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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,

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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; Zhzhikashvili 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 vul-

nerability 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 + AEE) 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 comprehen-

sively 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 tough-

ness 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 ($\eta^2 = 0,03$, $t = 12,14$, $p = 0,000$). 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 benefiting 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; Yarrayan 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.

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

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