this effort is the acquisition and application of scientific psychological and pedagogical knowledge in professional practice, along with the ability to distinguish between common, intuitive beliefs about learning and evidence-based approaches that define modern pedagogy (Margolis, 2024).

Russian and international studies on “pseudoscientific psychological knowledge” or “misconceptions in psychology” highlight the role of distorted scientific data in professional practice (Allakhverdov, 2018; Glebkin, 2009; Dorozhkin & Tkachev, 2016; Ermolova et al., 2023). Research shows that a significant portion of educational participants — students, trainee teachers, and educators themselves — hold widespread misconceptions about teaching methods, classroom dynamics, assessment systems, ethically acceptable disciplinary practices, and, most critically, fundamental psychological principles of learning that have long been established in scientific literature but persist as naive or mythologized beliefs (McAfee & Hoffman, 2021). Notably, one of the key barriers to developing theoretically grounded professional competencies in future teachers is the preconceived pedagogical notions they bring to their training (Margolis, 2024).

A distinct category of misconceptions arises from misinterpretations or oversimplifications of neuroscientific findings, collectively termed “neuromyths” (Howard-Jones, 2014; Dekker et al., 2012). Despite lacking empirical support, neuromyths — such as the idea of hemispheric dominance or learning styles — remain prevalent in

educational practice, including among university instructors (Maksimova, Frolova, & Chekalina, 2022).

Another group of definitions characterizing initial ideas reflects the category of intuitive knowledge termed by Vygotsky as “everyday concepts,” which are contrasted with formal scientific knowledge and defined as a necessary stage in the development of thinking. In this sense, everyday concepts do not necessarily act as distorted representations or misconceptions but rather serve as a kind of system of initial ideas about a phenomenon, which may consist of random, non-essential features and differ from scientific understanding. Everyday concepts can be refined and changed through learning, and the task of education is to allow the everyday concept to “grow into” a scientific one, while the scientific concept must “encompass” its subject area of application (Vygotsky, 1982, pp. 263–264). At the same time, a certain portion of everyday concepts may remain fixed in their initial state, persist unchanged for a long time, and complicate the process of acquiring new knowledge.

In our study, we relied on an approach that considers the “common” (“intuitive,” “initial”) psychological representations of future teachers as “observation-based,” poorly formalized, rather superficial, yet highly persistent ideas about the content and specifics of pedagogical activity (Margolis, 2024). Alongside many other factors contributing to successful learning — such as intelligence (Lobanov, Radchikova, 2011; Lobanov et al., 2018; Lobanov et al., 2017), students’ personal characteristics and instructors’ skills (Odintsova, 2018; Frolova et al., 2022), the type of instruction (Sorokova, 2021; Sorokova et al., 2021), the nature of educational interaction and the organization of the learning environment as a space for collaborative activity and communication (Rubtsov, 2024), among others — such representations contribute to the formation of a scientific worldview and the quality of a teacher’s professional practice (Bezrukikh, Ivanov, Orlov, 2021; Thompson, Zamboanga, 2004). Once acquired, misconceptions about the essence of a particular phenomenon become part of a person’s conceptual framework and demonstrate resistance to counter arguments aimed at debunking them (Lilienfeld et al., 2017; Hughes, Lyddy, Lambe, 2013; Menz, Spinath, Seifried, 2021). As a result, all participants in the educational process are at risk at every stage of its implementation, including the teacher’s entry into their professional life with pre existing ideas about the nature of teaching and learning processes. Teachers’ misconceptions about education, rooted in common conceptions, can lead to serious consequences — incorrect initial assumptions may provoke inappropriate actions toward students, influence the content of curricula, promote ineffective teaching techniques, contribute to emotional burnout, and more (Sibicky, Klein, Embrescia, 2021). This problem is further exacerbated by the observed phenomenon of “washing out” (loss) of accurate psychological knowledge during teachers’ independent work, as noted in several studies. Data indicate that up to 60% of teachers lose touch with current psychological and pedagogical theories within five years of practice (Day, 1999). Such knowledge is forgotten much faster than subject-specific expertise, is not applied in the organization of the learning process, and is easily replaced by scien-

tifically unsubstantiated practices. Thus, by common psychological conceptions of the learning process, we mean persistent, non-formalized, experience-based ideas and beliefs about various aspects of educational activity.

Despite the availability of empirical evidence indicating the influence of common psychological conceptions about learning, including neuromyths, on the professional attitudes and practices of students in pedagogical fields and practicing educators, it remains insufficiently studied, including the questions of how such beliefs are formed and how they transform in the process of receiving pedagogical education and engaging in professional activities.

Overall, it should be noted that in the Russian context, there is a notable lack of comprehensive studies covering the development of psychological conceptions about learning among educators — from the initial training stage to their professional implementation in practice. The present study aims to fill this gap by focusing on the dynamics of the formation and transformation of common psychological conceptions about learning processes within the context of teacher training and the professional development of teachers and educational psychologists.

Research Questions

This study aims to identify common psychological conceptions about learning processes and neuromyths among pedagogical university students, teachers, and educational psychologists, as well as to compare the prevalence of these beliefs across these groups.

The following research questions have been formulated within the study:

RQ1: How widespread are common psychological conceptions about learning and neuromyths among pedagogical university students and education professionals (teachers and educational psychologists)?

RQ2: Do common psychological conceptions about learning and neuromyths change among pedagogical university students at different stages of their professional training?

RQ3: Are there differences in common psychological conceptions about learning and neuromyths between pedagogical university students and education professionals (teachers and educational psychologists)?

Materials and Methods

The methodological foundation of the study was based on the research by examining and analyzing misconceptions and myths in the pedagogical and student environment. Based on the research work, the authors' Questionnaire "Ideas about Psychological Concepts in Education" Questionnaire (IPCE-Q) was developed.

The IPCE-Q consists of the following sections:

1. The Sociodemographic Section consists of 10 questions to collect data on gender, age, professional status (students or practicing specialists), level of education, field of study, year of study (for students) and length of professional experience (for specialists).

2. The Section of Closed Statements consists of 12 items (S1–S2) to identify neuromyths and common conceptions. The assessment was conducted using a five-point Likert scale for the participants to express their degree of agreement with each statement. The participants were asked to choose one of the following answer op-

tions: 1 — strongly disagree, 2 — rather disagree, 3 — find it difficult to answer, 4 — rather agree, 5 — completely agree. One of the statements contained a scientifically reliable fact. The remaining 11 statements reflected common but unreliable concepts in the educational environment.

The survey of respondents using the IPCE-Q was conducted online using the AnketologBox platform. Participation in the study was voluntary, anonymous, and did not involve incentive payments.

The analysis of the obtained data was performed using the STATISTICA statistical package. A one-way analysis of variance (ANOVA) was used to compare groups. Due to the sensitivity of this method to sample sizes, the effect size (η^2) was additionally calculated when interpreting the results. In our study, an η^2 value ≥ 0.03 was considered a sufficient basis for discussing the results in terms of practical significance. When searching for differences between specific groups (pairwise comparisons), Tukey's post hoc test was used. This test allows for a large number of pairwise comparisons of group means without a loss of statistical power.

Sample

The total number of respondents was 889 individuals aged 18 years and older (94,9% were women). Overall, the sample was represented by several groups differing in criteria related to teaching activities. The main criterion was affiliation with different stages of a professional career in education: students (235 respondents; 26,4%), working professionals (623 respondents; 70,1%), and participants combining work and study (31 respondents; 3,5%).

The student sample (N = 235, 100%) was further divided by:

- field of study: psychologists (64 respondents; 27,2%), educational psychologists (111 respondents; 47,2%), primary school teachers (58 respondents; 24,7%), as well as participants who did not specify their field of study (2 respondents; 0,9%);
- year of study: 1st year — 55 (23,4%) respondents, 2nd year — 69 (29,4%) respondents, 3rd year — 58 (24,7%) respondents, 4th year — 46 (19,6%) respondents, and 7 (3,0%) participants who did not indicate their year of study.

The sample of working professionals (N = 623, 100%) was divided according to the following criteria:

- specialization: teachers (113 respondents; 18,1%), educational psychologists (495 respondents; 79,5%), and 15 (2,4%) participants not engaged in teaching activities at the time of the survey;
- work experience: 1-year (93 respondents; 14,9%), 2 years (45 respondents; 7,2%), 3 years (30 respondents; 4,8%), more than 3 years (410 respondents; 65,8%), and 45 (7,2%) participants who did not specify their work experience.

The sample was formed from representatives of educational institutions in Moscow and the Moscow region.

Results

The data obtained during the study allowed for a quantitative analysis of the prevalence of common psychological conceptions about learning and neuromyths among pedagogical university students, teachers, and educational psychologists. The analysis covered both generalized indicators of agreement with the statements and comparisons between groups based on various criteria — educational level, field of study, work experience, and professional status. The dataset collected during the study and the original IPCE Questionnaire are available in the Russian national repository of psychological re-

search and tools, RusPsyDATA (Margolis et al., 2024).

To answer the first research question (RQ1) regarding the prevalence of common psychological conceptions about learning and neuromyths among students of Pedagogical Universities and specialists in the field of education, the average values of the degree of agreement and the proportion of the respondents agreeing with the statement were calculated. (Table).

The statements in the Table (S1–S12) are arranged in descending order of the average score of the degree of agreement of the respondents with the statement for the entire Sample (i.e. the order of the statements in the Table does not correspond to the order of the statements in the IPCE-Q).

Table

Prevalence of lay psychological conceptions about learning processes and neuromyths among students, practicing professionals (teachers and educational psychologists), and the total sample (mean score, % of respondents agreeing with the statement)

Statements (S1 — S12)		Practicing professionals (teachers and educational psychologists) (N = 623, 100%)		Students (N = 235, 100%)		Total sample*** (N = 889, 100%)	
		Mean score	% agreeing*	Mean score	% agreeing	Mean score	% agreeing
1	2	3	4	5	6	7	8
S1	The number of students in a classroom (class size) affects learning efficiency	4,3	90,9%	4,3	89,4%	4,3	90,4%
S2	The key quality of a good teacher is the ability to explain material clearly	4,1	84,3%	4,0	83,4%	4,1	83,8%
S3	There are various learning styles (auditory, visual, or kinesthetic) that allow for more effective teaching of students	4,0	77,4%	4,2	85,1%	4,1	79,4%
S4	Some people have a dominant left hemisphere, while others have a dominant right hemisphere, which determines their thinking style and personality traits	3,9	81,1%	3,6	65,1%	3,8	75,9%
S5	Repeated (self-)testing leads to a more long-term learning effect than re-reading the material**	3,3	49,9%	3,5	58,7%	3,3	52,8%
S6	In teacher training, practice-related activity is more important than theoretical knowledge	3,2	53,8%	3,4	58,7%	3,3	55,7%
S7	Humans generally use only 10% of their brains	3,2	48,6%	2,5	25,1%	3,0	42,1%
S8	The main challenge in a teacher's work is maintaining classroom discipline	3,1	47,5%	3,0	46,0%	3,1	46,7%

1	2	3	4	5	6	7	8
S9	Schools with mandatory uniforms have higher student achievement	2,9	37,6%	2,3	18,3%	2,7	31,6%
S10	Boys are more proficient in mathematics, while girls excel in languages	2,4	22,0%	2,1	15,7%	2,3	19,9%
S11	Autism is a developmental disorder that may be caused by vaccination	1,9	7,9%	1,5	1,7%	1,8	6,0%
S12	Teaching does not necessarily require formal training; any adult can be a teacher	1,5	3,7%	1,6	6,4%	1,5	4,6%

Note: * — agreement with the statement includes the responses “Strongly agree” and “Somewhat agree”; ** — denotes a true statement; *** — the total includes 31 participants who were not classified into any group, as they are simultaneously employed and enrolled in education.

The results revealed that across the entire sample, the statement receiving the highest level of trust was that “class size affects learning effectiveness” (S1) — with 90,4% of participants rather or completely agreeing. However, this seemingly convincing claim lacks scientific support (Hattie, 2009). Interestingly, the scientifically validated statement that “testing and self-testing are more effective than simple material repetition” (S5) received mixed support, with just over half of respondents (52,8%) agreeing.

Trust in the statement that “autism can result from vaccination” (S11) was observed only in 6,0% of respondents. The statement that “anyone can be a teacher” (S12) found the least support among educators (4,6%).

Figure 2 presents a comparison of proportions between students (N=235, 100%) and working professionals (N=623, 100%) who agreed with statements S1–S12 about learning characteristics and neuromyths (see Table, columns 4 and 6). The order of statements S1-S12 follows the descending sequence of mean agreement levels across the total sample (see Table, columns 1 and 7).

Our findings align with international studies on the prevalence of such misconceptions among educators (Fig. 1). For instance, belief in the effectiveness of different learning styles (auditory, visual, or kinesthetic) varies across countries from 82,0% to 97,0% (Menz, Spinath, & Seifried, 2021). A systematic review by Newton and Salvi, encompassing 37 studies with over 15000 educators from 18 countries, revealed that 79,7% of teachers not only endorsed the “learning styles” concept but also reported applying corresponding strategies in their practice. Teachers indicated they identify students’ presumed individual learning styles and adapt their teaching methods accordingly (Newton & Salvi, 2020).

These data demonstrate that neuromyths may significantly influence everyday teaching practices, becoming embedded in professional thinking. Similar patterns emerge regarding belief in hemispheric dominance affecting cognitive and personality traits: 72% of educators across countries (2019 international study average); 70% of Russian university instructors (Maksimova, Frolova, & Chekalina, 2022); 85–95% of Russian school teachers across disciplines (Bezrukikh, Ivanov, & Orlov, 2021).

Analysis of the second research question (RQ2) — whether common psychological conceptions about learning and trust in neuromyths change during uni-

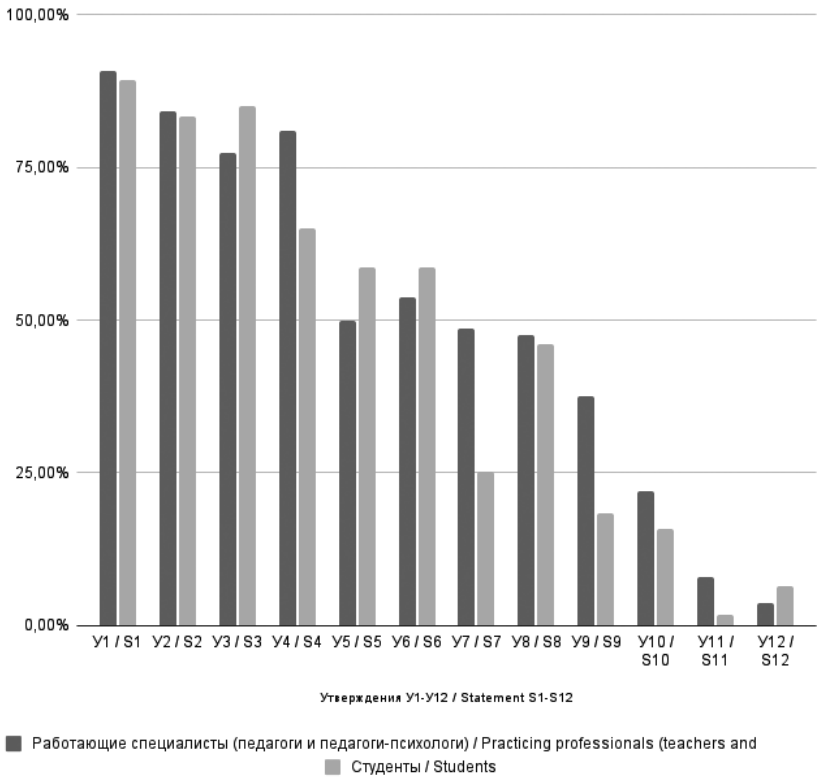

Fig. 1. Comparison of the proportions of respondents agreeing with statements S1–S12 about the learning processes characteristics and neuromyths in students (N = 235, 100%) and practicing professionals (N = 623, 100%): statements S1–S12 are presented in descending order based on the mean level of agreement among respondents in the overall sample

versity education — revealed that among students across different years (1st to 4th year), statistically significant differences were observed for only one statement: “Humans use only 10% of their brain” (S7) ($F(3,224) = 4,07$; $p = 0,0077$; $\eta^2 = 0,05$). Notably, significant differences for this statement were found only between 2nd-year ($M = 2,81$) and 3rd-year ($M = 2,12$) students (Tukey’s post hoc test, $p = 0,0085$). As seen in the agreement scores with 95% confidence intervals for statements S4, S6, S7, and S9 across different years, non-overlapping confidence intervals occurred solely between 2nd- and 3rd-year students for statement S7 (Fig. 2). Thus, the prevalence of the vast majority of common psychological conceptions about learning and trust in neuromyths remains nearly identical across different academic years. This suggests that university education does not significantly alter students’ initial conceptions in this domain — whether they are future psychologists, educational psychologists, or teachers.

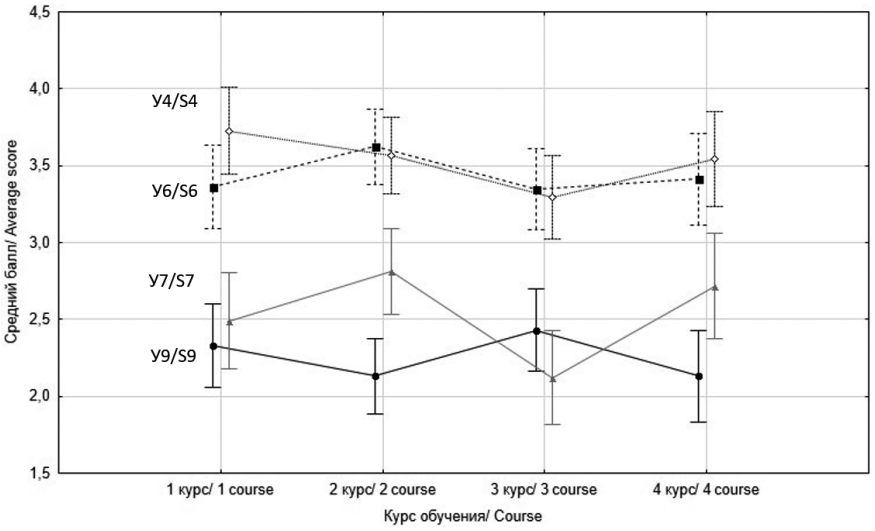

Fig. 2. Mean values of the degree of agreement for the statements S4, S6, S7, S9 with 95% confidence intervals in students from different years (1st—4th year)

An additional assessment was conducted to evaluate the differences between the responses of students from various fields of study: future psychologists, educational psychologists, and primary school teachers (see Fig. 3). The results of the variance analysis showed that differences between the groups were observed only for the statement "In teacher training, practical activities are more important than theory" (S6) ($F(2,230) = 3,93$; $p = 0,0210$; $\eta^2 = 0,033$). Future primary school teachers ($M = 3,76$) believed in this statement significantly more than future psychologists ($M = 3,25$) (post hoc Tukey test, $p = 0,0231$). For all other statements, no significant differences were found between the groups. Accordingly, belief in common psychological conceptions about learning and trust in neuromyths is not related to the field of study of future specialists.

Our findings are consistent with research by M.V. Khramova and colleagues, which demonstrated that educational level has minimal impact on the prevalence of neuromyths among students across various disciplines — including future teachers. Notably, even upper-year students-maintained belief in neuromyths (Khramova et al., 2023).

Similar conclusions were drawn in a study of Austrian psychology students. Although 95% of participants reported that neuroscience topics were covered in their university curriculum, and 87% had attended introductory cognitive neuroscience lectures, belief in neuromyths remained prevalent (e.g., 91% endorsed the learning styles myth) (Novak-Geiger, 2023).

An additional question we considered was whether common psychological conceptions of the learning process and neuromyths about education change during professional work at school. To answer this question, groups of respondents with

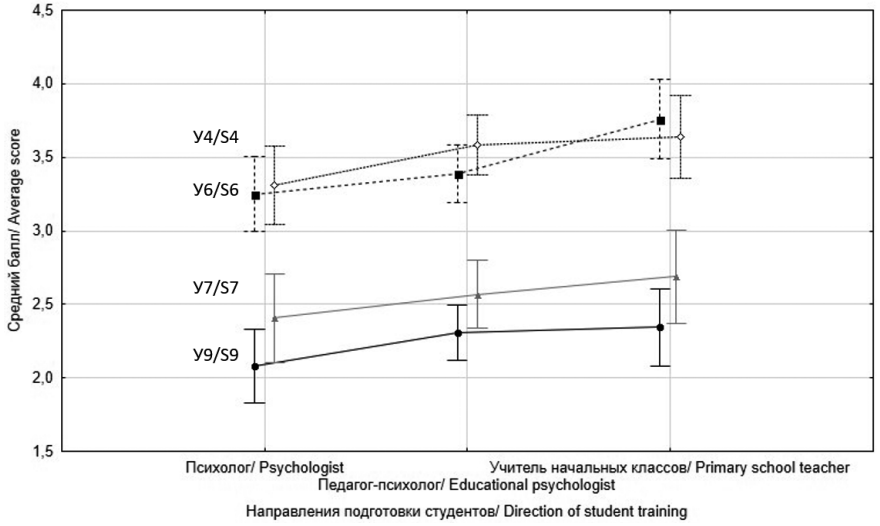

Fig. 3. Mean values of the degree of agreement for the statements S4, S6, S7, S9 with 95% confidence intervals in students of different fields of study

different lengths of work experience were identified: “1 year,” “2 years,” “3 years,” and “more than 3 years.” Statistically significant differences among these groups were found only for two statements (see Figure 5): “Schools with mandatory uniforms have higher student achievement” (S9) ($F(3,574) = 7,22$; $p = 0,0001$; $\eta^2 = 0,04$) and “ Some people are left-brain dominant while others are right-brain dominant that determines their thinking style and personality traits “ (S4) ($F(3,574) = 6,21$; $p = 0,0004$; $\eta^2 = 0,03$). The post hoc Tukey test revealed differences only between the most extreme groups: “1 year” (M9 = 2,62 and M4 = 3,62) and “more than 3 years” (M9 = 3,05 and M4 = 4,02) ($p = 0,0392$ and $p = 0,0246$ for the two statements, respectively). That is, both indicators significantly increase with more than three years of experience. Overall, it can be concluded that there are no substantial changes in common psychological conceptions of the learning process depending on work experience.

The obtained data are supported by research showing that work experience in the field of education does not contribute to reducing teachers’ belief in neuromyths. For instance, a study by S. Dekker and colleagues demonstrated that teachers in the United Kingdom and the Netherlands, on average, agreed with 49% of neuromyths, with no significant differences found between the two countries. The most widespread beliefs were in the existence of “learning styles” and “brain hemisphere dominance,” which were used by over 80% of the surveyed educators (Dekker et al., 2012). A systematic review of 24 qualitative studies on the persistence of neuromyths among current and future educators over time, involving 13 767 teachers and students from 20 countries (2012–2020), also revealed that, despite advancements in neuroscience and the availability of knowledge, misconceptions about brain functioning remain widespread in the educational

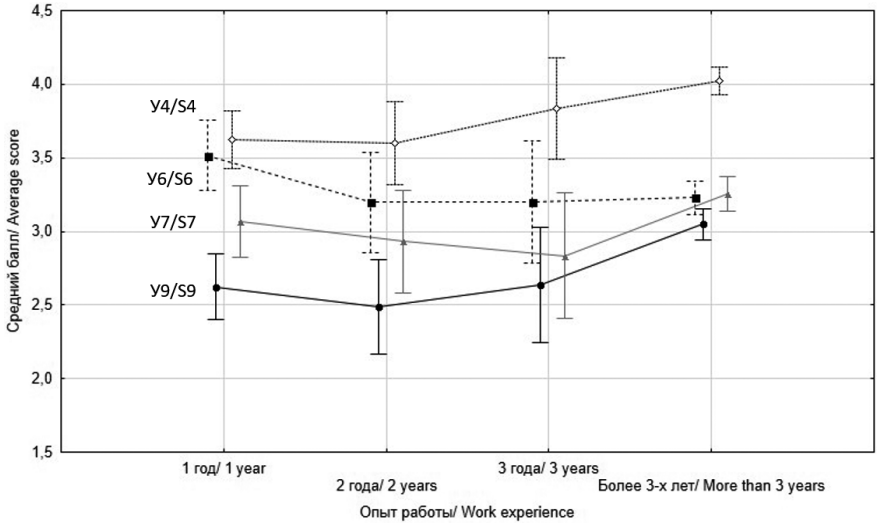

Fig. 4. Mean values of the degree of agreement for the statements S4, S6, S7, S9 with 95% confidence intervals in respondents with different lengths of professional experience

community. The most persistent myths include “A person uses only 10% of his brains”; “every individual learns better through their preferred sensory channel (auditory/visual/kinesthetic)”; and the division of people into “left-brained” and “right-brained” (Torrijos-Muelas et al., 2021).

Another key question we addressed was whether differences exist in common psychological perceptions of learning process and neuromyths between students and working professionals from two categories: educational psychologists versus teachers (RQ3). Statistically significant differences with acceptable effect sizes were found for two statements: (S9) “Schools with mandatory uniforms have higher student achievement” ($F(2,810) = 29,26$; $p < 0,0001$; $\eta^2 = 0,07$) and (S7) “A person uses only 10% of his brain“ ($F(2,810)= 27,69$; $p= < 0,0001$; $\eta^2 = 0,06$). For statement S7 about the 10% brain myth, students ($M = 2,49$) differed significantly from both teachers ($M = 3,24$; Tukey’s post hoc test; $p < 0,0001$) and educational psychologists ($M = 3,19$; Tukey’s post hoc test; $p < 0,0001$). However, for the school uniform statement (S9), differences were only found between students ($M = 2,26$) and practicing educational psychologists ($M = 2,95$; Tukey’s post hoc test; $p = 0,0054$). These results are presented in Fig. 5. Importantly, for both statements, students showed lower average agreement compared to the other two respondent groups, while no significant differences were found between educational psychologists and teachers.

It is noteworthy that according to nationwide surveys of Russian adults (2018), a significant majority of respondents (82%) support the introduction of school uniforms. This suggests that the belief in the importance and necessity of school uniforms appears widespread in

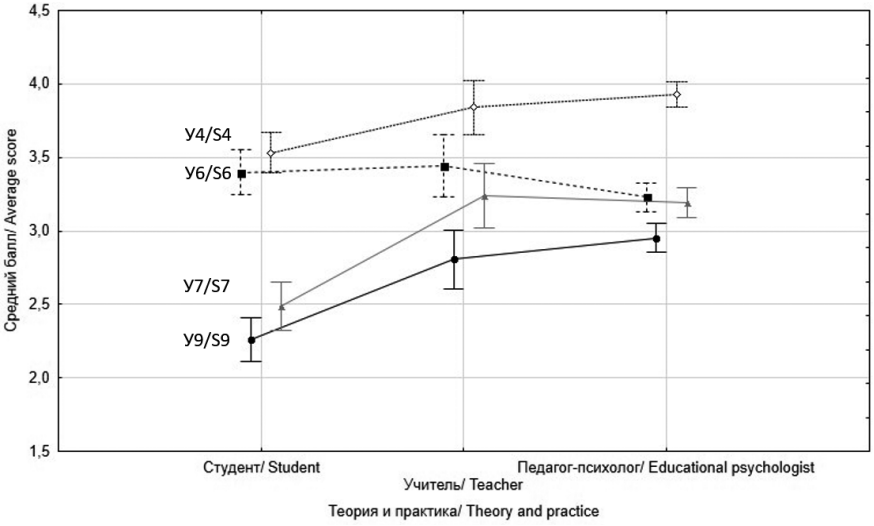

Fig. 5. Mean values of the degree of agreement for the statements S4, S6, S7, S9 with 95% confidence intervals among students and practicing specialists — educational psychologists and teachers

contemporary society, including among teachers and educational psychologists. The observed differences in attitudes toward school uniforms between students and practicing specialists may also be explained by workplace norms. In schools with dress codes, uniforms are perceived as part of institutional order and academic culture, leading professionals to attribute positive effects on student discipline and achievement to them (Shahr, Yazdani, & Afshar, 2019). Research consistently shows that teachers tend to support strict uniform policies for their perceived disciplinary benefits, while most students oppose uniforms and fail to recognize their advantages (Woo et al., 2020).

The persistence of such misconceptions aligns with findings from Grospietsch and Lins' comprehensive review on the prevalence and endurance of neuromyths among educators, students, and other education professionals. Their study demonstrates that neuromyths remain pervasive across all examined groups. While neuroscience education reduces belief in neuromyths, it doesn't eliminate them — even students in specialized programs continue to endorse some misconceptions. This remarkable persistence occurs because neuromyths are rooted in intuitive beliefs and socially reinforced assumptions that resist contradictory evidence (Grospietsch & Lins, 2021).

Our findings demonstrate the persistence of common psychological conceptions and neuromyths across all examined groups — students at different academic levels, teachers, and educational psychologists. The minimal differences observed between academic years suggest that standard pedagogical university curricula prove ineffective in challenging entrenched common psychological conceptions of the learning process. Even when educational programs include psychology,

pedagogy, and neuroscience courses, without specifically designed interventions they fail to impact these deeply rooted misconceptions. Students continue to rely on common-sense experience and popular explanatory models (Rousseau, 2021). Moreover, research shows that even targeted educational interventions (such as explanatory texts) yield limited success in reducing belief in inaccurate concepts unless accompanied by structured reflective activities (Ferrero, Konstantinidis, & Vadillo, 2020).

However, our comparison between students and practitioners revealed significant differences regarding two specific statements — the impact of school uniforms on academic performance and the 10% brain myth. In both cases, students showed lower agreement with these false statements, potentially indicating greater critical thinking during early professional development. These results suggest that professional immersion may reinforce rather than reduce common psychological conceptions. This aligns with international research on cognitive biases — new information tends to be ignored or distorted in favor of pre-existing beliefs (Deligiannidi & Howard-Jones, 2015; Weisberg et al., 2021).

The absence of differences between educational psychologists and teachers suggests that neither the type of professional training nor specific institutional roles significantly affect the prevalence of these misconceptions. The stability of such beliefs across different educational levels indicates that the educational environment itself plays a crucial role in perpetuating them. Rather than resulting from critical engagement with academic knowledge or professional practice, these persistent beliefs likely emerge through observational learning or generalizations drawn from personal schooling experiences and interactions with teachers. Common psychological conceptions of learning and trust in neuromyths continue to be reproduced and transmitted within the educational community despite contradicting scientific evidence (Blackmore, 1999). As Grospietsch and Lins argue, neuromyths may be viewed as elements of teachers' professional subculture that persistently recur in educational practice (Grospietsch & Lins, 2021).

These misconceptions persist despite exposure to scientific concepts for several key reasons. First, they are rarely targeted explicitly by educators or subjected to structured critical reflection, creating no opportunity for transforming common psychological conceptions into scientifically grounded knowledge. Second, mere recognition and verbalization of these naive beliefs about learning proves insufficient — deliberate, systematic efforts to facilitate conceptual change are required. However, current psychology and education curricula lack such transformative components. Third, when academic knowledge remains disconnected from practical application, professional understanding fails to fully develop. True knowledge formation requires using concepts as tools for solving real-world problems — a fundamental distinction between passive information and active knowledge. In practice, both students and professionals continue addressing challenges through pre-existing intuitive beliefs rather than scientific frameworks, leaving academic concepts as memorized facts rather than thinking tools. Fourth, even properly formed psychological knowledge becomes over-

simplified over time. Bridging this theory-practice gap demands early and sustained immersion in practical contexts from the first year of study. Field experience should serve as a transformative laboratory for refining psychological perspectives rather than brief skill-acquisition episodes (Margolis, 2024). Equally crucial are: continuous teachers' education ensuring regular updating of psychological knowledge (Kulyutkin, 1989); systematic supervision for novice educators; regular case-based coaching using authentic school scenarios (Shulman, 1987; Hattie, 2009).

Thus, the core mission of teacher education must become developing educators' capacity to critically examine their practice through scientific lenses — cultivating pedagogical reflection as the bridge from naive beliefs about the learning process to theoretically informed professional reasoning (Margolis, 2021).

Conclusions

The study revealed a high prevalence of common psychological conceptions of the learning process and neuromyths among pedagogical university students and education professionals (RQ1), with the strongest endorsement given to statements about class size effects on learning effectiveness (90,4% agreement), explanation clarity as a key teacher quality (83,8%), and prevalent neuromyths concerning learning styles (79,4%) and hemispheric dominance (75,9%). These findings demonstrate the persistent circulation of scientifically unsupported beliefs within the educational community. The research further showed that students' belief in these misconceptions does not decrease as they progress through their academic years (RQ2), indicating such attitudes form prior to professional training and remain stable throughout university education. The absence of significant differences across academic years and specializations suggests standard curricula have limited impact on developing scientific perspectives among future educators, with no correlation found between misconception prevalence and professionals' work experience either.

While comparing students and practitioners (teachers versus educational psychologists) revealed no significant differences for most statements (RQ3), two exceptions emerged regarding school uniforms' impact on academic performance and the 10% brain myth, with students showing lower agreement that may indicate greater critical thinking during early professional development. However, this doesn't negate the overarching pattern of misconception reinforcement in educational practice. The persistence of naive beliefs throughout professional training and into teaching practice underscores the urgent need for curriculum reforms, particularly through incorporating dedicated modules for conceptual change regarding learning misconceptions, enhancing pedagogical reflection training, and systematically integrating evidence-based approaches with practical experience.

In conclusion, our study is the first in Russia to simultaneously examine the nature of common psychological perceptions of learning process and neuromyths among student teachers, in-service teachers, and educational psychologists. The findings reveal that these intuitive perceptions emerge before future specialists begin their professional training and persist unchanged throughout university education and even after entering teaching practice.

This compelling evidence calls for a fundamental restructuring of teacher and educational psychologist training programs. The core of this reform should be a systematic effort to cultivate evidence-based professional thinking, anchored in empirical approaches and real-world challenges. The current system must shift toward actively replacing naive assumptions with scientifically grounded pedagogical reasoning — ensuring that training, from its earliest stages, integrates rigorous practice-oriented methodologies.

Limitations. The sample was limited to a single region (Moscow and the Moscow Region), which may reduce the generalizability of the findings. The list of neuromyths and lay psychological beliefs about education included 12 statements, which provides a limited view of the prevalence of these phenomena in the educational environment.

Список источников / References

1. Аллахвердов, В.М. (2018). Психология как наука и проблема демаркации (статья первая). *Методология и история психологии,* 1, 46—57. https://doi.org/10.7868/S1819265318010041
Allakhverdov, V.M. (2018). Psychology as a science and the problem of demarcation (article one). Methodology and History of Psychology, 1, 46–57. (In Russ.). https://doi.org/10.7868/S1819265318010041
2. Безруких, М.М., Иванов, В.В., Орлов, К.В. (2021). Диссонанс между представлениями о развитии мозга в современной нейробиологии и знаниями педагогов. *Science for Education Today, 11*(1), 125—150. https://doi.org/10.15293/2658-6762.2101.08
Bezrukikh, M.M., Ivanov, V.V., Orlov, K.V. (2021). Differences between concepts of brain development in modern neurobiology and teachers' knowledge. *Science for Education Today, 11*(1), 125—150. (In Russ.). https://doi.org/10.15293/2658-6762.2101.08
3. Выготский, Л.С. (1982). Мышление и речь. *Собрание сочинений: В 6 т.: Т. 2: Проблемы общей психологии* (с. 35–496). М.: Педагогика.
Vygotsky, L.S. (1982). Thinking and speech. Collected Works: In 6 vol.: Vol. 2: Problems of general psychology (pp. 35–496). Moscow: Pedagogy. (In Russ.).
4. Глебкин, В.В. (2009). Наука и псевдонаука: методологические поиски Карла Поппера. *Исследователь, 2*(2), 61—62. URL: https://elibrary.ru/item.asp?id=46383016 (дата обращения: 13.04.2025).
Glebkin, V.V. (2009). Science and pseudoscience: Karl Popper's methodological quest. *Researcher, 2*(2), 61—62. (In Russ.). URL: https://elibrary.ru/item.asp?id=46383016 (viewed: 13.04.2025).
5. Дорожкин, А.М., Ткачев, А.Н. (2016). Заблуждение как проявление мифа в науке. *Ценности и смыслы, 6*(46), 53—61. URL: https://www.elibrary.ru/item.asp?id=27545489 (дата обращения: 13.04.2025).
Dorozhkin, A.M., Tkachev, A.N. (2016). Fallacy as a manifestation of myth in science. *Values and Meanings*, *6*(46), 53—61. (In Russ.). Available at: https://www.elibrary.ru/item.asp?id=27545489 (viewed: 13.04.2025).
6. Ермолова, Т.В., Литвинов, А.В., Чернова, О.Е., Гузова, А.В. (2023). Мисконцепции в психологии как негативный фактор формирования профессиональной компетенции психологов. *Современная зарубежная психология, 12*(2), 104—115. https://doi.org/10.17759/jmfp.2023120210
Ermolova, T.V., Litvinov, A.V., Chernova, O.E., Guzova, A.V. (2023). Misconceptions in Psychology as a Negative Factor in the Formation of Professional Competence of Psychologists. *Journal of Modern Foreign Psychology, 12*(2), 104—115. (In Russ.). https://doi.org/10.17759/jmfp.2023120210
7. Kuznetsova, O.I., Maslennikova, E.G. (2015). National doctrines and education systems of different countries. *Lichnost', sem'ya i obshchestvo: voprosy pedagogiki i psikhologi [Personality, family and society: issues of pedagogy and psychology], 49*, 44—45. (In Russ.). URL: https://www.elibrary.ru/item.asp?id=23104081 (viewed: 13.04.2025).
8. Кулюткин, Ю.Н. (1989). Социальная обусловленность непрерывного образования. *Вопросы психологии, 2,* 5–13. URL: http://voppsy.ru/issues/1989/892/892005.htm (дата обращения: 13.04.2025).
Kulutkin, Y.N. (1989). Social conditionality of continuous education. *Voprosy psychologii, 2*, 5—13. (In Russ.). URL: http://voppsy.

ru/issues/1989/892/892005.htm (viewed: 13.04.2025).

9. Лобанов, А.П., Радчикова, Н.П. (2011). Формирование ментальных репрезентаций в контексте прототипов. *Вестник Томского государственного университета, 343*, 180—183. URL: https://elibrary.ru/item.asp?id=15640309 (дата обращения: 13.04.2025).
   Lobanov, A.P., Radchikova, N.P. (2011). Formation of mental representations in prototype context. *Tomsk State University Journal, 343*, 180—183. (In Russ.). URL: https://elibrary.ru/item.asp?id=15640309 (viewed: 13.04.2025).
10. Лобанов, А.П., Радчикова, Н.П., Айсмонтас, Б.Б., Воронова, А.В. (2017). Эмоциональный интеллект: к проблеме операционализации понятия в контексте эмпирического исследования. *Вестник Полоцкого государственного университета. Серия Е. Педагогические науки,* 7, 69—74. URL: https://elibrary.ru/item.asp?id=30024273 (дата обращения: 13.04.2025).
    Lobanov, A.P., Radchikova, N.P., Aysmontas, B.B., Voronova, A.V. (2017). Emotional intelligence: to the problem of the operationalization of the notion in the context of empirical investigations. *Herald of Polotsk State University. Series E. Pedagogical sciences, 7*, 69—74. (In Russ.). URL: https://elibrary.ru/item.asp?id=30024273 (viewed: 13.04.2025).
11. Лобанов, А.П., Радчикова, Н.П., Дроздова, Н.В., Воронова, А.В. (2018). Влияние академических и неакадемических видов интеллекта на учебные достижения студентов. *Известия Саратовского университета. Новая серия. Серия: Акмеология образования. Психология развития,* 7(4), 304—312. https://doi.org/10.18500/2304-9790-2018-7-4-304-312
    Lobanov, A.P., Radchikova, N.P., Drozdova, N.V., Voronova, A.V. (2018). Influence of academic and non-academic types of intelligence on academic achievements of students. *Izvestiya of Saratov University. New Series. Series: Educational Acmeology. Developmental Psychology, 7*(4), 304—312. (In Russ.). https://doi.org/10.18500/2304-9790-2018-7-4-304-312
12. Максимова, М.В., Фролова, О.В., Чекалина, Т.А. (2022). Нейромифы в образовании: анализ распространенности среди преподавателей вузов. *Вопросы образования, 2*, 190—215. https://doi.org/10.17323/1814-9545-2022-2-190-215
    Maksimova, M.V., Frolova, O.V., Chekalina, T.A. (2022). Neuromyths in education: An analysis of prevalence among faculties of higher educational institutions. *Educational Studies. Moscow, 2,* 190—215. (In Russ.). https://doi.org/10.17323/1814-9545-2022-2-190-215
13. Марголис, А.А. (2021). Новая научная грамотность: проблемы и трудности формирования. *Психологическая наука и образование, 26*(6), 5—24. https://doi.org/10.17759/pse.2021260601
    Margolis, A.A. (2021). New Science Literacy: Problems and Difficulties of Formation. *Psychological Science and Education, 26*(6), 5—24. (In Russ.). https://doi.org/10.17759/pse.2021260601
14. Марголис, А.А. (2024). Педагогическое образование как развитие исходных педагогических представлений. *Психологическая наука и образование*, *29*(6), 5—20. https://doi.org/10.17759/pse.2024290601
    Margolis, A.A. (2024). Teacher Education as the Development of Student Teachers' Preconceptions and Beliefs. *Psychological Science and Education, 29*(6), 5—20. (In Russ.). https://doi.org/10.17759/pse.2024290601
15. Марголис, А.А., Шведовская, А.А., Адаскина, А.А., Ермолова, Т.В., Земскова, Т.В., Коновалова, И.В., Пономарева, В.В., Прокопьева, Л.М., Семилетова, А.Н., Сорокова, М.Г. (2024). Распространенность нейромифов и житейских представлений о психологических понятиях среди студентов педагогических вузов и учителей: Набор данных 2024 год. RusPsyData: репозиторий психологических исследований и инструментов. М. https://doi.org/10.48612/MSUPE/bfvb-z8v8-4pv1
    Margolis, A.A., Shvedovskaya, A.A., Adaskina, A.A., Ermolova, T.V., Zemskova, T.V., Konovalova, I.V., Ponomareva, V.V., Prokopyeva, L.M., Semiletova, A.N., Sorokova, M.G. (2024). Prevalence of neuromyths and everyday representations of psychological concepts among students of pedagogical universities and teachers: Dataset 2024. RusPsyData: Psychological Research Data and Tools Repository. Moscow. (In Russ.). https://doi.org/10.48612/MSUPE/bfvb-z8v8-4pv1
16. Одинцова, М.А., Радчикова, Н.П. (2018). Самоактивация как личностный ресурс студентов в инклюзивной образовательной среде вуза. *Современная зарубежная психология, 7*(1), 62—70. https://doi.org/10.17759/jmfp.2018070107
    Odintsova, M.A., Radchikova, N.P. (2018). Self-activation as a personal resource in university inclusive educational environment. *Journal of Modern Foreign Psychology, 7*(1), 62—70. (In Russ.). https://doi.org/10.17759/jmfp.2018070107
17. Рубцов, В.В. (2024). *Социально-генетическая психология учебных взаимодействий:*

избранные статьи, выступления, проекты: Том 2. М.: Городец. URL: https://psyjournals.ru/nonserialpublications/sgpli2024b2/contents (дата обращения: 13.04.2025).
Rubtsov, V.V. (2024). Social-genetic psychology of learning interactions: Selected articles, speeches, projects: Vol. 2. Moscow: Gorodets. (In Russ.). URL: https://psyjournals.ru/nonserialpublications/sgpli2024b2/contents (viewed: 13.04.2025).

18. Сорокова, М.Г. (2021). Предметные результаты студентов в цифровой среде университета на разных уровнях высшего образования: Так кто же более успешен? *Психологическая наука и образование,* 26(1), 76—91. https://doi.org/10.17759/pse.2021260105
Sorokova, M.G. (2021). Academic outcomes of students in university digital environment at different levels of higher education: Who is more successful? *Psychological Science and Education, 26*(1), 76—91. (In Russ.). https://doi.org/10.17759/pse.2021260105
19. Сорокова, М.Г., Одинцова, М.А., Радчикова, Н.П. (2021). Образовательные результаты студентов в электронных курсах при смешанном и онлайн-обучении. *Моделирование и анализ данных, 11*(1), 61—77. https://doi.org/10.17759/mda.2021110105
Sorokova, M.G., Odintsova, M.A., Radchikova, N.P. (2021). Students Educational Results in Blended and Online E-Courses. *Modelling and Data Analysis, 11*(1), 61—77. (In Russ.). https://doi.org/10.17759/mda.2021110105
20. Blackmore, S.J. (1999). The meme machine: Vol. 25. New York: Oxford Paperbacks. Доступно по ссылке: https://books.google.ru/books?id=hpU0FOqr2YEC&lpg=PP1&hl=ru&pg=PP1#v=onepage&q&f=false (дата обращения: 13.04.2025).
21. Day, C. (1999). Professional Development and Reflective Practice: Purposes, Processes and Partnerships. *Pedagogy, Culture & Society, 7*(2), 221—233. Доступно по ссылке: https://www.tandfonline.com/doi/abs/10.1080/14681366.1999.11090864 (дата обращения: 13.04.2025).
22. Dekker, S., Lee, N.C., Howard-Jones, P., Jolles, J. (2012). Neuromyths in education: Prevalence and predictors of misconceptions among teachers. *Frontiers in psychology*, *3*, Article 33784. https://doi.org/10.3389/fpsyg.2012.00429
23. Deligiannidi, K., Howard-Jones, P.A. (2015). The neuroscience literacy of teachers in Greece. *Procedia-Social and Behavioral Sciences, 174*, 3909—3915. https://doi.org/10.1016/j.sbspro.2015.01.1133
24. Ferrero, M., Konstantinidis, E., Vadillo, M.A. (2020). An attempt to correct erroneous ideas among teacher education students: the effectiveness of refutation texts. *Frontiers in Psychology, 11*, Article 577738. https://doi.org/10.3389/fpsyg.2020.577738
25. Grospietsch, F., Lins, I. (2021). Review on the prevalence and persistence of neuromyths in education — where we stand and what is still needed. *Frontiers in Education, 6*, Article 665752. https://doi.org/10.3389/feduc.2021.665752
26. Hattie, J. (2009). Visible learning: a synthesis of over 800 meta-analyses relating to achievement. London, New York: Routledge.
27. Howard-Jones, P.A. (2014). Neuroscience and education: myths and messages. *Nature reviews neuroscience*, 15(12), 817—824. Доступно по ссылке: https://www.nature.com/articles/nrn3817 (дата обращения: 13.04.2025).
28. Hughes, S., Lyddy, F., Lambe, S. (2013). Misconceptions about Psychological Science: A review. *Psychology Learning and Teaching*, *12*(1), 20—31. https://doi.org/10.2304/plat.2013.12.1.20
29. Khramova, M.V., Bukina, T.V., Smirnov, N.M., Kurkin, S.A., Khramov, A.E. (2023). Prevalence of neuromyths among students and future teachers. *Humanities and Social Sciences Communications, 10*, Article 950. https://doi.org/10.1057/s41599-023-02412-4
30. Lilienfeld, S.O., Lynn, S.J., Ruscio, J., Beyerstein, B. (2010). *50 great myths of popular psychology: shattering widespread misconceptions about human behavior*. Chichester: John Wiley & Sons.
31. McAfee, M., Hoffman, B. (2021). The morass of misconceptions: how unjustified beliefs influence pedagogy and learning. *International Journal for the Scholarship of Teaching and Learning, 1*(1), Article 4. https://doi.org/10.20429/ijsotl.2021.150104
32. Menz, C., Spinath, B., Seifried, E. (2021). Misconceptions die hard: prevalence and reduction of wrong beliefs in topics from educational psychology among preservice teachers. *European Journal of Psychology of Education, 36*, 477—494. https://doi.org/10.1007/s10212-020-00474-5
33. Newton, P.M., Salvi, A. (2020). How common is belief in the learning styles neuromyth, and does it matter? A pragmatic systematic review. *Frontiers in Education*, *5*, Article 602451. https://doi.org/10.3389/feduc.2020.602451
34. Novak-Geiger, V. (2023). Prevalence of neuromyths among psychology students: small differences to pre-service teachers. *Frontiers in Psychology, 14*, Article 1139911. https://doi.org/10.3389/fpsyg.2023.1139911
35. Rousseau, L. (2021). Interventions to dispel neuromyths in educational settings — a review. *Frontiers in Psychology, 12*, Article 719692. https://doi.org/10.3389/fpsyg.2021.719692

36. Shahr, H.S.A., Yazdani, S., Afshar, L. (2019). Professional socialization: an analytical definition. *Journal of Medical Ethics and History of Medicine, 12*(17), 1—14. https://doi.org/10.18502/jmehm.v12i17.2016
37. Shulman, L.S. (1987). Knowledge and teaching: foundations of the new reform. *Harvard Educational Review, 57*(1), 1—22. https://doi.org/10.17763/haer.57.1.j463w79r56455411
38. Sibicky, M., Klein, C.L., Embrescia, E. (2021). Psychological misconceptions and their relation to students' lay beliefs of mind. *Teaching of Psychology, 48*(2), 103—109. https://doi.org/10.1177/0098628320959925
39. Thompson, R., Zamboanga, B. (2004). Academic aptitude and prior knowledge as predictors of student achievement in introduction to psychology. *Journal of Educational Psychology*, *96*(4), 778—784. https://doi.org/10.1037/0022-0663.96.4.778
40. Torrijos-Muelas, S., Peropadre, C., Quiles, C., Sánchez-Morcillo, S. (2021). The persistence of neuromyths in the educational settings: a systematic review. *Frontiers in Psychology, 11*, Article no. 591923. https://doi.org/10.3389/fpsyg.2020.591923
41. Weisberg, D.S., Landrum, A.R., Hamilton, J., Weisberg, M. (2021). Knowledge about the nature of science increases public acceptance of science regardless of identity factors. *Public Understanding of Science*, *30*(2), 120—138. https://doi.org/10.1177/0963662520977700
42. Woo, J.M., Tam, C.L., Bonn, G.B., Tagg, B. (2020). Student, teacher, and school counselor perceptions of national school uniforms in Malaysia. *Frontiers in Psychology, 11*, Article 1871. https://doi.org/10.3389/fpsyg.2020.01871

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Mental toughness of first-year students: interrelations with university admission strategies and educational outcomes

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Abstract

Context and relevance. Mental toughness as the ability to effectively cope with stressful events and systematically work toward achieving set goals regardless of external conditions takes on particular importance at the stage of completing school education, entering university, and studying during the first year. **Objective.** The study aims to examine the range of variability in mental toughness among a large sample of Russian first-year students, analyze sex differences based on an integrated measure of mental toughness, determine differences between student groups depending on their university admission strategy, and identify the relationship between mental toughness and educational outcomes during the first year. **Methods and materials.** The study analyzed data from 6950 first-year students from 26 universities across 7 federal districts of Russia (mean age of participants was 18,8 with a standard deviation of 2,1; 64,7% were female). The abbreviated version of the "Mental Toughness Questionnaire" (Dagnall et al., 2019) was used. **Results.** The variability of the integrated indicator of mental toughness among first-year students is characterized by a maximum wide range. At the same time, 21,8% of freshmen can be classified into groups with low and very low levels of mental toughness. On average, young men are found to be more mentally tough than women, resulting in a higher percentage of women among first-year students with low mental toughness. Mental toughness differs depending on the university admission strategy only between two groups of first-year students admitted based on the results of school Olympiads and combined data from state exams and additional university entrance tests. Mental toughness is directly proportional to the educational outcomes of first-year university students. **Conclusions.** Understanding the variability and threshold values of mental toughness levels,

calculated using a large sample of Russian students, expands opportunities for providing psychological support to first-year students experiencing difficulties related to maladjustment and academic underperformance.

Keywords: mental toughness, university admission strategy, educational outcomes, test threshold values, sex differences, first-year students

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Психическая устойчивость студентов первого курса: взаимосвязь со стратегией поступления в вуз и образовательными результатами

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Резюме

Контекст и актуальность. Психическая устойчивость как способность эффективно противостоять стрессовым событиям и планомерно действовать в направлении достижения намеченных результатов вне зависимости от внешних условий приобретает особое значение на этапе окончания школь-

ного обучения, поступления в вуз и обучения на первом курсе. **Цель**. Исследование направлено на определение диапазона вариативности психической устойчивости на масштабной выборке российских первокурсников, анализ половых различий по интегрированному показателю психической устойчивости, определение различий между группами студентов в зависимости от стратегии поступления в вуз и выявление связи психической устойчивости с образовательными результатами студентов на первом курсе. **Методы и материалы**. В исследовании анализировались данные 6950 первокурсников из 26 университетов в 7 федеральных округах России (средний возраст участников — 18,8 со стандартным отклонением в 2,1; 64,7% девушек). Применялась краткая версия опросника «Психическая устойчивость» (Dagnall et al., 2019). **Результаты.** Вариативность интегрированного показателя психической устойчивости у студентов первого курса характеризуется максимально широким диапазоном проявления. При этом 21,8% первокурсников могут быть отнесены к группам с низким и очень низким уровнем психической устойчивости. Юноши оказываются в среднем психически более устойчивыми по сравнению с девушками, что приводит к большему проценту девушек среди первокурсников с низкой психической устойчивостью. Психическая устойчивость различается в зависимости от стратегии поступления в вуз лишь между двумя группами студентов первого курса, зачисленных по результатам школьных олимпиад и объединенным данным государственных экзаменов и дополнительных вступительных испытаний. Интегральный показатель психической устойчивости прямо пропорционально связан с образовательными результатами студентов на первом курсе вуза. **Выводы**. Понимание вариативности и пороговых значений уровней психической устойчивости, рассчитанных на масштабной выборке российских студентов, расширяет возможности психологического сопровождения первокурсников с трудностями адаптивного характера, в том числе академической неуспешностью.

Ключевые слова: психическая устойчивость, стратегия поступления в вуз, образовательные результаты, пороговые значения теста, половые различия, студенты первого курса

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Introduction

The construct of mental toughness embodies an individual's capability to effectively manage stress and sustain focused effort toward predefined goals despite environmental pressure (Clough

et al., 2002). Emerging initially in sports psychology (Loehr, 1986; see also Hsieh et al., 2024), its relevance has expanded into various fields, including occupational psychology (Mireku et al., 2024; Turkington et al., 2023) and educational settings (St Clair-Thompson & Devine, 2023; Du et al., 2023). Characterized by multidimensional traits — including emotional regulation, goal persistence, reconceptualization of adversity as opportunity, and maintenance of self-efficacy following failure — mental toughness serves as a central predictor of high-performance across multiple areas of modern life (Taylor, 2024). Standardized measures frequently employ a four-component framework encapsulating control, commitment, challenge acceptance, and confidence (Dagnall et al., 2019; Zhozhikashvili et al., 2021; Perry et al., 2023; Denovan et al., 2021). This framework gains particular importance during periods of major life transitions amplified by broader societal shifts, such as transformations in labor markets, advancements in educational milestones, or fluctuations in socioeconomic status (Crede & Niehorster, 2012; St Clair-Thompson et al., 2017). Within the educational realm, prominent examples include the shift from secondary to higher education, exemplified by the distinctive challenges faced during freshmen year (Basyuk et al., 2022; Tikhomirova et al., 2024). During these transitional phases, mental toughness plays a pivotal role in mediating adaptive responses among incoming students (Mattanah et al., 2004; Meggs & Sewell, 2022; St Clair-Thompson et al., 2017). Empirical investigations demonstrate that elevated levels of mental toughness confer protective benefits, mitigating vulnerability to detrimental coping mechanisms, subpar academic performance, interpersonal conflicts, and dropout rates common among college students (Crust et al., 2014; St Clair-Thompson & Devine, 2023; St Clair-Thompson et al., 2017). However, despite accumulating evidence, there remains a relative paucity of systematic explorations focusing explicitly on mental toughness within Russian youth populations encountering secondary or tertiary educational environments. Existing scholarship primarily concentrates on related yet divergent constructs, such as hardiness or vitality (Leontiev & Rasskazova, 2006; Makhnach, 2022; Osin & Rasskazova, 2013). As a result, normative data reflecting quantitative dimensions of mental toughness remain sparse, thereby constraining efforts to develop and implement effective interventions addressing academic and social adjustment challenges (St Clair-Thompson & London, 2024). Preliminary findings highlight considerable variation in mental toughness distributions across different cultural and demographic contexts, revealing discernible gender-related trends during pivotal educational transitions (Andrews & Chen, 2014; Crust et al., 2014; Hartanto et al., 2024; St Clair-Thompson et al., 2017). While some studies suggest attenuated or absent gender gaps upon controlling for confounding variables such as age, previous work experience, and background attributes (Yarayan et al., 2024; Hartanto et al., 2024; St Clair-Thompson et al., 2017), others point to sustained disparities requiring further exploration. Functionally, mental toughness operates reciprocally: It influences emotional and behavioral reactions to stress-

ors varying in intensity (Taylor, 2024; St Clair-Thompson & Devine, 2023; Clough et al., 2002), while simultaneously being molded by long-term exposure to specific experiences (Du et al., 2023; St Clair-Thompson & Devine, 2023; Crust et al., 2014). Factors shaping mental toughness levels include university admission processes and academic performance. In Russia, prospective university candidates encounter diverse entry paths: the Unified State Exam (USE), victory in school olympiads, targeted recruitment initiatives, completion of secondary vocational training (SVT), reserved quotas for children of military personnel involved in special operations, or hybrid approaches combining USE scores with complementary assessments (USE+ AEE). These pathways differ significantly regarding psychological strain and subsequent preparedness for higher education (Tikhomirova et al., 2024). For example, the dual-track pathway (USE + A EE) imposes greater psychological burdens due to intensive preparatory requirements, while targeted recruitment reduces stress by guaranteeing placement, financial incentives, and career stability (Tikhomirova et al., 2024). Furthermore, mental toughness correlates strongly with academic achievement across demographic groups and subject areas (Crust et al., 2014; Du et al., 2023; St Clair-Thompson & Devine, 2023; St Clair-Thompson et al., 2017). Steady academic progress corresponds positively with higher mental toughness ratings, whereas ongoing academic struggles manifest negatively (Crust et al., 2014). Considering these interconnections, our present study posits that differing admission trajectories and academic outcomes yield measurable effects on the development of mental toughness among Russian first-year students.

Materials and methods

Sample

A total of 6,950 first-year students from 26 universities distributed across the seven federal districts of the Russian Federation took part in this study. Participants had a mean age of 18,8 years (SD = 2,1), with 64,7% identifying as female. The majority (97,1%) pursued full-time programs, while only 0,9% opted for part-time enrollment, and 2% enrolled in distance-learning formats. Financial arrangements indicated that 60,4% studied free-of-charge (budgetary funding), 31,1% covered tuition costs independently, and 8,5% availed themselves of targeted recruitment scholarships. Participants followed heterogeneous admission strategies: 74,2% entered based on Unified State Exam (USE) results; 2,5% excelled in specialized school competitions (Olympiads); 8,5% benefited from target-oriented recruitment policies; 7,4% graduated from vocational schools (secondary vocational education, SVE); 6,2% obtained admission through a combined approach (USE plus additional entrance exams, USE + AEE); and 1,2% secured spots allocated for descendants of individuals engaged in Special Military Operations (SMO). Initial Semester Grades Distribution Performance during the inaugural examination session showed varied outcomes: 22% earned uniformly highest marks (‘5’); 37,7% maintained a balance of ‘5’ and ‘4’; 17,5% displayed mixed results of ‘5’, ‘4’, and ‘3’; 6,9% received predominantly second-highest grades (‘4’); 9,7% fluctuated between ‘4’

and '3'; 3% accumulated minimum passing grades ('3'); and 3,2% incurred academic deficits.

Study Design and Procedures

The study was carried out during the latter half of the academic year, from February to May. Each session occurred in designated university computer laboratories under controlled conditions. Uniform procedures were employed to ensure compliance with a standardized protocol, which included identical instructions and meticulous adherence to the stipulations set forth in Federal Law No. 152-FZ "On Personal Data." To safeguard anonymity and confidentiality, each participant was assigned a unique identification code compliant with regulatory requirements concerning personal data protection. Trained researchers supervised all activities closely. Participants progressed sequentially through a series of task modules, structured identically for all individuals. Prior to initiating the primary testing battery, informed consent was obtained, confirming participants' awareness of the study's objectives. Preceding the commencement of experimental tasks, detailed demographic and contextual data were collected, encompassing participants' chosen university admission route and their corresponding outcomes from the introductory examination session (for further detail, refer to Tikhomirova et al., 2024).

Methods

For this study, we adopted a condensed version of the Mental Toughness Questionnaire (MTQ) originally developed by Dagnall et al. (2019). Comprised of ten items, this instrument comprehensively addresses all four components of the 4C conceptual model of psychological resilience, assessing aspects such as emotional and behavioral self-regulation, resolute goal-directed behavior irrespective of situational constraints, the interpretation of life challenges as opportunities for personal growth, and the maintenance of high self-efficacy despite recurring obstacles (Clough et al., 2002). The questionnaire features statements framed in both positive and negative tones, illustrated by examples such as: o Even under intense pressure, I typically remain calm. o When confronted with competing priorities, I find prioritizing difficult. o I am skilled at adapting quickly to unexpected situations. o My general outlook on life tends to be optimistic. Responses were elicited using a five-point Likert scale, wherein participants expressed their degree of agreement, ranging from "Strongly Disagree" to "Strongly Agree." Scoring entails calculating a cumulative point value, factoring in reverse-scored items, yielding a final score ranging from 10 to 50 points. Prior validation studies corroborate that this abridged version of the MTQ demonstrates excellent psychometric properties (Dagnall et al., 2019, p. 1933), rendering it eminently suited for utilization across cultural boundaries, inclusive of diverse sociocultural populations (Denovan et al., 2024).

Results

First-Year Russian Students' Mental Toughness: General Sample Analysis

This study investigates an integrative measure of mental toughness among first-year Russian students. Descriptive statistics for this metric are summarized

in Table 1, stratified by the entire freshman population and differentiated according to distinct levels of mental toughness development. These categorical divisions are determined using percentile ranks:

- **Very Low**: Total test scores fall below the 5th percentile.
- **Low**: Test scores lie between the 5th and 25th percentiles.
- **Medium**: Individuals obtain scores within the interquartile range of the 25th to 75th percentiles.
- **High**: Scores exceed the 75th percentile but do not surpass the 95th percentile.
- **Very High**: Those with test results exceeding the 95th percentile represent the highest tier of mental toughness.

Table 1 encompasses key descriptive statistics, such as minimum and maximum values, which serve as valuable references for practical utilization by university psychological support services.

According to Table 1, there is considerable heterogeneity in mental toughness levels among first-year university students, with scores ranging from a minimum of 10 to a maximum of 50. The average score across the whole sample is 34,29 (see the row titled “General Sample”).

Examining the distribution percentages reveals that the largest subgroup consists of students displaying moderate levels of mental toughness, constituting 57,9% of the sample with an average score of 34,63 (SD = 2,83). By contrast, the smallest subgroups include those with very low and very high levels of mental toughness, comprising merely 5,2% and 5% of the total sample, respectively. Among these extreme groups, students demonstrating very high resilience achieve an average score of 47,24 (SD = 1,84), while those with very low resilience record an average of 20,53 (SD = 2,66) — representing the two ends of the measured spectrum.

Gender representation highlights interesting trends across different levels of mental toughness. For instance, among students showing very low and low resilience, females make up 73,7%

Table 1

Descriptive statistics for mental toughness among students in accordance with the level of formation

Level	Mean (Standard Deviation)	Minimum	Maximum	Percentage of students	Percentage of females
“Very Low”	20,53 (2,66)	10	23	5,2	73,7
“Low”	26,88 (1,64)	24	29	16,6	74,1
“Medium”	34,63 (2,83)	30	39	57,9	65,2
“High”	41,44 (1,34)	40	44	15,3	54,9
“Very High”	47,24 (1,84)	45	50	5,0	48,5
Total sample	34,29 (6,42)	10	50	100	64,7

and 74,1%, respectively. However, in the highly resilient group, females comprise only 48%. This implies a noticeable gender difference favoring males in terms of mental toughness.

These observations are supported by statistical comparisons, which identify a small but statistically significant difference in mean mental toughness scores between genders (η^2 = 0,03, t = 12,14, p = 0,000). On average, male students exhibit higher mental toughness (M = 35,56, SD = 6,4) compared to female students (M = 33,59, SD = 6,4). Overall, these findings indicate that first-year male students display greater psychological resilience than their female counterparts.

Mental Toughness Based on University Admission Strategy and Academic Outcomes

Students were grouped into six distinct categories according to their respective university admission pathways:

1. **Unified State Exam (USE)** — Admitted based on USE results.
2. **School Olympiads** — Winners or finalists of regional/national school competitions.
3. **Targeted Recruitment** — Selected through specific recruitment drives.
4. **Vocational Graduates (SVE)** — Former graduates of secondary vocational education organizations.
5. **Special Quota (SMO)** — Beneficiaries of a special admission quota reserved for children of participants in the Special Military Operation.
6. **Combined Pathway (USE + AEE)** — Admitted through a combination of USE results and additional entrance exams organized by universities.

Additionally, seven distinct clusters emerged based on their performance during the initial examination period:

1. **Top Grades Only ('5')** — Achieved exclusively top-grade marks.
2. **Mixed Top/Upper-Middle Grades ('5' & '4')** — Scored a mixture of top and upper-middle grades.
3. **Broad Range Mix ('5', '4', & '3')** — Earned a combination of top, upper-middle, and lower-middle grades.
4. **Upper-Middle Grades Only ('4')** — Obtained strictly upper-middle grades.
5. **Upper/Middle Mixed Grades ('4' & '3')** — Combination of upper-middle and middle grades.
6. **Middle Grades Only ('3')** — Received only middle-range grades.
7. **Freshmen Carrying Debt** — Freshmen retaining academic debts from the first term.

Detailed descriptive statistics pertaining to the composite index of mental toughness among first-year students, segregated by both admission methodology and academic performance, are consolidated in Table 2.

Table 2

Descriptive statistics of mental toughness in groups of students stratified by university admission strategies and educational performance

Table 2 provides comprehensive statistical details regarding the distribution of mental toughness test scores, encompassing measures such as means, standard errors, and the lower/upper bounds of the 95% confidence interval. The range of test scores spans from a minimum value of 10 to a maximum of 50 points.

Table 2

Descriptive statistics for mental toughness in groups of students with different university admission strategies and educational outcomes

Group of students	Number of students	Mean	Standard Error	95% Confidence Interval	
				Lower Limit	Upper Limit
University admission strategy					
on the results of the Unified State Exams	5156	34,16	0,14	33,90	34,46
on the results of school Olympiads	174	31,90	1,11	26,54	35,06
via targeted recruitment	591	33,96	0,45	33,07	34,83
after completing institutions of SVE	514	33,55	0,49	32,59	34,51
using combined USE scores and AEE organized by universities	431	34,99	0,71	33,10	35,66
under special quotas for children of participants in the SMO	84	33,41	0,84	31,75	35,06
Outcomes from the first examination session					
all ‘5’s	1529	34,84	0,79	33,29	36,40
‘5’s and ‘4’s	2620	33,81	0,63	32,51	35,13
‘5’s, ‘4’s, and ‘3’s	1216	33,79	0,68	32,46	35,12
all ‘4’s	479	34,11	1,01	32,01	36,11
‘4’s and ‘3’s	674	32,86	0,71	31,49	34,23
all ‘3’s	209	32,29	1,17	29,62	34,29
who had academic debts	223	31,25	1,06	29,17	33,34

Interestingly, the highest average mental toughness score is observed among students who gained admission into university via both Unified State Examination (USE) results and supplementary entrance examinations, contrasting starkly with the lowest average found among Olympic medalists or finalists (averages of 34,99 vs. 31,90 respectively). Meanwhile, other categories — such as those admitted under targeted recruitment programs, college graduates, and applicants benefitting from special quotas — demonstrate comparable averages, clustering closely within a narrow band from 33,41 to 33,96, indicating minimal variation across these subgroups. It is noteworthy that a marginal increase in mean mental toughness can be detected among students solely admitted on the basis of USE results (average of 34,16).

Thus, statistically significant variations in mean mental toughness are predominantly evident only when comparing these distinct modes of university entry pathways.

In terms of academic achievement, the strongest mental toughness profile manifests itself prominently in the cohort achieving consistently high marks after concluding their initial round of assessments (an average score of 34,84), surpassing all other student subcategories characterized by heterogeneous grading patterns, including combinations of “excellent,” “good,”

and “satisfactory” ratings. On the contrary, the weakest mental resilience is displayed by students facing extensive academic deficiencies following their inaugural evaluation period (a mean score of 31,25). Remarkably, this data reveals an almost linear diminution in mean mental toughness scores, gradually descending stepwise from peak levels associated with top performers downwards towards bottom-tier values linked to students encountering pronounced academic challenges.

To evaluate the reliability of group differences in mental toughness related to university admission strategies and educational outcomes, while also quantifying their effect sizes, a two-way Analysis of Variance (ANOVA) was conducted. The study included the following independent variables:

1. University admission strategy,
2. Result of the first exam session.

The dependent variable was the composite mental toughness measure.

A Levene’s test was performed to verify the assumption of equal variances across comparison groups for both categorical predictors, yielding non-significant results ($p > 0,05$ $p > 0,05$), thereby confirming the appropriateness of applying ANOVA.

The outcomes of the two-way ANOVA investigating disparities in mental toughness among first-year students categorized according to university admission methods and academic achievements are presented in Table 3 below.

As illustrated in Table 3, statistically significant differences emerge in the composite measure of mental toughness among first-year student cohorts classified by their university admission strategy, albeit with a small effect size of approximately 3% ($\eta 2 = 0,03$, $p = 0,04$). Post hoc analyses employing Bonferroni corrections for multiple comparisons uncovered significant contrasts exclusively between two distinct admission groups: students admitted via combined USE + Additional Entrance Exam (AEE) results exhibited significantly higher mental toughness compared to those admitted based on Olympiad qualifications (mean scores referenced in Table 2). Conversely, variations in mental toughness averages across remaining admission categories did not reach statistical significance ($p > 0,05$).

Table 3

Differences in mental toughness depending on the university admission strategies and educational outcomes

Categorical Factor	Sum of Squares (SS)	Fisher’s Criterion (F)	Level of Significance (p)	Effect Size (η^2)
University Admission Strategy	346,79	2,42	0,041	0,03
Educational Outcomes	515,89	3,11	0,032	0,06
Interaction of Factors	1415,57	0,99	0,476	0,00

Consequently, it is evident that first-year students entering university via the combined USE + AEE pathway demonstrate appreciably greater mental resilience relative to their counterparts admitted via Olympiads (mean scores of 34,99 vs. 31,90, respectively).

Furthermore, Table 3 highlights statistically significant variability in mental toughness measures attributed to first-exam session outcomes, accounting for a moderate effect size of around 6% ($\eta 2 = 0{,}06$, $p = 0{,}03$) among first-year students. Utilizing Bonferroni-adjusted pairwise comparisons revealed substantial disparities between students accumulating academic debt subsequent to their first session and those attaining various grade distributions, including “Excellent,” “Excellent–Good,” “Good Only,” or even “Excellent–Good–Satisfactory.” Specifically, students struggling with failing grades scored considerably lower than their peers achieving more favorable grade compositions (mental toughness scores: 31,25 vs. 34,84, 33,81, 34,11, and 33,79, respectively).

This indicates that first-year students enduring poorer academic performances during their initial sessions exhibit diminished mental resilience compared to those achieving satisfactory or better grade profiles.

Nonetheless, the interaction term between the dual categorical factors — admission strategy and first-exam session outcomes — failed to achieve statistical significance ($p > 0{,}05$), suggesting no discernible interplay between these variables influencing mental toughness.

Discussion

Based on our descriptive analysis, approximately 57,9% of first-year students enrolled in Russian universities exhibit an intermediate level of mental toughness — a key trait essential for navigating the multifaceted challenges characteristic of higher education environments, including interpersonal interactions with peers and instructors. Moreover, roughly 20,3% of freshmen demonstrate advanced or exemplary levels of mental toughness, which translates into superior emotional control and behavior regulation throughout routine activities and academic tasks, particularly under stressful circumstances. Numerous studies have consistently shown that increased mental toughness reduces the risk of maladaptive behaviors, such as academic failure, especially during pivotal transitions like university enrollment (St Clair-Thompson & London, 2024; Meggs & Sewell, 2022; St Clair-Thompson et al., 2017; Mattanah et al., 2004).

However, a considerable segment (approximately 21,8%) of first-year students exhibits low or severely impaired mental toughness. These deficiencies hinder effective coping strategies, undermine self-confidence, amplify vulnerability to external pressures, and elevate conflict frequencies with fellow students and teaching staff. Ultimately, these weaknesses enhance the probability of course failures and early dismissals (St Clair-Thompson & Devine, 2023; St Clair-Thompson et al., 2017; Crust et al., 2014). Thus, this subset constitutes a priority target for university-sponsored psychological interventions aiming to alleviate academic distress and boost retention rates (Basyuk, Malykh, Tikhomirova, 2022).

These empirical observations align well with international comparative stud-

ies employing established tools such as the "Mental Toughness Questionnaire" (MTQ48; Perry et al., 2023; Denovan et al., 2021; Dagnall et al., 2019; Clough et al., 2002). Importantly, our investigation identifies a notable sex difference favoring male students, who generally attain higher overall mental toughness scores. Although statistical tests affirm this distinction, the overlap in raw test scores warrants cautious interpretation of absolute differences (St Clair-Thompson et al., 2017; Andrews & Chen, 2014; Crust et al., 2014). Intriguingly, societal norms governing gender expression might account for women's inclination toward open emotional disclosure, which could obscure underlying struggles experienced by men (Hartanto et al., 2025; Yarayan et al., 2024).

Expanding our inquiry through ANOVA methodologies further elucidates divergent patterns in mental toughness across different university admission pathways. Distinct clusters emerge, wherein students admitted via combined standardized national exams complemented by supplementary institutional assessments (Unified State Exam + Additional Entrance Exam, USE + AEE) evince significantly higher levels of resilience compared to their counterparts selected exclusively through secondary school Olympiad competitions. This finding lends credence to prior hypotheses suggesting that rigorous selection procedures entail prolonged preparation periods, continuous exertion, and adaptation to chronic stressors (Tikhomirova et al., 2024). Nevertheless, despite similarities in drawing upon personal psychological resources, Olympiad participants confront unique stresses arising from protracted high-pressure experiences extending far beyond their formative schooling years. Prolonged exposure to demanding conditions depletes adaptive capabilities, thereby jeopardizing successful academic adjustments and precipitating disproportionately higher instances of early academic difficulties (Du, Wang, & Zhou, 2023; Crust et al., 2014).

Finally, ANOVA models reinforce associations between mental toughness profiles and immediate academic outcomes. Robust correlations materialize between inferior exam results and attenuated resilience metrics. Particularly striking is the reduction in mental toughness among students accruing persistent academic deficits immediately following their initial assessment rounds. Progressive deterioration in mental toughness mirrors declining grade point averages, mirroring previous reports documenting analogous tendencies across diverse demographic segments (St Clair-Thompson & Devine, 2023; Du, Wang, & Zhou, 2023; St Clair-Thompson et al., 2017).

Collectively, these findings illuminate explicit linkages between mental toughness, university admission modalities, and proximal academic performance indicators. Ongoing research initiatives aim to deepen understanding of causal mechanisms and investigate intricate interrelationships impacting mental toughness trajectories among emerging Russian academics.

Conclusion

In this study, we explored mental toughness — the ability to manage emotions effectively, maintain goal-directed

behavior regardless of external circumstances, address life's challenges constructively, and recover promptly from setbacks — on a large-scale sample of first-year university students in the Russian Federation for the first time.

Key Findings and Conclusions:

• **Variability**: The spectrum of mental toughness scores among first-year students ranges widely, spanning from the minimum possible test value to its maximum equivalent. Approximately 5,2% and 16,6% of respondents fell into categories corresponding to very low and low levels of mental toughness, respectively. These deficient levels translate into reduced situational control across diverse life domains, augmented sensitivity to negative external influences, and diminished confidence in personal skills and ambitions.

• **Sexual Dimorphism**: Gender-specific differences emerged in the manifestation of mental toughness attributes. Male students tended to exhibit higher levels of resilience compared to female students, resulting in a disproportionately larger percentage of female first-year students demonstrating very low or low levels of mental toughness.

• **Impact of Admission Strategy**: Variation in mental toughness levels is detectable among first-year students contingent on their mode of university admission. However, this phenomenon pertains principally to distinctions between two particular groups: students admitted based on combined results from unified state exams (USE) plus additional entrance exams (USE + AEE) exhibited significantly higher mental toughness compared to those admitted via school Olympiad achievements.

• **Academic Performance Correlations**: A noticeable association exists between mental toughness and academic performance. First-year students who accumulate academic deficits soon after their initial examination session display markedly lower levels of mental toughness relative to their peers achieving varying grades (e.g., excellent, good, or satisfactory).

Importantly, this study serves practical purposes by establishing reference thresholds for mental toughness levels tailored to Russian students, thereby increasing the applicability of the abbreviated version of the *Mental Toughness Questionnaire* (*MTQ*) within university counseling services.

Future research should include longitudinal monitoring across the duration of university education — or at least repeated measurements — to clarify causal relationships linking mental toughness, university admission approaches, and academic outcomes among Russian students.

Limitations. Access to complete datasets remains limited due to the ongoing collection phase of a nationwide survey targeting first-year students.

Список источников / References

1. Басюк, В.С., Малых, С.Б., Тихомирова, Т.Н. (2022). Федеральная сеть психологических служб образовательных организаций высшего образования: концепция, приоритеты и ресурсы развития. *Психологическая наука и образование*, *27*(6), 4–18. https://doi.org/10.17759/pse.2022270601
Basyuk, V.S., Malykh, S.B., Tikhomirova, T.N. (2022). Federal Network of Psychological Services of Educational Institutions of Higher Education: Concept, Priorities and Development Resources. *Psychological Science and Education*,

27(6), 4–18. (In Russ.). https://doi.org/10.17759/pse.2022270601

2. Жожикашвили, Н.А., Малых, А.С., Девятерикова, А.А. (2021). Психическая устойчивость. *Теоретическая и экспериментальная психология*, *14*(4), 49–65. https://doi.org/10.24412/2073-0861-2021-4-49-65
   Zhozhikashvili, N.A., Malykh, A.S., Devyaterikova, A.A. (2021). Mental Toughness. *Theoretical and Experimental Psychology*, *14*(4), 49–65. (In Russ.). https://doi.org/10.24412/2073-0861-2021-4-49-65
3. Лебедева, А.А., Леонтьев, Д.А. (2022). Современные подходы к изучению качества жизни: от объективных контекстов к субъективным. Социальная психология и общество, 13(4), 142–162. DOI:10.17759/sps.2022130409
   Lebedeva, A.A., Leont'ev, D.A. (2022). Modern approaches to studying quality of life: from objective contexts to subjective ones. *Social Psychology and Society, 13*(4), 142–162. (In Russ.).
4. Махнач, А.В. (2022). *Жизнеспособность человека и семьи. Социально-психологическая парадигма*. Litres.
   Makhnach, A.V. (2022). *Human and Family Viability. Socio-Psychological Paradigm*. Litres. (In Russ.).
5. Осин, Е.Н., Рассказова, Е.И. (2013). Краткая версия теста жизнестойкости: психометрические характеристики и применение в организационном контексте. *Вестник Московского университета. Серия 14. Психология*, (2), 147–165.
   Osin, E.N., Rasskazova, E.I. (2013). Short version of the Hardiness Test: Psychometric characteristics and application in an organizational context. *Moscow University Bulletin. Series 14. Psychology*, (2), 147–165. (In Russ.).
6. Тихомирова, Т.Н., Басюк, В.С., Исматуллина, В.И., Зинченко, Е.В., Матяш, Н.В., Овсянникова, О.А., Пилипенко, С.А., Поникарова, И.Д., Сахарова, Т.Н., Случ, Н.А., Малых, С.Б. (2024). Психологическое благополучие и образовательные результаты студентов с различными стратегиями поступления в вуз. *Психологическая наука и образование*, *29*(6), 35–53. https://doi.org/10.17759/pse.2024290603
   Tikhomirova, T.N., Basyuk, V.S., Ismatullina, V.I., Zinchenko, E.V., Matyash, N.V., Ovsyannikova, O.A., Pilipenko, S.A., Ponikarova, I.D., Sakharova, T.N., Sluch, N.A., Malykh, S.B. (2024). Well-Being and Educational Outcomes Among Student with Different University Admission Strategies. *Psychological Science and Education*, *29*(6), 35–53. (In Russ.). https://doi.org/10.17759/pse.2024290603
7. Clough, P.J., Earle, K., Sewell, D. (2002). Mental Toughness: The Concept and Its Measurement. In I. Cockerill (Ed.), Solutions in Sport Psychology (pp. 32–46). Thomson Learning.
8. Credé, M., Niehorster, S. (2012). Adjustment to college as measured by the student adaptation to college questionnaire: A quantitative review of its structure and relationships with correlates and consequences. *Educational Psychology Review*, *24*, 133–165. https://doi.org/10.1007/s10648-011-9184-5
9. Crust, L., Earle, K., Perry, J., Earle, F., Clough, A., Clough, P.J. (2014). Mental toughness in higher education: Relationships with achievement and progression in first-year university sports students. *Personality and individual differences*, *69*, 87–91. https://doi.org/10.1016/j.paid.2014.05.016
10. Dagnall, N., Denovan, A., Papageorgiou, K.A., Clough, P.J., Parker, A., Drinkwater, K.G. (2019). Psychometric assessment of shortened Mental Toughness Questionnaires (MTQ): Factor structure of the MTQ-18 and the MTQ-10. *Frontiers in psychology*, *10*, 1933. https://doi.org/10.3389/fpsyg.2019.01933
11. Denovan, A., Dagnall, N., Artamonova, E., Papageorgiou, K.A. (2021). Dark Triad traits, learning styles, and symptoms of depression: Assessing the contribution of mental toughness longitudinally. *Learning and Individual Differences*, *91*, 102053. https://doi.org/10.1016/j.lindif.2021.102053
12. Denovan, A., Dagnall, N., Artamonova, E., Papageorgiou, K.A. (2024). Evaluation of the 10-item Mental Toughness Questionnaire (MTQ10): cross-cultural assessment and scrutiny of method effects. *Current Psychology*, *43*(40), 31254–31266. https://doi.org/10.1007/s12144-024-06562-9
13. Du, X., Wang, L., Zhou, L. (2023). Review of Young Children's Mental Toughness: Family, School, and Peer Factors. *Lecture Notes in Education Psychology and Public Media*, *16*, 181–187. https://doi.org/10.54254/2753-7048/16/20231142
14. Graves, B.S., Hall, M.E., Dias-Karch, C., Haischer, M.H., Apter, C. (2021). Gender differences in perceived stress and coping among college students. *PloS one*, *16*(8), e0255634. https://doi.org/10.1371/journal.pone.0255634
15. Hartanto, A., Darmawan, A.T.A., Sukoco, P., Marhaendro, A.S.D., Mohammad, R. (2025). Mental toughness and self-confidence of volleyball extracurricular participants: a study of gender differences. *Retos: nuevas tendencias en*

educación física, deporte y recreación, *62*, 470–479. https://recyt.fecyt.es/index.php/retos/index

16. Hsieh, Y.C., Lu, F.J., Gill, D.L., Hsu, Y.W., Wong, T.L., Kuan, G. (2024). Effects of mental toughness on athletic performance: a systematic review and meta-analysis. *International Journal of Sport and Exercise Psychology*, *22*(6), 1317–1338. https://doi.org/10.1080/1612197X.2023.2204312
17. Lin, Y., Mutz, J., Clough, P.J., Papageorgiou, K.A. (2017). Mental toughness and individual differences in learning, educational and work performance, psychological well-being, and personality: A systematic review. *Frontiers in psychology*, *8*, 1345. https://doi.org/10.3389/fpsyg.2017.01345
18. Loehr, J. (1982). *Mental toughness training for sports: Achieving athletic excellence*. Plume.
19. Mattanah, J.F., Hancock, G.R., Brand, B.L. (2004). Parental attachment, separation-individuation, and college student adjustment: A structural equation analysis of mediational effects. *Journal of counseling Psychology*, *51*(2), 213. https://doi.org/10.1037/0022-0167.51.2.213
20. Meggs, J., Sewell, P. (2022). Strategies for developing mental toughness in higher education and measuring the impact. In *Innovative approaches in pedagogy for higher education classrooms* (Vol. 42, pp. 121–135). Emerald Publishing Limited.
21. Mireku, E.K., Kissi, E., Badu, E., Aigbavboa, C.O., Kwofie, T., Eluerkeh, K. (2024). Establishing the characteristics of mental toughness among construction professionals. *Engineering, Construction and Architectural Management*. https://doi.org/10.1108/ECAM-07-2023-0751
22. Perry, J.L., Clough, P.J., Crust, L., Earle, K., Nicholls, A.R. (2013). Factorial validity of the mental toughness questionnaire-48. *Personality and individual differences*, *54*(5), 587–592. https://doi.org/10.1016/j.paid.2012.11.020
23. St Clair-Thompson, H., Devine, L. (2023). Mental toughness in higher education: Exploring the roles of flow and feedback. *Educational Psychology*, *43*(4), 326–343. https://doi.org/10.1080/01443410.2023.2205622
24. St Clair-Thompson, H., London, J. (2024). Does mental toughness predict happiness over and above resilience, self-efficacy and grit? *New Ideas in Psychology*, *74*, 101093. https://doi.org/10.1016/j.newideapsych.2024.101093
25. St Clair-Thompson, H., Giles, R., McGeown, S.P., Putwain, D., Clough, P., Perry, J. (2017). Mental toughness and transitions to high school and to undergraduate study. *Educational Psychology*, *37*(7), 792–809. https://doi.org/10.1080/01443410.2016.1184746
26. Taylor, M.E. (2024). *Mental Toughness in the Workplace*. Liberty University.
27. Turkington, G.D., Tinlin-Dixon, R., St Clair-Thompson, H. (2023). A mixed-method exploration of mental toughness, perceived stress and quality of life in mental health workers. *Journal of psychiatric and mental health nursing*, *30*(6), 1152–1169. https://doi.org/10.1111/jpm.12948
28. Yarayan, Y.E., Solmaz, S., Aslan, M., Batrakoulis, A., Al-Mhanna, S.B., Keskin, K. (2024). Sex differences in athletic performance response to the imagery and mental toughness of elite middle-and long-distance runners. *Sports*, *12*(6), 141. https://doi.org/10.3390/sports12060141

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Научная статья | Original paper

Teachers' attitudes and expectations as factors in the academic achievement of students with a migration background: a review of international studies

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Abstract

Relevance. The low educational outcomes of students with a migration background in Russia may be attributed to a number of factors, including biased attitudes and expectations of teachers. **Objective.** This study aims to summarize the findings of research on the determination of academic achievement of children with a migration background by teachers' attitudes and expectations, as well as the potential ways to influence this process. **Methods and materials.** Based on a developed model of the formation of teachers' attitudes and expectations and their impact on the outcomes of students with migration background, a selection and review of quantitative studies from the period 2010–2024 (33 articles) was conducted. **Results.** Many studies note that teachers demonstrate biased attitudes and low expectations towards children with a migration background. These attitudes are shaped by stereotypes about migrant status, race, or ethnic group and manifest in teachers' practices, primarily in grading, disciplinary actions, and recommendations on educational trajectories Attitudes and expectations of this type more often have significant negative effects and less often neutral effects on the academic performance of students with a migration background, with the nature and strength of these effects potentially depending on a number of factors, including the student's sex, ethnic group, country, and institutional context. Mitigating their negative impact can be achieved by raising teachers' awareness of the influence of stereotypes, providing guidelines for using objective assessment criteria, increasing attention to students, fostering high expectations, and introducing incentives for teachers based on the success of students with a migration background. Understanding the factors shaping academic achievement of children with migration background and the possibilities of managing this process is important for modern Russian school.

Keywords: teachers' attitudes, teachers' expectations, children with a migration background, academic performance, stereotypes

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Установки и ожидания педагогов как факторы академической успеваемости учащихся с миграционным опытом: обзор международных исследований

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Резюме

Актуальность. Низкие образовательные результаты учащихся с миграционным опытом в России могут быть обусловлены рядом факторов, включая предвзятые установки и ожидания педагогов. **Цель.** Работа направлена на обобщение результатов исследований детерминации учебных достижений детей с миграционным опытом установками и ожиданиями педагогов, а также возможностей влияния на этот процесс. **Методы и материалы.** На основе разработанной модели формирования установок и ожиданий педагогов и их воздействия на результаты учащихся с миграционным опытом проведены отбор и обзор количественных исследований за период 2010–2024 гг. (33 статьи). **Результаты.** Во многих исследованиях отмечается, что педагоги демонстрируют предвзятые установки и заниженные ожидания в отношении детей с миграционным опытом. Данные установки формируются под влиянием стереотипов о мигрантском статусе, расе или этнической группе и проявляются в деятельности педагога, прежде всего в практиках оценивания и дисциплинарного воздействия, рекомендациях по образовательным траекториям. Установки и ожидания указанного типа оказывают чаще значимый негативный, реже — нейтральный эффект на успеваемость учащихся-мигрантов, характер и сила которых могут зависеть от ряда факторов, включая пол учащегося, этническую группу, страновой и институциональный контекст. Снижение их негативного влияния может быть достигнуто через осведомление педагогов о влиянии стереотипов, рекомендации по использованию педагогами объективных критериев оценивания, повышению внимания к учащимся, формированию высоких ожиданий, стимулирующие меры педагогам, основанные на успехах учащихся с миграционным опытом. Понимание обусловленности учебных достижений детей с миграционным опытом и возможностей управляющего влияния на этот процесс важно для современной российской школы.

Ключевые слова: установки педагогов, ожидания учителей, дети с миграционным опытом, академическая успеваемость, стереотипы

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Introduction

The growing number of children with a migrant background in Russian education and their concentration in certain schools (Demintseva, 2020) in recent years have become a challenge for teachers responsible for the academic success of all students.

While early studies indicated that children with a migrant background in Russia did not differ from local children in terms of educational outcomes (OECD, 2016; Tovar Garcia, 2017), the latest nationwide study reports comparatively lower results (FIOKO, 2024), which is generally consistent with the global situation (Cortina Toro, Jimenez, Rozo Villarraga, 2024).

In most studies, insufficient proficiency in the Russian language is considered a key factor contributing to the low academic performance of students with a migrant background (Aleksandrov, Baranova, Ivanyushina, 2012; FIOKO, 2024).

For this reason, the main focus of educational policy in Russia aimed at improving the academic performance of children with a migrant background has become enhancing their proficiency in the Russian language, which aligns with global practices (Sedmak et al., 2021). Starting in 2025, responsibility for children's Russian language proficiency has been placed on migrant families, and mandatory language testing is being introduced as a prerequisite for school enrollment.

While the linguistic aspect plays a decisive role, the academic success of children with a migrant background is also influenced by other factors, including teachers' attitudes and expectations (Brophy & Good, 1974; Costa, Langher, & Pirchio, 2021; Van den Bergh et al., 2010).

Teachers' attitudes represent a psychological tendency expressed in the evaluation of a specific individual with a certain degree of favorability or unfavorability (Eagly & Chaiken, 2007, p. 598). This shapes the teacher's behavior (Fazio, 1990) and affects student outcomes (Kahveci, 2023). This construct has been extensively studied in relation to the inclusion of students with special educational needs (Lindner et al., 2023; Iskakova, Prisyazhnyuk, & Zangieva, 2023), as well as in relation to children with a migrant background (Chircop, 2022; Rokita-Ja kow et al., 2025; Kozlova, 2020; Khayrutdinova & Gromova, 2024; Wang et al., 2022). It is also closely linked to teachers' multicultural or ethnocultural competence (Klushina & Volkov, 2023).

The construct of teacher expectations began to receive significant scholarly attention following the publication of Pygmalion in the Classroom (Rosenthal & Jacobson, 1968), which confirmed hypotheses about "self-fulfilling prophecies" and the link between teachers' expectations and student outcomes. This experiment inspired further research in the field (Proctor, 1984). Teacher expectations are defined as judgments about a student's potential academic achievement, formed based on the in-

formation a teacher has about the student (Rubie-Davies, 2014).

There is a substantial body of reviews and meta-analyses on the topic of teacher expectations (Good, 2024; Rubie-Davies & Hattie, 2024; Orlov, Krushelnitskaya, & Terekhova, 2024; Abdurakhmanova, 2020), as well as reviews and empirical studies specifically focused on teacher expectations toward children with a migrant background(Pit-ten Cate & Glock, 2023; Kleen & Glock, 2018; Akifeva & Alieva, 2018), and works on acculturation expectations (Karimova et al., 2023).

However, there are fewer studies on the relationship between teachers' attitudes and expectations and the academic performance of students with a migrant background in global science in general (Costa, Langher, & Pirchio, 2021), and in Russia, with a high proportion of migrants (World Migration Report, 2024), this area remains little known to researchers and practitioners.

This publication aims to address this gap, stimulate Russian research on the topic, and provide an evidence base for implementing practices that promote positive changes in teachers' attitudes and expectations toward students with a migrant background, ultimately contributing to improved academic outcomes.

The article consists of several sections: the theoretical framework and review methodology, the review findings, and the general conclusions.

Theoretical framework, materials and methods

To select and analyze studies on the relationship between teachers' attitudes and expectations and the academic outcomes of students with a migrant background, we used the following theoretical model (see Figure 1).

It is based on leading theories that explain how teachers' attitudes and expectations influence their behavior and student outcomes:

1. The self-fulfilling prophecy model (Brophy & Good, 1974)
2. A school-based model for teacher expectations (Proctor, 1984)
3. The model of teacher attitudes and expectations affecting learning opportunities and outcomes (Denessen et al., 2022)
4. The MODE model (Fazio, 1990)
5. The theory of planned behavior (Ajzen & Fishbein, 1980)

This model not only allows for a structured analysis of the literature but also

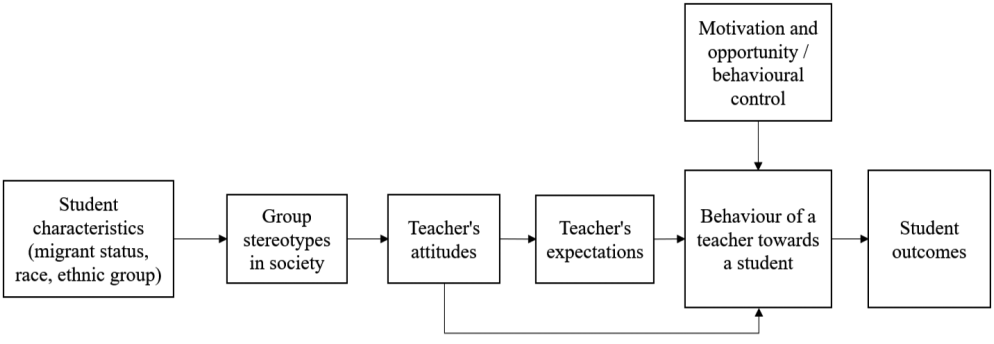

Fig. Model of formation of attitudes and expectations of a teacher and their impact on the results of a migrant student

highlights the key stages of the process under consideration, which is important for identifying potential points of influence through professional development and school leadership practices.

Compliance with the proposed model served as the primary selection criterion. Additional criteria included: journal quartile (Q1/Q2), language of publication (Russian or English), publication format (article), publication period (2010–2024), research subject (school education, pre-service or in-service teachers), open access to the full text, and use of quantitative research methods. The search for academic sources was conducted using keywords — constructs and their synonyms embedded in our model — on the following platforms: Google Scholar, ERIC, JSTOR, and Dimensions.

Results

A total of 33 articles were selected and analyzed. The publications represent eight countries with varying migration contexts and school education systems. Most frequently, the studies were conducted in Germany (18) and the United States (6), which can be explained by the high proportion of migrants in these countries (World Migration Report, 2024). The majority of the studies on the topic were published in the journal *Social Psychology of Education* (8 articles), with a number of leading authors and researchers clearly standing out. The most studied element of the model appears to be the activities of teachers through the objectivity of assessing children with a migrant background.

Formation of attitudes and expectations: the role of stereotypes

A key factor determining the formation of teachers' attitudes and expectations is the presence of group-based stereotypes about ethnic minorities, race, or migrants. Teachers are more likely to assimilate information that aligns with existing stereotypes about certain national or ethnic groups than information that contradicts them (Glock & Krolak-Schwerdt, 2013). Stereotypes are also activated by non-native accents in students, which influence teachers' expectations even when other factors are controlled (Lorenz et al., 2023). The effects of stereotypes, however, vary depending on the ethnic group involved (Froehlich et al., 2016).

Stereotypical attitudes tend to form the basis for predicting students' academic performance. Teachers tend to extrapolate stereotypes onto their expectations of students with a migration background (Dandy et al., 2015; Lorenz, 2021; Okura, 2022). For example, generalised perceptions of the "coldness" or "average competence" of certain ethnic groups influenced teachers' expectations (Neuenschwander, Garrote, 2024). Conversely, teachers' expectations regarding academic performance were fairly accurate for students with a migration background, but overestimated for students without a migration background (Tobisch, Dresel, 2017). In the United States, positive stereotypes about Asian students led to positive attitudes and high expectations among teachers (Okura, 2022).

The impact of teachers' attitudes and expectations

Teachers and pre-service teachers generally demonstrate negative implicit attitudes toward ethnic minorities (Costa, Langher, & Pirchio, 2021). Negative implicit attitudes and low expectations toward ethnic minority students not only lower these students' academic performance, but also indirectly enhance the achievement of students from majority groups, thereby widening the intergroup academic gap (Van den Bergh et al., 2010). The influence of

teacher expectations on the academic performance of students, especially girls, from ethnic minorities is higher than on the results of students from the ethnic majority (Jamil, Larsen, Hamre, 2018). However, such effects are ambiguous: sometimes students' ethnic characteristics do not moderate teachers' expectations (De Boer, Bosker, & Van Der Werf, 2010). (De Boer, Bosker, Van Der Werf, 2010). This aligns with the findings of Peterson et al. (2016), where after controlling for prior academic achievement explicit teacher expectations did not explain the ethnic achievement gap between European and Asian students, although implicit biases did show an effect. The negative impact of low expectations on the academic outcomes of children with a migrant background was confirmed by Neuenschwander et al. (2021), but not found in Lorenz's (2021) study. A positive relationship between high expectations and academic achievement among Asian students was demonstrated in Okura's (2022) research. In schools with a high concentration of students with a migrant background, teacher expectations had an indirect effect on academic outcomes through the phenomenon of *academic futility* (Agirdag, Van Avermaet, & Van Houtte, 2013).

Bias in teachers' behavior

A key link in the chain of influence of attitudes and expectations on the academic outcomes of students is the behavioral component, primarily the objectivity of assessment. Teachers tend to give lower grades to students with a migrant background even when their abilities are comparable to those of students without such a background (Van den Bergh et al., 2010; Triventi, 2020). Essays attributed to Turkish names received lower scores than similar essays with German names (Sprietsma, 2012). Trainee teachers systematically underrated the work of children with a migrant background, especially when their prior academic performance was low (Bonefeld, Dickhäuser, 2018; Bonefeld, Dickhäuser, Karst, 2020). This tendency toward negative bias in evaluating the work of students with a migrant background is supported by several other studies as well (Holder, Kessels, 2017; Peter, Karst, Bonefeld, 2024; Vieluf, Sauerwein, 2018). Moreover, assessment bias is exacerbated not only by teachers' negative attitudes but also by attributing academic failures of students with a migrant background to their personal abilities (Glock, Kleen, 2023). Even when teachers did not show bias in grading the correctness of a particular student's answer, such bias appeared in the assessment of mathematical abilities (Copur-Gencturk et al., 2020). However, in some cases, examples of hypercompensation have been observed, such as inflated grades caused either by fear of appearing biased (Kleen, Glock, 2018) or by positive stereotypical attitudes of teachers toward certain races (Okura, 2022).

Underestimation of the potential of children with a migrant background by teachers can determine bias in recommendations regarding academic tracking, thereby limiting their upward mobility (Nishen et al., 2023), although teacher bias in tracking recommendations is not always observed (Nishen, Kessels, 2024). Furthermore, teachers' racial attitudes correlate with disciplinary practices: students of African (Chin et al., 2020; Owens, 2022) and Latino (Owens, 2022) origin are more frequently subject to disciplinary measures than white students for comparable infractions.

Mechanisms for controlling the behavior of teachers

Reducing the impact of teachers' stereotypical attitudes and expectations on

student learning and outcomes can be achieved through targeted interventions. For instance, a program raising teachers' awareness about stereotypes and discrimination and providing strategies to form fairer expectations regardless of students' ethnic status helped neutralize the effect of migration background on teachers' expectations in a test group (Neuenschwander et al., 2021). Using objective grading criteria, such as error tables, reduced the influence of teachers' implicit associations (stereotypes) on the assessment of students with a migrant background (Peter, Karst, Bonefeld, 2024). Similarly, practices aimed at increasing teachers' attention to students with a migrant background (Karst, Bonefeld, 2020) partially reduced bias, though they could decrease the accuracy of grading. At the same time, traditional incentive payments for teachers based on average class performance exacerbated inequalities between African American students and those from the dominant racial group (Hill, Jones, 2021), so it may be more appropriate to incentivise teachers for the progress of students with a migrant background. Providing cultural matching between teachers and students, i.e., recruiting teachers with a migrant background into schools has contradictory effects (Neugebauer, Klein, Jacob, 2022).

Conclusion

The conducted analysis shows that biased negative attitudes and expectations of teachers, based on stereotypes related to race, ethnic group, or migration background, affect the academic performance of students with a migrant background: often with a significant negative effect, and rarely neutral or positive. These teacher attitudes and expectations may manifest in their practices toward students with a migrant background, primarily in assessment, disciplinary measures, and recommendations regarding learning trajectories.

The nature and strength of these effects may vary depending on the student's ethnic group and gender, as well as the institutional and national sociocultural contexts. Thus, teacher bias toward students with a migrant background contributes to the formation of educational inequality.

Reducing the influence of these attitudes and expectations can be achieved through targeted interventions such as raising teachers' awareness of stereotype effects, recommending the use of objective assessment criteria, increasing attention to students, fostering high expectations, and incentive payments linked to improvements in the academic outcomes of students with a migrant background.

Measures to adjust teachers' attitudes and expectations toward students with a migrant background have the potential to enhance these students' academic achievements. Understanding the determinants of academic success through teacher attitudes and expectations, as well as the possibility of managerial influence over this process, is particularly important for the contemporary Russian school, which faces the challenge of ensuring educational success for all students amid growing diversity.

Limitations of this study include, first, selective coverage of publications, and second, consideration of only one predictor of teachers' attitudes and expectations — stereotypes.

Scientific and practical interest lies in studying additional factors shaping teachers' attitudes and expectations toward children with a migrant background that can refine and complement the proposed model: state migration policy (Finch, Hern ndez Finch, Avery, 2021), mass media (Omelchenko, 2021), school climate (including professional community attitudes)

(Ulbricht et al., 2022), parents' attitudes and expectations toward students with a migrant background(Kast, Schwab, 2020), and teacher training practices (Akcaoğlu, Arsal, 2022). A central research question for future studies is the empirical examination of the effect that teachers' attitudes and expectations have on the academic outcomes of children with a migrant background in the Russian educational context.

Список источников / References

1. Абдурахманова, Э.М. (2020). Учительские ожидания и академические достижения учащихся: обзор зарубежных исследований. *Отечественная и зарубежная педагогика*, *1*(4 (69)), 75–87.
Abdurakhmanova, E.M. (2020). Teacher expectations and students' academic achievements: a review of foreign studies. *National and Foreign Pedagogy, 1*(4 (69)), 75–87. (In Russ.).
2. Александров, Д.А., Баранова, В.В., Иванюшина, В.А. (2012). Дети и родители-мигранты во взаимодействии с российской школой. *Вопросы образования*, (1), 176–199.
Alexandrov, D.A., Baranova, V.V., Ivanyushina, V.A. (2012). Migrant children and parents in interaction with Russian school. *Voprosy obrazovaniya / Educational Studies*, (1), 176–199. (In Russ.).
3. Деминцева, Е.Б. (2020). Дети мигрантов в школах Томска и Иркутска: проблемы адаптации и меры включения в школьное пространство. *Журнал исследований социальной политики, 18*(4), 673–688. https://doi.org/10.17323/727-0634-2020-18-4-673-688
Demintseva, E.B. (2020). Migrant children in schools in Tomsk and Irkutsk: problems of adaptation and measures of inclusion in school space. *Journal of Social Policy Research*, *18*(4), 673–688. (In Russ.). https://doi.org/10.17323/727-0634-2020-18-4-673-688
4. Искакова, Б.С., Присяжнюк, Д.И., Зангиева, И.К. (2023). Установки родителей и учителей к инклюзивному образованию в России и Казахстане: сравнительный анализ. *Мир России. Социология. Этнология*, *32*(2), 30–51. https://doi.org/10.17323/1811-038X-2023-32-2-30-51
Iskakova, B.S., Prisyazhnyuk, D.I., Zangieva, I.K. (2023). Parents' and teachers' attitudes to inclusive education in Russia and Kazakhstan: a comparative analysis. *Mir Rossii. Sociology. Ethnology, 32*(2), 30–51. (In Russ.). https://doi.org/10.17323/1811-038X-2023-32-2-30-51
5. Каримова, В.Г., Минюрова, С.А., Валиев, Р.А., Петрова, Г.М. (2023). Связь эмоциональной зрелости с аккультурационными ожиданиями педагога как фактор готовности к взаимодействию с субъектами образовательных отношений в поликультурной среде. *Педагогическое образование в России*, (4), 124–133.
Karimova, V.G., Minyurova, S.A., Valiev, R.A., Petrova, G.M. (2023). Connection of emotional maturity with acculturation expectations of a teacher as a factor of readiness to interact with the subjects of educational relations in a multicultural environment. *Pedagogical Education in Russia*, (4), 124–133. (In Russ.).
6. Клушина, Н.П., Волков, А.А. (2023). Формирование этнокультурной компетенции в педагогической деятельности: социокультурный аспект исследования. *Научный альманах стран Причерноморья, 9*(2), 19–25.
Klushina, N.P., Volkov, A.A. (2023). The formation of ethnocultural competence in pedagogical activity: the sociocultural aspect of research. *Scientific Almanac of the Black Sea Region Countries , 9*(2), 19–25. (In Russ.).
7. Козлова, М.А. (2020). Образовательная инклюзия детей мигрантов в идеологических установках школьных учителей. *Вестник государственного университета Дубна. Серия: Науки о человеке и обществе*, (4), 3–17. https://doi.org/10.37005/2687-0231-2020-0-12-3-17
Kozlova, M.A. (2020). Educational inclusion of migrant children in ideological attitudes of school teachers. *Vestnik of Dubna State University. Series: Sciences of Man and Society*, (4), 3–17. (In Russ.). https://doi.org/10.37005/2687-0231-2020-0-12-3-17
8. Омельченко, Е.А. (2021). Проблема адаптации детей иноэтничных мигрантов: негативный дискурс в интернете. *Вестник антропологии*, 269–282. https://doi.org/10.33876/2311-0546/2021-4/269-282
Omelchenko, E.A. (2021). The problem of adaptation of children of foreign-ethnic migrants: negative discourse on the Internet. *Anthropology Bulletin*, 269–282. (In Russ.). https://doi.org/10.33876/2311-0546/2021-4/269-282
9. Орлов, В.А., Крушельницкая, О.Б., Терехова, Е.С. (2024). Ролевые ожидания в системе взаимодействия субъектов образовательного процесса. *Современная*

зарубежная психология, *13*(3), 93–101. https://doi.org/10.17759/jmfp.2024130309
Orlov, V.A., Krushel'nickaya, O.B., Terekhova, E.S. (2024). Role expectations in the system of interaction between participants in the educational process. *Modern foreign psychology, 13*(3), 93–101. (In Russ.). https://doi.org/10.17759/jmfp.2024130309

10. ФИОКО (2024). *Результаты общероссийской оценки по модели международных исследований качества образования — 2023: Часть 1*. ФГБУ ФИОКО.
FIOCO (2024). *Results of the All-Russian assessment based on the model of international studies of education quality — 2023: Part 1*. FGBU FIOKO. (In Russ).
11. Хайрутдинова, Р.Р., Громова, Ч.Р. (2024). Дети мигрантов в российской школе: установки и практики учителей. *Образование и саморазвитие, 19*(4), 242–257.
Khairutdinova, R.R., Gromova, Ch.R. (2024). Migrant children in Russian schools: teachers' attitudes and practices. *Education and Self-Development, 19*(4), 242–257. (In Russ.).
12. Agirdag, O., Van Avermaet, P., Van Houtte, M. (2013). School segregation and math achievement: A mixed-method study on the role of self-fulfilling prophecies. *Teachers College Record, 115*(3), 1–50. https://doi.org/10.1177/016146811311500305
13. Ajzen, I., Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior*. Englewood-Cliff, NJ: Prentice-Hall.
14. Akcaoğlu, M.Ö., Arsal, Z. (2022). The effect of multicultural education on preservice teachers' attitude and efficacy: Testing bank's content integration dimension. *Participatory Educational Research*, *9*(2), 343–357. https://doi.org/10.17275/per.22.44.9.2
15. Akifeva, R., Alieva, A. (2018). The influence of student ethnicity on teacher expectations and teacher perceptions of warmth and competence. *Psychology in Russia: State of the art, 11*(1), 106–124. https://doi.org/10.11621/pir.2018.0109
16. Bonefeld, M., Dickhäuser, O. (2018). (Biased) grading of students' performance: Students' names, performance level, and implicit attitudes. *Frontiers in psychology, 9*, 481. https://doi.org/10.3389/fpsyg.2018.00481
17. Bonefeld, M., Dickhäuser, O., Karst, K. (2019). Do preservice teachers' judgments and judgment accuracy depend on students' characteristics? The effect of gender and immigration background. *Social Psychology of Education, 23*(1), 189–216. https://doi.org/10.1007/s11218-019-09533-2
18. Brophy, J.E., Good, T.L. (1974). *Teacher-student relationships: Causes and consequences*. Holt, Rinehart, Winston.
19. Chin, M.J., Quinn, D.M., Dhaliwal, T.K., Lovison, V.S. (2020). Bias in the air: A nationwide exploration of teachers' implicit racial attitudes, aggregate bias, and student outcomes. *Educational Researcher, 49*(8), 566–578. https://doi.org/10.3102/0013189X20937240
20. Chircop, L. (2022). "Until they fit in." Maltese educators' practices and attitudes towards migrant students in middle and secondary schools. *Journal for Multicultural Education, 16*(2), 148–158. https://doi.org/10.1108/JME-04-2021-0042
21. Copur-Gencturk, Y., Cimpian, J.R., Lubienski, S.T., Thacker, I. (2020). Teachers' Bias Against the Mathematical Ability of Female, Black, and Hispanic Students. *Educational Researcher*, *49*(1), 30–43. http://www.jstor.org/stable/45280852
22. Cortina Toro, M., Jimenez, J.M., Rozo Villarraga, S.V. (2024). Little Nomads: Economic and Social Impacts of Migration on Children. Washington, D.C.: World Bank Group. https://doi.org/10.1596/1813-9450-10686
23. Costa, S., Langher, V., Pirchio, S. (2021). Teachers' implicit attitudes toward ethnic minority students: A systematic review. *Frontiers in Psychology, 12*, 712356. https://doi.org/10.3389/fpsyg.2021.712356
24. Dandy, J., Durkin, K., Barber, B.L., Houghton, S. (2015). Academic expectations of Australian students from Aboriginal, Asian and Anglo backgrounds: Perspectives of teachers, trainee-teachers and students. *International Journal of Disability, Development and Education, 62*(1), 60–82. https://doi.org/10.1080/1034912X.2014.984591
25. De Boer, H., Bosker, R.J., Van Der Werf, M.P. (2010). Sustainability of teacher expectation bias effects on long-term student performance. *Journal of Educational Psychology, 102*(1), 168. https://doi.org/10.1037/a0017289
26. Denessen, E., Hornstra, L., van den Bergh, L., Bijlstra, G. (2022). Implicit measures of teachers' attitudes and stereotypes, and their effects on teacher practice and student outcomes: A review. *Learning and Instruction, 78*, 101437. https://doi.org/10.1016/j.learninstruc.2020.101437
27. Eagly, A.H., Chaiken, S. (2007). The Advantages of an Inclusive Definition of Attitude. *Social Cognition, 25*(5), 582–602. https://doi.org/10.1521/soco.2007.25.5.582
28. Fazio, R.H. (1990). *Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework*. In: M.P. Zanna (Ed.), Advances in experimental social psychology

(Vol. 23, pp. 75–109). New York: Academic Press. https://doi.org/10.1016/S0065-2601(08)60318-4
29. Finch, H., Hernández Finch, M.E., Avery, B. (2021). The impact of national and school contextual factors on the academic performance of immigrant students. *Frontiers in Education, 6*, 793790. https://doi.org/10.3389/feduc.2021.793790
30. Froehlich, L., Martiny, S.E., Deaux, K., Mok, S.Y. (2016). "It's Their Responsibility, Not Ours" Stereotypes About Competence and Causal Attributions for Immigrants' Academic Underperformance. *Social Psychology, 47*(2), 74–86. https://doi.org/10.1027/1864-9335/A000260
31. Glock, S., Kleen, H. (2023). The role of preservice teachers' implicit attitudes and causal attributions: a deeper look into students' ethnicity. *Current Psychology, 42*(10), 8125–8135. https://doi.org/10.1007/s12144-021-02000-2
32. Glock, S., Krolak-Schwerdt, S., Klapproth, F., Böhmer, M. (2013). Beyond judgment bias: How students' ethnicity and academic profile consistency influence teachers' tracking judgments. *Social Psychology of Education, 16*(4), 555–573. https://doi.org/10.1007/s11218-013-9227-5
33. Good, T.L. (2024). Reflecting on decades of teacher expectations and teacher effectiveness research: Considerations for current and future research. *Educational Psychologist, 59*(2), 111–141. https://doi.org/10.1080/00461520.2024.2324386
34. Hill, A.J., Jones, D.B. (2021). Paying for Whose Performance? Teacher Incentive Pay and the Black-White Test Score Gap. *Educational Evaluation and Policy Analysis*, *43*(3), 445–471. http://www.jstor.org/stable/45390418
35. Holder, K., Kessels, U. (2017). Gender and ethnic stereotypes in student teachers' judgments: A new look from a shifting standards perspective. *Social psychology of education, 20*, 471–490. https://doi.org/10.1007/s11218-017-9384-z
36. Jamil, F.M., Larsen, R.A., Hamre, B.K. (2018). Exploring longitudinal changes in teacher expectancy effects on children's mathematics achievement. *Journal for Research in Mathematics Education*, *49*, 57–90. https://doi.org/10.5951/jresematheduc.49.1.0057
37. Karst, K., Bonefeld, M. (2020). Judgment accuracy of pre-service teachers regarding Student performance: The influence of attention allocation. *Teaching and Teacher Education, 94*, 103099. https://doi.org/10.1016/j.tate.2020.103099
38. Kast, J., Schwab, S. (2020). Teachers' and parents' attitudes towards inclusion of pupils with a first language other than the language of instruction. *International Journal of Inclusive Education, 27*(2), 221–240. https://doi.org/10.1080/13603116.2020.1837267
39. Kleen, H., Glock, S. (2018). A further look into ethnicity: The impact of stereotypical expectations on teachers' judgments of female ethnic minority students. *Social Psychology of Education, 21*(4), 759–773. https://doi.org/10.1007/s11218-018-9451-0
40. Lindner, K.T., Schwab, S., Emara, M., Avramidis, E. (2023). Do teachers favor the inclusion of all students? A systematic review of primary schoolteachers' attitudes towards inclusive education. *European Journal of Special Needs Education, 38*(6), 766–787. https://doi.org/10.1080/08856257.2023.2172894
41. Lorenz, G. (2021). Subtle discrimination: Do stereotypes among teachers trigger bias in their expectations and widen ethnic achievement gaps? *Social Psychology of Education, 24*(2), 537–571. https://doi.org/10.1007/s11218-021-09615-0
42. Lorenz, G., Kogan, I., Gentrup, S., Kristen, C. (2023). Non-native accents among school beginners and teacher expectations for future student achievements. *Sociology of Education, 97*(1), 76–96. https://doi.org/10.1177/00380407231202978
43. Neuenschwander, M.P., Garrote, A. (2024). Biased teacher expectations of students with migration backgrounds: Analysis with nationality stereotype clusters. *Zeitschrift für Bildungsforschung*, 1–16. https://doi.org/10.1007/s35834-024-00460-7
44. Neuenschwander, M.P., Mayland, C., Niederbacher, E., Garrote, A. (2021). Modifying biased teacher expectations in mathematics and German: A teacher intervention study. *Learning and Individual Differences, 87*, 101995. https://doi.org/10.1016/j.lindif.2021.101995
45. Neugebauer, M., Klein, O., Jacob, M. (2022). Migrant teachers in the classroom: a key to reduce ethnic disadvantages in school? *International Studies in Sociology of Education, 33*(2), 203–221. https://doi.org/10.1080/09620214.2022.2132983
46. Nishen, A.K., Corcoran, K., Holder, K., Kessels, U. (2023). When ethnic minority students are judged as more suitable for the highest school track: A shifting standards experiment. *European Journal of Psychology of Education, 38*(1), 367–387. https://doi.org/10.1007/s10212-021-00595-5
47. Nishen, A.K., Kessels, U. (2024). "Failure-to-warn" when giving advice to students? No evidence for an ethnic bias among teacher students in Germany. *Social Psychology of Education*, 27(5), 2321–2341. https://doi.org/10.1007/s11218-024-09899-y
48. OECD (2016). PISA 2015 Results (Volume I): Excellence and Equity in Education, PISA. OECD Publishing, Paris. https://doi.org/10.1787/9789264266490-en. https://doi.org/10.1787/9789264266490-en

49. Okura, K. (2022). Stereotype Promise: Racialized Teacher Appraisals of Asian American Academic Achievement. *Sociology of Education*, *95*(4), 302–319. https://www.jstor.org/stable/48746118
50. Owens, J. (2022). Double Jeopardy: Teacher Biases, Racialized Organizations, and the Production of Racial/Ethnic Disparities in School Discipline. *American Sociological Review*, *87*(6), 1007–1048. https://www.jstor.org/stable/48749833
51. Peter, S., Karst, K., Bonefeld, M. (2024). Objective assessment criteria reduce the influence of judgmental bias on grading. *Frontiers in Education, 9*, 1386016. https://doi.org/10.3389/feduc.2024.1386016
52. Peterson, E.R., Rubie-Davies, C., Osborne, D., Sibley, C. (2016). Teachers' explicit expectations and implicit prejudiced attitudes to educational achievement: Relations with student achievement and the ethnic achievement gap. *Learning and Instruction, 42*, 123–140. https://doi.org/10.1016/j.learninstruc.2016.01.010
53. Pit-ten Cate, I.M., Glock, S. (2023). A Systematic Review on Teachers' Stereotypical Beliefs and Expectations: Effects of the Intersectionality of Students' Gender and Ethnicity. The Routledge International Handbook of Gender Beliefs, Stereotype Threat, and Teacher Expectations, 238–250. https://doi.org/10.4324/9781003275763-24
54. Proctor, C.P. (1984). Teacher expectations: A model for school improvement. *The Elementary School Journal, 84*(4), 469–481. https://doi.org/10.1086/461377
55. Rokita-Jaśkow, J., Nosidlak, K., Wolanin, A., Król-Gierat, W. (2025). Language teachers' attitudes to working with multilingual refugee learners: Do teacher Openness to Experience, Intercultural Sensitivity and plurilingualism matter? *Language Teaching Research, 0*(0). https://doi.org/10.1177/13621688251317902
56. Rosenthal, R., Jacobson, L. (1968). Pygmalion in the classroom. *The urban review, 3*(1), 16–20. https://doi.org/10.1007/BF02322211
57. Rubie-Davies, C. (2014). *Becoming a high expectation teacher: Raising the bar*. Routledge. https://doi.org/10.4324/9781315761251
58. Rubie-Davies, C.M., Hattie, J.A. (2024). The powerful impact of teacher expectations: a narrative review. *Journal of the Royal Society of New Zealand, 55*(2), 343–371. https://doi.org/10.1080/03036758.2024.2393296
59. Sprietsma, M. (2012). Discrimination in grading: Experimental evidence from primary school teachers. *Empirical economics, 45*, 523–538. https://doi.org/10.1007/s00181-012-0609-x
60. Sedmak, M., Hernández-Hernández, F., Sancho, J.M., Gornik, B. (2021). Migrant children's integration and education in Europe: approaches, methodologies and policies. Octaedro.
61. Tobisch, A., Dresel, M. (2017). Negatively or positively biased? Dependencies of teachers' judgments and expectations based on students' ethnic and social backgrounds. *Social Psychology of Education*, 20, 731–752. https://doi.org/10.1007/s11218-017-9392-z
62. Tovar García, E.D. (2017). Migration background and educational achievements in Russia. *Migraciones internacionales, 9*(1), 69–93.
63. Triventi, M. (2020). Are children of immigrants graded less generously by their teachers than natives, and why? Evidence from student population data in Italy. *International Migration Review, 54*(3), 765–795. https://doi.org/10.1177/0197918319878104
64. Ulbricht, J., Schachner, M.K., Civitillo, S., Noack, P. (2022) Teachers' acculturation in culturally diverse schools — How is the perceived diversity climate linked to intercultural self-efficacy? *Front. Psychol, 13*, 953068. https://doi.org/10.3389/fpsyg.2022.953068
65. Kahveci, H. (2023). The Positive and Negative Effects of Teacher Attitudes and Behaviors on Student Progress. *Journal of Pedagogical Research, 7*(1), 290–306. https://doi.org/10.33902/JPR.202319128
66. Van den Bergh, L., Denessen, E., Hornstra, L., Voeten, M., Holland, R.W. (2010). The implicit prejudiced attitudes of teachers: Relations to teacher expectations and the ethnic achievement gap. *American Educational Research Journal, 47*(2), 497–527. https://doi.org/10.3102/0002831209353594
67. Vieluf, S., Sauerwein, M.N. (2018). Does a lack of teachers' recognition of students with migration background contribute to achievement gaps? *European Educational Research Journal, 23*(1), 3–27. https://doi.org/10.1177/1474904118810939
68. Wang, J.S., Lan, J.Y.C., Khairutdinova, R.R., Gromova, C.R. (2022). Teachers' attitudes to cultural diversity: Results from a qualitative study in Russia and Taiwan. *Frontiers in Psychology, 13*, 976659. https://doi.org/10.3389/fpsyg.2022.976659
69. World Migration Report 2024 (2024). Mcauliffe M., Oucho (Eds.). Geneva: International Organisation for Migration.

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Engagement in online learning: evidence from a psychophysiological investigation

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Abstract

Context and relevance. Research utilizing computer vision methods represents a novel, promising, and highly relevant direction in education. It opens up opportunities for applying neuroscience to the development of scientifically grounded pedagogical approaches aimed at improving the quality of education. **Objective.** This study aims to determine the relationship between the visual design features of educational video content and engagement components (both cognitive and emotional). **Hypothesis.** The psychophysiological components of students' cognitive and emotional engagement during the viewing of educational video content (in the context of online learning) are positively associated with a polylogic format of material presentation in video lectures, the use of concrete examples, and the presence of questions directed by the lecturer to the audience. **Methods and materials.** During the viewing of video lectures and the completion of subsequent tasks, changes in skin electrical activity and gaze movement were recorded. Skin electrical activity was measured using the NTrend-BIO biobracelet, while gaze coordinates were tracked using the NTrend-ET500 eye tracker. Based on the collected data, standard metrics of emotional engagement, valence changes, attention, and interest were calculated using the "Neurobarometer" software package (developed by AO "Neurotrend"). **Results.** The experiment revealed a relationship between cognitive engagement and the visual design features of educational video content. Attention metrics were significantly higher among participants who watched video lectures with questions addressed directly to them. Emotional engagement metrics were significantly higher when participants completed tasks than during video viewing. Eye-tracking metrics further demonstrated that participants focused more on video sequences featuring a single lecturer or slides rather than on dialogic/polylogic formats with multiple instructors. **Conclusions.** The results obtained in the conducted study allow preliminary conclusions that engagement indicators are determined by specific features of the visual design of educational video content. These findings can be taken into account when developing an "ideal model" for online courses.

Keywords: engagement, online learning, video content, emotional engagement, cognitive engagement, computer vision methods, eye tracking, biobracelet, psychophysiological components of engagement, gaze movement, vegetative reactions

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Вовлеченность в процесс онлайн-обучения: результаты психофизиологического исследования

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Резюме

Контекст и актуальность. Исследования с использованием методов компьютерного зрения являются новым, перспективным и востребованным направлением в образовании. Они открывают возможности использования нейронаук для создания научно обоснованных педагогических разработок в контексте повышения качества образования. **Цель**. Определить связь особенностей визуального дизайна образовательного видеоконтента с компонентами вовлеченности (когнитивными и эмоциональными). **Гипотеза**. Психофизиологические составляющие когнитивной и эмоциональной вовлеченности студентов в процессе просмотра образовательного видеоконтента (в процессе онлайн-обучения) положительно связаны с полилоговой формой подачи материала в видеолекциях, использованием конкретных примеров и наличием вопросов, адресованных лектором слушателям. **Методы и материалы**. Во время просмотра видеолекций и выполнения заданий у респондентов фиксировали изменение электрической активности кожи и движения взгляда. Электрическую активность кожи регистрировали с помощью биобраслета NTrend-BIO, координаты взгляда определяли с помощью айтрекера NTrend-ET500. На основе собранных данных в ПАК «Нейробарометр» (АО «Нейротренд») рассчитывались стандартные метрики эмоциональной вовлеченности, изменения валентности, внимания и интереса. **Результаты.** В ходе эксперимента выявлено, что существует связь между когнитивной вовлеченностью и особенностями визуального дизайна образовательного видеоконтента: метрики внимания были достоверно выше у тех участников эксперимента, которые смотрели видеолекцию с вопросами, обращенными к ним. Метрики эмоциональной вовлеченности достоверно выше у участников эксперимента при выполнении заданий, чем при просмотре видео. Результаты метрик айтрекинга также демонстрируют, что респонденты выделяют (метрика внимание и интерес) видеоряды с одним лектором или слайдами, а не диалоговые/полилоговые форматы видеолекции с несколькими преподавателями. **Выводы**. Полученные в проведенном исследовании результаты позволяют сделать предварительные выводы о том, что показатели вовлеченности обусловлены конкретными особенностями визуального дизайна образовательного видеоконтента, что можно принимать во внимание при разработке «идеальной модели» онлайн-курса.

Ключевые слова: вовлеченность, онлайн-обучение, видеоконтент, эмоциональная вовлеченность, когнитивная вовлеченность, методы компьютерного зрения, айтрекинг, биобраслет, психофизиологические составляющие вовлеченности, движение взгляда, вегетативные реакции

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Introduction

Despite improvements in the quality, accessibility, and flexibility of online education, the issue of student engagement in the learning process remains highly relevant. This article presents a study aimed at examining how the visual design of educational video content influences cognitive and emotional components of student engagement in the context of online learning. We assumed that cognitive and emotional engagement are dynamic parameters influenced by various features of visual educational content design. The focus of the study was on psychophysiological aspects of students' engagement while watching educational video content. We examined the impact of multiple design variables (presentation formats and lecture organization) on engagement. As indicators of engagement, we used emotional reactions and cognitive load, measured using the NTrend-BIO biobracelet and NTrend-ET500 eye tracker.

Literature review

M. Bond and S. Bedenlier define engagement as "the energy and effort that students invest in their learning community, which can be observed at behavioral, cognitive, or affective levels." Engagement is shaped by a combination of external and internal factors, including the interplay of relationships with educational stakeholders, learning activities, and the educational environment itself. The stronger students feel engaged and inspired within their academic setting, the more likely they are to invest energy in their learning, which leads to short- and long-term learning gains that reinforce further engagement (Bond & Bedenlier, 2019).

Following Jennifer Fredricks (2004), many researchers identify three core components of engagement: behavioral, emotional, and cognitive (Fredricks, Blumenfeld, & Paris, 2004). Behavioral engagement involves participation in academic and extracurricular activities (e.g., attendance, task completion), emotional engagement refers to students' emotional reactions toward the content and learning environment, as well as their sense of belonging, while cognitive engagement includes effort toward understanding material, self-regulated learning, and problem-solving strategies. There is no single consensus in the academic com-

munity regarding the exact categorization of these components. For example, “effort and persistence” may be classified as either cognitive or behavioral engagement (Bond et al., 2020). Nonetheless, researchers agree that engagement is a multidimensional construct with dynamically interconnected elements.

Researchers have developed a variety of indicators for each component of engagement (Fredricks & McColskey, 2018; Bond & Bedenlier, 2019). The divergence in these indicators stems from different conceptual and methodological approaches. J. Symonds and colleagues introduced the concept of “momentary engagement,” described as a localized, embodied, affective-motivational experience of integrated mental and physical activity during task execution. This type of engagement occurs during specific, discrete time periods and reflects a rapid dynamic system of emotional, motivational, cognitive, and physical interaction (Symonds et al., 2019). Other studies examine engagement at an institutional level or in relation to specific course structures and formats (e.g., blended learning) and their influence on student engagement (Fredricks, 2022).

Engagement in online learning: measurement and indicators

Given the increasing prevalence of online elements in higher education, the task of measuring engagement in online learning environments has become essential (Bond et al., 2020). Most studies use a three-component (or extended) engagement model to guide indicator selection and measurement techniques (Booth, Bosch, & D’Mello, 2023).

Engagement management in hybrid, blended, and fully online formats is a major focus. Traditionally, three types of interaction are distinguished in online settings: student-content (S–C), student-teacher (S–T), and student-student (S–S) (Moore, 1989). In blended and online learning, the teacher plays a key role in structuring the course and selecting educational activities. Active interaction with students and effective feedback — whether online or offline — are critical to fostering engagement (Buhl-Wiggers, Kjærgaard, & Munk, 2023).

In asynchronous online learning, student-content interaction becomes the primary driver of engagement. This interaction results in digital traces, which are commonly used as behavioral engagement indicators (Dewan, Murshed, & Lin, 2019).

Asynchronous, individualized online education differs significantly from traditional classroom instruction or blended learning. Here, interaction with peers and instructors is mediated through digital tools. The online environment becomes a complex construct where multiple variables — video quality, course design, platform management — can influence engagement. Empirical studies have examined which video design features are most effective in supporting learning (Noetel et al., 2021). Among the most influential are Richard Mayer’s evidence-based principles: segmenting long videos, varying camera perspectives, minimizing extraneous media and background music, and dynamically drawing on-screen rather than pointing at static content (Mayer, 2021).

Eye-tracking in the study of emotional and cognitive processes

In recent years, there has been a growing trend in research (across educa-

tion, psychology, cognitive neuroscience, and neuropsychology) toward using eye-tracking metrics to investigate higher-order cognitive functions and emotional states of students (Skaramagkas et al., 2021). Studies have shown that eye and pupil movements — including gaze, fixation, saccades, blinking, and pupil diameter — are reliable indicators of emotional arousal and cognitive load.

S. Aslan and colleagues used eye trackers to analyze student engagement while viewing educational video content and proposed engagement classifications based on behavior in real learning settings (Aslan et al., 2014). L.B. Krithika and P.G.G. Lakshmi applied fixation and head movement metrics to assess students' emotional states during e-learning sessions (Krithika & Lakshmi, 2016). Raina et al. proposed a model for enhancing student engagement in online learning through eye movement analysis, showing that segmented modules resulted in broader content coverage and reduced skipping compared to linear ones (Raina et al., 2016).

Multimodal studies use various physiological signals to recognize learners' cognitive and emotional states (Buscher, Dengel, & Elst, 2008; Sharma et al., 2019). Tasks in such studies typically involve viewing images or videos designed to elicit emotional responses (Tarnowski et al., 2020). Researchers often focus on one primary metric, treating others as secondary. For example, C. Wu and colleagues found that pupil diameter changes with task difficulty (Wu et al., 2019). M. Pomplun and S. Sunkara confirmed a correlation between pupil size and task complexity, noting that average pupil diameter reflects cognitive load (Pomplun & Sunkara, 2003). Similarly, the standard deviation of pupil diameter increases under high cognitive load (Prabhakar et al., 2020). T. Zu et al. found that the frequency of pupil size changes was most sensitive to excessive external load (Zu et al., 2018).

Despite their advantages, eye trackers present challenges — especially during calibration. They can be inaccurate when tracking fine eye movements (Holmqvist & Blignaut, 2020), require multiple calibration sessions, and may be less effective for participants wearing glasses or with visual impairments (Raina et al., 2016). Furthermore, requiring users to remain physically still during testing can restrict natural behavior and complicate data collection.

In Russia, the use of computer vision methods to study student engagement is still emerging (Kasatkina et al., 2020). Most domestic research has relied on traditional survey-based methods such as psychodiagnostic tools (Klimenskikh et al., 2019), questionnaires (Gritsova & Tissen, 2021), and interviews (Barannikov et al., 2023). Nevertheless, there is an ongoing discussion in Russia about the importance of developing intelligent video analysis systems and machine learning applications in education, particularly in light of the sector's digital transformation over the past five years (Uvarov, 2018).

This study contributes to the discussion by using instrumental diagnostics — specifically, the NTrend-BIO biobracelet and the NTrend-ET500 eye tracker — to investigate cognitive and emotional engagement when viewing educational content. Our work also aligns with the emerging field of neuromarketing in education, which seeks to optimize learning based on physiological and neurological feedback.

Methodology

To achieve the research objective, an experiment was conducted to record changes in the psychophysiological responses of participants while watching video lectures from two massive open online courses (MOOCs) hosted on the Stepik platform (asynchronous online learning). Courses were selected based on three criteria: (1) number of enrolled learners, (2) user ratings, and (3) format of content delivery. The course “Critical Thinking” had 31,518 learners and received a high rating of 4,5 out of 5; the course “Entrepreneurial Activity Management” had 3,439 learners and a lower rating of 3,7 out of 5.

The “Critical Thinking” course included dialogues between multiple speakers, while the “Entrepreneurial Activity Management” course used a more traditional format, where a single lecturer presented content alongside on-screen keywords, diagrams, and illustrations.

Participants were asked to watch the first module of one of the courses and complete the associated tasks. Video playback speed could not be altered. The total duration of the “Critical Thinking” videos was 25 minutes, and for the “Entrepreneurial Activity Management” course — 34,5 minutes.

Twenty participants aged 19–36 took part in the study: 10 watched videos from “Critical Thinking” (M = 24,5 years, 5 women) and 10 watched “Entrepreneurial Activity Management” (M = 24,5 years, 7 women).

During video viewing and task completion, participants’ skin electrical activity and eye movements were recorded. Skin activity was measured using the NTrend-BIO biobracelet, and gaze coordinates were tracked with the NTrend-ET500 eye tracker. Based on this data, the Neurobarometer software (developed by AO Neurotrend) calculated standard metrics of emotional engagement, valence changes, attention, and interest. Emotional engagement was defined as the amplitude and polarity shifts of emotions in response to a stimulus. Attention was interpreted as focused visual interest that prompts cognitive processing, based on long fixations on video elements, and included both sensory and cognitive attention. Interest was operationalized as selective visual focus on meaningful details that indicate a desire to acquire new knowledge (Koroleva & Luzhin, 2019; Latanov et al., 2019).

Video metrics were compared to a database of prior promotional videos processed by AO Neurotrend. Success was determined by the quintile placement of video metrics relative to this database distribution.

Eye-tracking data were also used to assess the visibility (number of participants who fixated on an object) and attention share (average fixation duration on branded elements relative to their on-screen time).

Changes in attention, emotional engagement, and valence were analyzed using time-series visualizations. The Neurobarometer system automatically computed indicators for emotional engagement, attention, and interest.

To test the hypotheses, 15-second video segments were selected that either included or excluded specific engagement-inducing techniques (dialogue, use of examples, direct questions). For each participant, mean scores of emotional en-

gagement, attention, and interest were calculated for the selected segments.

Statistical analyses were conducted in R Studio version 1.3.959 (R Core Team, 2022). Normality was assessed using the Shapiro–Wilk test, and homogeneity of variances with the Fisher F-test. Outliers exceeding two standard deviations were replaced with the mean.

Depending on data distribution and variance equality, either parametric Student's t-tests or non-parametric Mann–Whitney tests were used. Incomplete or artifact-containing data were excluded. Normally distributed data are reported as means and standard deviations; non-normal data are reported as medians and interquartile ranges.

A Bonferroni correction was applied to account for multiple hypothesis testing.

Three primary hypotheses were tested:

1. Dialogues or polylogues are more engaging than monologues (i.e., associated with higher emotional engagement, interest, and attention).

2. Use of concrete examples by the lecturer enhances engagement compared to abstract explanations.

3. Questions directed at students during or after the video increase engagement.

Results

To test the first hypothesis, data from the "Critical Thinking" course (N = 10) were analyzed. This course featured both monologic and dialogic/polylogic segments. Student engagement was assessed by comparing metrics within the same group of participants across different lecture formats. Therefore, a paired Student's t-test was applied (see Table 1), with Bonferroni correction.

Attention and interest metrics significantly differed between video fragments featuring a single lecturer and those with multiple instructors engaged in dialogue. Contrary to expectations, engagement was higher in the monologue format.

To test the second hypothesis, data from both courses (N = 20) were used. Video fragments were identified where lecturers either included or did not include concrete examples. According to the hypothesis, example-based content was expected to yield higher engagement. The Student's t-test and Mann–Whitney U test were used for analysis (Table 2). After Bonferroni correction, all differences were found to be statistically non-significant.

The second hypothesis was not supported. There were no significant differences in engagement, attention, or inter-

Table 1

Results of Metric Calculations for Engagement, Attention, and Interest (Hypothesis 1)

Metrics	Single Lecturer (Non-Engaging)	Dialogue (Engaging)	t	df	p	p adj
Engagement	0,66 (SD = 0,48)	0,56 (SD = 0,42)	2,05	9	0,032	0,32
Attention	2,297 (SD = 0,34)	1,92 (SD = 0,27)	3,45	8	0,004	0,04**
Interest	1,47 (SD = 0,44)	0,99 (SD = 0,35)	3,64	8	0,003	0,03**

Note: SD — standard deviation, t — t-test statistic, df — degrees of freedom, p — significance level, p adj — adjusted p-value.

est between segments with and without examples.

To test the third hypothesis, Student's t-test or Mann–Whitney U test was used (Table 3). After correction, significant results were obtained only for the attention metric.

Hypothesis 3 was supported for the attention metric: attention was significantly higher when participants watched videos containing questions addressed to them ($t(16) = –3,20$, $p = 0,0028$).

An additional hypothesis emerged during observational analysis: engagement while completing tasks was higher than during video viewing. This hypothesis was confirmed ($t = 2,25$, $df = 9$, $p = 0,03$).

Discussion

This study explored student engagement during the viewing of educational video content using instrumental diagnostics (NTrend-BIO biobracelet and NTrend-ET500 eye tracker). The findings provide preliminary evidence that specific features of visual content design affect engagement metrics.

First, participants demonstrated higher attention and interest when watching videos featuring a single lecturer or slides compared to dialogue or polylogue formats with multiple speakers. These results contradict the initial hypothesis, which assumed that dialogic and polylogic formats would be more engaging. Instead, the monologic format appeared more effective in maintaining focused attention and visual interest.

Second, emotional engagement metrics were significantly higher during task completion than during video viewing. This aligns with existing literature supporting the effectiveness of integrated learning activities embedded in video-based instruction

Таблица 2 / Table 2

Results of Metric Calculations for Engagement, Attention, and Interest (Hypothesis 2)

Metrics	Without Examples (Non-Engaging)	With Examples (Engaging)	t / U	df	p	p adj
Engagement (Mann-Whitney)	0,68 (0,34; 0,91)	0,40 (0,20; 1,03)	U = 127	-	0,037	0,33
Attention	2,47 (SD = 0,47)	2,1 (SD = 0,56)	2,33	18	0,016	0,14
Interest	1,43 (SD = 0,67)	1,30 (SD = 0,78)	0,56	18	0,290	1

Note: SD — standard deviation, t — t-test statistic, U — Mann-Whitney U test, df — degrees of freedom, p — significance level, p adj — adjusted p-value. N = 20.

Table 3

Results of Metric Calculations for Engagement, Attention, and Interest (Hypothesis 3)

Metrics	Without Question (Non-Engaging)	With Question (Engaging)	t / U	df	p	p adj
Engagement	0,67 (SD = 0,33)	0,89 (SD = 0,61)	–0,92	16	0,185	1,0
Attention	2,16 (SD = 0,36)	2,83 (SD = 0,49)	–3,20	16	0,003	0,03
Interest	1,33 (1,10; 1,45)	1,89 (1,43; 2,48)	U = 20	-	0,042	0,37

Note: SD — standard deviation, t — t-test statistic, U — Mann-Whitney U test, df — degrees of freedom, p — significance level, p adj — adjusted p-value. N = 20.

(Noetel et al., 2021).

Third, the absence of statistically significant differences in how students perceived videos with and without concrete examples suggests that the design or presentation format of the examples may require refinement. Future studies should specify how examples are integrated and contextualized.

Further research on online learning engagement should incorporate a broader range of learning formats (e.g., lectures, practical exercises, independent work on educational platforms, and collaborative student-instructor tasks). It should also explore the pedagogical techniques used in video content — such as the inclusion of visual aids, animations, charts, interactive elements, and embedded assessments.

Additionally, the integration of brain activity measurements using electroencephalography (EEG) and pupillometry may enhance understanding of learners' cognitive states. EEG can provide insights into activation levels, visual attention, cognitive load, and fatigue during the learning process. Such research may lead to objective guidelines for developing an "ideal model" of online courses based on neurophysiological and psychophysiological feedback, including recommendations for shot composition, text volume and complexity, and optimal learning timeframes.

Conclusion

Engagement metrics are influenced by the visual design features of educational video content; however, the results should be interpreted with caution due to the small sample size.

Participants demonstrated higher levels of engagement when watching videos with a single lecturer or slide-based visuals, compared to dialogic or polylogic lecture formats. Emotional engagement increased significantly during task completion following video viewing.

The lack of significant differences in student responses to videos with or without concrete examples highlights the need to further investigate how such examples are framed and presented.

Limitations

The limited sample size (n = 10 per group) reduces the statistical power of the tests and constrains the generalizability of the findings. Therefore, the results should be considered preliminary.

Список источников / References

1. Баранников, К.А., Ананин, Д.П., Стрикун, Н.Г., Алканова, О.Н., Байзаров, А.Е. (2023). Гибридное обучение: российская и зарубежная практика. Вопросы образования, (2), 33–69. https://doi.org/10.17323/1814-9545-2023-2-33-69
   Barannikov, K.A., Ananin, D.P., Strikun, N.G., Alkanova, O.N., Bayzarov, A.Ye. (2023). Hybrid Learning: Russian and International Practice. Educational Studies Moscow, (2), 33–69. (In Russ.).
2. Грицова, О.А., Тиссен, Е.В. (2021). Оценка качества онлайн-обучения в системе высшего образования в регионах. Экономика региона, 17(3), 929–943. https://doi.org/10.17059/ekon.reg.2021-3-15
   Gritsova, O.A., Tissen, E.V. (2021). Quality Assessment of Online Learning in Regional Higher Education Systems. Economy of Region, 17(3), 929–943. (In Russ.).
3. Касаткина, Д.А., Кравченко, А.М., Куприянов, Р.Б., Нехорошева, Е.В. (2020). Автоматическое распознавание вовлеченности в образовании: критический обзор исследований. Современная зарубежная психология, 9(3), 59–68. https://doi.org/10.17759/jmfp.2020090305
   Kasatkina, D.A., Kravchenko, A.M., Kupriyanov, R.B., Nekhorosheva, E.V. (2020). Automatic Engagement Detection in Education: Critical Review. Journal of Modern Foreign Psychology, 9(3), 59–68. (In Russ.).
4. Клименских, М.В., Лебедева, Ю.В., Мальцев, А.В., Савельев, В.В. (2019). Психологические факторы эффективного онлайн-обучения студентов. Перспективы науки и образования, 42(6), 312–321. https://doi.org/10.32744/pse.2019.6.26
   Klimenskikh, M.V., Lebedeva, Yu.V., Maltsev, A.V., Savelyev, V.V. (2019). Psychological Factors of Online Learning Efficiency of Students. Perspectives of Science and Education, 42(6), 312–321. (In Russ.).
5. Королева, М.В., Лужин, А.О. (2020). Способ анализа эмоционального восприятия аудиовизуального контента у группы пользователей: пат. 2723732 Рос. Федерация. № 2019133745 / заявл. 23.10.2019; опубл. 17.06.2020, Бюл. № 17.
   Koroleva, M.V., Luzhin, A.O. (2020). Method for Analyzing Emotional Perception of Audiovisual Content among a User Group. Patent RF, no. 2723732. (In Russ.).
6. Латанов, А.В., Анисимов, В.Н., Бойко, Л.А., Галкина, Н.В. (2020). Способ оценки произвольного внимания на основе глазодвигательных показателей и амплитудно-частотных характеристик электроэнцефалограммы: пат. 2722447 Рос. Федерация. № 2019136623 / заявл. 14.11.2019; опубл. 01.06.2020, Бюл. № 16.
   Latanov, A.V., Anisimov, V.N., Boiko, L.A., Galkina, N.V. (2020). Method for Assessing Voluntary Attention Based on Oculomotor Indicators and Amplitude-Frequency Characteristics of Electroencephalogram. Patent RF, no. 2722447. (In Russ.).
7. Уваров, А.Ю. (2018). Технологии искусственного интеллекта в образовании. Информатика и образование, (4), 14–22.
   Uvarov, A.Yu. (2018). The AI Technologies in Education. Informatics and Education, (4), 14–22. (In Russ.).
8. Aslan, S., Diner, I., Cataltepe, Z., Esme, A. A., Ferens, R., Kamhi, G., Dundar, O., Oktay, E., Soysal, C., Yener, M. (2014). Learner engagement measurement and classification in 1:1 learning. 13th International Conference on Machine Learning and Applications (ICMLA), 545–552. https://doi.org/10.1109/ICMLA.2014.111
9. Bond, M., Bedenlier, S. (2019). Facilitating student engagement through educational technology: Towards a conceptual framework. Journal of Interactive Media in Education, 1(1), 1–14. https://doi.org/10.5334/jime.528
10. Bond, M., Buntins, K., Bedenlier, S., Zawacki-Richter, O., Kerres, M. (2020). Mapping research in student engagement and educational technology in higher education: A systematic evidence map. International Journal of Educational Technology in Higher Education, 17(1), 1–30. https://doi.org/10.1186/s41239-019-0176-8
11. Booth, B.M., Bosch, N., D'Mello, K.S. (2023). Engagement detection and its applications in learning: A tutorial & selective review. Proceedings of the IEEE, 111(10), 1398–1422. https://doi.org/10.1109/JPROC.2023.3309560
12. Buhl-Wiggers, J., Kjærgaard, A., Munk, K. (2023). A scoping review of experimental evidence on face-to-face components of blended learning in higher education. Studies in Higher Education, 48(1), 151–173. https://doi.org/10.1080/03075079.2022.2123911
13. Buscher, G., Dengel, A., Elst, L.V. (2008). Eye movements as implicit relevance feedback. Extended Abstracts Proceedings of the 2008 Conference on Human Factors in Computing Systems, 2991–2996. https://doi.org/10.1145/1358628.1358796
14. Dewan, M., Murshed, M., Lin, F. (2019). Engagement detection in online learning: A review. Smart Learning Environments, 6(1), 1–20. https://doi.org/10.1186/s40561-018-0080-z
15. Fredricks, J.A., Blumenfeld, P.C., Paris, A.H.

(2004). School engagement: Potential of the concept, state of the evidence. Review of Educational Research, 74(1), 59–109. https://doi.org/10.3102/00346543074001059
16. Fredricks, J.A., McColskey, W. (2012). The measurement of student engagement: A comparative analysis of various methods and student self-report instruments. In S.L. Christenson et al. (Eds.), Handbook of Research on Student Engagement (pp. 763–782). Boston, MA: Springer US. https://doi.org/10.1007/978-1-4614-2018-7_37
17. Fredricks, J.A. (2022). The measurement of student engagement: Methodological advances and comparison of new self-report instruments. In J.A. Fredricks et al. (Eds.), Handbook of Research on Student Engagement (pp. 597–616). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-07853-8_29
18. Krithika, L.B., Lakshmi, P.G.G. (2016). Student emotion recognition system (SERS) for e-learning improvement based on learner concentration metric. Procedia Computer Science, 85, 767–776. https://doi.org/10.1016/j.procs.2016.05.264
19. Mayer, R.E. (2021). Evidence-based principles for how to design effective instructional videos. Journal of Applied Research in Memory and Cognition, 10(2), 229–240.
20. Moore, M.G. (1989). Editorial: Three types of interaction. American Journal of Distance Education, 3(2), 1–7. https://doi.org/10.1080/08923648909526659
21. Noetel, M., Griffith, S., Delaney, O., Sanders, T., Parker, P.D., del Pozo Cruz, B., Lonsdale, C. (2021). Video improves learning in higher education: A systematic review. Review of Educational Research, 91(2), 204–236.
22. Pomplun, M., Sunkara, S. (2003). Pupil dilation as an indicator of cognitive workload in human-computer interaction. Proceedings of the International Conference on HCI, 1–5. Available at: https://api.semanticscholar.org/CorpusID:1052200
23. Raina, S., Bernard, L., Taylor, B., Kaza, S. (2016). Using eye-tracking to investigate content skipping: A study on learning modules in cybersecurity. IEEE Conference on Intelligence and Security Informatics (ISI), 261–266. https://doi.org/10.1109/ISI.2016.7745486
24. Sharma, P., Joshi, S., Gautam, S., Filipe, V., Reis, M. (2019). Student engagement detection using emotion analysis, eye tracking and head movement with machine learning. arXiv:1909.12913, 9 p. https://doi.org/10.48550/arXiv.1909.12913
25. Skaramagkas, V., Giannakakis, G., Ktistakis, E., et al. (2023). Review of eye tracking metrics involved in emotional and cognitive processes. IEEE Reviews in Biomedical Engineering, 16, 260–277. https://doi.org/10.1109/RBME.2021.3066072
26. Symonds, J., Kaplan, A., Upadyaya, K., Salmela-Aro, K., Torsney, B., Eccles, J. (2019). Momentary student engagement as a dynamic developmental system. PsyArXiv. https://doi.org/10.31234/osf.io/fuy7p
27. Tarnowski, P., Kołodziej, M., Majkowski, A., Rak, R.J. (2020). Eye-tracking analysis for emotion recognition. Computational Intelligence and Neuroscience, 2020, 1–13. https://doi.org/10.1155/2020/2909267
28. Wu, C., Cha, J.S., Sulek, J.E., et al. (2019). Eye-tracking metrics predict perceived workload in robotic surgical skills training. Human Factors: The Journal of the Human Factors and Ergonomics Society, 62(8), 001872081987454. https://doi.org/10.1177/0018720819874544
29. *R Core Team (2022). R: A language and environment for statistical computing [online]. R Foundation for Statistical Computing, Vienna, Austria, 2022, available at: http://www.R-project.org/ (accessed 25.12.2023)*

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Larionova A.V. — application of statistical data processing methods; interpretation of cognitive and emotional engagement metrics; writing the “Methods and Materials” section; contribution to the formulation of conclusions.

Tolstova M.A. — conducting the experiment; data collection using an eye tracker and a biobracelet; data analysis in the “Neurobarometer” software package; preparation of data visualization.

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The authors declare no conflict of interest.

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Transition of psychological state from recording to live performance: a longitudinal explanatory sequential study in music students from Universiti Malaya during COVID-19

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Abstract

Music students often struggle with music performance anxiety (MPA), which is debilitating stress brought on by performances. However, MPA varies according to the type of performance. Therefore, this study aims to compare the MPA levels of performance recorded versus live. This study also looks at the factors that influence students' anxiety levels and their views on the various assessment formats. A total of 28 second-year music undergraduates were recruited. Survey questionnaires (K-MPAI-R) were administered to evaluate the anxiety levels of the students. This was followed by interview sessions with randomly selected participants. Through descriptive statistics and paired sample t-tests, this study suggests that the participants were afflicted with different levels of MPA in the first year (M = 127,379) compared to the second year (M = 138,621). There was a significant difference between the MPA level in the recorded assessment and the live assessment. The qualitative interview data were analysed through thematic analysis. The following themes emerged to reflect the factors that influence MPA. Mental/psychological stress was the emergent theme for internal factors, whereas environment, sound quality, and physical challenges were emergent themes for external factors. In conclusion, MPA levels of the students were high regardless of the assessment format and the factors that resulted in MPA varied according to the format.

Keywords: music performance anxiety, recorded exam, live exam, COVID-19, undergraduate

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Изменение психологического состояния музыкантов при переходе от записи к живому выступлению: лонгитюдное объяснительное исследование среди студентов Университета Малайя в период пандемии COVID-19

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Резюме

Студенты музыкальных факультетов часто испытывают тревогу перед выступлениями (ТПВ), которая представляет собой изнурительный стресс. Уровень этой тревоги может различаться в зависимости от типа выступления. Целью данного исследования стало сравнение уровня тревоги у студентов во время записи их выступления и во время живых выступлений. В нашей работе также исследуются факторы, влияющие на уровень тревожности студентов, и их взгляды на различные форматы оценивания. Всего в исследовании приняли участие 28 студентов второго курса факультета музыкальных искусств. Для оценки уровня тревожности студентов были использованы анкеты-опросники (K-MPAI-R). После анкетирования проводились интервью со случайно выбранными участниками. Результаты статистического анализа и t-тестов показывают, что уровень тревоги перед выступлением у студентов на первом курсе (M = 127,379) отличался от их уровня ТПВ на втором курсе (M = 138,621). Между уровнем тревоги перед выступлением во время записи и уровнем тревоги при живом выступлении наблюдались значительные отличия. Качественный анализ интервью был проведен с помощью тематического анализа. В результате были выделены следующие темы, отражающие факторы, влияющие на уровень ТПВ: психологический стресс — основная тема, связанная с внутренними факторами; окружающая среда, качество звука и физические трудности — основные темы, связанные с внешними факторами. В заключение можно сказать, что уровень тревоги перед выступлением у студентов был высоким независимо от формы оценивания, а факторы, вызывающие ТПВ, различались в зависимости от того, как проводилось оценивание выступления.

Ключевые слова: тревога перед выступлениями, экзамен в формате записи, очный экзамен, COVID-19, бакалавриат

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Introduction

Music performance anxiety (MPA) is defined as fear of and/or actual impairment of one's performance abilities, regardless of musical aptitude, training, or level of preparation (Kenny, 2011). MPA is a traumatic form of nervousness (Yoshie et al., 2009) that has a significant impact on how musicians perceive themselves and others, as well as their feelings when they believe they have not performed to their full potential (Wilson & Roland, 2002). As a result, musicians may experience emotional stress as a result of a perceived threat to their self-worth (Dickerson & Kemeny, 2004). MPA symptoms include stomach discomfort, sweaty palms, negative self-talk, dry mouth, excessive swallowing, shortness of breath, fuzzy thinking, avoidance, and giving up (Wesner et al., 1990).

MPA is common among musicians (Wilson & Roland, 2002), affecting over 58% of musicians (Wesner et al., 1990; van Kemenade et al., 1995; Yoshie et al., 2011). While some thrive under the additional stress, others struggle, doubting their abilities. Many well-known musicians reportedly suffered from MPA: From Chopin, who performed less than 40 times in his 30-year career, to Horowitz, who repeatedly retired due to severe MPA (Kenny, 2011).

Clinical studies revealed that cognitive-behavioural psychotherapeutic interventions effectively reduce MPA (Osborne et al., 2007; Kenny, 2011; Fernholz et al., 2019). Fine motor coordination and flexibility, high aesthetic and interpretative skills, intense concentration, and good memory work are all required for music performance (Palmer, 1997; Zatorre et al., 2007; Altenm ller & Ioannou, 2016). Students must also have excellent technical skills in order to overcome the psychological and physical demands of performing in front of an audience (Ackerman et al., 2014; Osborne et al., 2014). The best performances are a result of years of training, consistent practice, and a high standard of self-evaluation (Ericsson et al., 1993; Morijiri & Welch, 2022).

Notably, violinist Tom Eisner found that performing in a group reduced his anxiety because his performance was not the only focus (Kenny, 2011). The intensity of music performance anxiety (MPA) differs based on the nature of the performance, being more pronounced in public performances than in private ones (Craske & Craig, 1984; Fancourt et al., 2015; Aufegger & Wasley, 2018; Fredrikson & Gunnarsson, 1992). Moreover, individual performances evoke greater MPA levels compared to group performances (Cox & Kenardy, 1993; Papageorgi et al., 2011). Additionally, the level of significance attributed to the performance (Yoshie et al., 2009), as well as the specific musical instruments involved, can also lead to varying degrees of performance anxiety (Iusca & Dafinoiu, 2012). However, there is a gap in research when it comes to comparing MPA in the context of live and recorded tertiary music exams, especially during the COVID-19 pandemic.

Music performance in UM and its changes during COVID-19

At Universiti Malaya (UM), music performance is a core subject in the three-year music programme, involving weekly recitals, faculty-organized showcases and a final graduation recital.

In November 2019, the outbreak of the COVID-19 virus led to a global pandemic which prompted lockdowns on a global scale (Barrero et al., 2020). On March 18, a nationwide lockdown was imposed in Malaysia, mandating the closure of all non-essential businesses, including colleges and universities (Lim, 2022). The announcement of the Movement Control Order (MCO) led to the implementation of New Teaching and Learning (T&L) online standards, with the exception of certain academic programmes and subjects. UM had activated e-learning mode in March 2020, before transitioning to hybrid mode beginning in December 2021.

Students that enrolled in the first semester of 2021/2022 had to take online/remote exams (recorded) during their first year of study. As the government began gradually lifting the MCO, the students from 2021/2022 had to return to the campus and undergo live performances and exams, such as their weekly recitals, music

showcase and their final exam, within the span of 14 weeks. This situation is vastly different from their previous year of learning, which comprised of recordings that could be done at their own discretion as long it was submitted before the due date.

Hence, this study investigated the level of MPA experienced by the 2021/2022 intake music students and aims to find out if there were any differences in the anxiety level between the recorded and live performances. Additionally, this study seeks to understand the students' perspectives and the factors that influence their anxiety levels on the two different exam formats.

Research Design

This study applied explanatory sequential mixed-method design with purposive sampling. At the end of their first year of study (when exams were conducted in the form of recorded performance), the music students were briefed on the research objectives, during which their consent to participate in this research was obtained. Following that, questionnaires (K-MPAI-R) were distributed to the students via email, to be filled in anonymously.

To gain more insight, follow-up interviews were conducted and recorded via Zoom with the respondents. Each interview lasted 30–45 minutes, allowing the participants to sufficiently explain the challenges they faced during the recorded exam, followed by the discussion on their stress factors. By the fifth interview, common themes emerged regarding factors that affect the participants' stress levels, indicating data saturation. Therefore, no further interviews were conducted. Subsequently, verbatim transcriptions of the interviews were prepared, and coded, capturing all comments, exclamations and pauses. The following topics were covered by the interview questions: 1) What are their views on the recorded and live exam and performance, 2) What are the difficulties in taking the recorded and live exam and performance, and 3) What are the factors that cause them to be anxious about their performance. Before analysis, the transcripts were reviewed by the five participants. The same iterative process was repeated at the end of their second year of study for the live exam.

Participants

This study examines the impact of MPA on undergraduate music majors at UM. 28 second-year undergraduate music students from the intake 2021/2022 were recruited for the study. Participants were required to have completed a year of recorded exams and performance, followed by a year of live exams and performance, as part of the selection criteria.

Tools/Measures

K-MPAI-R was used in this study, a questionnaire designed to assess music performance-related anxiety by evaluating symptoms associated with MPA such as anxiety, tension and memory alterations. In 2009, Kenny revised her Music Performance Anxiety Inventory (Kenny et al., 2004), which resulted in the revised Kenny Music Performance Anxiety Inventory (K-MPAI-R; Kenny, 2009). While the initial K-MPAI self-assessment questionnaire consisted of 26 items, the revised version comprises 40 items. Both questionnaires are graded on a 7-point Likert-type scale (where 0 = strongly disagree and 6 = strongly agree; or inversely, depending on the statement). Both the K-MPAI and the K-MPAI-R recorded an internal reliability of 0,94 Cronbach's alpha, with adequate predictive validity, and positive and significant correlations with the STAI (Spielberger, 1983) and with the Performance Anxiety Questionnaire (Cox & Kenardy, 1993), a specific instrument to assess MPA, which certifies the K-MPAI-R concurrent validity (Kenny, 2011). Higher total scores indicate greater levels of anxiety and MPA-related distress.

Diagnostic Criteria

Cut-off indicators for performance anxiety according to the K-MPAI-R vary across publications. Paliaukiene et al. (2018) deemed scores above 130 as falling under the "high MPA" group. This cut-off point was determined based on the principle of one standard deviation above the mean. Typically, clinical diagnoses

are based on Youden's Index, which sets 104 and above as a high MPA group. Therefore, the cut-off point to designate high MPA through the M-MPAS was determined through linear regression with the overall K-MPAI-R score for the four experience related factors. Following that, the score would then be scaled from 0–240 for the 40 items upon which the published cut-offs are based on. The least squares linear regression equation to estimate the conversion from K-MPAI-R to the M-MPAS for the present dataset explained 62,89% of the variance and can be expressed as: The K-MPAI-R cut-off of 104 (out of 240) can therefore be estimated as 11.0 (out of 30) on the M-MPAS.

Findings

The analysis begins with statistical analysis using IBM SPSS Statistics (version 29.0), followed by thematic analysis using ATLAS.ti 23. Table displays the results of a comparison between the MPA levels of first- and second-year students.

Before data analysis, all variables were subjected to a normality test, and the results showed that the data was normally distributed. Therefore, a parametric test was carried out using a paired sample t-test to determine the difference between the MPA levels of students in year 1 versus year 2. The 95% confidence interval of the mean difference ranged from 9,02 to 13,46, indicating the difference between the sample means. The results reveal a statistically significant difference between the mean MPA score in the first year (M = 127,379; SD = 27,032) and the mean MPA score in the second year (M = 138,621; SD = 24,816); [t (28) = 10,364, p = 0,001]. Lastly, the effect size was close to medium (d = 0,433).

The researchers performed independent data familiarisation and coding, and then concluded the four emergent themes, classified as either internal or external factors. The emergent themes are depicted in the thematic analysis map below:

Recorded Exam

For the recorded exam, three main themes were derived from the data, namely: (1) Environment, and its sub-themes (a) Isolation, (b) No Audience, (c) Family and Surrounding Sound Distraction; (2) Sound Quality, and its sub-themes (a) Perfectionism, (b) Time-consuming, (c) Recording Devices, (d) Camera Angle and Distance; and (3) Mental/psychological Stress and its sub-themes (a) Unpredictable breakdown, (b) Recording Process, (c) Choosing Videos, (d) 2nd Chances.

Theme 1 — Environment (External factors)

The theme 'environment' is conceptualised as the surroundings or conditions in which the recording was conducted and consists of several sub-themes as listed below.

Isolation

To curb the spread of the virus, quarantine and social isolation measures were implemented. This resulted in increased levels of loneliness and social isolation. Participant 2 expressed feelings of isolation and loneliness, as he was alone in a room for hours during recording sessions, "Enduring endless repeated recordings on my own as I struggled with my mental health due to the isolated lifestyle caused by the MCO."

No Audience

All participants agreed that video recordings were detrimental to the performance because they did not capture the ambiance and atmosphere of a live performance. Furthermore, because they had never performed in front of

Table

A comparison between first and second MPA level

Year	Mean	SD	T-Value	P-Value	Cohen's d
1	127,379	27,032	10,364	< 0,001	0,433
2	138,621	24,816			

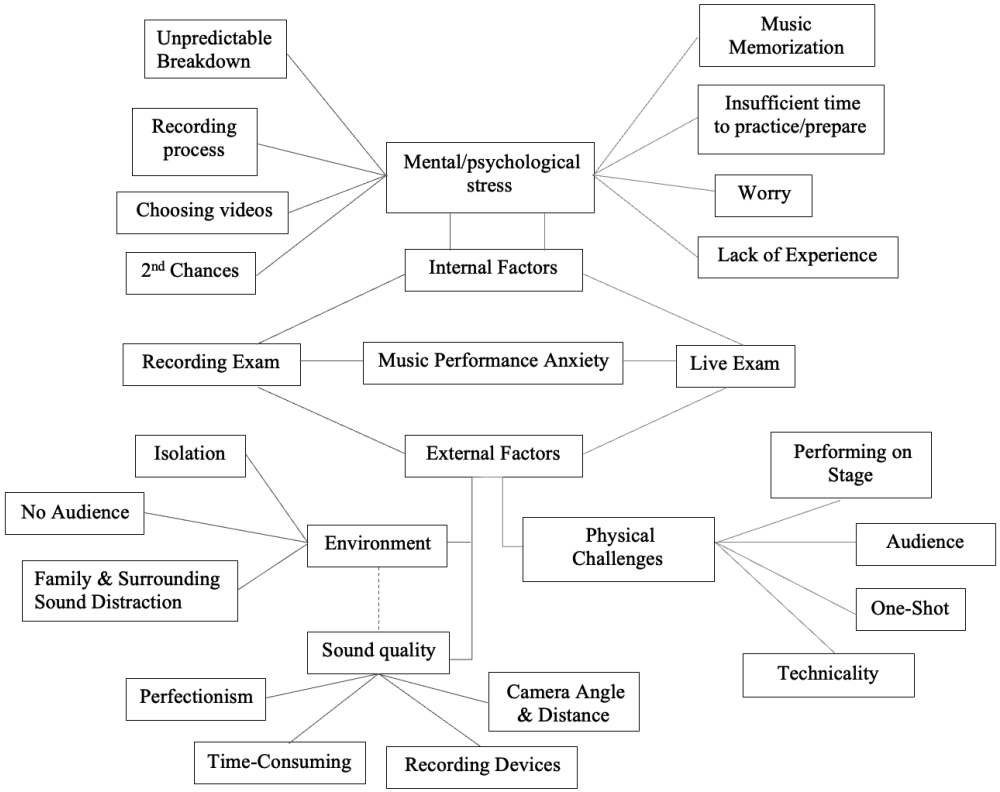

Fig. Comparison figure on MPA between live and recorded exam

an audience, the participants were concerned about their future prospects. «Overall, the performance can feel less genuine than in live sessions,» said participant 1.

Family & Surrounding Sound Distraction

Participants 3, 4, and 5 stated that the main issues they encountered while video recording their performances were family and surrounding sound. «My family must remain quiet for 3–5 hours because I am recording,» said participant 3. The sound of a passing car or even birds chirping will have an impact on performance.» In addition, participant 4 stated, «Recordings are less nerve-racking, but they take a long time.» Not only because of re-recordings due to errors, but also because of external factors such as family members or unexpected noises from outside.» «My family members listen to me record,» Participant 5 said, reinforcing the statements of Participants 3 and 4.

Theme 2 — Sound Quality (External Factors)

The theme 'sound quality' is conceptualised as a perceptual reaction to the adequacy of sound/audio from a recording and consists of several sub-themes as listed below.

Perfectionism

Most participants had to record several takes to capture the "perfect" video. This notion of perfectionism exacerbated their stress in the process of recording their performance. When they hear

themselves play in the recording, they became hyper aware of their mistakes. «I feel annoyed and stressed while recording,» said Participant 1, "I must continue recording in order to submit the most satisfying video.» «I feel stressed when I can't get the «perfect» recording,» said Participant 2. However, Participant 2 mentioned a benefit of recorded evaluations: «I got to force myself to listen to my own recording and submit the «best take» I could get. I was able to review my own performance before others.» Participant 5 said «There is an unspoken sense of perfectionism because you can re-do a recording and submit the best,» said participant 5.

Time-consuming

All participants mentioned how time-consuming video recording is, leaving them physically and mentally exhausted. «Video recording is terribly exhausting,» said participant 5. "To me, it must be flawless. It took three days to record a 2-minute video for my weekly recital, let alone the entire set of programme pieces.» In line with that, participant 3 said, «Having to do recording for recitals and final jury was exhausting as I was thinking I can do better with each recording.»

Recording Devices

Students' anxiety stemmed not only from the threat of COVID-19, but also from their unfamiliarity with the new learning platforms. The quality of the recordings is determined by the recording devices used. The recording quality and technical issues were raised by all participants. «There is the technological sound aspect to worry about,» participant 1 said, «resulting in the need to invest in better gadgets for optimal recording quality.»

Camera Angle & Distance

The placement of the camera is an important consideration when recording. For a pianist, the camera should be positioned on the right side so that the microphone captures more treble than bass. «The sound captured by the recording device sometimes does not give out a good balance as many surrounding factors such as camera angle and distance may affect the sound quality,» Participant 2 said.

Theme 3 — Mental/Psychological Stress (Internal factors)

The theme 'mental/psychological stress' is conceptualised as psychological experience of distress and anxiety caused by processes and factors contributing to the onset and maintenance of a variety of mental conditions during the recording process and consists of several sub-themes as listed below.

Unpredictable breakdown

The participants spent years honing their abilities and building their confidence through practice, yet breakdowns during performances are common. Participant 3 stated:

"Our performance is fine until the end, when the spike in adrenaline causes us to mess up the very last section. We might think that we can record as many times as we wish, but one will get physically and mentally drained after one recording because of the focus and concentration needed."

According to Participant 1, «recording causes more stress because you have to start over if you make a mistake. Each time you restart, your hands will become more tense as you go through a mental and physical breakdown.»

Recording Process

Recording a performance is not an easy task, and it usually takes several attempts to achieve the desired result. «I spent a few days trying to get one good recording,» said participant 3, "I planned my schedule so that I could record, and I informed my family that I would need to record so that they could lower their voices.»

Choosing Videos

All participants stated that they had to go through several videos in order to submit the best one after extensive recording sessions.

2nd Chances

Some students may feel the pressure to re-record multiple times in search of perfection.

However, once they have made a mistake, they are likely to make the same mistake in the next recording, which causes them to focus on the specific section. Participant 2 said, "I feel mentally stressed when I keep making mistakes while recording. We make more mistakes near the end because we are afraid of recording again. The longer I do the recording, the more mistakes I will make." Participant 4 reported the same issue, "Re-recording is not good. I discovered this when performing live and during physical exams. I always thought there would be opportunities to re-record, so I didn't bother to correct my mistakes." Participant 5 brought up a positive side to recorded evaluations, "Video recordings provide us with more opportunities to make the performance perfect. I won't be afraid of making mistakes since I can record again."

Live Exam

For live exam, two main themes were derived from the data, namely: (1) Physical Challenge, which consists of the following sub-theme (a) Performing on Stage, (b) Audience, (c) One-Shot, (d) Technicality; and (2) Metal/Psychological Stress which consists of the following sub-themes (a) Music Memorisation, (b) Insufficient time to practice/ prepare, (c) Worry, (d) Lack of Experience.

Theme 1 — Physical Challenge (External Factors)

The theme 'physical challenge' is conceptualised as external factors and conditions that have an impact on the success of the live performance and consists of several sub-themes as listed below.

Performing on Stage

Participants expressed their performance anxiety and their fear of not performing their best during the actual live performance despite practicing a lot. Participant 1 said:

"Dealing with the live final jury was more complicated. Although I practiced a lot, I cannot guarantee my performance will be alright. There's only one chance to perform during the jury. Our mental preparation, familiarity with the stage, flexibility in terms of listening and response will significantly reflect how good we are when we play on the stage, and it's not just about the technique or dexterity. It requires a lot of focus and concentration as most of us will experience trembling in our hands or legs due to stage fright, or cold temperature in the hall that may affect our performance."

Audience

The presence of an audience during the live performance caused anxiety in the participants. Participant 3 said, "When performing live for the weekly recital the first time, I felt very nervous because there was an audience listening. When my hands were shaking, it had an influence on the performance." Participants 4 & 5 also experienced similar feelings.

One-Shot

Another drawback of live exams is the fact that the performer only has one chance, whereas a recording could be re-recorded. Participant 2 said, "Live performances cannot be repeated. We practice for six months but perform for less than 15 minutes. We must do our best when playing." Similarly, Participant 4 shared, "Live performance is more challenging, but it helps me to stay out of my comfort zone and boost my confidence. There is only one chance. Hence, I will appreciate it by practicing hard to ensure there are no mistakes."

Technicality

The participants expressed their insufficient/ lacking technical ability as one of the factors that contributes to their anxiety during live performance. Without the correct technique, musicians may not be able to achieve their fullest potential, and their dexterity and mobility could be constrained. Participant 2 expressed his/her concern of lacking technique affecting his performance "My technique was not very concrete to begin with, and this causes a huge worry in my performance, especially in challenging passages."

Theme 2 — Mental/Psychological Stress (Internal factors)

The theme 'mental/psychological stress' is conceptualised as psychological experience of

distress and anxiety caused by processes and factors contributing to the onset and maintenance of a variety of mental conditions during the live performance and consists of several sub-themes as listed below.

Music Memorisation

Most participants stated that they have no prior experience in memorising the music for their performance before enrolling into the music program. Participant 3 said, "It is undeniable that the nervousness for live performance is much higher than video recording, occasionally there will be some negative thoughts that appear before live performance, such as what if I lost my memory, what if I play the wrong notes, etc."

Insufficient time to practice/prepare

Transitioning from remote lessons to physical lessons caused some time management issues to the students, resulting in insufficient time to practice for their performance. Participant 2 shared, "I lack practice because of time constraints. It is challenging to attend classes from morning to evening. There's not much time for practicing."

Worry

All participants expressed concern about their performance. Participant 3 shared their experience of feeling anxious when performing live, saying, «I was constantly thinking about how the audience would judge my performance. I felt extremely worried that I might not perform well in front of an audience. This significantly affects my level of performance, and I don't do as well as I do in practice.»

Lack of Experience

When the participants first enrolled in the music program, the performances were conducted remotely, through the means of video recording. None of the participants had experience performing live in front of an audience throughout the first year of their study. Participant 1 illustrated this, "When I first performed in the weekly recital, my hands were shaking. This continued until the final jury. I tried to not think too much about the exam and focused on playing music as practice." Also, participant 2 said, "I didn't have much opportunity to do a live performance previously. There are a lot of possible mistakes that we could make during a live performance. For example, forgetting the score or pressing the wrong keys." Furthermore, Participant 5 said:

"I rarely performed alone on stage with audiences. I tried to play in front of my friends and helped my friends out as their piano accompaniment so that I can get more opportunities to step onto the stage. This actually helped me cope with anxiety by getting me more involved on stage."

Discussion & Conclusion

According to the National Institute of Mental Health, MPA affects approximately 73% of musicians, making it the most frequently cited fear. A survey of 48 ICSOM orchestras revealed that 76% of musicians reported at least one medical issue affecting their performance, with MPA being the most prevalent medical issue. The MPA level on the recorded exam (M = 127.379) was lower than on the live exam (M = 138.621), the difference was significant. As the cut-off point for high-level MPA level is 130 (Paliaukiene et al., 2018) and 104 (Paliaukiene et al., 2018), the recorded exam MPA level was still deemed high (Kenny, 2015). A majority of the participants in this study viewed the recorded exams as less stressful and anxiety-inducing than the live exams. Although the difference in the MPA level between recorded and live exam was statistically significant, their MPA scores were only marginally different, indicating that both exam modes were equally difficult and emotionally taxing. Further exploration into their MPA through an in-depth interview also revealed that both exam modes were equally difficult and emotionally taxing, but in different ways.

Two external factors — environment and sound quality — affected the participants MPA level during recorded examination. In the Environment theme, participants grappled with the consequences of pandemic-induced isolation, experiencing loneliness, which can have a negative impact on physical and mental health during

the recording sessions (Torales et al., 2020). The absence of a live audience raised concerns about the authenticity of their performances, while family and environmental noise distractions added stress. According to Ryan et al. (2021) and Spahn (2015), it is difficult to capture a perfect performance because students, like any other performer, would be nervous. In this study, the Sound Quality theme highlights the pursuit of perfection among students, which led to repeated recordings and heightened stress due to performance nerves and errors. This is in line with Kotani & Furuya (2018), who stated that mistakes are exacerbated by the stress of having to record the performance. The time-consuming nature of video recording leaves participants physically and mentally drained, with technical issues further exacerbating their anxiety (Kotani & Furuya, 2018).

In contrast, the external factor of MPA in live examinations revolves around physical challenge. This involves performing on stage, which triggers stage fright and performance anxiety, impacting the musicians' academic and professional progress negatively (Angelidis et al., 2019). LeBlanc (2021) stated that negative emotions such as stage fright and anxiety can arise in any situation where one feels that they are being judged. This is prevalent in this study, where according to the participants, audience presence intensified their nervousness as they felt like they were being judged. Furthermore, the one-shot nature of live exams adds worry and pressure to excel, which according to Burin & Osório (2017) is one of the causes of MPA. On top of that, technical proficiency is vital, as incorrect technique can lead to errors (James, 2018).

Both recorded and live exam revealed mental/psychological stress as an internal factor contributing to MPA, albeit in different ways. In the recorded exam, participants expressed that unpredictable performance breakdowns, which are common recurrences (Ioannou et al., 2016), particularly towards the end of recordings, create physical and mental tension. The recording process demands meticulous scheduling, and selecting from numerous recorded videos adds complexity. However, some participants find a sense of achievement in redoing the recordings, boosting their self-esteem. The pressure to achieve perfection through multiple re-recordings is both a source of stress and an opportunity for improvement. On the other hand, in the live exam, the participants grapple with internal stressors such as music memorisation, time constraints, worry, and a lack of prior live performance experience. In addition, their anxiety is amplified by fears of judgment from the audience (LeBlanc, 2021).

Suggestions for Future Research

Future research should address this study's limitations, particularly its focus on students' perspectives. Expanding the sample to include lecturers could provide deeper insights into the teaching-learning process and MPA. Additionally, exploring lecturer experiences may develop a broader understanding on how various elements interact and influence exams. Participants were limited to second-year students who had completed recorded exams in their first year and live exams in their second. COVID-19 has undoubtedly caused psychological distress among students; however, this unprecedented event will strengthen them and prepare them for future threats because they have learned to adapt to these rapidly changing times.

References

1. Ackermann, B., Driscoll, T., Kenny, D.T. (2012). Musculoskeletal pain and injury in professional orchestral musicians in Australia. *Medical Problems of Performing Artists*, 27(4), 181–187. https://doi.org/10.21091/mppa.2012.4034
2. Altenmüller, E., Ioannou, C.I. (2016). Music performance: expectations, failures, and prevention. In M. Raab, B. Lobinger, S. Hoffmann, A. Pizzera, S. Laborde (Eds.), Performance Psychology. Academic Press.
3. Angelidis, A., Solis, E., Lautenbach, F., van der Does, W., Putman, P. (2019). I'm going to fail! Acute cognitive performance anxiety increases threat-interference and impairs WM performance. *PLOS One*, 14(2). https://doi.org/10.1371/journal.pone.0210824

4. Aufegger, L., Wasley, D. (2018). Salivary cortisol and alpha-amylase are modulated by the time and context of musical performance. *International Journal of Stress Management,* 25(S1), 81–93. https://doi.org/10.1037/str0000079
5. Barrero, J.M., Bloom, N., Davis, S.J. (2020). COVID-19 is also a reallocation shock. *Brookings Papers on Economic Activity*, 2, 329–383. https://doi.org/10.1353/eca.2020.0012
6. Burin, A.B., Osório, F.L. (2017). Music performance anxiety: a critical review of etiological aspects, perceived causes, coping strategies and treatment. *Archives of Clinical Psychiatry* (São Paulo), 44, 127–133. https://doi.org/10.1590/0101-60830000000136
7. Cox, W.J., Kenardy, J. (1993). Performance anxiety, social phobia, and setting effects in instrumental music students. *Journal of Anxiety Disorders*, 7(1), 49–60. https://doi.org/10.1016/0887-6185(93)90020-L
8. Craske, M.G., Craig, K.D. (1984). Musical performance anxiety: the three-systems model and self-efficacy theory. *Behaviour Research and Therapy*, 22(3), 267–280. https://doi.org/10.1016/0005-7967(84)90007-X
9. Dickerson, S.S., Kemeny, M.E. (2004). Acute stressors and cortisol responses: a theoretical integration and synthesis of laboratory research. *Psychological Bulletin*, 130, 355–391. https://doi.org/10.1037/0033-2909.130.3.355
10. Ericsson, K.A., Krampe, R.T., Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, 100(3), 363–406. https://doi.org/10.1037/0033-295X.100.3.363
11. Fancourt, D., Aufegger, L., Williamon, A. (2015). Low-stress and high-stress singing have contrasting effects on glucocorticoid response. *Frontiers in Psychology*, 6, 1242. https://doi.org/10.3389/fpsyg.2015.01242
12. Fernholz, I., Mumm, J., Plag, J., Noeres, K., Rotter, G., Willich, S.N., Ströhle, A., Berghöfer, Fredrikson, M., Gunnarsson, R. (1992). Psychobiology of stage fright: the effect of public performance on neuroendocrine, cardiovascular and subjective reactions. *Biological Psychology*, 33(1), 51–61. https://doi.org/10.1016/0301-0511(92)90005-F
13. Ioannou, C.I., Furuya, S., Altenmüller, E. (2016). The impact of stress on motor performance in skilled musicians suffering from focal dystonia: physiological and psychological characteristics. *Neuropsychologia*, 85, 226–236. https://doi.org/10.1016/j.neuropsychologia.2016.03.029
14. Iusca, D., Dafinoiu, I. (2012). Performance anxiety and musical level of undergraduate students in exam situations: The role of gender and musical instrument. *Procedia — Social and Behavioural Sciences*, 33, 448–452. https://doi.org/10.1016/j.sbspro.2012.01.161
15. James, B. (2018). Pianism: Performance communication and the playing technique. *Frontiers in Psychology*, 9, 2125. https://doi.org/10.3389/fpsyg.2018.02125
16. Kenny, D.T. (2015). Identifying cut-off scores for clinical purposes for the Kenny Music Performance Anxiety Inventory (K-MPAI) in a population of professional orchestral musicians. Retrieved from https://www.researchgate.net/publication/282735405_Identifying_cut-off_scores_for_clinical_purposes_for_the_Kenny_Music_Performance_Anxiety_Inventory_K-MPAI_in_a_population_of_professional_orchestral_musicians.
17. Kenny, D. (2009, Jan). The factor structure of the revised Kenny Music Performance Anxiety Inventory. Paper presented at the International Symposium on Performance Science, Auckland, New Zealand.
18. Kenny, D.T. (2011). The psychology of music performance anxiety. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199586141.001.0001
19. Kotani, S., Furuya, S. (2018). State anxiety disorganizes finger movements during musical performance. *Journal of Neurophysiology*, 120(2), 439–451. https://doi.org/10.1152/jn.00813.2017
20. LeBlanc, A. (2021). A theory of music performance anxiety. *Visions of Research in Music Education*, 16(5), 34.
21. Lim, B. (2022). Coronavirus disruptions to the private higher education sector in Malaysia. In J.S. McKeown, K. Bista, R.Y. Chan (Eds.), Global higher education during COVID-19: Policy, society, and technology (pp. 92–103). STAR Scholars.
22. Morijiri, Y., Welch, G.F. (2022). Decisions on the quality of piano performance: Evaluation of self and others. *Frontiers in Psychology*, 13, 954261. https://doi.org/10.3389/fpsyg.2022.954261
23. Osborne, M.S., Greene, D.J., Immel, D.T. (2014). Managing performance anxiety and improving mental skills in conservatoire students through performance psychology training: a pilot study. *Psychology of Well-Being*, 4(18). https://doi.org/10.1186/s13612-014-0018-3
24. Osborne, M.S., Kenny, D.T., Cooksey, J. (2007). Impact of a cognitive-behavioural treatment program on music performance anxiety in secondary school music students: A pilot study. Musicae Scientiae, Special Issue, 53–84. https://doi.org/10.1177/10298649070110S204
25. Paliaukiene, V., Kazlauskas, E., Eimontas, J., Skeryte-Kazlauskiene, M. (2018). Music

performance anxiety among students of the academy in Lithuania. *Music Education Research*, 20(3), 390–397. https://doi.org/10.1080/14613808.2018.1445208
26. Palmer, C. (1997). Music performance. *Annual Review of Psychology*, 48, 115–138. https://doi.org/10.1146/annurev.psych.48.1.115
27. Papageorgi, I., Creech, A., Welch, G. (2013). Perceived performance anxiety in advanced musicians specializing in different musical genres. *Psychology of Music*, 41(1), 18–41. https://doi.org/10.1177/0305735611408995
28. Ryan, C., Boucher, H., Ryan, G. (2021). Performance preparation, anxiety, and the teacher. Experiences of adolescent pianists. *La Revue Musicale OICRM*, 8(1), 38–62. https://doi.org/10.7202/1079790ar
29. Spahn, C. (2015) Treatment and prevention of music performance anxiety. *Progress in Brain Research*, 217, 129–140. https://doi.org/10.1016/bs.pbr.2014.11.024
30. Torales, J., Ríos-González, C., Barrios, I., O'Higgins, M., González, I., García, O., Castaldelli-Maia, J.M., Ventriglio, A. (2020). Self-perceived stress during the quarantine of COVID-19 pandemic in Paraguay: An exploratory survey. Frontiers in Psychiatry. https://doi.org/10.3389/fpsyt.2020.558691
31. van Kemenade, J.F., van Son, M.J., van Heesch, N.C. (1995). Performance anxiety among professional musicians in symphonic orchestras: a self-report study. *Psychological Reports*, 77(2), 555–562. https://doi.org/10.2466/pr0.1995.77.2.555
32. Wesner, R.B., Noyes, R.Jr., Davis, T.L. (1989). The occurence of performance anxiety among musicians. *Journal of Affective Disorders*, 18(3), 177–185. https://doi.org/10.1016/0165-0327(90)90034-6
33. Wilson, G.D., Roland, D. (2002). Performance anxiety. In R. Parncutt, G.E. McPherson (Eds.), The science and psychology of music performance: Creative strategies for teaching and learning (pp. 47–61). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780195138108.003.0004
34. Yoshie, M., Kanazawa, E., Kudo, K., Ohtsuki, T., Nakazawa, K. (2011). Music performance anxiety and occupational stress among classical musicians. In J. Langan-Fox & C. Cooper (Eds.), Handbook of Stress in the Occupations (pp. 409–425). Cheltenham. https://doi.org/10.4337/9780857931153.00051
35. Yoshie, M., Kudo, K., Murakoshi, T., Ohtsuki, T. (2009). Music performance anxiety in skilled pianists: effects of social-evaluative performance situation on subjective, autonomic, and electromyographic reactions. *Experimental Brain Research*, 199(2), 117–126. https://doi.org/10.1007/s00221-009-1979-y
36. Zatorre, R.J., Chen, J.L., Penhune, V.B. (2007). When the brain plays music: auditory-motor interactions in music perception and production. *Nature Reviews Neuroscience*, 8, 547–558. https://doi.org/10.1038/nrn2152

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Contribution of the authors
All authors contributed equally to this work.

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Ethics statement
Ethics approval was obtained from the Research Ethics Council (UMREC) at the Universiti Malaya (ethics approval code: UM.TNC2/UMREC_2106). Participants received information and contact details of the study team at the start of the study and were given time to read the information, consider any implications, and raise any questions prior to deciding to participate. Participants were informed that they were free to withdraw at any time by closing their browser. Consent was then obtained by asking participants to confirm they had read a series of statements and provide final consent that they were happy to continue before starting the study.

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Совет по этике исследований (UMREC) при Университете Малайя утвердил проведение исследования (код протокола: UM.TNC2/UMREC_2106). Участникам на начальном этапе исследования была предоставлена подробная информация и контактные данные исследовательской команды. Им было предоставлено время для ознакомления с информацией, обдумывания возможных последствий и отведено время для вопросов перед принятием решения об участии. Участникам было разъяснено, что они в любой момент могут отказаться от участия, закрыв браузер. После этого было получено их согласие посредством подтверждения и окончательного согласия на продолжение исследования перед его началом.

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ПСИХОЛОГИЯ РАЗВИТИЯ (ВОЗРАСТНАЯ ПСИХОЛОГИЯ)

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Studying basic concepts of happiness in preschool and early elementary school children using the in-depth interview method

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Abstract

Context and relevance. In childhood, the basic structure of the social world is built, and the idea of happiness is its core component. Studying children's ideas about the key components of their well-being — happiness and its fulfillment — is a relevant area of psychological and pedagogical research. **Objective.** To identify children's basic ideas about happiness and to determine their specificity depending on gender, age characteristics, cultural identity, family structure and "level" of happiness. **Methods and materials.** The study involved 120 children aged 5 to 9 years (M = 6,6; SD = 1,43). The in-depth interview method was used. To analyze the results of the qualitative research, the following were used: expert assessment method, qualitative and quantitative content analysis, Janis coefficient, Pearson chi-square test. **Results.** The model of representative fields of happiness and two types of semantic organization of children's representations about happiness: balanced and need-oriented were received as results. Among children who development well, the semantic organization of the fields of happiness are in balance: subjective and objective, individual and social. **Conclusions.** The deficiency or emphasis of the representative fields of happiness and the signs and emotions associate with them make the differences in basic representations about happiness in the compared categories of children. Children from single-parent families and children with low level of happiness have a pronounced imbalance in the representative fields of happiness, focusing on the need for affection and material needs. Low self-esteem leads to the fact that the representations of happiness become more dependent on the satisfaction of needs.

Keywords: representation of happiness, the model of happiness, balanced type of representation of happiness, need-oriented type of representation of happiness, semantic organization of the representative field

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зучение базовых представлений о счастье у дошкольников и младших школьников с помощью метода глубинного интервью

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Резюме

Контекст и актуальность. В детстве выстраивается базовая структура социального мира, и представление о счастье является стержневым ее компонентом. Изучение представлений детей о ключевых составляющих их благополучия — счастья и его наполнения — является актуальной областью психолого-педагогических исследований. **Цели**. Выявить базовые представления детей о счастье, определить их специфику в зависимости от половозрастных характеристик, культурной идентичности, семейной структуры и «уровня» счастья. **Методы и материалы**. Выборку исследования составили 120 респондентов в возрасте от 5 до 9 лет (M = 6,6; SD = 1,43). Применялся метод глубинного интервью. Для обработки результатов качественного исследования применялись: метод экспертных оценок, качественный и количественный контент-анализ, коэффициент Яниса, критерий хи-квадрат Пирсона. **Результаты.** В рамках исследования разработана модель репрезентативных полей счастья и выделено 2 типа семантической организованности представлений детей о счастье: сбалансированный и потребностно-ориентированный. У детей в благоприятной ситуации развития семантическая организованность полей счастья представляет баланс секторов: субъективного и объективного, индивидуального и социального. **Выводы**. Различия базовых представлений о счастье у сравниваемых категорий детей связаны с дефицитарностью или акцентностью репрезентативных полей счастья и стоящих за ними знаков и эмоций. У детей из неполных семей и низко оценивающих уровень своего счастья имеется ярко выраженный дисбаланс репрезентативных полей счастья с фокусировкой на потребности в привязанности и материальных потребностях. Чем меньше положительных характеристик в отношении себя ребенок высказывает, тем в большей степени представление о счастье у ребенка зависит от удовлетворения потребностей.

Ключевые слова: представление о счастье, модель счастья, сбалансированный тип представления о счастье, потребностно-ориентированный тип представления о счастье, семантическая организованность репрезентативного поля

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Introduction

This Research on values indicates a growing number of individuals reflecting on happiness and the meaning of life (Norris & Inglehart, 2011). Happiness is widely regarded as a key indicator of human experience (Argyle, 2003). However, relatively few people consider themselves truly happy (Dzhidaryan, 2013). Michael Argyle notes that while research often focuses on identifying the sources of happiness, the concept itself remains undertheorized, and a comprehensive theory of happiness is still lacking (Argyle, 2003). When it comes to children, there is a notable discrepancy between adult and child understandings of well-being (Titarenko & Klepach, 2016), highlighting the need for child-centered theoretical frameworks and research methodologies (Bayanova & Mustafin, 2013). Given these considerations, exploring how children perceive the factors contributing to well-being — especially happiness and what brings them joy — is a timely and significant area of psychological and pedagogical inquiry.

Does higher family income lead to greater happiness for children? How do children define and measure happiness? The conceptual scope of “happiness,” as influenced by age, gender, and cultural background, remains underexplored. Among Russian psychologists, A.L. Zhuravlev and A.V. Yurevich have attempted to define happiness, examining it within the context of life meaning, which they consider a central component of happiness (Zhuravlev & Yurevich, 2014). While these concepts are interdependent in adults, little is known about their relationship in children. The younger the child, the less likely these two constructs are to be linearly related.

Ed Diener and colleagues define happiness as a subjective state re-

flecting overall subjective well-being (Diener, 2000). From this perspective, happiness is not only equivalent to subjective well-being but represents its highest form (Dzhidaryan, 2013). It is often conceptualized as a unidimensional construct — essentially a balance between positive and negative affect, along with a person's overall life satisfaction (Linley et al., 2009). Single-item measures of happiness are common in international research and have demonstrated validity across numerous studies (Abdel-Khalek, 2006).

However, another body of literature approaches happiness through its structure and content. Martin Seligman's theory of flourishing identifies key elements of well-being: positive emotion, engagement, relationships, meaning, and accomplishment (PERMA model) (Seligman, 2011). Similarly, Michael Argyle highlights factors such as positive attitude, life satisfaction, optimism, and high self-esteem as contributors to happiness (Argyle, 2003). Zhuravlev and Yurevich's "Typical Structure of Happiness" includes dominant positive emotions and thoughts, optimism, a positive worldview, a sense of life meaning, harmony between personal and suprapersonal values, and overall life satisfaction (Zhuravlev & Yurevich, 2014). D.A. Leontiev proposes a two-level model of happiness: (1) deficiency happiness, reflecting the satisfaction of basic needs given material and social resources, and (2) existential (self-determined or idealistic) happiness, rooted in self-realization and the achievement of personal life goals (Leontiev, 2020). These goals are linked to core personality structures, including self-fulfillment strategies, lifestyle, and behavioral patterns.

Talcott Parsons conceptualizes happiness as part of a dyad: the Achievable— what individuals strive for within social norms and self-realization in social being — and the Predetermined — that which is inherent and defined by personal traits (Argyle, 2003). As evident, understanding happiness involves analyzing the fulfillment of both physical and existential needs (Kazantseva & Lipovaya, 2019), positioning happiness as both an individual and a social psychological phenomenon.

To conduct a substantive analysis, we draw on theoretical constructs from D.A. Leontiev and Talcott Parsons. By contrasting deficiency happiness and existential happiness from an ontological perspective, we establish the dichotomy of Subjective–Objective. Another dichotomy, Social–Individual, arises from the idea of human realization: within social being (emphasizing social norms) and individual being (prioritizing inherent personal traits). These dichotomies inform the representative fields of happiness used as the foundational category grid in our study (see Figure 1).

To explore children's perceptions of happiness, we apply Abric's

Fig. 1. Model of representative fields of happiness

concept of core and peripheral representations (Abric, 2001), identifying semantic cores within each representative field. These semantic cores are interpreted using Charles Sanders Peirce's semiotic triad: Object–Sign–Interpretant (Norris & Inglehart, 2011). In this framework, the representative fields are the objects, the semantic cores are the signs, and the expressed emotions are the interpretants. It is important to note that signs may carry emotional weight, as emotions are closely tied to motives, needs, values, and goals.

Based on this theoretical foundation, the study's objectives are: (1) to identify basic perceptions of happiness among preschool and early elementary school children, and (2) to examine variations in these perceptions based on gender, age, cultural background, family structure, and expert assessment of the child's "level of happiness," derived from in-depth interviews and behavioral observations.

Materials and methods

We conducted individual video-recorded interviews lasting 20–30 minutes on average. After initial processing, the data were thematically categorized. The resulting classification was summarized in a table detailing each child's responses across categories such as family, self-image, and emotions. Sampling criteria ensured categories were exhaustive, mutually exclusive, consistent, and relevant.

Thematic analysis employed text mining techniques, with words as the unit of analysis. Synonymous and cognate terms were generalized to identify the most frequently occurring words, which formed the semantic cores of children's happiness perceptions. These cores were categorized using the author's model of representative fields of happiness. Subsequently, the semantic cores were analyzed through Peirce's triadic framework.

A comparative analysis of happiness perceptions across different

child groups was conducted using statistical methods for qualitative data, including qualitative and quantitative content analysis, the Janis coefficient, Pearson's chi-squared test, and expert assessment.

Sample characteristics: 120 participants (41 boys, 79 girls), aged 5–9 years (M = 6,6; SD = 1,43). The sample included 69 preschoolers and 51 elementary school children. Family structure: 100 from two-parent families, 20 from single-parent families (living with mother). Birth order: 41 only children, 41 firstborn, 35 secondborn, 3 thirdborn. Ethnicity: 73 Russian, 47 Tatar, with participants residing in the Republic of Tatarstan, Chuvash Republic, Mari El Republic, and Moscow.

Data were collected during individual creativity sessions involving paper crafts, during which children were interviewed using a semi-structured protocol developed by Yu.Yu. Panfilova. Questions included: What is happiness? Do you consider yourself happy? What makes you happy? What is your dream? What do you value most? What is most important in life? Do you believe in miracles? What was the best day of your life? Do you enjoy being a child? etc.

Results

Semantic cores were identified based on occurrence in at least 50% of respondents.

The central semantic core in children's perceptions of happiness is joy. Joy is linked both to material aspects (e.g., LEGO, toys, money, tablets) and immaterial ones (e.g., parents being together, a mother's kiss, helping people and animals). Notably, young children (especially preschoolers) often incorporate magical thinking: entering fairy tales, becoming birds, trees turning into marmalade, or being a princess. As Serge Moscovici observes, social representations shape how we perceive reality (Moscovici, 2000), and thus, fairy tales, miracles, and the sacred play a significant role in children's conceptual worlds.

Age differences:

Preschoolers frequently mention "mother" as central to happiness, while elementary school children emphasize "family." This shift may reflect growing autonomy and a broader understanding

Table

Analysis of semantic cores of children's representations about happiness using Peirce's semantic triads (N = 120)

Object (representative)	Signs (symptoms)	Interpretante
Self concept	Cheerful, kind, beautiful, smart, good, I can, I know	Positive self-perception
The meaning of life	I will be, be, happiness, live, love	Self-worth («I for myself» in opposition to «I for others»)
Satisfaction of needs	Mother, love, parents, family, to be close	A sense of belonging
Mental states	Joy, living well, (good, happy) life	Optimism

of familial bonds. Elementary school children associate happiness with "health" more than preschoolers do. Quantitative analysis revealed significant differences by age: older children show greater mindfulness and self-criticism (χ^2 = 12,045, p < 0,001 for self-traits; χ^2 = 5,055, p < 0,05 for needs). Cultural Differences: Tatar children frequently used gender-marked language, unlike Russian children (χ^2 = 10,1, p < 0,01). Gender Differences: Girls more often associate happiness with family; boys with their mother. Girls use the word "dad" significantly more than boys, suggesting stronger father-daughter bonds. No other significant gender differences were found.

Family Structure and Birth Order: Children from single-parent families frequently use the word "together" when defining happiness (e.g., "Happiness is being together, close, and enjoying ourselves"). They rarely use the word "family," instead referring to "mom" and "dad" separately — unlike children from two-parent families, who commonly mention "family." Firstborn children are significantly more likely to mention "family" than later-born siblings, possibly due to assumed responsibilities. Children with siblings often mention "care," "help," and "play" (e.g., "Happiness is helping someone"). Level of Happiness: 14% of children responded "no" or hesitated when asked if they were happy. These children focused on others rather than themselves: "The meaning of life? I don't know. My mom and dad had me, so I live." "The meaning of life is to make everyone happy." "To help my mom and dad." Their responses reflect external determinants: "It's good when I don't have to go to hobby groups," "It's good when I don't have school today." In contrast, "happy" children used positive self-descriptors (beautiful, smart, kind, strong), while "not-so-happy" children used emotionally neutral terms (normal, simple, ordinary, so-so). Thus, children reporting lower happiness show deficient self-determination — low self-worth and a dominant "I exist for others" orientation (fig. 2).

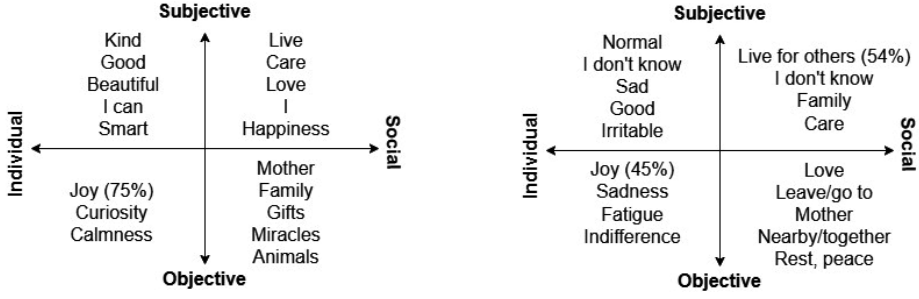

Fig. 2. Semantic units of happiness analysis, ranked in each category according to the results of frequency of mention, for happy (left) and not very happy (right) children

Using the Janis coefficient, we analyzed emotional valence across representative fields. It is given as a 100% stacked column chart. The Janis coefficient allowed us to develop the semantic arrangement of the representative field of happiness for different groups of children. The arrangement is given as a 100% stacked column chart (Fig. 3).

Two types of semantic organization emerged: Balanced type and Need-oriented type. Balanced type found in children from favorable developmental contexts, with equilibrium across subjective/objective and individual/social domains. Need-oriented type: Characterized by an overemphasis on need satisfaction, especially in children from single-parent families

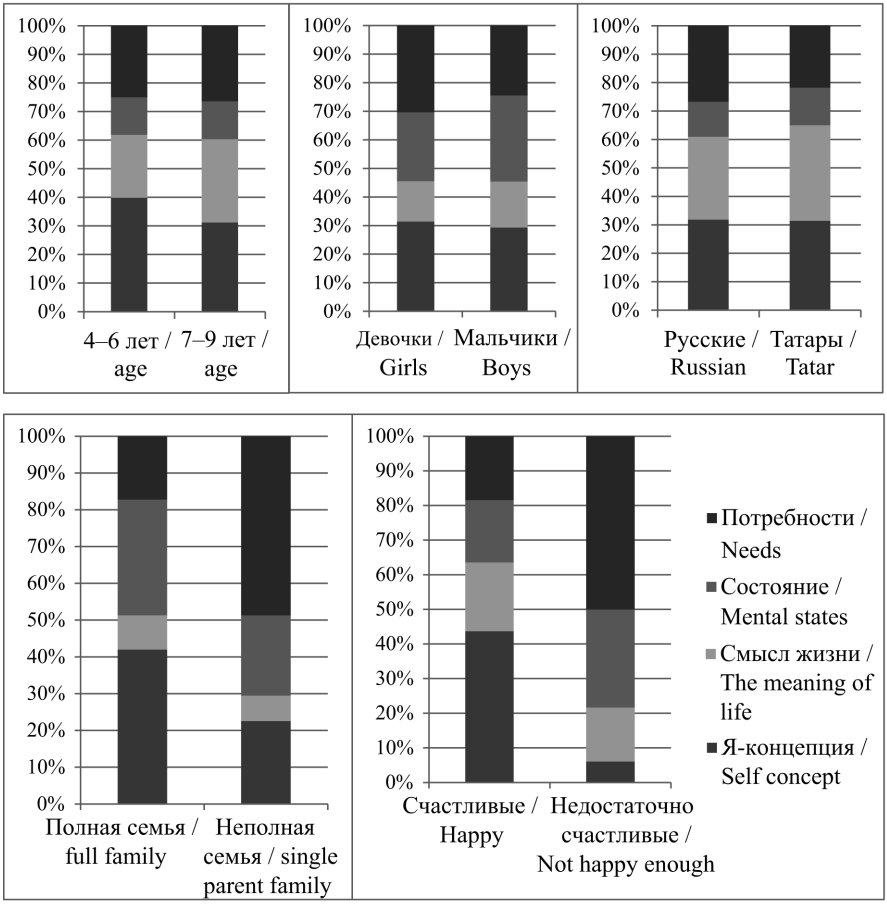

Fig. 3. Semantic organization of representative fields of happiness of different categories of children

or those with low happiness. Children from two-parent families show stronger individual-sector dominance, possibly due to family-centered parenting. As children age, mindfulness increases, and meaning-making may be replaced by internalized family values. The most vulnerable areas for "not-so-happy" children are self-concept (χ^2 = 65,349, p < 0,001) and meaning of life (χ^2 = 33,861, p < 0,001) — domains of existential happiness (Leontiev). Children from single-parent families also show weaker self-concept (χ^2 = 25,376, p < 0,001). Deficiencies in personal meaning and self-attitude lead to an over-reliance on material and emotional needs, risking a "materialization" of happiness and stagnation in objectification.

Discussion

Our findings align with Self-Determination Theory (Ryan & Deci, 2017), which distinguishes between intrinsic (autonomy, competence, relatedness) and extrinsic (wealth, fame, appearance) goals. Psychological well-being is enhanced by intrinsic goals but undermined by extrinsic ones (Olcar, Rijavec, & Ljubin Golub, 2019). Our study reveals a compensatory mechanism: children with weak internal resources overemphasize external needs — a pseudo-compensation rather than genuine balance.

Bradshaw et al. (2022) confirm that intrinsic goal pursuit correlates with well-being. The balance between individualization and integration — harmonizing "life for oneself" and "life for others" — is crucial for children's happiness (Deeva, 2022; Bruk & Ignatzheva, 2021).

Our model of representative fields resonates with S.V. Molchanov's types of psychological well-being in adolescents: balanced, ego-centered, and fortunate (Molchanov, Almazova, & Poskrebysheva, 2019). It also aligns with empirical findings: family and friends are central to children's happiness (Bruk & Ignatzheva, 2021), and single-parent family children report lower happiness due to reduced emotional support (Yakovleva & Makarova, 2015). Our data confirm that these children less frequently associate "family" with joy.

The weak internal self-determination in "not-so-happy" children echoes Bruk and Ignatzheva's (2021) findings on the need for balance between inner and outer worlds. In contrast, Belinskaya and Shaekhov (2023) suggest psychological adaptation and resilience may not always correlate with well-being — a nuance worth exploring further.

Conclusions

This in-depth interview study reveals the content and key determinants — socio-psychological and individual — of children's happiness perceptions. By integrating Leontiev's two-level happiness model and Parsons' dichotomous framework, we developed a model of representative

fields of happiness encompassing four domains: self-concept, meaning of life, satisfaction of needs, and mental states.

Key conclusions:

1. For young children, happiness is emotionally grounded in self-worth ("I for myself"), positive self-perception, belonging, and optimism.

2. In favorable developmental conditions, children exhibit a balanced semantic organization across subjective/objective and individual/social domains. With age, children become more reflective and critical — a shift evident in the transition from preschool to elementary school.

3. Children from single-parent families and those with low happiness levels show imbalanced happiness fields, overemphasizing emotional bonds and material needs. The fewer positive self-traits a child reports, the more their happiness depends on need satisfaction.

As happiness perception is central to children's understanding of social reality, analyzing it through representative fields allows us to identify deficiencies or overemphases in specific domains. These insights can inform psychological and educational practices aimed at fostering a "happy childhood" and preventing socio-psychological maladaptation.

Limitations. The study's sample is uneven in size and limited in age range. Future research should include longitudinal designs to track the evolution of happiness perceptions and explore risks such as hedonism, addictive behaviors, and involvement in destructive groups. While qualitative methods do not require representativeness, future studies should expand the model to other age groups. Additionally, participation was limited to children whose parents consented.

Список источников / References

1. Аргайл, М. (2003). *Психология счастья*. 2-е изд. СПб.: Питер, 270 с.
   Argayl, M. (2003). *Psychology of happiness*. St. Petersburg: Piter, 270 p. (In Russ.).
2. Баянова, Л.Ф, Мустафин, Т.Р. (2013). Культурная конгруэнтность дошкольника в нормативной ситуации и возможности ее исследования. *Современное дошкольное образование*, 36(4), 70–75.
   Bayanova, L.F, Mustafin, T.R. (2013). Cultural congruence of a preschooler in a normative situation and the possibilities of its study. *Modern preschool education*, 36(4), 70–75. (In Russ.).
3. Белинская, Е.П., Шаехов, З.Д. (2023). Взаимосвязь психологического благополучия и адаптации к рискам цифрового мира в молодежном возрасте. *Вестник Московского университета. Серия 14. Психология,* 46(3), 239–260. https://doi.org/10.11621/LPJ-23-35
   Belinskaya, Ye.P., Shayekhov, Z.D. (2023). The relationship between psychological well-being and adaptation to the risks of the digital world in youth. *Bulletin of Moscow University. Psychology,* 46(3), 239–260. (In Russ.). https://doi.org/10.11621/LPJ-23-35
4. Брук, Ж.Ю., Игнатжева, С.В. (2021). Субъективное благополучие детей 10-и и 12-и лет в пространстве удовлетворенности семьей, школой и друзьями. *Психологическая наука и образование*, 26(6), 164–175. https://doi.org/10.17759/pse.2021260613
   Bruk, ZH.YU., Ignatzheva, S.V. (2021). Subjective well-being of children 10 and 12 years old in the space of satisfaction with family, school and friends. *Psychological Science and Education*, 26(6), 164–175. (In Russ.). https://doi.org/10.17759/pse.2021260613
5. Волкова, Е.Н., Микляева, А.В., Хороших, В.В. (2022). Субъективные предпосылки психологического благополучия одаренных подростков. *Психологическая наука и образование*. 27(1), 92–103. https://doi.org/10.17759/pse.2022270108
   Volkova, Ye.N., Miklyayeva, A.V., Khoroshikh, V.V. (2022). Subjective prerequisites for the psychological well-being of gifted adolescents. *Psychological Science and Education*, 27(1), 92–103. (In Russ.). https://doi.org/10.17759/pse.2022270108
6. Деева, Н.А. (2022). Субъективные представления личности о жизненной успешности в современной ситуации. *Национальный психологический журнал*, 2, 14–24. https://doi.org/10.11621/npj.2022.0202
   Deyeva, N.A. (2022). Subjective ideas of the individual about success in life in the modern situation. *National psychological journal*, 2, 14–24. (In Russ.). https://doi.org/10.11621/npj.2022.0202
7. Джидарьян, И.А. (2013). Психология счастья и оптимизма. М.: Институт психологии РАН.
   Jidarian, I.A. (2013). Psychology of happiness and optimism. Moscow: Institute of Psychology, Russian Academy of Sciences. (In Russ.).
8. Журавлев, А.Л., Юревич, А.В. (2014). Счастье как научная категория. *Вестник Российской академии наук*, 84(8), 715. https://doi.org/10.7868/S0869587314080179
   Zhuravlev, A.L., Yurevich, A.V. (2014). Happiness as a scientific category. *Bulletin of the Russian Academy of Sciences*, 84(8), 715. (In Russ.). https://doi.org/10.7868/S0869587314080179
9. Казанцева, Е.В., Липовая, О.А. (2019). К вопросу о характеристике нарративной структуры социальных представлений. *Психология и психотехника*, 1, 33–43. https://doi.org/10.7256/2454-0722.2019.1.29275
   Kazantseva, Ye.V., Lipovaya, O.A. On the question of characterizing the narrative structure of social representations. *Psychology and psychotechnics*, 1, 33–43. (In Russ.). https://doi.org/10.7256/2454-0722.2019.1.29275

10. Леонтьев, Д.А. (2020). Счастье и субъективное благополучие: к конструированию понятийного поля. *Мониторинг общественного мнения: Экономические и социальные перемены,* 1 (155), 14–37. https://doi.org/10.14515/monitoring.2020.1.02
Leontyev, D.A. (2020). Happiness and subjective well-being: towards the construction of a conceptual field. *Monitoring of public opinion: Economic and social changes*, 1, 14–37. (In Russ.). https://doi.org/10.14515/monitoring.2020.1.02
11. Молчанов, С.В., Алмазова, О.В., Поскребышева, Н.Н. (2019). Моральные суждения подростков с разным уровнем психологического благополучия. *Психологическая наука и образование*, 24(4), 22–35. https://doi.org/10.17759/pse.2019240402
Molchanov, S.V., Almazova, O.V., Poskrebysheva, N.N. (2019). Moral judgments of adolescents with different levels of psychological well-being. *Psychological Science and Education*, 24(4), 22–35. (In Russ.). https://doi.org/10.17759/pse.2019240402
12. Титаренко, Е.В., Клепач, Ю.В. (2016). Особенности представлений о счастье у дошкольников. *IN SITU*, 6, 70–72.
Titarenko, Ye.V., Klepach, YU.V. (2016). Peculiarities of ideas about happiness among preschool children. *IN SITU*, 6, 70–72. (In Russ.).
13. Яковлева, А.В., Макарова, А.П. (2015). Представление о счастье у детей из полных и неполных семей. *Международный студенческий научный вестник*, 5–2, 205–206.
Yakovleva, A.V., Makarova, A.P. (2015). The idea of happiness in children from single-parent and single-parent families. *International Student Scientific Bulletin*, 5-2, 205–206. (In Russ.).
14. Abdel-Khalek, A.M. (2006). Measuring happiness with a single-item scale. *Soc. Behav,* 34, 139–150. https://doi.org/10.2224/sbp.2006.34.2.139
15. Abric, J.-C. (2001). A structural approach to social representations. *Representations of the social: Bridging theoretical traditions* (pp. 42–47). Ed. by K. Deaux, G. Philogene. Oxford: Blackwell Publishers.
16. Bradshaw, E.L., et al. (2022). A meta-analysis of the dark side of the American dream: Evidence for the universal wellness costs of prioritizing extrinsic over intrinsic goals. *Journal of Personality and Social Psychology*, 124(4), 873–889. https://doi.org/10.1037/pspp0000431
17. Diener, E. (2000). Subjective well-being: the science of happiness and a proposal for a national index. *Am. Psychol*, 55, 34–43. https://doi.org/10.1037/0003-066X.55.1.34
18. Linley, P.A., Maltby, J., Wood, A.M., Osborne, G., Hurling, R. (2009). Measuring happiness: the higher order factor structure of subjective and psychological well-being measures. *Pers. Individ. Differ*, 47, 878–884. https://doi.org/10.1016/j.paid.2009.07.010
19. Moscovici, S. (2000). The phenomenon of social representations. *Social representations: Explorations in social psychology* (pp. 18–77). Ed. by G. Duveen. New York: New York University Press.
20. Norris, P., Inglehart, R. (2011). *Sacred and Secular: Religion and Politics Worldwide*. 2nd ed. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511894862
21. Olcar, D., Rijavec, M., Ljubin Golub, T. (2019). Primary school teachers' life satisfaction: The role of life goals, basic psychological needs and flow at work. *Current Psychology*, 38, 320–329. https://doi.org/10.1007/s12144-017-9611-y
22. Ryan, R.M., Deci, E.L. (2017). Self determination theory. Basic psychological needs in motivation development and wellness. *Revue Québécoise de Psychologie*, 38(3), 231–234. https://doi.org/10.7202/1041847ar
23. Seligman, M.E.P. (2011). *A new understanding of happiness and well-being and how to achieve them*. Boston: Nicholas Brealey.

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Elvira N. Gilemkhanova — ideas; application of statistical, mathematical or other methods for data analysis; annotation, writing and design of the manuscript; control over the research.

Yulia Yu. Panfilova — conducting the experiment; data collection and analysis; visualization of research results.

All authors participated in the discussion of the results and approved the final text of the manuscript.

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Научная статья | Original paper

The use of humor in regulating the subjective experience of danger by younger schoolchildren

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Abstract

Context and relevance. The comic is an object of interdisciplinary research, which introduced the idea of the comic into psychology as a unity of cognitive and regulatory characteristics that allow the subject to perceive and understand contradictions in a situation of social interaction. **Objective.** To study the regulation of the subjective experience of danger by younger schoolchildren in a situation of violation of cultural norms through comic. **Hypothesis.** We assume that the comic, its formation in ontogenesis, allows us to judge the success of mastering a child of primary school age by his own mental activity. **Methods and materials.** The sample included 223 primary school students aged 7–11 years (M = 9,01; SD = 0,93): 112 boys and 111 girls The empirical study used content analysis of funny stories of younger schoolchildren, diagnostic tools for assessing the comic in younger schoolchildren "Sometimes it happens"(Certificate of state registration No. 2025611158 Russian Federation). **Results.** The study revealed that the number of rules of social interaction specified by younger schoolchildren depends on the degree of regulation of activities. Younger schoolchildren were more likely to offer comical options in less regulated activities, in situations of extracurricular interaction. **Conclusions.** Younger schoolchildren assessed the degree of danger of violating cultural norms: the realization that violating norms could lead to injury and punishment from an adult did not allow them to perceive the situation as comical. Following the cultural norm in the child's mind guarantees them a certain safety in situations of interaction with adults and peers in situations of violation of the cultural norm in the comic.

Keywords: the comic, humor, regulatory function, regulation, self-regulation, experience, danger, safety, cultural norms, the rules of conduct, younger schoolchild

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Использование юмора в регуляции субъективного переживания опасности младшими школьниками

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Резюме

Контекст и актуальность. Комическое есть предмет межпредметных исследований, привнесший в психологию идею комического как единства когнитивных и регулятивных характеристик, позволяющих субъекту воспринимать и понимать противоречия в ситуации социального взаимодействия. **Цель**. Выявить особенности регуляции субъективного переживания опасности младшими школьниками в ситуации нарушения культурной нормы посредством комического. **Гипотеза**. Становление комического в онтогенезе позволяет судить об успешности овладевания ребенком младшего школьного возраста своей собственной психической деятельностью. **Методы и материалы**. Выборку составили 223 школьника в возрасте 7–11 лет (M = 9,01, SD = 0,93): 112 мальчиков и 111 девочек. В исследовании были использованы: контент-анализ забавных историй младших школьников, а также диагностический инструментарий по оценке комического у младших школьников «Иногда так случается» (Свидетельство о государственной регистрации № 2025611158 Российской Федерации). **Результаты.** Выявлено, что количество выделяемых младшими школьниками правил социального взаимодействия, способность составить комичные варианты развертывания событий в ситуации нарушения культурной нормы зависят от степени регламентированности деятельности: в менее регламентированной деятельности показатели выше. **Выводы**. Младшие школьники при составлении комичных историй и выборе комичных вариантов развертывания событий оценивали степень опасности нарушения культурной нормы. Осознание, что нарушение нормы может привести к травме, наказанию со стороны взрослого, не позволяло воспринимать ситуацию как комичную. Следование норме в представлении ребенка гарантировало ему определенную безопасность в ситуации нарушения культурной нормы в комическом.

Ключевые слова: комическое, юмор, регулятивная функция, регуляция, саморегуляция, переживание, опасность, безопасность, культурные нормы, правила поведения, младший школьник

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Introduction

The development of the comic in ontogenesis remains a relatively underexplored area in psychological science. Existing research highlights a crucial prerequisite for the emergence of humor: the perception of the comic as safe — devoid of real or imagined threat to the narrator or audience. Laughter facilitates a detached, external perspective on reality, transforming events into something perceived as "safe and amusing." According to L.V. Karasev, this transformation can be achieved through a reinterpretation of meaning, which neutralizes potential malevolence and converts it into its opposite (Karasev, 1996, p. 31). Understanding humor requires a specific cognitive reframing, where a situation is perceived as humorous only when it does not compromise the individual's sense of security (Dzemidok, 1974). A safe context thus provides the necessary foundation for the humorous perception of incongruity (Borodenko, 1995).

O.A. Shiyan argues that the cognitive mechanism enabling children to transform frightening characters into non-threatening ones in narratives is rooted in dialectical thinking — the ability to manipulate opposing concepts (Shiyan, 2022). N.E. Veraksa emphasizes the importance of studying laughter within the framework of children's subculture and views culture as a system of normative situations (Veraksa, Bayanova, Artemyeva, 2023). A.K. Pashchenko notes that children "interact with others within normative situations that constitute a unit of an individual's lived space" (Pashchenko, 2010, p. 78). Laughter can thus be seen as a unique form of cathartic experience, often arising from the playful transgression of cultural norms (Romanova, 2014). In the context of self-regulation, the integration of affect and cognition becomes critical, with experience serving as the fundamental unit of a child's psychological development (Veraksa & Dyachenko, 1996).

Children's peer interactions and their ability to satisfy personal needs while maintaining positive social relationships are essential for the development of regulatory functions (Veraksa, 2014). Upon entering school, a child becomes part of a structured social environment where fulfilling specific roles and adhering to established norms are crucial (Bayanova et al., 2016). Primary school children develop within the frameworks of "student–educational activity," "student–teacher," and "student–student" relationships, necessitating the cultivation of context-appropriate behaviors. Adult attitudes, particularly those of teachers, significantly mediate a child's relationships with authority figures (Elkonin, 1971, p. 15). In her study of educational environments, P.I. Belyaeva identified the absence of anxiety and the presence of subjective well-being as key indicators of psychological safety among primary school students (Belyaeva, 2013). The ability to transform negative emotions into positive ones is vital for preserving a child's "individual self," a process influenced by personal experiences, imagination, environment, and individual characteristics (Zakharova, 2017).

International research underscores humor's role in primary education, dem-

onstrating its effectiveness in capturing students' attention, increasing engagement, and reducing anxiety (Ger, Daum, Manfredi, 2024; Emery et al., 2024; Yalçıntaş & Kartal, 2023; Zhou & Lee, 2024). Humor also fosters creative thinking and innovation (Akben & Coskun, 2024; Eskidemir & Koçer, 2023; Gaete, 2024; Kellner & Benedek, 2017). As cognitive functions mature during the primary school years, children increasingly comprehend complex forms of humor, including violations of cultural, logical, and linguistic norms (Piaget, 2003; McGhee, 2014; Zajączkowska & Abbot-Smith, 2020).

A pressing challenge in the study of humor among younger schoolchildren is the development of diagnostic tools that assess both cognitive and regulatory aspects of humor. Recent reviews have examined existing instruments for evaluating humor in preschool and early school-aged children (Shatskaya et al., 2024). Other methods focus on humor styles (James & Fox, 2016; Y ld r m, Karaca, & enol, 2024), irony, laughter frequency in social contexts (Martin, 2009), and the presence of comedic elements in narratives (Romanova, 2014).

However, psychological research has not yet fully explored the regulatory function of humor in younger children as they develop cognitive abilities and manage fears and emotional experiences. To address this gap, the present study employs the author-developed methodology "Sometimes It Happens," which enables children to identify cultural norms, recognize potential norm violations, and construct a subjectively safe social reality through humor in response to such violations.

Materials and methods

The study involved 223 primary school students aged 7 to 11 years (M = 9,01, SD = 0,93) from Kazan, Russia.

In the first phase, 174 children aged 9 to 11 years (M = 9,42, SD = 0,82; 92 boys, 82 girls) were asked to create and record a humorous story to explore their understanding of comedy.

In the second phase, an empirical investigation into humor was conducted using the author's diagnostic methodology "Sometimes It Happens." This method examines children's perception and creation of humor in contexts involving violations of cultural norms. It includes six scenarios: educational ("in class," "during recess"), extracurricular ("in the park," "while walking"), and family-based ("at breakfast," "at the zoo").

The methodology demonstrates strong psychometric reliability: test-retest correlations are r = 0,789 for "identifying rules in interaction situations," r = 0,637 for "creating comical event scenarios," and r = 0,702 for "selecting adaptive or maladaptive comical scenarios." Construct validity is supported by significant correlations between the methodology's indicators and L.F. Bayanova's measure of cultural congruence.

An additional sample of 49 children aged 7 to 10 years (M = 8,75, SD = 1,05; 20 boys, 29 girls) participated in individual diagnostic sessions. Parental consent was obtained. A psychologist administered the methodology and recorded responses.

Procedure: Each child was shown a card depicting one of six scenarios. They were first asked to describe appropriate behavior and identify relevant rules in the depicted context. This assessed their ability to recognize social norms in academic, extracurricular, and family settings.

Next, children were informed that rule-breaking could sometimes lead to humorous outcomes. They were encouraged to recall or imagine such situations from personal experience. This assessed their capacity to conceptualize norm violations and generate comical narratives.

Finally, children were presented with two humorous scenarios — one adaptive (harmless rule-breaking, e.g., playful use of chopsticks) and one maladaptive (potentially harmful, e.g., pushing a peer or stealing from an animal) — and asked to choose the funnier one and explain their choice. Each selection was scored 1 point (Artemyeva, 2025).

Data were analyzed using descriptive statistics and Spearman's correlation analysis via IBM SPSS Statistics 23.

Results

The content analysis of humorous stories

A total of 170 humorous stories were analyzed. Children frequently drew on personal experiences involving norm violations in school, such as mischievous interactions with teachers or peers. Recurring themes included falling objects or people, unexpected behaviors, object transformations, and joyful interactions involving friendship, games, or animals.

Perception and creation of humor in younger schoolchildren

Identifying rules (norms) in interaction situations

The number of rules articulated by each child was recorded. Responses were scored: 1 point for a complete rule (e.g., "don't shout during class"), 0,5 points for partial articulation (e.g., "be careful"). A statistical analysis of the rules and norms identified by younger schoolchildren in interaction situations is presented in Table 1.

• Family contexts: 195 responses yielded 17 distinct rules (e.g., "don't play at the table," "obey parents").

•Educational contexts: 188 responses identified 16 rules (e.g., "raise your hand," "complete assignments").

•Extracurricular contexts: 150 responses revealed 21 rules (e.g., "don't bully others," "clean up after yourself").

Table 1

Norms identified by younger students in situations of interaction

Indicator	Situations	Frequency			Maximum			Average			Standard deviation		
		В	М	Д	В	М	Д	В	М	Д	В	М	Д
Identifying rules and regulations	Curricular	188,00	75,00	113,00	9,00	6,00	9,00	3,83	3,75	3,89	2,06	1,74	2,28
	Extracurricular	150,00	65,00	87,00	6,00	6,00	6,00	3,06	3,25	3,01	1,99	2,22	1,76
	Family	195,00	75,00	120,00	9,00	9,00	8,00	3,97	3,75	4,13	2,16	2,63	1,80

Note: В: the whole sample (n = 49); М: boys (n = 20); Д: girls (n = 29).

Developing Comical Scenarios

Children were assessed on their ability to generate humorous narratives involving norm violations. Scoring criteria:

• 1 point: continuation of the scenario (e.g., "the kids go sledding").

• 2 points: labeling the situation as "funny" without elaboration (e.g., "someone says something funny").

• 3 points: explicit norm violation creating humor (e.g., "a student gives a wrong answer, and everyone laughs — it's ridiculous"). The results of this task performed by the younger students are shown in Table 2.

Total scores:

• Extracurricular: 175 points (highest)

• Family: 124 points

• Educational: 118 points (lowest).

3. Choosing adaptive or maladaptive scenarios

Children selected between adaptive (harmless) and maladaptive (harmful) humorous outcomes. Adaptive scenarios received 197 points; maladaptive ones, 48 points.

Qualitative analysis revealed children's awareness of danger:

• "No, it's not funny — he falls and gets hurt."

• "She could break her back — it's not amusing."

• "That's not funny; you could cut your hand on glass."

• The boy will get scolded — the ball is torn."

These responses indicate that potential harm or punishment inhibits the perception of humor.

Spearman's Correlation Analysis revealed significant relationships (see Table 3):

• Positive correlations between rule identification across contexts (educational, extracurricular, family).

• Positive correlations in creating humorous scenarios across domains.

• Positive correlation in selecting adaptive scenarios across all contexts.

• Negative correlation between adaptive and maladaptive scenario choices in extracurricular and family settings.

Notably:

• A negative correlation existed between identifying rules in educational settings and choosing adaptive humorous outcomes.

• A positive correlation was found between recognizing rules in extracurricular

Table 2

Comical scenarios for the development of events in various situations of interaction, proposed by younger students

Indicator	Situations	Total points			Maximum			Average			Standard deviation		
		В	М	Д	В	М	Д	В	М	Д	В	М	Д
Comical scenarios of events	Curricular	118,00	35,00	83,00	9,00	6,00	9,00	2,40	1,75	2,86	2,48	2,04	2,68
	Extracurricular	175,00	72,00	103,00	8,00	8,00	6,00	3,57	3,60	3,55	2,34	2,60	2,19
	Family	124,00	44,00	80,00	6,00	6,00	6,00	2,53	2,20	2,75	2,55	2,66	2,50

Note: В: the whole sample (n = 49); М: boys (n = 20); Д: girls (n = 29).

Table 3

The relationship between the indicators of the "Sometimes it happens" methodology (N = 49)

Indicator	Identifying rules and regulations		Comical scenarios of events		The choice of comical adaptive or maladaptive options					
	Внеуч	Сем	Внеуч	Сем	АдЮ			ДезЮ		
					Уч	Внеуч	Сем	Уч	Внеуч	Сем
ПР *Уч*	0,562**	0,584**			–0,529**		–0,315*			
ПР *Внеуч*		0,639**							0,412**	
ПР *Сем*					–0,321*					
СКИ *Уч*			0,443**	0,539**						
СКИ *Внеуч*				0,685**					0,334*	
СКИ *Сем*									0,339*	0,366**
АдЮ *Уч*						0,366**	0,330*	–0,484**		
АдЮ *Внеуч*							0,659**		–0,593**	–0,423**
АдЮ *Сем*									–0,449**	–0,625**
ДезЮ *Уч*									0,285*	0,315*
ДезЮ *Внеуч.*										0,672**

Note: the correlation is significant at the level of: * — p < 0,05; ** — p < 0,01; ПР — identifying rules and regulations; СКИ — comical scenarios of events; АдЮ, ДезЮ — the choice of comical adaptive or maladaptive options: Уч — curricular; Внеуч — extracurricular; Сем — family.

settings and selecting maladaptive options.

• A positive correlation linked maladaptive choices in family and extracurricular contexts with the ability to generate humorous narratives.

Discussion

The literature indicates that international research primarily focuses on children's cognitive capacity to understand humor, irony, and teasing (McGhee, 2014), while Russian studies emphasize that cognitive development alone does not guarantee full comprehension of humor (Romanova, 2014). A key factor is contextual safety. Humor serves as a tool for emotional regulation and cognitive mastery (Borodenko, 1995).

This study, grounded in N.E. Veraksa's framework, treats humor as embedded in systems of normative situations (Veraksa, Bayanova, Artemyeva, 2023). It examines children's ability to identify social norms and creatively reinterpret norm violations in a humorous way.

Findings align with L.F. Bayanova's research on cultural congruence (Bayanova et al., 2016): children's identified

rules reflect dimensions such as “social interaction,” “academic competence,” “obedience,” and “self-regulation.” The results confirm that younger children are aware of the need for behavioral regulation in various contexts.

The negative correlation between rule identification in educational settings and choosing adaptive humorous outcomes — alongside the positive link between rule recognition in extracurricular settings and maladaptive choices — suggests a maturing regulatory function. As children develop, they can mentally distance themselves from threatening norm violations, perceiving them as subjectively safe. This supports Romanova’s (2014) observation that children who cannot emotionally distance themselves from frightening situations fail to enjoy humor.

Scholars from both Russian and international traditions (Veraksa et al., 2023; Martin, 2009) view humor as a cultural phenomenon allowing temporary, playful transgression of norms. The positive correlation between maladaptive scenario selection and humorous narrative generation indicates that children use humor to regulate emotional experiences, distance themselves from threat, and construct a safe social reality amid norm violations.

Conclusions

The subjective experience of danger refers to the psychological states that arise in children when facing potentially threatening situations. Psychological safety — defined as a child’s subjective confidence in the absence of danger during social interactions — is essential for emotional stability, especially when cultural norms are violated. In this context, experience functions as an internal mechanism supporting adaptive behavior.

Key findings include:

1. The less regulated an activity, the more rules children articulated.

2. Extracurricular contexts yielded the highest number of identified rules; educational contexts, the fewest.

3. Children recognize humor as involving norm violations, but adherence to norms provides them with a sense of safety.

4. Humor is understood as a deviation from expected behavioral patterns.

5. The quantity of humorous narratives was highest in less regulated (extracurricular) contexts and lowest in structured (educational) ones.

6. Children avoided humor in situations where norm violations could lead to injury or punishment.

7. Competence in identifying rules or creating humorous scenarios in one context predicted similar abilities in others.

8. Cultural norms were violated to varying degrees in chosen scenarios.

9. Children preferred adaptive humor (minimal harm), avoiding maladaptive scenarios that risk health or reputation.

10. Children skilled in creating humor were more likely to choose maladaptive options, indicating reduced fear of norm violation.

11. The negative correlation between rule identification and adaptive choices, and the positive link with maladaptive choices, suggests that increased regulatory capacity allows children to perceive

even “dangerous” norm violations as safe through humor.

12. Developed self-regulation enables children to use humor to transform threatening situations into safe, enjoyable experiences. Conversely, poor regulation prevents humorous perception and enjoyment.

Limitations. The study was conducted in Kazan, Republic of Tatarstan, limiting generalizability. Given humor’s cultural specificity and Russia’s multiethnic composition, future research should explore ethnocultural differences in children’s humor perception and creation.

Future Directions. Promising areas include examining humor in boys and girls, and among children with varying levels of school-related anxiety, in both safe and potentially dangerous situations.

Список источников / References

1. Артемьева, Т.В. (2025). Изучение комического у младших школьников в ситуации нарушения культурной нормы: Набор данных. RusPsyData: Репозиторий психологических исследований и инструментов. Москва. https://doi.org/10.48612/MSUPE/ph24-9bkp-fkub
   Artemyeva, T.V. (2025). The study of the comic in younger schoolchildren in a situation of violation of cultural norms: Data set. RusPsyData: Repository of psychological research and instruments. Moscow. https://doi.org/10.48612/MSUPE/ph24-9bkp-fkub
2. Беляева, П.И. (2013). *Психологическая безопасность личности младшего школьника в образовательной среде школы: Дисс. … канд. психол. наук*. СПб.
   Belyaeva, P.I. (2013). *Psychological security of the personality of a younger student in the educational environment of the school: Dis. Cand. Sci. (Psychol.).* St. Petersburg. (In Russ.).
3. Бороденко, М.В. (1995). *Комическое в системе установочной регуляции поведения: Дисс. ... канд. психол. наук*. М.
   Borodenko, M.V. (1995). *The comic in the system of institutional regulation of behavior: Dis. Cand. Sci. (Psychol.).* Moscow. (In Russ.).
4. Веракса, А.Н. (2014). Социальный аспект в развитии регуляторных функций в детском возрасте: обзор современных зарубежных исследований. *Вестник Московского университета*, Серия 14(4), 91–101. URL: https://rucont.ru/efd/340949 (дата обращения: 30.01.2025).
   Veraksa, A.N. (2014). The social aspect in the development of regulatory functions in childhood: a review of modern foreign research. *Bulletin of Moscow University*, Series 14(4), 91–101. (In Russ.). URL: https://rucont.ru/efd/340949 (viewed: 30.01.2025).
5. Веракса, Н.Е., Баянова, Л.Ф., Артемьева, Т.В. (2023). Психология смеха в структурно-диалектическом подходе. *Культурно-историческая психология*, 19(3), 93–101. https://doi.org/10.17759/chp.2023190311
   Veraksa, N.E., Bayanova, L.F., Artemyeva, T.V. (2023). The psychology of laughter in a structural-dialectical approach. *Cultural and Historical Psychology*, 19(3), 93–101. (In Russ.). https://doi.org/10.17759/chp.2023190311
6. Веракса, Н.Е., Дьяченко, О.М. (1996). Способы регуляции поведения у детей дошкольного возраста. *Вопросы психологии*, 3, 14–27. https://psychlib.ru/mgppu/periodica/VP031996/VSr-014.htm?ysclid (дата обращения: 30.01.2025).
   Veraksa, N.E., Dyachenko, O.M. (1996). Ways of regulating behavior in preschool children. *Questions of Psychology*, 3, 14–27. (In Russ.). https://psychlib.ru/mgppu/periodica/VP031996/VSr-014.htm?ysclid (viewed: 30.01.2025).
7. Дземидок, Б. (1974). *О комическом*. М.: Прогресс.
   Dzemidok, B. (1974). *About the comic*. Moscow: Progress. (In Russ.).
8. Захарова, Т.Г. (2017). Психологические особенности восприятия и понимания чувства юмора детьми младшего школьного возраста. *Герценовские чтения. Начальное образование*, 8(1), 51–56. https://elibrary.ru/item.asp?id=28416251 (дата обращения: 30.01.2025).
   Zakharova, T.G. (2017). Psychological features of perception and understanding of the sense of humor by children of primary school age. *The Herzen readings. Primary Education*, 8(1), 51–56. (In Russ.). https://elibrary.ru/item.asp?id=28416251 (viewed: 30.01.2025).
9. Карасев, Л.В. (1996). *Философия смеха*. М.: РГГУ.
   Karasev, L.V. (1996). *The philosophy of laughter*. Moscow: RGGU. (In Russ.).
10. Мартин, Р. (2009). *Психология юмора*. СПб.: Питер.
    Martin, R. (2009). *Psychology of humor*. St. Petersburg: Peter. (In Russ.).
11. Пащенко, А.К. (2010). Нормативное поведение младших школьников.

Культурно-историческая психология, 3, 78–85. https://psyjournals.ru/journals/chp/archive/2010_n3/30834 (дата обращения: 30.01.2025).
Pashchenko, A.K. (2010). The normative behavior of younger students. *Cultural and Historical Psychology*, 3, 78–85. (In Russ.). https://psyjournals.ru/journals/chp/archive/2010_n3/30834 (viewed: 30.01.2025).

12. Пиаже, Ж. (2003). *Психология интеллекта*. СПб.: Питер.
Piaget, J. (2003). *Psychology of intelligence*. St. Petersburg: Peter. (In Russ.).
13. Романова, А.Л. (2014). Возрастные особенности восприятия смешного и страшного в мультфильме. *Культурно-историческая психология*, 10(4), 47–56. https://psyjournals.ru/journals/chp/archive/2014_n4/73435 (дата обращения: 30.01.2025).
Romanova, A.L. (2014). Age-related features of the perception of funny and scary in a cartoon. *Cultural and Historical Psychology*, 10(4), 47–56. (In Russ.). https://psyjournals.ru/journals/chp/archive/2014_n4/73435 (viewed: 30.01.2025).
14. Шатская, А.Н., Ощепкова, Е.С., Веракса, Н.Е., Баянова, Л.Ф., Ковязина, М.С. (2024). Чувство юмора у дошкольников и младших школьников: обзор диагностического инструментария. *Национальный психологический журнал*, 19(4), 40–57. https://doi.org/10.11621/npj.2024.0403
Shatskaya, A.N., Oschepkova, E.S., Veraksa, N.E., Bayanova, L.F., Kovyazina, M.S. (2024). Development of sense of humor in preschoolers and younger schoolchildren: a review of diagnostic tools. *National Psychological Journal*, 19(4), 40–57. (In Russ.). https://doi.org/10.11621/npj.2024.0403
15. Шиян, О.А. (2022). Смешное и страшное в детских нарративах: когнитивный аспект. *Национальный психологический журнал*, 3(47), 44–51. https://doi.org/10.11621/npj.2022.0306
Shiyan, O.A. (2022). Funny and scary in children's narratives: the cognitive aspect. *National Psychological Journal*, 3(47), 44–51. (In Russ.). https://doi.org/10.11621/npj.2022.0306
16. Эльконин, Д.Б. (1971). К проблеме периодизации психического развития в детском возрасте. *Вопросы психологии*, 4, 6–21. https://psychlib.ru/mgppu/EPr-1997/EPR-0661.htm#$p66 (дата обращения: 30.01.2025).
Elkonin, D.B. (1971). On the problem of periodization of mental development in childhood. *Questions of Psychology*, 4, 6–21. (In Russ.). https://psychlib.ru/mgppu/EPr-1997/EPR-0661.htm #$p66 (viewed: 30.01.2025).
17. Akben, C., Coskun, H. (2024). Humor supports creativity: evidence that personality traits moderate the effects of humor styles on divergent thinking. *Current Psychology*, 43, 33089–33104. https://doi.org/10.1007/s12144-024-06858-w
18. Bayanova, L.F., Tsivilskaya, E.A., Bayramyan, R.M., Chulyukin, K.S. (2016). A cultural congruence test for primary school students. *Psychology in Russia: State of the Art*, 9(4), 94–105. https://doi.org/10.11621/PIR.2016.0408
19. Emery, L., Libera, A., Lehman, E., Levi, B.H. (2024). Humor in parenting: Does it have a role? *PLOS One*, 19(7). https://doi.org/10.1371/journal.pone.0306311
20. James, L., Fox, C. (2016). The development of a humor styles questionnaire for younger children. Humor: *International Journal of Humor Research*, 29(4), 555–582. https://doi.org/10.1515/humor-2016-0042
21. Eskidemir, Mera S., Koçer, H. (2023). Humor development in preschool and primary school children *Turkiye Problems of Education in the 21st Century*, 81(3), 374–387. https://doi.org/10.33225/pec/23.81.374
22. Gaete, J.P. (2024). Oral storytelling and humor in primary education: Perceptions of an educational community regarding its impact on the creativity and concentration of boys and girls. *Tercio Creciente*, 26, 95–114.

https://doi.org/10.17561/rtc.26.8649

23. Ger, E., Daum, M.M., Manfredi, M. (2024). Children's recognition of slapstick humor is linked to their Theory of Mind. *Frontiers in Cognition*, 3: 1369638. https://doi.org/10.3389/fcogn.2024.1369638
24. Kellner, R., Benedek, M. (2017). The role of creative potential and intelligence for humor production. *Psychology of Aesthetics Creativity and the Arts*, 11(1), 52–58. https://doi.org/10.1037/aca0000065
25. McGhee, Paul E. (2014). *Humor and Children`s Development: A Guide to Practical Applications*. Taylor&Francis. https://doi.org/10.4324/9781315826127
26. Yalçıntaş, E., Kartal, H. (2023). Children's sense of humor and humor in the classroom. *E-International Journal of Educational Research*, 14(1), 20–36. https://doi.org/10.19160/e-ijer.1155362
27. Yıldırım, O.G., Karaca, N., Şenol, F.B. (2024). Examining the Relationship between Humor Styles and Self-Perceptions in Turkish Children: A Validation of the HSQ-Y. *International Electronic Journal of Elementary Education*, 16(3), 311–324. Retrieved from https://www.iejee.com/index.php/IEJEE/article/view/2120 (viewed: 29.01.2025).
28. Zajączkowska, M., Abbot-Smith, K. (2020). «Sure, I'll help — I've just been sitting around doing nothing at school all day»: Cognitive flexibility and child irony interpretation. *Journal of Experimental Child Psychology*, 199, Article number 104942. https://doi.org/10.1016/j.jecp.2020.10494
29. Zhou, W., Lee, J.C. (2024). Enhancing learning outcomes and notivation: the benefits of related humor over self-disparaging humor in primary Chinese education. *Journal of Curriculum and Teaching*, 13(5), 281–291. https://doi.org/10.5430/jct.v13n5p281

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Ethics Statement

Written informed consent to participate in this study was provided by the immediate family members of the younger school children.

Декларация об этике

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Научная статья | Original paper

EPOCH questionnaire for the study of psychological well-being of Russian adolescents: psychometric characteristics and possibilities for use

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Abstract

Context and relevance. The EPOCH questionnaire is an instrument for assessing the psychological well-being of adolescents. The results of the validation of the questionnaire and international studies have shown its good measurement ability and construct validity. The 20-item version of the questionnaire is widely used in English-speaking countries as well as in China. **Objective.** The purpose of this article is to evaluate the psychometric parameters of the EPOCH questionnaire and to determine the possibilities of using it to study the psychological well-being of Russian adolescents. **Methods and materials.** To analyze the psychometric characteristics of the questionnaire, we used the results obtained from 230 respondents aged 13 to 16 years (M = 14,65, SD = 1,04), 36,1% were boys and 63,9% were girls. The respondents were students in grades 7th–9th of general education schools in a large industrial metropolis. The Success and Difficulties Questionnaire (SDQ) and the Satisfaction of Basic Psychological Needs Questionnaire were used to test construct validity. The analysis was performed using R (version 4.3.2), psych and Bifactor Indices Calculator packages. **The results** of the study showed that the Russian version of the questionnaire is similar to the original version in structure and includes 20 statements of self-assessment type, which allow us to assess the expression of five components of the model of psychological well-being — five scales: teenager's engagement; perseverance; optimism; connectedness; happiness. The integral index of psychological well-being is determined on the basis of summarizing the values of the scales. **Conclusions.** The questionnaire is a reliable, convenient and compact instrument. It can be used in the research of adolescents' psychological well-being and in practical activities in the field of developmental and educational psychology.

Keywords: psychological well-being, adolescents, EPOCH questionnaire, psychometric characteristics

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Опросник EPOCH для изучения психологического благополучия российских подростков: психометрические характеристики и возможности использования

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Резюме

Контекст и актуальность. Опросник EPOCH представляет собой инструмент для оценки психологического благополучия подростков. Результаты апробации опросника и международные исследования показали его хорошую измерительную способность и конструктную валидность. 20-пунктовая версия опросника широко используется в англоязычных странах, а также в Китае. **Цель** данной статьи — представить результаты психометрической проверки русскоязычного варианта опросника EPOCH для оценки психологического благополучия российских подростков. **Методы и материалы.** Для анализа психометрических характеристик опросника использовались результаты, полученные от 230 респондентов в возрасте от 13 до 16 лет (M = 14,65, SD = 1,04), 36,1% — мальчики, 63,9% — девочки. Респонденты являлись учащимися 7–9 классов общеобразовательных школ крупного промышленного мегаполиса. Для проверки конструктной валидности использовались Опросник успехов и трудностей (SDQ) и Опросник удовлетворенности базовых психологических потребностей. Анализ был выполнен при помощи R (версия 4.3.2), пакеты psych и Bifactor Indices Calculator. **Результаты** исследования показали, что русскоязычная версия опросника аналогична оригинальной версии по структуре и включает 20 утверждений самооценочного типа, которые позволяют оценить выраженность пяти компонентов модели психологического благополучия — пяти шкал: вовлеченность подростка в деятельность; настойчивость и упорство; оптимизм; взаимосвязи с другими людьми; ощущение счастья. Интегральный показатель психологического благополучия определяется на основе суммирования значений шкал. **Вывод.** Опросник представляет собой надежный, удобный и компактный инструмент и может использоваться в исследованиях психологического благополучия подростков и в практической деятельности в области психологии развития, психологии образования.

Ключевые слова: психологическое благополучие, подростки, опросник EPOCH, психометрические характеристики

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Introduction

Within the system of criteria and assessments for the quality of contemporary education, psychological well-being (PWB) occupies one of the leading positions and, in a certain sense, establishes a new discourse for Russian educational policy (Polivanova, 2020; Potanina, Morosanova, 2022). PWB is also considered one of the key criteria for the socialization of contemporary children, adolescents, and youth. PWB is linked to productive types of activity motivation (Deci, Ryan, 2008; Dekhtyarenko, Savchenko, Shlyagina, 2023), academic achievement (Potanina, Morosanova, 2022; Kern et al., 2015), low behavioral risks (Adler, Seligman, 2016), and physical health (Dray et al., 2017). Research emphasizes the importance of interpersonal communication factors for understanding adolescent well-being (Rasskazova, Sadovnichaya, 2023). A high level of well-being and the development of its core components ensure the positive functioning of the personality and contribute to a person's self-realization at different stages of ontogenesis (Isaeva et al., 2022; Volkova et al., 2022; Rudnova et al., 2023). PWB, as an experience of positive modality, can be considered a mechanism for the internalization of social behavior, thereby opening possibilities for pedagogical interventions and the management of socialization processes (Volkova, Sorokoumova, 2024).

The problem of assessing PWB is one of the current issues in contemporary psychology. Within various theoretical approaches to understanding the concept of PWB, different assessment methods exist (e.g., Belinskaya, Shaehov, 2023; Rikel et al., 2017; Shilko et al., 2018). For assessing adolescent PWB, in our view, the theoretical approach of positive psychology is appropriate. In this approach, well-being is conceptualized not so much as the absence of various disorders of personal or professional origin (e.g., low stress, low anxiety, absence of emotional burnout, apathy, amotivation), but rather as the feeling of fullness and sufficiency of personal resources for a productive life rich in positive experiences (Ryff, 1989; Seligman, 2012; Ryan, Deci, 2000).

Based on M. Seligman's theory, a group of psychologists led by M. Kern (Kern et al., 2016; Kern et al., 2015) developed a model of adolescent PWB. This model was symbolically named EPOCH (epoch) based on an acronym from the first letters of the five core components of PWB: adolescent engagement in activity (Engagement); perseverance and persistence (Perseverance); optimism, characterized by hope and confidence in the future (Optimism); connectedness with other people (Connectedness); happiness as a stable state of positive mood and life satisfaction (Happiness). In 2016, based on the EPOCH model, a specific questionnaire for assessing adolescent PWB was created (Kern et al., 2016). Results from its pilot testing on samples of Australian, American, and Chinese adolescents (Kern et al., 2019) demonstrated its good measurement capability and construct validity. The aim of this article is to assess the psychometric parameters of the EPOCH questionnaire and, based on this, determine the possibilities for its use in studying the PWB of Russian adolescents.

Materials and methods

Sample. The study involved 230 respondents aged 13 to 16 years (M = 14,65, SD = 1,04), 36,1% boys, 63,9% girls; students in grades 7-9 of general education schools in a large industrial metropolis. The data are stored in the database of the affiliated organization. The data collection procedure complied with the ethical standards of the Russian Psychological Society.

Methods. The 20-item version of the EPOCH questionnaire was chosen for the study as the most compact and possessing the best psychometric characteristics in both the original and translated versions (Kern et al., 2016; Kern et al., 2019). The translation was carried out following procedures for translating foreign-language instruments. The 20 questionnaire items contained self-report statements for the scales "Engagement," "Perseverance," "Connectedness," "Optimism," and "Happiness." All questionnaire items were direct (positively worded). A Likert scale from 1 ("not at all like me") to 5 ("very much like me") was used for answer gradation. Furthermore, the questionnaire allowed for the calculation of a total score as an integral characteristic (index) of psychological well-being. To test construct validity, the "Strengths and Difficulties Questionnaire" for children aged 11–17 (SDQ) (Goodman, 1997), recommended by the World Health Organization for assessing adolescent mental health and having evidence of validity and reliability, with normative data for Russian adolescents (Goodman et al., 2005), and the Basic Psychological Needs Satisfaction Questionnaire (Deci, Ryan, 2008; Ryan, Deci, 2000), the results of which correlate with human psychological well-being at different stages of onto- and professional development, including adolescents (Gagne, 2003), were used.

Data analysis. The analysis was performed using R (version 4.3.2, packages psych (Revelle, 2024; Rosseel, 2012) and Bifactor Indices Calculator based on the Excel calculator (Dueber, 2017). Descriptive statistics are presented in Appendix 1. To assess the structure of the EPOCH questionnaire, confirmatory factor analysis (CFA) was used. Three models were compared: a five-factor model (each factor includes 4 items), a five-factor model with one general factor (each factor includes four items, and the obtained factors are combined into one general factor), and a one-factor model (one factor includes all 20 items). Robust estimation methods were used in model construction. The following criteria were used as model fit indices and for comparing models: Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI). Models were considered acceptable with values of RMSEA $\leq$ 0.06, SRMR $\leq$ 0.09, TLI and CFI > 0.90 (Hu, Bentler, 1999). Since the questionnaire responses are coded on a 5-point Likert scale, the data can be considered ordinal. Therefore, besides robust maximum likelihood (ML) estimation, diagonally weighted least squares (DWLS) estimation, calculated based on the polychoric correlation matrix between items, was also used.

In assessing internal consistency, alongside the traditional Cronbach's alpha (α), a hierarchical model was considered. This model allows estimation of what portion of the variance pertains to specific factors (well-being components) and what portion is explained by a general factor underlying them (general well-being). For this, a range of ω coefficients were used (Revelle, Zinbarg, 2009; Rodriguez et al., 2016a): ω estimates internal consistency based on all sources of variance (for the general factor — all 20 items, for each factor — its constituent items), ωH estimates it based solely on one general latent factor (differences in scores across the 5 factors are considered measurement error of one general factor), ωS estimates it based on the specified scales in the presence of a general factor, ωHS estimates it based solely on the specified scales excluding the commonality generated by the general

factor. The relationship between ω and ωH allows assessment of how much response consistency is explained by one general factor; the relationship between ωH and ωHS — higher values of ωHS with lower values of ωH indicate the presence of multiple scales within the construct (Rodriguez et al., 2016).

Construct validity was assessed using Spearman's rank correlations between the questionnaire scales and the general factor with the SDQ and the Basic Psychological Needs Satisfaction Questionnaire. P-value calculations were performed using the Bonferroni correction.

Results

Fit indices for different models (one-factor, five-factor, and hierarchical) are presented in Table 1. All models except the one-factor model estimated with ML were acceptable. Overall, one-factor models fit the data somewhat worse than the five-factor and hierarchical models. The best-fitting model was the five-factor model (RMSEA = 0,04, 90% confidence interval [0,03; 0,06], TLI = 0,99, CFI = 1,00, SRMR = 0,06) estimated with DWLS. Covariances between scales were practically identical for ML and DWLS models (see Appendix 3). In the hierarchical DWLS model, the five factors loaded slightly more strongly onto the general factor than in the ML model. Individual items loaded moderately (from 0,4) to highly (from 0,6) onto their corresponding scales across all presented models. Item 11 ("I get so involved in activities that I forget about everything else") loaded somewhat lower (0,3–0,45) on the "Engagement" scale, and item 9 ("I complete my homework assignments from start to finish and don't stop until I finish them") loaded lower (0.25-0.4) on the "Perseverance" scale. Correlations between individual items are presented in Appendix.

Internal consistency

The questionnaire scales demonstrate at least sufficient internal consistency (Cronbach's α ranging from 0,63 to 0,84). Overall, the questionnaire items show high internal consistency (α = 0,91, ω = 0,92) regarding the general measured construct. Excluding the factor-scales changes the overall internal consistency from high to acceptable (ωH = 0,62). The values of ωH

Table 1

Fit Indices for CFA Models

Критерии	ML			DWLS		
	1-Factor	5-Factor	General factor	1-Factor	5-Factor	General factor
$\chi 2$	524,51***	343,10***	362,92***	460,48***	227,48***	264,36***
$\chi 2$/df	3,09	2,14	2,20	2,71	1,42	1,60
TLI	0,79	0,89	0,88	0,97	0,99	0,99
CFI	0,82	0,91	0,90	0,98	1,00	0,99
RMSEA [90% CI]	0,10 [0,09;0,10]	0,07 [0,06;0,08]	0,07 [0,06;0,08]	0,09 [0,08;0,10]	0,04 [0,03;0,06]	0,05 [0,04;0,06]
SRMR	0,07	0,06	0,06	0,08	0,06	0,06

and ωHS diverge only slightly (range of differences 0,03-0,09), indicating that several scales are identifiable within the general well-being construct.

Construct validity

Spearman correlation coefficients are presented in Table 3. As expected based on the content of the measured constructs, the questionnaire scales showed weak negative correlations with Emotional Problems (-0,15 to -0,27) and Conduct Problems (-0,18 to -0,29), except for the Engagement scale. The questionnaire scales showed weak positive correlations with Hyperactivity-Inattention (0,18 to 0,25) and Peer Problems (0,17 to 0,28). Moderate strength correlations were observed with the Prosocial Behavior scale (0,33 to 0,54) and the Basic Needs scales (0,28 to 0,67).

Discussion

The objective of this article was to test the psychometric indicators of the EPOCH questionnaire: its structure and construct validity. When examining the factor loadings of individual scales, it turned out that item 9 ("I complete my homework assignments from start to finish and don't stop until I finish them") loaded weakly onto its corresponding

Table 2

Internal consistency indices for EPOCH scales

Parameters	ω	ωS	ωH	ωHS	α
Engagement		0,95		0,65	0,75
Perseverance		0,72		0,57	0,63
Optimism		0,77		0,53	0,77
Connectedness		0,83		0,56	0,84
Happiness		0,83		0,59	0,82
Well-being	0,92		0,62		0,91

Table 3

Spearman Correlations Between EPOCH, SDQ and Basic Psychological Needs Satisfaction Scales

Parameters	Engagement	Perseverance	Optimism	Connectedness	Happiness	Well-being
Emotional Problems	*–0,09*	–0,21	–0,17	–0,15	–0,27	–0,25
Conduct Problems	*–0,11*	–0,23	–0,18	–0,29	–0,26	–0,28
Hyperactivity-Inattention	0,25	0,18	0,2	*0,1*	0,2	0,23
Peer Problems	0,24	0,17	0,23	0,23	0,26	0,28
Prosocial Behavior	0,33	0,38	0,5	0,53	0,47	0,54
Autonomy Needs	0,33	0,47	0,53	0,52	0,59	0,62
Competence Needs	0,34	0,44	0,51	0,47	0,54	0,58
Relatedness Needs	0,28	0,32	0,51	0,67	0,59	0,59

Note: Correlation coefficient values for which p-values are greater than 0,05 are italicized (not significant).

"Perseverance" scale (see Appendix). We assumed that the item might not have been entirely clear to respondents. Therefore, we changed the translation and propose using the text "I do my homework to the end" instead of "I complete my homework assignments from start to finish and don't stop until I finish them" in the future.

When comparing the mean scale values in the Russian and English-speaking samples, the higher value on the "Happiness" scale among Russian adolescents compared to adolescents from the USA is noteworthy. Deviations in the values of other scales, in our opinion, are less pronounced, taking into account the significant difference in sample sizes. A similar tendency was noted during the adaptation of the EPOCH questionnaire and its translation into Chinese (Kern et al., 2019): on average, responses to each of the four items on the "Happiness" scale were also significantly higher among Chinese adolescents and comparable to our results. This may reflect cultural specificity and should be taken into account when using the questionnaire in Russia. Some studies have shown that cultural characteristics can strongly influence the mean values on measured scales, with the changes becoming increasingly noticeable as sample sizes increase (Steinmetz, 2013), which will require further research.

Confirmatory factor analysis confirms the five-factor structure of the Russian-language version of the questionnaire. This aligns with the results of both the original psychometric study and the Chinese pilot testing of the questionnaire. The DWLS model shows slightly better fit indices, indicating rather the ordinal nature of the obtained response values. In future research using this questionnaire, methods intended for ordinal scales are preferable.

In their work (Kern et al., 2019), the authors suggest that the questionnaire might have a hierarchical structure where the five components relate to a more general well-being construct (a two-tier questionnaire structure). In our study, this assumption is partially confirmed. Firstly, in the confirmatory factor analysis, the model with five separate factors showed a better fit to the data than the hierarchical model. Secondly, the internal consistency analysis indicates that since the differences between ωH and HS for the individual scales and the general score are small, it is more appropriate to speak of five distinct factors that can be combined into one general construct. In practice, this means that when working with the questionnaire, each component can be measured separately as part of the general well-being indicator; however, it is premature to speak of hierarchical relationships within the model.

In studying construct validity, the questionnaire scales predictably showed positive correlations with the Basic Psychological Needs Satisfaction scales. This aligns with the core tenets of Self-Determination Theory, according to which satisfaction of these needs reflects well-being and flourishing (Martela, Sheldon, 2019). Negative correlations between well-being indicators and the problem scales of the SDQ questionnaire were also expected, in accordance with previous research (e.g., Dudovitz et al., 2022; Leavey et al., 2020). Nevertheless, the EPOCH questionnaire scales showed positive correlations with indicators of hyperactivity problems and peer relationship problems among adolescents in our sample. This could be explained, for example, by age-specific characteristics: hyperactivity tendencies and the significance of peer relationship problems are characteristic of adolescents; these problems might be differently related to the subjective experience of well-being/maladjustment in adolescence

(Sekaran et al., 2024). Adolescents' perception of their own hyperactivity might reflect their competence and skillfulness and thus correlate with PWB. Problems in peer relationships might be perceived as evidence of having relationships, regardless of their valence. For an adolescent, the most traumatic experience is the absence of relationships and the feeling of exclusion from the group. Possibly, the link between PWB and peer problems reflects this feature.

Conclusion

The result of this study is the psychometric testing of the Russian-language version of the EPOCH questionnaire for assessing adolescent PWB. The questionnaire is structurally analogous to the original version and includes 20 self-report items that assess the expression of the five components of the PWB model — five scales: Engagement; Perseverance; Optimism; Connectedness; Happiness. The integral indicator of PWB is determined by summing the scale values.

The pilot testing of the questionnaire on a Russian sample of adolescents and the analysis of its characteristics demonstrated that the questionnaire meets the requirements for such measurement instruments. The questionnaire represents a reliable, convenient, and compact tool and can be used for research and practical activities in the fields of developmental psychology, educational psychology, as well as in studies of adolescent psychological well-being in adjacent fields such as sociology, medical sciences, and pedagogy across different social contexts.

A limitation of this study is the relatively small size of the research sample and its homogeneity in terms of age, gender, place of residence, and education level. Nevertheless, the results of the theoretical analysis of the well-being construct under study, as well as the psychometric characteristics of the Russian-language version of the questionnaire, suggest that the questionnaire will yield adequate results on larger and more diverse Russian-speaking samples. This assumption requires further empirical verification.

Promising directions for future research on the further adaptation of the questionnaire for Russian adolescents include testing other versions, particularly the 25-item version used in some international studies. Furthermore, investigating the relationships between well-being components and various respondent characteristics (gender, family composition, number of friends, social status, individual psychological characteristics, etc.) is of interest. The development of test norms depending on age, education level, and other indicators differentiating scale values also appears promising.

Список источников / References

1. Белинская, Е.П., Шаехов, З.Д. (2023). Взаимосвязь психологического благополучия и адаптации к рискам цифрового мира в молодежном возрасте. *Вестник Московского университета. Серия 14. Психология*, *46*(3), 239–260. https://doi.org/10.11621/LPJ-23-35
Belinskaya, E.P., Shaehov, Z.D. (2023). The relationship between psychological well-being and adaptation to digital world risks in youth. *Moscow University Psychology Bulletin*, *46*(3), 239–260. (In Russ.). https://doi.org/10.11621/LPJ-23-35
2. Волкова, Е.Н., Микляева, А.В., Хороших, В.В. (2022). Субъективные предпосылки психологического благополучия одаренных подростков [Электронный ресурс]. *Психологическая наука и образование*, *27*(1), 92–103. https://doi.org/10.17759/pse.2022270108
Volkova, E.N., Miklyaeva, A.V., Khoroshikh, V.V. (2022). Subjective prerequisites for psychological well-being of gifted adolescents. *Psychological Science and Education*, *27*(1), 92–103. (In Russ.). https://doi.org/10.17759/pse.2022270108

3. Волкова, Е.Н., Сорокоумова, Г.В. (2024). Психологические критерии благополучия современных подростков в контексте изучения цифровой социализации. *Социальная психология и общество*, *15*(2), 12–27. https://doi.org/10.17759/sps.20241502024
Volkova, E.N., Sorokoumova, G.V. (2024). Psychological criteria of well-being in modern adolescents in the context of studying digital socialization. *Social Psychology and Society*, *15*(2), 12–27. (In Russ.). https://doi.org/10.17759/sps.20241502024
4. Дехтяренко, А.А., Савченко, Н.Л., Шлягина, Е.И. (2023). О различном вкладе личностных характеристик в компоненты субъективного благополучия. Вестник Московского университета. Серия 14. Психология, 46(3), 120–142. https://doi.org/10.11621/LPJ-23-30
Dekhtyarenko, A.A., Savchenko, N.L., Shlyagina, E.I. (2023). On the Differential Contribution of Personality Traits to Subjective Well-being Components. Moscow University Psychology Bulletin, 46(3), 120–142. (In Russ.). https://doi.org/10.11621/LPJ-23-30
5. Исаева, О.М., Акимова, А.Ю., Волкова, Е.Н. (2022). Факторы психологического благополучия российской молодежи. *Психологическая наука и образование*, *27*(4), 24–35. https://doi.org/10.17759/pse.2022270403
Isaeva, O.M., Akimova, A.Yu., Volkova, E.N. (2022). Factors of psychological well-being of Russian youth. *Psychological Science and Education*, *27*(4), 24–35. (In Russ.). https://doi.org/10.17759/pse.2022270403
6. Поливанова, К.Н. (2020). Новый образовательный дискурс: благополучие школьников. *Культурно-историческая психология*, *16*(4), 26–34. https://doi.org/10.17759/chp.2020160403
Polivanova, K.N. (2020). New educational discourse: Schoolchildren's well-being. *Cultural-Historical Psychology*, *16*(4), 26–34. (In Russ.). https://doi.org/10.17759/chp.2020160403
7. Потанина, А.М., Моросанова, В.И. (2022). Индивидуально-типические особенности взаимосвязи осознанной саморегуляции, психологического благополучия и академической успеваемости учащихся 6-х классов. *Теоретическая и экспериментальная психология*, *15*(1), 52–78. https://doi.org/10.24412/2073-0861-2022-1-52-78
Potanina, A.M., Morosanova, V.I. (2022). Individual-typical features of the relationship between conscious self-regulation, psychological well-being, and academic performance in 6th-grade students. *Theoretical and Experimental Psychology*, *15*(1), 52–78. (In Russ.). https://doi.org/10.24412/2073-0861-2022-1-52-78
8. Рассказова, Е.И., Садовничая, В.С. (2023). Субъективная неудовлетворенность потребности в межличностном общении и признаки психологического неблагополучия у подростков и молодых людей с разным уровнем суицидального риска. *Вестник Московского университета*. *Серия 14. Психология*, *46*(4), 112–130. https://doi.org/10.11621/LPJ-23-41
Rasskazova, E.I., Sadovnichaya, V.S. (2023). Subjective dissatisfaction with interpersonal communication needs and psychological distress in adolescents and young adults with varying levels of suicide risk. *Moscow University Psychology Bulletin*, *46*(4), 112–130. (In Russ.). https://doi.org/10.11621/LPJ-23-41
9. Рикель, А.М., Туниянц, А.А., Батырова, Н. (2017). Понятие субъективного благополучия в гедонистическом и эвдемонистическом подходах. *Вестник Московского университета*. *Серия 14: Психология*, (2), 64–82. https://doi.org/10.11621/vsp.2017.02
Rikel, A.M., Tuniyants, A.A., Batyrova, N. (2017). The concept of subjective well-being in hedonistic and eudaimonic approaches. *Moscow University Psychology Bulletin*, (2), 64–82. (In Russ.). https://doi.org/10.11621/vsp.2017.02
10. Руднова, Н.А., Корниенко, Д.С., Волкова, Е.Н., Исаева, О.М. (2023). Цифровая родительская медиация и ее связь с показателями психологического благополучия детей школьного возраста. Наука телевидения, 19(1), 175–198. https://doi.org/10.30628/1994-9529-2023-19.1-175-198
Rudnova, N.A., Kornienko, D.S., Volkova, E.N., Isaeva, O.M. (2023). Digital Parental Mediation and Its Connection to Psychological Well-being Indicators in School-Aged Children. Television Science, 19(1), 175–198. (In Russ.). https://doi.org/10.30628/1994-9529-2023-19.1-175-198
11. Шилко, Р.С., Долгих, А.Г., Алмазова, О.В. (2018). Измерение психического здоровья в образовательном пространстве: шкала психологического благополучия Варвик-Эдинбург. В: Л.А. Цветкова, Е.Н. Волкова, А.В. Микляева (Ред.), *Герценовские чтения: психологические исследования в образовании*. *В 2 ч. Часть 1* (с. 285–290). СПб: РГПУ.
Shilko, R.S., Dolgikh, A.G., Almazova, O.V. (2018). Measuring mental health in educational settings: Warwick-Edinburgh Mental Well-being Scale. In: L.A. Tsvetkova, E.N. Volkova, A.V. Miklyaeva (Ed.), *Herzen Readings: Psychological Research in Education*. *In 2 parts*. *Part 1* (pp. 285–290). Saint Petersburg: RSPU. (In Russ.).
12. Adler, A., Seligman, M.E. (2016). Using wellbeing for public policy: Theory, measurement, and

recommendations. *International Journal of Wellbeing*, *6*(1), 1–35.
13. Carlo, G., Randall, B.A. (2002). The Development of a Measure of Prosocial Behaviors for Late Adolescents. *Journal of Youth and Adolescence*, *31*(1), 31–44.
14. Deci, E.L., Ryan, R.M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health. *Canadian Psychology*, *49*(3), 182–185.
15. Dray, J., Bowman, J., Campbell, E., Freund, M., Wolfenden, L., Hodder, R.K., McElwaine, K., Tremain, D., Bartlem, K., Bailey, J., Small, T. (2017). Systematic review of universal resilience-focused interventions targeting child and adolescent mental health in the school setting. *Journal of the American Academy of Child and Adolescent Psychiatry*, *56*(10), 813–824.
16. Dudovitz, R.N., Thomas, K., Shah, M.D., Szilagyi, P.G., Vizueta, N., Vangala, S., Shetgiri, Kapteyn, A. (2022). School-Age Children's Wellbeing and School-Related Needs During the COVID-19 Pandemic. *Academic Pediatrics*, *22*(8), 1368–1374. https://doi.org/10.1016/j.acap.2022.01.015
17. Dueber, D.M. (2017). Bifactor Indices Calculator: A Microsoft Excel-based tool to calculate various indices relevant to bifactor CFA models. https://doi.org/10.13023/edp.tool.01
18. Gagne, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion*, *27*, 199–223. https://doi.org/10.1023/A:1025007614869
19. Goodman, R. (1997). The strengths and difficulties questionnaire: a research note. *Journal of Child Psychology and Psychiatry*, *38*(5), 581–586.
20. Goodman, R., Slobodskaya, H.R., Knyazev, G.G. (2005). Russian child mental health: a cross-sectional study of prevalence and risk factors. *European Child & Adolescent Psychiatry*, *14*, 28–33.
21. Hu, L., Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1–55. https://doi.org/10.1080/10705519909540118
22. Kern, M.L., Benson, L., Steinberg, E.A., Steinberg, L. (2016). The EPOCH measure of adolescent well-being. *Psychological Assessment*, *28*, 586–597. http://dx.doi.org/10.1037/pas0000201
23. Kern, M.L., Waters, L.E., Adler, A., White, M.A. (2015). A multidimensional approach to measuring wellbeing in students: Application of the PERMA framework. *The Journal of Positive Psychology*, *10*(3), 262–271.
24. Kern, M.L., Zeng, G., Hou, H., Peng, K. (2019). The Chinese Version of the EPOCH Measure of Adolescent Well-Being: Testing Cross-Cultural Measurement Invariance. *Journal of Psychoeducational Assessment*, *37*(6), 757–769. https://doi.org/10.1177/0734282918789561
25. Leavey, G., Rosato, M., Harding, S., Corry, D., Divin, N., Breslin, G. (2020). Adolescent mental health problems, suicidality and seeking help from general practice: A cross-sectional study (Northern Ireland Schools and Wellbeing study). *Journal of Affective Disorders*, *274*, 535–544. https://doi.org/10.1016/j.jad.2020.05.083
26. Martela, F., Sheldon, K.M. (2019). Clarifying the Concept of Well-Being: Psychological Need Satisfaction as the Common Core Connecting Eudaimonic and Subjective Well-Being. *Review of General Psychology*, *23*(4), 458–474. https://doi.org/10.1177/1089268019880886
27. Revelle, W. (2024). *Psych: Procedures for Psychological, Psychometric and Personality Research*. Northwestern University, Evanston, Illinois. R package version 2.4.6. https://CRAN.R-project.org/package=psych
28. Revelle, W., Zinbarg, R.E. (2009). Coefficients alpha, beta, omega, and the glb: Comments on Sijtsma. *Psychometrika*, *74*(1), 145–154. https://doi.org/10.1007/s11336-008-9102-z
29. Rodriguez, A., Reise, S.P., Haviland, M.G. (2016). Evaluating bifactor models: Calculating and interpreting statistical indices. *Psychological Methods*, *21*(2), 137–150. https://doi.org/10.1037/met0000045
30. Rodriguez, A., Reise, S.P., Haviland, M.G. (2016). Applying bifactor statistical indices in the evaluation of psychological measures. *Journal of Personality Assessment*, *98*(3), 223–237. https://doi.org/10.1080/00223891.2015.1089249
31. Rosseel, Y. (2012). lavaan: An R Package for Structural Equation Modeling. *Journal of Statistical Software*, *48*(2), 1–36. https://doi.org/10.18637/jss.v048.i02
32. Ryan, R.M., Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68
33. Ryff, C.D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*(6), 1069–1081.
34. Sekaran, V.C., Prabhu, V., Ashok, L., D'Souza, B., Shetty, S.D., Nair, R. (2024). Predictors of Adolescent Internalizing and Externalizing Mental Health Symptoms: A School-Based Study in Southern India. *International Journal of Environmental Research and Public Health*, *21*(4), 393. https://doi.org/10.3390/ijerph21040393
35. Seligman, M.E. (2012). *Flourish: A visionary new understanding of happiness and well-being*. New York: Simon and Schuster.

36. Steinmetz, H. (2013). Analyzing observed composite differences across groups: Is partial measurement invariance enough? *Methodology*, *9*(1), 1–12. https://doi.org/10.1027/1614-2241/a000049

Appendix

Appendix A. Descriptive Statistics. https://doi.org/10.17759/pse.2025300408

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Do personality traits predict the quality of life among adolescents?

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Abstract

Context and relevance. Quality of life (QoL) may be conceptualized as a subjective appraisal of various dimensions of human experience. Personality plays an instrumental role in shaping individual behaviours and perceptions, influencing how people interpret and engage with reality. It stands to reason that personality may have a considerable impact on an individual's quality of life. **Objectives.** The objectives of this study are to examine the association between personality traits and quality of life, as well as to identify significant predictors of QoL. **Methods and materials.** The research adopts a cross-sectional design and was conducted on a sample of 210 adolescents. Participants ranged in age from 14 to 19 years, with a mean age of 16,87 years with a standard deviation of 2,95. Snowball sampling was employed for participant recruitment and data were collected online. Both descriptive and inferential statistical methods were utilized for data analysis. The NEO-Five-Factor Inventory-3 (NEO-FFI-3) and the WHOQOL-BREF were administered to assess personality traits and quality of life, respectively. **Results and Conclusions.** The findings revealed a significant, positive association between the physical dimension of quality of life and openness to experience as well as a significant, negative association between the physical dimension of quality of life and neuroticism. Furthermore, there was a significant positive relationship between the psychological dimension of quality of life and both extraversion and conscientiousness, alongside a negative association between the psychological dimension of quality of life and neuroticism. Extraversion and neuroticism emerged as significant predictors of quality of life. The implications of these findings have also been explored within the study.

Keywords: adolescent, personality trait, quality of life, snowball sampling

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Определяют ли черты личности качество жизни подростков?

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Резюме

Контекст и актуальность. Качество жизни (КЖ) можно рассматривать как субъективную оценку различных аспектов человеческого опыта. Черты личности играют важную роль в формировании поведения человека и его восприятия окружающего мира, влияя на то, как происходит интерпретация событий и взаимодействие с реальностью. Можно предположить, что на качество жизни каждого человека значительно влияют черты его личности. **Цели.** Цель данного исследования — изучить связь между чертами личности и качеством жизни, а также определить значимые предикторы качества жизни. **Методы и материалы.** Исследование выполнено по поперечной методике и проводилось на выборке из 210 подростков. Возраст участников составлял от 14 до 19 лет, средний возраст составил 16,87 лет, со стандартным отклонением 2,95. Для набора участников использовался метод снежного кома, а сбор данных проводился онлайн. Для анализа данных применялись как описательные, так и интерпретационные статистические методы. Для оценки черт личности использовался опросник NEO-FFI-3, а для оценки качества жизни — опросник WHOQOL-BREF. **Результаты и выводы.** Результаты показали значимую положительную связь между физической составляющей качества жизни и открытостью к опыту, а также значимую отрицательную связь между физической составляющей качества жизни и нейротизмом. Также выявлена значимая положительная корреляция между психологической составляющей качества жизни и экстраверсией, а также с сознательностью, в то время как между психологической составляющей качества жизни и нейротизмом наблюдается отрицательная связь. Экстраверсия и нейротизм оказались значимыми предикторами качества жизни. В рамках исследования также были проанализированы возможные последствия этих выводов.

Ключевые слова: подростковый возраст, черты личности, качество жизни, метод снежного кома

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Introduction

Personality traits wield a profound influence across diverse life domains, including interpersonal relationships, career trajectories and health-related behaviours. Investigating the nexus between personality traits and quality of life illuminates potential risk factors associated with mental health disorders, stress-induced

illnesses and other adverse outcomes, particularly within social realms. Consequently, it becomes essential to explore preventative measures, therapeutic interventions and strategies that bolster resilience and foster adaptive coping mechanisms, thereby facilitating optimal psychological and physical health outcomes. Research into personality traits thus contributes to an enriched understanding of human behaviour and the underlying factors that foster a rewarding and meaningful existence.

The term "personality" traces its origins to the Latin word "persona," which denoted the masks worn by actors in ancient theatre. Personality is defined as the "dynamic organization within the individual of those psycho-physical systems that determine his unique adjustment to his environment" (Allport, 1961). This description underscores the notion that both physical and psychological systems are inherently independent yet subject to evolution over time, stating that each individual's experiences and responses are uniquely shaped by their specific environmental context.

Personality traits serve as the foundational elements that facilitate the description and comprehension of individual differences. Traits are enduring and stable attributes that underlie variations in cognition, affect and behaviour (McCrae, Costa, 1986). The Five Factor Model of personality (Costa, McCrae, 1985) is among the most widely utilized frameworks for examining personality, encompassing five core traits that capture an individual's dispositions. Individuals with elevated scores on particular traits typically exhibit a higher propensity for characteristics associated with that trait. These personality dimensions include agreeableness, conscientiousness, extraversion, neuroticism and openness to experience (Costa, McCrae, 1985). Agreeableness is characterised by cooperation, trustworthiness, compassion, adaptability, tolerance, leniency and a pleasant demeanour. Neuroticism is characterized by anxiety, emotional volatility, self-consciousness, moodiness, vulnerability and difficulty in managing emotions. Conscientiousness is known for diligence, meticulousness, punctuality, ambition and tenacity. Openness to Experience centres around imagination, artistically inclined, innovative, curious and receptive to new ideas. Extraversion involves a warm, sociable, enthusiastic and passionate individual is typically marked by elevated levels of extraversion.

Quality of life (QoL) can be understood as an individual's appraisal of various dimensions of human experience. It encompasses a comprehensive array of factors, including physical health, psychological well-being, autonomy, social relationships, personal beliefs and the individual's relationship to significant environmental features in a complex, multifaceted manner (Pocnet et al., 2016). The four primary domains of QoL are: Physical Health which refers to one's general physical state, encompassing elements such as regular exercise, balanced nutrition and sufficient rest. Psychological Health encompasses mental and emotional well-being, happiness, life satisfaction and emotional resilience, incorporating effective stress management and healthy emotional expression. Social Relationships that pertain to the depth and satisfaction derived from interpersonal connections, including supportive friendships, strong familial bonds and a sense of community belonging. Environment that encompasses external factors that influence one's quality of life, such as living conditions, safety, access to resources and opportunities for employment. Together, these four domains provide a comprehensive framework for assessing and understanding an individual's overall quality of life.

Research evidence on personality

Research in the domains of mental health, quality of life and personality traits has revealed that neuroticism serves as a predictor of heightened negative affect reactivity, which, in turn, is associated with the onset of chronic conditions and functional limitations. Conversely, elevated levels of conscientiousness are linked with a diminished negative affect reactivity and more favourable physical health outcomes (Leger, Turiano, Almeida, 2016). Neuroticism has been consistently correlated with lower subjective well-being and the prevalence of various

mental disorders, while extraversion has been associated with overstimulation and impulsivity, which pose challenges in navigating social interactions. This suggests a nuanced relationship between personality traits and social functioning (Kang et al., 2023). Moreover, research indicates that positive social support correlates with higher levels of openness, extraversion, agreeableness and conscientiousness and is associated with active coping strategies, whereas neuroticism is linked with maladaptive coping mechanisms (Agbaria, Mokh, 2022). Studies have further suggested that socio-demographic and psychological factors, including traits such as conscientiousness, extraversion and agreeableness, significantly influence global quality of life (GQOL) among students during the COVID-19 pandemic (Mihăilescu, Ciobanu, Diaconescu, 2024). Personality traits, gender and age notably impact post-COVID quality of life, with neuroticism and extraversion affecting health outcomes, and women and younger healthcare workers experiencing elevated stress levels (Lekka, Orlandou, Roubi, 2021). Neuroticism, extraversion and conscientiousness have emerged as the most reliable predictors of mental health, life satisfaction and positive affective states (Finch et al., 2012). Specifically, neuroticism has been linked to the intensity and persistence of negative emotions, which ultimately contribute to a diminished quality of life, while extraversion has been associated with an enhancement in quality of life (Wilt, Revelle, 2012). The significant and positive relationship exists between all the dimensions of quality of life such as Physical health, Psychological health, Social relationship and environment with extraversion, agreeableness, and Conscientiousness trait of personality except the social relationship which is not significantly related to agreeableness (Pal, Sharma, Kirmani, 2024). The personality trait such as neuroticism was significantly linked with inferior quality of life (QoL) and consequently, was negatively related to QoL (Dedova, 2022; Harandi, 2020; Khan, 2022). Agreeableness was found be a significant predictor of quality of life (Khan et al., 2021). Extraversion, agreeableness and neuroticism have a positive relationship with health-related quality of life whereas openness has a reverse relationship (Chen et al., 2024). The study revealed that all traits (except neuroticism) of BIG five factor are significantly related to QoL whereas reverse relationship is evident between neuroticism and QoL (Cai et al., 2023).

In the aftermath of the COVID-19 pandemic, billions of adolescents have undergone rapid and unparalleled shifts in their lives, encompassing school closures, confinement to their homes and the imposition of social distancing measures-each of which has profoundly affected their mental health. Adolescence is a pivotal period for social and emotional development, marked by an intensified need for social engagement and relationships. Consequently, adapting to the prevailing “neo-normal” conditions and adhering to current restrictions may have adverse effects on adolescents’ mental health; thereby influencing their quality of life.

Despite the body of research, significant gaps persist, many of which remain inadequately explored or insufficiently addressed. For instance, studies have rarely examined all the specific facets within each dimension of quality of life. Therefore, more extensive research is warranted to investigate how personality traits correlate with various aspects of physical and psychological health, social relationships and environmental satisfaction. Furthermore, the far-reaching impact of COVID-19, including the “neo-normal” conditions post-2021-2022, and their effects on dimensions of quality of life such as social relationships and environmental satisfaction, remain underexplored and require further investigation. The constraints inherent in cross-sectional designs-particularly in terms of establishing causal relationships, the necessity for more representative participant recruitment and the absence of pre-pandemic quality of life data-further underscore the limitations within the existing body of research.

Thus, there exists an urgent need to examine whether personality traits possess the potential to predict the quality of life among adolescents. Despite the increasing body of literature, there remains a conspicuous lack of information regarding the interplay between personality traits

and quality of life among adolescents during the pandemic. Accordingly, the present research seeks to address the following **objectives**:

1. To explore the quality of life (encompassing physical health, psychological health, social relationships and environment) among adolescent boys and girls.

2. To determine the relationship between personality traits and quality of life.

3. To identify the significant predictors of quality of life.

Method

A. Sample

In the current study, a total of 210 adolescents (boys — 120 (57,14%); girls — 90 (42,86%)) participated through an online survey platform (Google Forms). The participants, ranging in age from 14 to 19 years (mean age = 16,87, SD = 2,95), were recruited from various regions across India. They were contacted via social networking platforms such as LinkedIn, Facebook and through email. Participants were informed of the study's primary objectives and were requested to complete an online questionnaire. Snowball sampling, a non-probability sampling technique, was utilized to recruit participants for this study. Most of the participants were from middle socioeconomic status.

B. Measures Used

a) The NEO-Five-Factor Inventory-3 (NEO-FFI-3) (Costa, McCrae, 1986) was administered to evaluate the core personality dimensions of the Big Five Factor Model: neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. Participants provided responses to 60 items on a 5-point Likert scale, ranging from 0 (strongly disagree) to 4 (strongly agree), with the internal consistency coefficients for each of the NEO-FFI-3's five scales varying between 0,75 and 0,83. Neuroticism (N) assesses tendencies toward emotional instability, impulse dysregulation and heightened anxiety; individuals with elevated neuroticism scores are typically characterized by heightened distress, reduced adaptability, a predisposition toward irrational thoughts and a propensity to experience negative emotions and diminished self-esteem. Extraversion (E) reflects sociability and assertiveness; extraverts tend to excel in social environments, exhibit strong collaborative tendencies, and maintain a characteristically cheerful and optimistic outlook. Openness to Experience (O) captures intellectual curiosity, aesthetic appreciation and autonomous judgment, with individuals scoring high in openness often engaging in unconventional behaviours and perspectives. Agreeableness (A) comprises traits of altruism, benevolence, empathy, trust in the intentions of others and respect for alternative viewpoints; thereby making individuals with high agreeableness notably cooperative. Conscientiousness (C) denotes a marked propensity for purposefulness, rigorous organization, punctuality, resoluteness, dependability and a strong orientation toward achievement.

b) The WHOQOL-BREF (WHOQOL, 1995), an abridged form of the original WHOQOL-100, functions as a self-administered assessment comprising 24 items dispersed across four distinct domains: physical health (7 items), psychological well-being (6 items), social relations (3 items) and environmental context (8 items). Each item is rated by participants on a 5-point Likert scale, where higher scores correspond to an enhanced overall quality of life. The reliability coefficients, calculated via Cronbach's alpha, were observed to be 0,85 for the physical health domain, 0,77 for psychological well-being, 0,61 for social relations and 0,80 for environmental factors, indicating robust internal consistency across most domains.

C. Procedure

Prior to data collection, informed consent was duly obtained from all participants. They were provided with comprehensive instructions to ensure clarity and the questionnaire was administered on participants with clear and proper instructions. Following procedure was followed:

(i) In the present study, the demographic information schedule was administered first. In which first one was age which was a continuous variable used in the present study and we administered questionnaire only on adoles-

cents. The second demographic variable was gender (binary variable) boys and girls and the third demographic variable was socioeconomic status which we kept it control for our study that is we collected data from middle socio economic status only.

(ii) After collecting demographic information, NEO-FFI-3's five scales were administered on participants to assess their five personality traits and lastly

(iii) The WHOQOL-BREF was administered in order to assess the four dimensions of QoL of participants.

(iv) After collecting data screening was done in order to carry out requisite analyses and calculations and facilitating a meticulous interpretation of the results.

Results and discussion

The primary data were screened and then were statistically analysed. The descriptive statistics (mean and standard deviation) and inferential statistics (t test) of QoL dimensions (Physical health, Psychological health, Social relationships and Environment) based on gender were computed and displayed in Table 1.

The above table indicates that average adolescents are pretty much low on all the dimensions of QoL however, no significant difference by gender is found.

In order to examine second objective, Pearson's Product Moment Correlations Between Personality Traits and Quality of Life Dimensions were carried out and presented in Table 2.

The significant and positive relationship between the physical dimension of quality of life and openness to experience indicating that openness to experience is associated with better physical health. A negative and significant relationship exists between the physical dimension of quality of life and the neuroticism dimensions of personality which states that emotional instability negatively impacts physical health. Significant and positive relationship between psychological dimension of quality of life and extraversion and conscientiousness. This states that adolescents who are high on extraversion and conscientiousness tend to be higher on emotional, psychological resilience, emotional well-being, happiness and life satisfaction and thereby using effective stress management strategies while confronting adverse situations in life. The findings are par-

Table 1

Mean, standard deviation (SD) and t Test of QoL dimensions by gender (N = 210)

QoL Dimensions	Adolescent Boys (N = 120)		Adolescent Girls (N = 90)		t-test
	Mean	SD	Mean	SD	
Physical health	9,37	3,57	9,90	2,01	1,266
Psychological health	10,20	4,03	9,45	3,81	1,37
Social relationships	8,35	2,76	8,26	3,32	0,214
Environment	9,56	2,34	10,01	2,90	1,244

Table 2

Pearson's product moment correlation between personality traits and quality of life dimensions of adolescent (N = 210)

Personality / QOL	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Physical	–0,50**	0,04	0,46**	–0,09	0,02
Social	–0,10	0,03	0,06	0,11	0,09
Psychological	–0,37**	0,53**	0,11	0,09	0,39**
Environmental	–0,11	–0,10	–0,07	0,09	0,11

Note: ** — $p < 0,01$ level.

tially supported by the findings of (Pal, Sharma, Kirmani, 2024) which suggested that extraversion, agreeableness and conscientiousness are positively and significantly related to few personality traits. Negative relationship exists between psychological dimension of quality of life and neuroticism. Adolescents who are low on emotional stability prefer to lower on life satisfaction and psychological resilience and consequently, tend to use ineffective stress management strategies. This finding is supported by the finding of (Khan et al., 2021) which stated that neuroticism had a negative significant relationship with the quality of life. This finding is also contradicted by the finding of an existing study which stated that neuroticism had a positive relationship with health related QoL (Chen et al., 2024).

To find out the significant predictor/s of QoL, multiple regression analyses were calculated and only the significant predictors are presented in the Table 3.

Model 1: Adjusted $R^2 = 0,48$; Model 2: Adjusted $R^2 = 0,32$

Above table indicates that extraversion is the only significant predictor of psychological health and it explains 48% variance in psychological health. Neuroticism is found to be the significant predictor of physical health and explains 32% variance in physical health.

Conclusion

To the best of our knowledge, this is the first representative study in India assessing the relationship between personality traits and different dimensions of quality of life among adolescents during the COVID-19 pandemic. The study suggests that adolescents manifest lower levels in all dimensions of quality of life, possibly due to the feelings of being overburdened, fatigued and experiencing more negativity from restricted social interactions and isolation during lockdown. These findings align with Bronfenbrenner's Ecological Systems Theory, which posits that disruptions in the microsystem (e.g., peer interactions and social activities) can negatively impact adolescent development and overall well-being.

The findings indicate a significant and positive association between the physical dimension of quality of life and openness to experience, suggesting that individuals high in openness may sustain better physical functioning through their continued interest in engaging with new activities, curiosity, adaptability and compliance with governmental health measures. From a self-determination theory (SDT) perspective, openness to experience may fulfil the psychological needs of autonomy and competence, as these individuals seek out novel and meaningful activities; thereby supporting their overall health.

Additionally, a significant positive relationship exists between the psychological dimension of quality of life and both extraversion and conscientiousness (Wilt, Revelle, 2012). Active social media users, for instance, may find an outlet for venting negative emotions, while conscientious individuals demonstrate an enhanced ability to foresee and prepare for challenges; thereby serving as tools of emotional regulation and maintaining a sense of connectedness. As outlined in the Social Learning Theory, social interactions enable shaping of behaviour and fosters emotional resilience.

In contrast, a significant negative relationship emerges between both the physical and psychological dimensions of quality of life and neuroticism (Costa, McCrae, 1986), as neurotic tendencies-such as ineffective coping mecha-

Table 3

Regression analysis of personality traits on QoL dimensions of adolescents

Model	Criterion	Predictors	Unstandardized		Standardized Coefficients	t value
			B	Std. Error	B	
Model 1	Psychological health	Extraversion	2,16	0,48	0,59	4,55**
Model 2	Physical Health	Neuroticism	–0,49	0,19	0,34	2,62*

Note: * — $p < 0,05$ level, ** — $p < 0,01$ level.

nisms and immature defense strategies-can foster social isolation and negative emotional states, along with heightened stress level, anxiety and social withdrawal, which inhibit positive psychological experiences (Costa, Zonderman, McCrae, 1991). As stated by the cognitive theorists, individuals with neurotic traits may have a negative cognitive schema that amplifies feelings of helplessness and inhibits adaptive functioning. The dual-process model of self-regulation also supports this observation, indicating that high neuroticism undermines the ability to employ effective regulatory strategies. Thus, this study posits that traits such as openness to experience, extraversion and conscientiousness are positively associated with quality of life, while neuroticism is negatively associated.

Interventions focusing on strengths-based approaches, such as cultivating curiosity (openness), encouraging social connectedness (extraversion) and enhancing self-discipline (conscientiousness), may prove effective in improving adolescent quality of life. Simultaneously, targeted therapeutic strategies such as cognitive-behavioural therapy (CBT) may assist with high neuroticism by reframing maladaptive thought patterns and reducing their vulnerability to negative emotional experiences.

The study, hence, provides preliminary insights into how personality traits contribute to adolescents' quality of life, bearing several practical implications. Among these is the need for educational initiatives aimed at enhancing quality of life by encouraging openness and discipline in students as well as equipping adolescents with strategies to better manage anxiety and impulsive behaviour.

Limitations and implications

The study presents certain limitations. Firstly, its cross-sectional design restricts the ability to draw causal inferences. Secondly, the study depends on self-reported data collected online, which may introduce biases. Thirdly, the sample size is relatively small, limiting the generalizability of findings. Additionally, due to constraints related to time and situational factors, this study does not account for other variables that might influence quality of life, such as additional personality traits, psychological capital and self-esteem. These limitations underscore the need for future research utilizing longitudinal designs, offline data collection methods and more diverse sampling approaches.

The study has several implications. Educators and mentors are encouraged to organize targeted educational programs, such as psychological resilience training, workshops and educational excursions, aimed at enhancing students' quality of life. School administrators and parents should also focus on fostering openness and discipline in their students and children. Moreover, adolescents would benefit from training designed to improve anxiety management and impulse control, equipping them to lead more fulfilling and productive lives.

References

1. Agbaria, Q., Mokh, A. (2022). Predictors of personal and social adjustment among Israeli-Palestinian teenagers. *Child Indicators Research, 96*, 1–17. https://doi.org/10.1037/0022-0663.96.2.195
2. Allport, G.W. (1961). *Pattern and growth in personality* (14th ed.). Holt, Rinehart and Winston.
3. Cai, L., He, J., Wu, Y., Jia, X. (2023). The relationship between Big Five personality and quality of life of people with disabilities: The mediating effect of social support. *Frontiers in Psychology, 13*, 1061455. https://doi.org/10.3389/fpsyg.2023.1061455.
4. Chen, J., Wan, J., Wu, Y., Gan, L., Li, H., Zhou, Y., Liu, S., Luo, L., Zhou, H., Yin, X., Chang, J. (2024). The association between personality traits and health-related quality of life and the mediating role of smoking: Nationwide cross-sectional study. *JMIR Public Health and Surveillance, 10*, e51416. https://doi.org/10.2196/51416
5. Costa, P.T., McCrae, R.R. (1985). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology, 38*(4), 668–678. https://doi.org/10.1037/0022-3514.38.4.668
6. Costa, P.T., Jr., McCrae, R.R. (1986). *The NEO Personality Inventory manual*. Psychological Assessment Resources.
7. Costa, P.T., McCrae, R.R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-*

Factor Inventory (NEO-FFI) professional manual. Psychological Assessment Resources.
8. Costa, P.T., Jr., Zonderman, A.B., McCrae, R.R. (1991). Personality, defense, coping, and adaptation in older adulthood. In E.M. Cummings, A.L. Greene, & K. H. Karraker (Eds.), *Life-span developmental psychology: Perspectives on stress and coping* (pp. 277–293). Erlbaum.
9. Dedova, M., Jakabova, V., Dobrikova, P., Banik, G. (2022). Subjective perception of quality of life, neuroticism and life meaningfulness in cancer survivors in context of psychological counseling. *Acta Missiologica, 16*, 66–76.
10. Finch, J.F., Baranik, L.E., Liu, Y., West, S.G. (2012). Physical health, positive and negative affect, and personality: A longitudinal analysis. *Journal of Research in Personality, 46*, 537–545. https://doi.org/10.1016/j.jrp.2012.05.013
11. Harandi, R.J., Najinia, M.A., Khayyer, Z. (2020). Neuroticism and quality of life: The mediating role of internet addiction. *International Journal of Behavioural and Healthcare Research, 7*(1), 37–48. https://doi.org/10.1504/IJBHR.2020.10026892
12. Kang, W., Steffens, F., Pineda, S., Widuch, K., Malvaso, A. (2023). Personality traits and dimensions of mental health. *Scientific Reports, 13*(1), 7091. https://doi.org/10.1038/s41598-023-33996-1
13. Khan, S., Mahmood, K., Zaidi, S.M.I.H., Asim, M., Hussain, S. (2021). Personality traits as a predictor of quality of life and life satisfaction among elementary school teachers. *Turkish Online Journal of Qualitative Inquiry, 12*(7), 4506–4519.
14. Leger, K.A., Turiano, N.A., Almeida, D.M. (2016). Personality and stressor-related affect. *Journal of Personality and Social Psychology, 111*(6), 917–928. https://doi.org/10.1037/pspp0000083
15. Lekka, D., Orlandou, K., Roubi, A. (2021). The effect of personality traits on the quality of life of health professionals in COVID-19 reference hospital. *Cureus, 13*(9), e17897. https://doi.org/10.7759/cureus.17897
16. McCrae, R.R., Costa, P.T., Jr. (1986). Personality, coping, and coping effectiveness in an adult sample. *Journal of Personality, 54*, 385–405. https://doi.org/10.1111/j.1467-6494.1986.tb00401.x
17. Mihăilescu, A.I., Ciobanu, A.M., Diaconescu, L.V. (2024). Psychological factors associated with general quality of life in the context of COVID-19 pandemic: A cross-sectional study on a multicultural sample of Romanian medical students. *Healthcare, 12*(13), 1243. https://doi.org/10.3390/healthcare12131243
18. Pal, R., Sharma, J., Kirmani, M.N. (2024). Personality and quality of life among young adults: Correlational analyses. *International Journal of Humanities & Social Science Studies, 10*(3), 229–242. https://doi.org/10.29032/ijhsss.v10.i3.2024.229-242
19. Pocnet, C., Antonietti, J.-P., Strippoli, M.-P.F., Glaus, J., Preisig, M., Rossier, J. (2016). Individuals' quality of life linked to major life events, perceived social support, and personality traits. *Quality of Life Research, 25*(11), 2897–2908. https://doi.org/10.1007/s11136-016-1296-4
20. Skevington, S.M., Lotfy, M., O'Connell, K.A. (2004). The World Health Organization's WHOQOL-BREF quality of life assessment: Psychometric properties and results of the international field trial. A report from the WHOQOL group. *Quality of Life Research, 13*, 299–310. https://doi.org/10.1023/B:QURE.0000018486.91360.00
21. The WHOQOL Group. (1995). The World Health Organization Quality of Life assessment (WHOQOL): Position paper from the World Health Organization. *Social Science & Medicine, 41*, 1403–1409. https://doi.org/10.1016/0277-9536(95)00112-K
22. Wilt, J., Revelle, W. (2012). Extraversion. In M. Leary & R. Hoyle (Eds.), *Handbook of individual differences in social behavior* (pp. 27–45). Guilford Press.

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Structural and dynamic characteristics of the worldview of adolescent students

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Abstract

The context and relevance of the study are determined by its focus on the analysis of the formation of the worldview of young people in modern socio-cultural conditions. **Objective**. To describe the structure of the worldview of students in early (16–18 years) and late (19–22 years) adolescence and to trace its substantive and dynamic characteristics. **Hypothesis.** Social and psychological sources of the formation of a holistic worldview in adolescence are civic position, family history, value orientations, desire for success and orientation towards the way of knowing the world, the significance of which can change depending on the requirements of the social situation of development throughout the age period from 16 to 22 years. **Methods and materials**. The study involved 529 people, including high school students and 1st–2nd year college students (16–18 years old) — 344 people (M = 16,7, SD = 0,70), university students (19–22 years old) — 185 people (M = 21,5, SD = 0,85). The study was conducted using the author's methodological kit "Study of the components of the picture of the world of modern high school students". **Results**. The picture of the world of adolescent students has a certain structure, which is formed by the beginning of the studied age period and is maintained throughout its entire period. It includes 4 factors: "Mastering the social norm", "Significant society", "Resources for success", "Self-determination". **Conclusions.** Dynamic characteristics of the content of the picture of the world of students throughout adolescence change depending on the social situation of development at different stages of education, ensuring socio-psychological adaptation of the subject to the transforming conditions of the social environment.

Keywords: worldview, adolescence, high school students, university students, the structure of the worldview, the social situation of development

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Структурно-динамические характеристики мировоззрения учащихся юношеского возраста

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Резюме

Контекст и актуальность исследования обусловлены его направленностью на анализ становления мировоззрения юношества в современных социокультурных условиях. **Цель.** Выделить и описать структуру мировоззрения учащихся раннего (16–18 лет) и позднего (19–22 года) юношеского возраста и установить ее содержательные и динамические характеристики. **Гипотеза.** Социально-психологическими источниками становления целостного мировоззрения в юношеском возрасте являются гражданская позиция, семейная история, ценностные ориентации, стремление к успеху, ориентация на способ познания мира, значимость которых может меняться в зависимости от требований социальной ситуации развития на протяжении всего возрастного периода от 16 до 22 лет. **Методы и материалы**. В исследовании приняли участие 529 человек, среди них старшеклассников и студентов 1–2 курсов колледжа (16–18 лет) — 344 человека (M = 16,7, SD = 0,70), студентов университета (19–22 лет) — 185 человек (M = 21,5, SD = 0,85). Исследование выполнено с использованием авторского методического комплекта «Изучение компонентов мировоззрения современных старшеклассников». **Результаты.** Мировоззрение учащихся юношеского возраста имеет определенную структуру, складывающуюся уже к началу изучаемого возрастного периода и сохраняющуюся на всем его протяжении. Она включает 4 фактора: «Освоение социального норматива», «Значимый социум», «Ресурсы успеха», «Самоидентичность». **Выводы.** Динамические характеристики содержания мировоззрения учащихся на протяжении юношеского возраста меняются в зависимости от социальной ситуации развития на разных этапах обучения, обеспечивая социально-психологическую адаптацию субъекта к трансформирующимся условиям социальной среды.

Ключевые слова: мировоззрение, юношеский возраст, старшеклассники, студенты вуза, структура мировоззрения, социальная ситуация развития

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Introduction

In psychological literature, the concept of worldview is generally understood as a comprehensive mental representation of the physical and social reality accessible to an individual (Koltko-Rivera, 2004). It also serves as a subject of applied research in fields such as counseling across different cultural contexts (Jensen, 2021; Lemettinen, Hirvonen, Ubani, 2021; Lokhvytska, Rozsokha, Azman, 2022), as well as in areas related to professional self-determination and athletic achievement (Miller, West, 1993).

Although the concept of worldview has been extensively developed in various theoretical studies, empirical investigation of this phenomenon remains challenging (Grigor'eva, Sharov, Zagranichnyi, 2022; Martsinkovskaya, 2007; Sorokoumova, Fadeev, Borisova, 2021; Czerniawska, Szydło, 2020; Czerniawska, Szydło, 2022). Nonetheless, most researchers concur that the foundations of worldview begin to form during early adolescence (Andreeva et al., 1989; Berestovitskaya, 2016; Berulava, 2001; Bozhovich, 2008; Lubovskii, 2022; Manukyan, 2022; Mukhina, Melkov, 2022). As an individual's mental image of the world, worldview encompasses both institutional and everyday levels of consciousness (Begunova, 2023a; Begunova, 2023b; Berulava, 2001; Kitova, Zhuravlev, 2021; Murashchenkova, 2024).

At the outset of our research, we posited that worldview is not only a layered but also a dynamic system. Its effective functioning depends on both the stability and variability of its components within the context of inevitable environmental changes — social, economic, and technological transformations affecting society at large — as well as psychological, developmental, and pedagogical factors influencing personality development.

The methodological framework for our study draws upon Vygotsky's cultural-historical theory, Bozhovich's theory of personality development during ontogenesis, and Dubrovina's concept of the formation of readiness for self-determination in adolescence (Andreeva et al., 1989; Bozhovich, 2008; Vygotskii, 1982; Vygotskii, 1983). The selection of these approaches aims to ensure semantic continuity with prior psychological research conducted in Russia and to adapt these theoretical positions to contemporary socio-cultural conditions of development.

We adopt the definition of worldview prevalent in Russian science, where it is typically regarded as a complex system comprising generalized assumptions about oneself and the world. This includes knowledge reflecting core life positions, beliefs, ideals, value orientations, principles guiding cognition and activity (Il'ichev et al., 1983; Karabanova, Tikhomandritskaya, Molchanov, 2024; Meshcheryakova, Zinchenko, 2009; Murashchenkova, 2024; Fedotov, 2022).

The conceptual structural-dynamic model of worldview tested in our study hypothesizes that socio-psychological sources contributing to the formation of a holistic adolescent worldview include civic position, family history, value orientations, desire for success, and orientation toward ways of understanding the world. The significance of these components may vary depending on social developmental demands throughout the age range from 16 to 22 years.

The purpose of this study is to describe the structure of students' worldviews during early (16–18 years) and late (19–22 years) adolescence and to examine their substantive and dynamic characteristics.

Materials and methods

The study of the structure and dynamics of adolescent students' worldview was conducted using the author's methodological toolkit titled "The Study of the Components of the Worldview in Modern High School Students" (Andreeva, Begunova, Danilova,

2023). This toolkit includes questionnaires designed to identify students' dominant assumptions regarding the relationships between the individual, society, and the state (civic position), as well as the extent to which their worldview ideas are rooted in family history, societal values, and shared cultural beliefs. The questionnaires contain statements that respondents evaluate using a five-point scale. To examine the relationship between scientific worldview and everyday, common-sense, or quasi-scientific knowledge, paired judgments are assessed.

The methods were tested in schools and colleges across Moscow and the Ural regions of Russia. The results confirmed that the approach is appropriate for adolescents based on their age and educational level. The reliability and internal consistency of the instruments were verified using Cronbach's alpha.

The toolkit includes the following assessment methods:

- "Civic Position" (CP): comprising three scales — Institutional Component (IC), Activity Component (AC), and Emotional Component (EC).
- "Value Orientations in Proverbs and Sayings" (VO): consisting of nine scales — life stance; study and work; success and achievements; attitudes toward money; family and relatives; friendship; collectivism versus individualism; perspectives on law and personal responsibility; country and homeland.
- "My Family History" (FH): with four scales — self-identification; actual knowledge of family history; sense of responsibility toward other family members; positive perception of one's family.
- "Scientific Worldview": a single scale reflecting orientation toward scientific versus everyday ideas.
- The intensity of the desire for success was assessed using the "Need for Goal Achievement" questionnaire (Murashchenkova et al.; Orlov, 1984).

The psychological phenomena identified through these methods are regarded as components of worldview, characterizing features such as civic stance, value orientations, family identity, and scientific outlook among adolescent students.

The study involved 529 participants, including high school students and first- to second-year college students aged 16 to 18 years (n = 344; M = 16,9 years, SD = 1,38), as well as university students aged 19 to 22 years (n = 185; M = 21,5 years, SD = 0,85). The research employed a cross-sectional design: the groups differ solely by age — a purely objective parameter unaffected by other factors. This approach allows for studying the development of mental functions or psychological phenomena across different age groups (Martsinkovskaya, 2007).

Data were processed using descriptive statistics, correlation analysis, and factor analysis with IBM SPSS Statistics version 25.0.

Results

The results of descriptive statistical analysis facilitated the selection of appropriate statistical methods for data examination, specifically for comparing mean values and analyzing the content structure of worldview components. The standard error of skewness across the scales ranged from 0,171 to 0,186, while the standard error of kurtosis varied between 0.340 and 0.369. According to established norms cited in prior research (Ivanova, 2024), these skewness and kurtosis values are relatively low, thereby justifying the application of parametric statistical techniques in subsequent analyses.

Comparative analyses of mean scores for each method were conducted between two groups: adolescents aged 16–18 (including high school seniors and first- to second-year college students) and young adults aged 19–22 (third- and fourth-year undergraduates), as summarized in Table 1.

Table 1

Comparative characteristics of the average values of the worldview components in the samples of students aged 16–18 and 19–22

Components of the worldview		Age	Group statistics			t-test for equality of means	
			Mean	Std. Deviation	Std. Error of Mean	T	p
Family history	Self-identification	16–18 лет	18,25	3,40	0,18	–20,42	<0,001
		19–22 лет	26,97	6,41	0,47		
	Real knowledge	16–18 лет	6,98	1,42	0,07	4,114	<0,001
		19–22 лет	6,42	1,62	0,11		
	Responsibility	16–18 лет	7,76	1,34	0,07	–2,958	0,003
		19–22 лет	8,18	1,83	0,13		
	A positive family image	16–18 лет	6,85	1,63	0,08	5,908	<0,001
		19–22 лет	5,98	1,58	0,11		
Civil position	IC	16–18 лет	45,60	4,55	0,24	–0,185	0,853
		19–22 лет	45,68	4,54	0,33		
	EC	16–18 лет	39,40	4,73	0,25	3,985	<0,001
		19–22 лет	37,60	5,37	0,39		
	AC	16–18 лет	46,54	5,37	0,29	2,112	0,035
		19–21 лет	45,49	5,65	0,41		
Scientific and everyday ideas		16–18 лет	9,30	2,26	0,12	–7,093	<0,001
		19–22 лет	10,73	2,11	0,15		
Value orientations	Life position	16–18 лет	21,23	4,09	0,22	–2,352	0,019
		19–22 лет	22,08	3,60	0,26		
	Study, work	16–18 лет	16,76	3,06	0,16	1,466	0,143
		19–22 лет	16,35	3,13	0,23		
	Success, achievements	16–18 лет	10,21	2,45	0,13	–1,800	0,072
		19–22 лет	10,61	2,43	0,17		
	Money	16–18 лет	9,35	3,28	0,17	2,337	0,020
		19–22 лет	8,68	2,98	0,22		
	Family	16–18 лет	11,19	3,17	0,17	–0,011	0,991
		19–22 лет	11,19	3,03	0,22		
	Friendship	16–18 лет	10,19	2,897	0,156	1,608	0,109
		19–22 лет	9,76	2,939	0,216		
	Collectivism	16–18 лет	9,71	2,798	0,151	–2,628	0,009
		19–22 лет	10,33	2,104	0,155		
	Attitude to the law	16–18 лет	26,40	5,100	0,275	0,934	0,351
		19–22 лет	25,98	4,707	0,346		

Components of the worldview		Age	Group statistics			t-test for equality of means	
			Mean	Std. Deviation	Std. Error of Mean	T	p
	Country	16–18 лет	9,07	2,907	0,157	3,232	<0,001
		19–22 лет	8,22	2,853	0,210		
The need to achieve a goal		16–18 лет	13,34	2,525	0,136	25,389	<0,001
		19–22 лет	8,04	1,777	0,131		

The comparisons revealed statistically significant differences between these age groups across several scales: all scales within the “Family History” method; the emotional and activity components of the “Civic Position” method; the “Scientific and Everyday Ideas” method; multiple scales within the “Value Orientations in Proverbs and Sayings” method — specifically Life Position, Money, Collectivism, and Country; as well as the “Need for Goal Achievement” scale (see Table 1).

Subsequently, an exploratory factor analysis was performed using principal component analysis with Varimax rotation (noting that factor analysis is a common approach in contemporary worldview research (Kononenko et al., 2020)). The adequacy of the data was confirmed by the Kaiser-Meyer-Olkin (KMO) measure: for adolescents aged 16–18, KMO = 0,834, p = 0,000; Bartlett’s test yielded χ^2 = 2333,495 with p < 0,001. For young adults aged 19–22, KMO = 0,807, p = 0,000; Bartlett’s test produced χ^2 = 868,118 with p < 0,001.

Based on eigenvalue scree plots and factor loadings, a four-factor model of worldview structure was identified, consistent across both samples:

1) Mastering the Social Norm,
2) Significant Community,
3) Resources for Success,
4) Self-Identity.

These four factors collectively explained approximately 50,323% of variance in the younger group (16–18 years) and about 51,48% in the older group (19–22 years). Detailed factor loadings for each scale are presented in Table 2.

Confirmatory factor analysis supported this structure: for adolescents aged 16–18, fit indices indicated an acceptable model fit (CMIN = 310,980; df = 104; p < 0,001; CFI = 0,926; RMSEA = 0,0583). Similarly, for young adults aged 19–22, fit indices also demonstrated an acceptable fit (CMIN = 310,980; df = 68; p < 0,001; CFI = 0,872; RMSEA = 0,0687) (Brown, 2015).

Factor 1: “Mastering the Social Norm” includes thirteen worldview components in the younger group (explaining approximately 25,5% of variance) and nine components in the older group (25,32%). Among adolescents aged 16–18, this factor primarily reflects an active, emotionally engaged civic stance — positive attitudes toward law and personal responsibility — as well as values related to work, study, friendship, and collective actions. Family and financial relations are considered important but are not dominant elements within social norms.

In contrast, among students aged 19–22, this factor still pertains mainly to a conscious civic position characterized by

Table 2

The factor structure of the worldview of students aged 16–18 and 19–22 years

Components of the worldview		Factors							
		16–18 years old				19–22 years old			
		Mastering the social standard	A significant society	Success Resources	Self-identity	Mastering the social standard	A significant society	Success Resources	Self-identity
Family history	1. Self-identification		0,641						
	2. Real knowledge of family history				0,870		0,600		
	3. Responsibility for family members			0,477			–0,565		
	4. A positive family image				0,880				
Civil position	5. The institutional component	0,473	0,373			0,750			
	6. The emotional component	0,641	0,669			0,723	0,357		
	7. Activity component	0,710	0,528			0,692	0,374		
8. The scientific picture of the world			0.336	–0,563					
Value orientations	9. Life position	0,651				0,452		0,452	
	10. Study and work	0,704				0,638			
	11. Success and achievement			0,638				0,792	
	12. Money	0,568		–0,362					
	13. Family, relatives	0,425	0,452			0,375			0,342
	14. Friendship, friends	0,646							0,476
	15. Collectivism / individualism	0,671				0,597	0,581		
	16. Attitude to the law, personal responsibility	0,736				0,718			
	17. Country / Homeland	0,477	0,511			0,680		–0,390	
18. The need to achieve a goal			0.333		–0,488				0,722
Total percentage of variance		25,5	10,963	7,545	6,315	25,32	9,814	7,498	6,919

emotional engagement and positive attitudes toward law, responsibility, homeland, study, and work; however, emphasis on collectivist ties and family relationships diminishes noticeably — though they remain relevant aspects of social norms.

Factor 2: "Significant Community" comprises eight components in younger adolescents (explaining about 10,963% of variance) and five components in older students (9,814%). For high school and college students, this factor primarily relates to a strong sense of family belonging ("what kind of family am I from") and a generally positive emotional attitude toward their country ("what kind of country am I from"). Family bonds, civic activity, and national values are secondary but still relevant.

In older adolescents and young adults, this factor appears more connected to personal self-determination — interest in family history takes precedence over active societal participation or civic engagement.

Factor 3: "Resources for Success" includes four components among younger students (explaining about 7,545%) and three among university students (7,498%). For both groups, success is valued unconditionally — initially linked more to family support than individual achievement or material wealth.

In university students, however, success becomes more associated with personal life orientations rather than solely family support.

Factor 4: "Self-Identity" contains three components in both age groups — explaining approximately 6,315% in younger adolescents and nearly 6,919% in older students — and reflects aspects of self-awareness such as a positive view of one's family background or interest in family history.

For high schoolers and early college students, this factor mainly relates to a positive family image and self-identification within their familial group — family is not perceived as a primary resource for life success here.

In contrast, senior university students exhibit weaker connections between self-identity and parental family; their focus shifts toward personal ambitions related to success and achievement — indicating a possible detachment from familial roots.

Overall, as adolescents mature into late adolescence or early adulthood, there is a tendency for a reduction in the number of worldview components associated with each factor — a phenomenon likely reflecting increased clarity regarding life goals and priorities due to ongoing developmental processes.

Result discussion

The factor analysis of the entire dataset revealed certain structural and dynamic features of adolescents' worldview. It appears that the overall structure of the worldview is established by the early stages of adolescence and remains relatively stable throughout this period. However, the specific components and their relative importance within these structures differ between early and late adolescents, which we interpret as reflecting the evolving content of their worldview in response to changing social development contexts at different educational stages. This approach enables us to characterize the typical worldview content for students in early (16–18 years) and late (19–22 years) adolescence.

For high school and junior college students, the most prominent components are associated with the "Self-Identity" factor. The most significant among these is a positive attitude toward one's parental family and its history — essentially, towards one's roots. At this stage, young people tend to rely on resources provided by their family while being less prepared to independently maintain family well-being. Other key aspects of their worldview include awareness and acceptance of societal normative values, civic stance, personal activity, and responsibility. Their aspirations for the future — an important feature of personal development at this age — are reflected in their attitudes toward success.

However, their ideas about what success entails and how to achieve it are not directly linked to financial stability or education. This suggests a duality in self-determination, as described by L. I. Bozhovich: adolescents hold generalized views about their future prospects and achievements while simultaneously expressing a specific desire to pursue education in a chosen professional field (Bozhovich, 2008).

Overall, the structural and dynamic traits of early adolescents' worldview indicate the initial formation of an internal adult position. This development is influenced more by institutional expectations related to life and career self-determination than by personal maturity (Andreeva, Begunova, Lisichkina, 2023).

In contrast, ***university students and recent graduates*** primarily exhibit components related to "Mastering the Social norm" and "Self-Identity." Their civic stance becomes more conscious and emotionally engaged but less proactive compared to high school students. The dominant aspect of self-identity at this stage is a need for goal achievement; relationships with friends and family — beyond just parental ties — gain personal significance. Nonetheless, a positive attitude toward family values becomes less central, likely due to their physical separation from parents and unpreparedness for establishing their own families or long-term relationships. Given their age and social status as they begin professional careers and gain economic independence, this can be seen as an indication of responsible behavior.

The developmental context of late adolescence involves both external institutional demands and the internal readiness to assume responsibility for one's life. The structural and dynamic features of worldview among university students and graduates reflect an internal adult position: they no longer identify primarily with their parental family or its resources but instead focus on their own achievements and values. However, this internal adult position is still developing; it currently mainly pertains to personal needs and does not yet extend broadly to significant others or complex social relationships.

Conclusion

1. Our research confirmed the conceptual structural-dynamic model of worldview, which identifies civic stance, family history, value orientations, desire for success, and ways of understanding the world as key social-psychological factors shaping an individual's overall worldview.

2. The structural features of adolescents' worldview are linked to their development of social norms, their choice of meaningful communities, their perceptions of life resources, and their self-identity.

3. The content and development of students' worldview during early (16–18 years) and late (19–22 years) adolescence are influenced by their social development context at different educational stages. This process reflects the formation of an internal adult position, serving as a motivational and cognitive foundation for behavior.

4. As university students and graduates develop a clear internal adult position and establish specific life goals and priorities, their worldview becomes more focused and less diffuse.

5. The findings of this study contribute to understanding worldview as a psychological phenomenon, as well as the processes of worldview and value self-determination among students in contemporary sociocultural settings.

Research prospects

Future research should explore the hierarchical structure of the modern adolescent worldview, test the structural-functional model of worldview, and examine regional, socio-cultural, age-related, and gender-specific differences.

Список источников / References

1. Андреева, А.Д., Бегунова, Л.А., Данилова, Е.Е. (2023). Изучение компонентов мировоззрения современных старшеклассников. *Свидетельство о регистрации базы данных RU 2023624106*. Правообладатель ФГБНУ «Федеральный научный центр психологических и междисциплинарных исследований». № 2023623944; заявл. 16.11.2023; опубл. 22.11.2023; Бюл. № 12.
   Andreeva, A.D., Begunova, L.A., Danilova, E.E. (2023). Studying the components of the worldview of modern high school students. *Database registration certificate RU 2023624106*. FSBSI "Federal Scientific Center for Psychological and Interdisciplinary Research". Registration no. 2023623944; filed on 16.11.2023; publ. on 22.11.2023; Bul. no. 12. (In Russ.).
2. Андреева, А.Д., Гуткина, Н.И., Дубровина, И.В., Круглов, Б.С., Прихожан, А.М., Снегирева, Т.В., Толстых, Н.Н., Юферева, Т.И. (1989). *Формирование личности старшеклассника* (Дубровина И.В., ред.). НИИ общ. и пед. психологии АПН СССР. М.: Педагогика.
   Andreeva, A.D., Gutkina, N.I., Dubrovina, I.V., Kruglov, B.S., Prikhozhan, A.M., Snegireva, T.V., Tolstykh, N.N., Yufereva, T.I. (1989). Shaping the personality of a high school student (I.V. Dubrovina, ed.). The Scientific Research Institute of General and Pedagogical Psychology of the USSR Academy of Pedagogical Sciences. Moscow: Pedagogika. (In Russ.).
3. Андреева, А.Д., Бегунова, Л.А., Лисичкина, А.Г. (2023). Особенности внутренней позиции взрослого у современных учащихся раннего юношеского возраста. *Психологическая наука и образование*, *28*(2), 58–69. https://doi.org/10.17759/pse.2023280205
   Andreeva, A.D., Begunova, L.A., Lisichkina, A.G. (2023). Features of the Internal Position of an Adult in Modern Students of Early Adolescence. *Psychological Science and Education*, *28*(2), 58–69. (In Russ.). https://doi.org/10.17759/pse.2023280205
4. Бегунова, Л.А. (2023). История семьи в системе предпосылок формирования мировоззрения в юношеском возрасте. *Вестник государственного университета просвещения. Серия: Психологические науки*, (3), 65–81. https://doi.org/1018384/2949-5105-2023-3-65-81
   Begunova, L.A. (2023). Family History in the System of Prerequisites for the Formation of World View in Youth. *Bulletin of the State University of Education. Series: Psychology*, (3), 65–81. (In Russ.). https://doi.org/10 18384/2949-5105-2023-3-65-81
5. Бегунова, Л.А. (2023). Психологическое содержание гражданской позиции старших подростков. *Актуальные проблемы психологического знания*, *65*(4), 113–130. https://doi.org/10.51944/20738544_2023_4_113
   Begunova, L.A. (2023). Psychological Content of the Civil Position of Older Adolescents. *Actual problems of a psychological knowledge*, *65*(4), 113–130. (In Russ.). https://doi.org/10.51944/20738544_2023_4_113
6. Берестовицкая, С.Э. (2016). *Мировоззренческое самоопределение старшеклассников (в школьном образовании)*. СПб.: Нестор-История.
   Berestovitskaya, S.E. (2016). *Ideological self-determination of high school students (in school education)*. Saint-Petersburg: Nestor-Istoriya. (In Russ.).
7. Берулава, Г.А. (2001). *Образ мира как мифологический символ: учебное пособие*. М.: Педагогическое общество России.
   Berulava, G.A. (2001). *The image of the world as a mythological symbol: a textbook*. Moscow: Pedagogicheskoe obshchestvo Rossii. (In Russ.).
8. Божович, Л.И. (2008). *Личность и ее формирование в детском возрасте*. СПб.: Питер.
   Bozhovich, L.I. (2008). *Personality and its formation in childhood*. Saint Petersburg: Piter. (In Russ.).
9. Выготский, Л.С. (1982). *Собрание сочинений: В 6 т.: Том 2. Проблемы общей психологии*. М.: Педагогика.
   Vygotskii, L.S. (1982). *Collected Works: In 6 vols.: Vol. 2. Problems of general psychology*. Moscow: Pedagogika. (In Russ.).
10. Выготский, Л.С. (1983). *Собрание сочинений: В 6 т.: Том 3. Проблемы развития психики*. М.: Педагогика.
    Vygotskii, L.S. (1983). *Collected Works: In 6 vols.: Vol. 3. Problems of development of the psyche*. Moscow: Pedagogika. (In Russ.).
11. Григорьева, М.В., Шаров, А.А., Заграничный, А.И. (2022). Структура и мотивация социальной активности и ее соотношение с гражданским самосознанием молодежи. *Социальная психология и общество*, *13*(1), 142–158. https://doi.org/10.17759/sps.2022130109
    Grigor'eva, M.V., Sharov, A.A., Zagranichnyi, A.I. (2022). The Structure of Social Activity and its Correlation with the Civic Consciousness of Young People. *Social Psychology and Society*, *13*(1), 142–158. (In Russ.). https://doi.org/10.17759/sps.2022130109
12. Иванова, А.А. (2024). Роль индивидуальных ценностей в определении проэкологических действий. *Психологические исследования*,

17(95), Статья 6. https://doi.org/10.54359/ps.v17i95.1598
Ivanova, A.A. (2024). The Role of Individual Values in Shaping Pro-environmental Actions in Russia. *Psychological Research*, *17*(95), Article 6. (In Russ.). https://doi.org/10.54359/ps.v17i95.1598

13. Ильичёв, Л.Ф., Федосеев, П.Н., Ковалёв, С.М., Панов, В.Г. (ред.). (1983). *Философский энциклопедический словарь*. М.: Советская энциклопедия.
Il'ichev, L.F., Fedoseev, P.N., Kovalev, S.M., Panov, V.G. (eds.). (1983). *Philosophical encyclopedic dictionary*. Moscow: Sovetskaya entsiklopediya. (In Russ.).
14. Карабанова, О.А., Тихомандрицкая, О.А., Молчанов, С.В. (2024). Связь базовых ценностей личности с характером психологической адаптации к глобальным цифровым рискам. *Психологическая наука и образование*, *29*(4), 104–125. https://doi.org/10.17759/pse.2024290409
Karabanova, O.A., Tikhomandritskaya, O.A., Molchanov, S.V. (2024). The Connection Between Basic Personal Values and Psychological Adaptation to Global Digital Risks. *Psychological Science and Education*, *29*(4), 104–125. (In Russ.). https://doi.org/10.17759/pse.2024290409
15. Китова, Д.А., Журавлев, А.Л. (2021). Мировоззрение как психологический феномен в обыденном представлении россиян. *Психологический журнал*, *42*(4), 106–117. https://doi.org/10.31857/S020595920016045-5
Kitova, D.A., Zhuravlev, A.L. (2021). World View as a Psychological Phenomenon in the Ordinary Perception of the Russians. *Psychological Journal*, *42*(4), 106–117. (In Russ.). https://doi.org/10.31857/S020595920016045-5
16. Лубовский, Д.В. (2022). Теоретические основы исследования мировоззрения современных старшеклассников. *Актуальные проблемы психологического знания*, (4), 125–132. https://doi.org/10.51944/20738544_2022_4_125
Lubovskii, D.V. (2022). Theoretical foundations of the study of the modern high school students' worldview. *Actual problems of a psychological knowledge*, (4), 125–132. (In Russ.). https://doi.org/10.51944/20738544_2022_4_125
17. Манукян, В.Р. (2022). Взросление молодежи: сепарация от родителей, субъективная взрослость и психологическое благополучие в возрасте 18–27 лет. *Психологическая наука и образование*, *27*(3), 129–140. https://doi.org/10.17759/pse.2022270310
Manukyan, V.R. (2022). Growing Up of Youth: Separation from Parents, Subjective Adulthood and Psychological Well-being at the Age of 18–27. *Psychological Science and Education*, *27*(3), 129–140. (In Russ.). https://doi.org/10.17759/pse.2022270310
18. Марцинковская, Т.Д. (ред.). (2007). *Психология развития: учебник для студ. высш. психол. учеб. заведений* (3 изд., стер.). М.: Академия.
Martsinkovskaya, T.D. (ed.). (2007). *Psychology of development: a textbook for students of higher psychological educational institutions* (3rd ed.). Moscow: Akademiya.
19. Мещерякова, Б.Г., Зинченко, В.П. (ред.). (2009). *Большой психологический словарь* (4-е изд., расш.). СПб.: Прайм-ЕВРОЗНАК.
Meshcheryakova, B.G., Zinchenko, V.P. (eds.). (2009). *A large psychological dictionary* (4th enlarge ed.). Saint-Petersburg: Praim-EVROZNAK. (In Russ.).
20. Муращенкова, Н.В. (2024). Психологическое состояние российской студенческой молодежи в условиях кризиса: связь с культурным и политическим патриотизмом. *Психологическая наука и образование*, *29*(4), 63–73. https://doi.org/10.17759/pse.2024290405
Murashchenkova, N.V. (2024). Psychological State of Russian Student Youth in the Crisis: The Relationship with Cultural and Political Patriotism. *Psychological Science and Education*, *29*(4), 63–73. (In Russ.). https://doi.org/10.17759/pse.2024290405
21. Муращенкова, Н.В., Гриценко, В.В., Калинина, Н.В., Константинов, В.В., Кулеш, Е.В., Маленова, А.Ю., Малышев, И.В. (2023). Отношение к патриотизму и патриотическая самоидентичность российской студенческой молодежи в условиях поляризации российского общества. *Социальная психология и общество*, *14*(4), 68–88. https://doi.org/10.17759/sps.2023140405
Murashchenkova, N.V., Gritsenko, V.V., Kalinina, N.V., Konstantinov, V.V., Kulesh, E.V., Malenova, A.Yu., Malyshev, I.V. (2023). Attitudes towards Patriotism and Patriotic Self-identity of Russian Students Youth in the Polarization of Russian Society. *Social Psychology and Society*, *14*(4), 68–88. (In Russ.). https://doi.org/10.17759/sps.2023140405
22. Мухина, В.С., Мелков, С.В. (2022). Внутренняя позиция личности как основа развития гражданской идентичности. *Культурно-историческая психология*, *18*(1), 105–112. https://doi.org/10.17759/chp.2022180110
Mukhina, V.S., Melkov, S.V. (2022). Personality Inner Position as the Basis for Civic Identity Development. *Cultural-Historical Psychology*, *18*(1), 105–112. (In Russ.). https://doi.org/10.17759/chp.2022180110

23. Орлов, Ю.М. (1984). *Потребностно-мотивационные факторы эффективности учебной деятельности студентов вуза: Дис. … д-ра. психол. наук*. М.
Orlov, Yu.M. (1984). *Need-motivational factors of the effectiveness of educational activities of university students: Diss. Dr. Sci. (Psychol.)*. Moscow. (In Russ.).
24. Сорокоумова, Е.А., Фадеев, Д.С., Борисова, С.Л. (2021). Понимание метафоры как способ внешней репрезентации смыслов ценностных ориентаций личности. *Психологическая наука и образование*, *26*(4), 104–114. https://doi.org/10.17759/pse.2021260409
Sorokoumova, E.A., Fadeev, D.S., Borisova, S.L. (2021). Understanding of a Metaphor as a Way of External Representation of the Meanings of Individual's Value Orientations. *Psychological Science and Education*, *26*(4), 104–114. (In Russ.). https://doi.org/10.17759/pse.2021260409
25. Федотов, Б.В. (2022). Проблема формирования мировоззрения молодежи и студентов с точки зрения базовых ценностей и приоритетов в развитии России. *Мир науки, культуры, образования*, (2(93)), 70–72. https://doi.org/10.24412/1991-5497-2022-293-70-72
Fedotov, B.V. (2022). The Problem of Forming the Worldview of Young People and Students in Terms of Basic Values and Priorities in the Development of Russia. *The world of science, culture and education*, (2(93)), 70–72. (In Russ.). https://doi.org/10.24412/1991-5497-2022-293-70-72
26. Brown, T.A. (2015). *Confirmatory Factor Analysis for Applied Research* (2nd ed.). NY: Guilford.
27. Czerniawska, M., Szydło, J. (2020). The worldview and values – analysing relations. *WSEAS Transactions on Business and Economics*, *17*(58), 594–607. https://doi.org/10.37394/23207.2020.17.58
28. Czerniawska, M., Szydło, J. (2022). Traditionalism, Modernism, Postmodernism-Worldview Analysis in the Context of Values. *WSEAS Transactions on Business and Economics*, *19*(62), 701–713. https://doi.org/10.37394/23207.2022.19.62
29. Jensen, L.A. (2021). The Cultural Psychology of Religiosity, Spirituality, and Secularism in Adolescence. *Adolescent Research Review*, *6*(3), 277–288. https://doi.org/10.1007/s40894-020-00143-0
30. Koltko-Rivera, M.E. (2004). The Psychology of Worldviews. *Review of General Psychology*, *8*(1), 3–58. https://doi.org/10.1037/1089-2680.8.1.3
31. Kononenko, O., Kononenko, A., Stynska, V., Kachmar, O., Prokopiv, L., Katolyk, H., Popovych, I. (2020). Research of the factor structure of the model of worldview settings at a young age. *Revista Inclusiones*, 7(3), 98–116. URL: http://ekhsuir.kspu.edu/123456789/10794 (viewed: 11.06.2024).
32. Lemettinen, J., Hirvonen, E., Ubani, M. (2021). Is worldview education achieved in schools? A study of Finnish teachers' perceptions of worldview education as a component of basic education. *Journal of Beliefs & Values*. *42*(4), 537–552. https://doi.org/10.1080/13617672.2021.1889218
33. Lokhvytska, L., Rozsokha, A., Azman, C. (2022). Can Moral Values be Formed without Influencing the Development of an Individual's Worldview? *Philosophy and Cosmology*. Vol. *28*, 73–92. https://doi.org/10.29202/phil-cosm/28/7
34. Miller, M.E., West, A.N. (1993). Influences of world view on personality, epistemology, and choice of profession. In: J. Demick, P.M. Miller (eds.), *Development in the workplace* (pp. 3–19). Hillsdale, NJ: Erlbaum.

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All authors participated in the discussion of the results and approved the final text of the manuscript.

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Все авторы приняли участие в обсуждении результатов и согласовали окончательный текст рукописи.

Conflict of interest

The authors declare no conflict of interest.

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Авторы заявляют об отсутствии конфликта интересов.

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