

Research article

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Personality Traits, Emotions and Metacognitive Skills as Predictors of Subjective Well-being of University Students, Teachers and Staff

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Abstract

Introduction. The article analyzes the phenomenon of psychological well-being by examining its internal, subjective factors. It emphasizes the significance of well-being research in contemporary contexts and conducts an analysis of recent studies exploring the correlation between well-being and personality traits, emotional regulation, and metacognitive skills among students, teachers, and other educational professionals. The primary aim of this study was to identify predictors of subjective well-being within the cohorts of students, teachers, and other university staff. A total of 453 individuals participated in the research: 313 students, 106 teachers, and 45 other university employees. **Methods** and questionnaires employed included the short portrait questionnaire of the Big Five (B5-10, 2016), the 'Differential Emotions Scale' technique (SDE, adapted in 2003), the 'Personality Differential' test (2015 version), the methodology for diagnosing an individual's subjective well-being (Shamionov R. M., Beskova T. V., 2018), a questionnaire assessing metacognitive involvement in activity (adapted by A. V. Karpov, 1994), the 'Self-assessment Scale of Metacognitive Behavior' (adapted by A. V. Karpov, 1998), the 'Differential Type of Reflection' test (D.A. Leontyev, E.M. Lapteva, E.N. Osin, A.Zh. Salikhova, 2009), and the 'Cognitive Regulation of Emotions' questionnaire (adapted by O. L. Pisareva, 2007). The research design encompassed multiple stages of data analysis, involving comparative and regression analyses. **Results** indicated a direct correlation: heightened levels of metacognitive involvement and increased awareness of metacognitive skill utilization were associated with elevated levels of subjective well-being among

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educational practitioners. Additionally, a positive impact was observed from heightened scores on conscientiousness, extraversion, agreeableness, openness to experience, and the adoption of positive refocusing and positive revision strategies. Conversely, lower scores on introspection, neuroticism, and the acute negative emotion index also positively influenced subjective well-being. **Discussion.** The described findings offer valuable insights for addressing challenges such as preventing burnout and enhancing the well-being of students, teachers, as well as support and administrative staff within educational institutions.

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Keywords

psychological well-being, subjective well-being, education, metacognitive skills, metacognitive engagement, personality, cognitive regulation of emotions

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Introduction

Over the past decade, the landscape of education across various levels has undergone rapid transformation. The integration of distance learning, evolving educational standards and programs, and the introduction of innovative interaction formats, in particular through emerging digital technologies, has rendered the modern teaching environment distinct. This constant state of evolution, set against a backdrop of general instability and heightened stress in the environment, coupled with the absence of a clearly defined time horizon, may potentially detrimentally impact the well-being, motivational and value components, as well as the effectiveness of students, teachers, educational support staff, and administrative professionals (Isaeva, Akimova, Volkova, 2022; Devvrat, Gujral & Bhatt, 2022; Pilishvili, Savushkina, Danilova, Soruko Torres, 2021; Puchkova, 2021; Pilishvili,

Dyukareva, 2019). Consequently, there is an escalating need to explore subjective well-being factors that could enhance personal resilience in contemporary circumstances.

The significance of addressing the psychological well-being of teachers and students is underscored by a body of work from both domestic and foreign academic communities (Gilemkhanova, Khusainova, Lushpaeva, Khairutdinova, 2022; Koreshnikova, Frumin, 2020; Osamika, Lawal, Osamika, Hounhanou & Laleye, 2021). A teacher's psychological well-being is often regarded as a fundamental factor and a marker of professional efficacy (Manina, Petrakova, Kulikova, Orel, Kanonir, 2023; Zhang, Chen & Li, 2023; Gilemkhanova, Khusainova, Lushpaeva, Khairutdinova, 2022; Petrakova, Kanonir, Kulikova, Orel, 2021). Teaching is perceived as an intellectual pursuit, demanding a high level of emotional involvement, a creative approach, continual development, and the broadening of knowledge (Rodionova, Konyukhova, 2022; Glushkova, Kora, 2019). For students, their well-being is often linked to academic performance, attention levels, creative self-expression, and motivation (Samokhvalova, Tikhomirova, Vishnevskaya, Shipova, 2021; Volkova, Miklyaeva, Khoroshikh, 2022; Alkhatib, 2020; Gokalp, 2020). Moreover, authors emphasize that the educational process encompasses more than just students mastering the curriculum, but it is also about multi-level interpersonal interactions, the acquisition of social norms, enhancing social skills, as well as the professionalization of teachers and diverse professional interactions in organizing the learning environment (Khakimzyanov, Ryazanov, 2022; Viac & Fraser, 2020). Evidence has demonstrated a correlation between teachers' well-being and the emergence of risk factors for antisocial behavior among students (Khusainova, Gilemkhanova, 2019). Additionally, connections have been established between well-being and student motivation and performance (McLean & Connor, 2015; Li-Grining, Raver, Champion, Sardin, Metzger & Jones, 2010; Klusmann, Kunter, Trautwein, Lüdtke & Baumert, 2008). In essence, educational activity extends beyond mere teaching and learning; it constitutes a holistic system involving a minimum of three primary subjects, where the state and functionality of each entity are interdependent upon the others within the system.

Exploration into personal traits as predictive factors for well-being represents a contemporary phase in understanding the subjective elements of well-being. Numerous studies have established associations between agreeableness, extraversion, openness to experience, neuroticism, and various forms of well-being (Osamika et al., 2021; Banshchikova, Lukyanov, Kurdanova, 2022; Zhang & Chen, 2023; Laktionova, Matyushina, 2018). In the early 2000s, K. Peterson and M. Seligman, while advocating the '24 personality strengths' or Values In Action (VIA) model, suggested investigating positive personality traits contributing to higher levels of well-being (Park, Peterson & Seligman, 2004). This model finds echoes in more recent works, where traits like curiosity, energy, gratitude, and optimism, along with socio-demographic indicators, hold predictive value in assessing an individual's positive functioning, well-being, and self-efficacy (Rean, Stavtsev, Kuzmin, 2022; Azañedo, Artola, Sastre & Alvarado, 2021). Contemporary research underscores the connection between well-being and emotional characteristics, particularly the prevalence

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of positive affect, emotional intelligence levels, development of self-regulation skills, and stress coping strategies (Rodionova, Konyukhova, 2022; Gilemphanova, Khusainova, Lushpayeva, Khairutdinova, 2022; Grigorova, 2019). The regulatory aspect's significance is also evident in studies of metacognition, a form of reflexive regulation within educational and professional spheres (Prokhorov, Yusupov, 2011). Metacognitive skills, notably linked to self-organization, metaplanning, and reflection, have proven crucial in academic performance, well-being, and effective communication within the educational setting (Perikova, Byzova, 2020; Perikova, Lovyagina, Byzova, 2019; Berezhnova, Fedoseeva, Tarasov, 2019; Danilenko, 2018; Tikhomirova, Malykh, Lysenkova, Malykh, 2021), with the emotional sphere of students (Guseva, Sylka and Denisova, 2022). Also of interest is the connection between metacognitive awareness and the degree of alienation from the educational process (Belikova, Pronenko, 2023a; Pronenko, Belikova, Skripkina, 2023) and meaning in life (Belikova, Pronenko, 2023b).

As we can see contemporary research on subjective well-being primarily focus on establishing correlations or attributing standard socio-psychological characteristics, such as stable personality traits, to factors influencing well-being. However, for a more comprehensive understanding of the predictors shaping the well-being of educational practitioners in current conditions, it becomes imperative to consider not only personal characteristics but also the nuances of emotional regulation and the level of metacognitive skill development.

Hence, the study **aim** was to conduct a holistic examination of emotional, personal, and metacognitive predictors influencing the psychological well-being of students, teachers, and other educational professionals. The investigation anticipates the existence of universal components within emotional-personal and metacognitive predictors that impact the well-being of all educational stakeholders, alongside factors specific to each subgroup under scrutiny.

Methods

Sample

The study encompassed individuals from higher educational institutions within the southern federal district of the Russian Federation, totaling 453 participants (77% female, 23% male) aged between 18 and 75 years. The distribution comprised:

- 106 teachers (75% female, average age 45.8 years).
- 45 administrative, management, and support staff (77% female, average age 37.8 years).
- 313 students (79% female, average age 21.8 years) across various educational levels - bachelor's, specialist's, master's, and postgraduate programs.

The survey and psychological testing were conducted in person and through

electronic testing formats. Prior to participation, all respondents provided explicit consent for their involvement in the study, were briefed on its objectives, and received notification regarding the subsequent use and publication of the study's findings.

Techniques

To elucidate the socio-psychological characteristics of the participants and assess metacognitive skills, a survey method was employed. All participants provided demographic details such as gender and age. Students were additionally asked to specify their educational level, field of study, study format, and rate the intensity of academic stress along with their coping mechanisms. Teachers and other educational professionals were prompted to specify their position, years of professional experience, evaluate their level of professional stress, and self-assess their ability to manage their workload effectively.

The self-assessment questionnaire utilized for measuring metacognitive behavior was the "Metacognitive Skills in the Structure of Educational and Professional Activities" (Denisova, 2022; Denisova, Ermakov, Abakumova,, Sylka, 2022).

Psychological testing encompassed the following methods to explore personal characteristics, emotional aspects, and metacognitive behavior:

1. Short Portrait Questionnaire of the Big Five (B5-10, M. S. Egorova and O. V. Parshikova, 2016);
2. Differential Emotions Scale (SDE, adapted by A. V. Leonova and M. S. Kapitsa, 2003);
3. Personality Differential Test (version adapted at the V. M. Bekhterev Research Institute, 2015);
4. Methodology for Diagnosing Individual Subjective Well-being (R. M. Shamionov, T. V. Beskova, 2018);
5. Questionnaire of Metacognitive Involvement in Activity (G. Schrow, R. Dennison, adapted by A. V. Karpov, 1994);
6. Self-assessment Scale of Metacognitive Behavior (D. Lacoste, adapted by A. V. Karpov, 1998);
7. Differential Type of Reflection Test (D. A. Leontyev, E. M. Lapteva, E. N. Osin, A. Zh. Salikhova, 2009);
8. Questionnaire on Cognitive Regulation of Emotions by N. Garnefsky and V. Craig (adapted by O. L. Pisareva, 2007).

These techniques were employed to comprehensively investigate personal attributes, emotional aspects, and metacognitive behavior within the context of educational and professional activities.

Statistical Methods for Data Analysis

The statistical processing of the obtained results employed various methods, including Kruskal-Wallis Test and Dunn's Post-hoc Test (to compare multiple groups for statistical differences); Multiple Regression Analysis by Least Squares Method (to explore the relationship between multiple independent variables and a dependent variable); Akaike Information Criterion (AIC, for model selection and comparison to identify the best-fitting model among alternatives); Durbin-Watson Autocorrelation Check (to examine autocorrelation in model residuals); Bonferroni Test for Outliers (to detect and address outliers in the data); Breusch-Pagan Test for Residual Variance Unevenness (to assess heteroscedasticity in residuals); Cross-Validation of the Model (to assess the performance and generalizability of the statistical model).

The statistical analysis was conducted using the open-source software package R version 4.2.2, facilitated by the R Commander shell version 2.8-0, and supplemented by the DAAG package version 1.25.4 for specific analyses and procedures.

Results

In the initial phase of data processing, an analysis of average values within the sample and across comparison groups was conducted, accompanied by a normality assessment utilizing the Shapiro-Wilk test. The test results indicated deviations from normal distribution for most studied indicators. However, the overall sample's average values fell within or near normative ranges for the tests, with no extreme values recorded.

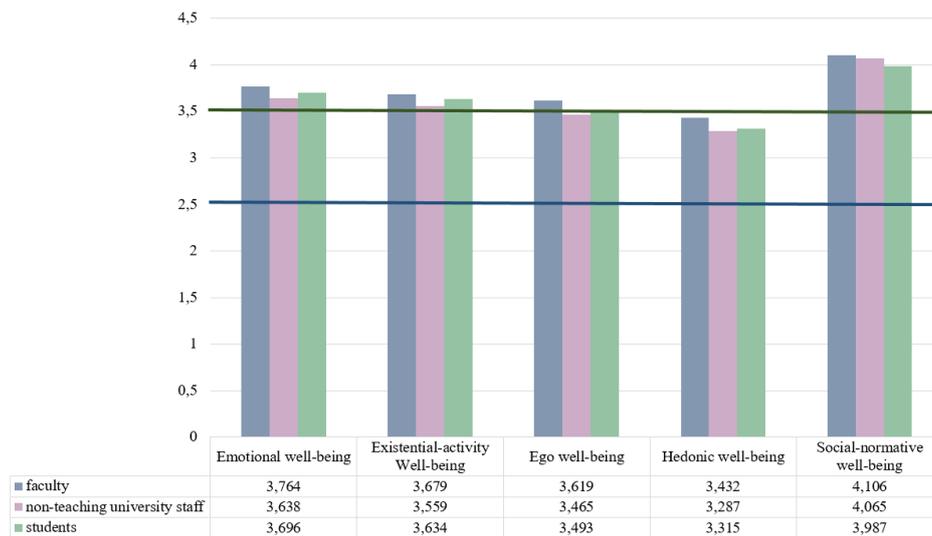
A comparative analysis of the studied subgroups was undertaken utilizing the Kruskal-Wallis test, followed by Dunn's method for pairwise comparisons as a post-hoc analysis.

Subjective well-being indicators showcased average values nearing the upper limits of normative ranges, with no significant disparities detected among student, teacher, educational support staff, and administrative worker subgroups (Figure 1). Notably, all three groups exhibited highest scores on the social-normative well-being scale.

The evaluation of metacognitive skills and reflection indicators showcased average values either meeting average normative benchmarks or reaching their upper limits (Figure 2). Statistical examination via the Kruskal-Wallis criterion revealed significant differences between groups on both the scale of metacognitive involvement and various types of reflection ($p < 0.01$). However, upon post-hoc analysis, distinctive differences were identified solely within a subgroup of students. This subgroup notably demonstrated significantly lower levels of metacognitive involvement and higher values across multiple reflection types, particularly systemic reflection.

Figure 1

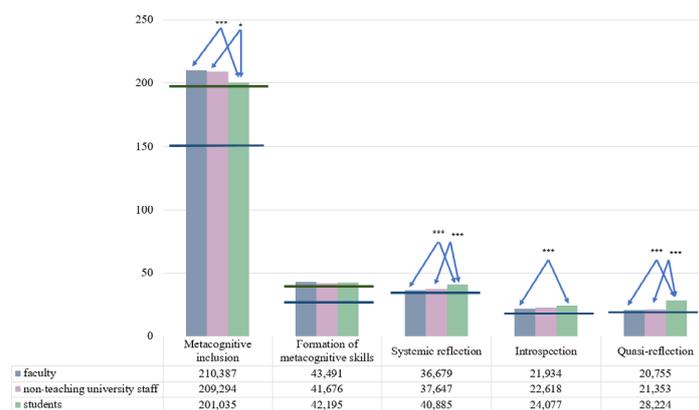
Comparative analysis of average values based on the methodology for diagnosing individual subjective well-being across the studied subgroups



Note: The blue and green horizontal lines denote lower and upper limits, respectively, of the average value ranges for the studied indicators.

Figure 2

Comparative analysis of average values for metacognitive skills and reflection among the studied subgroups



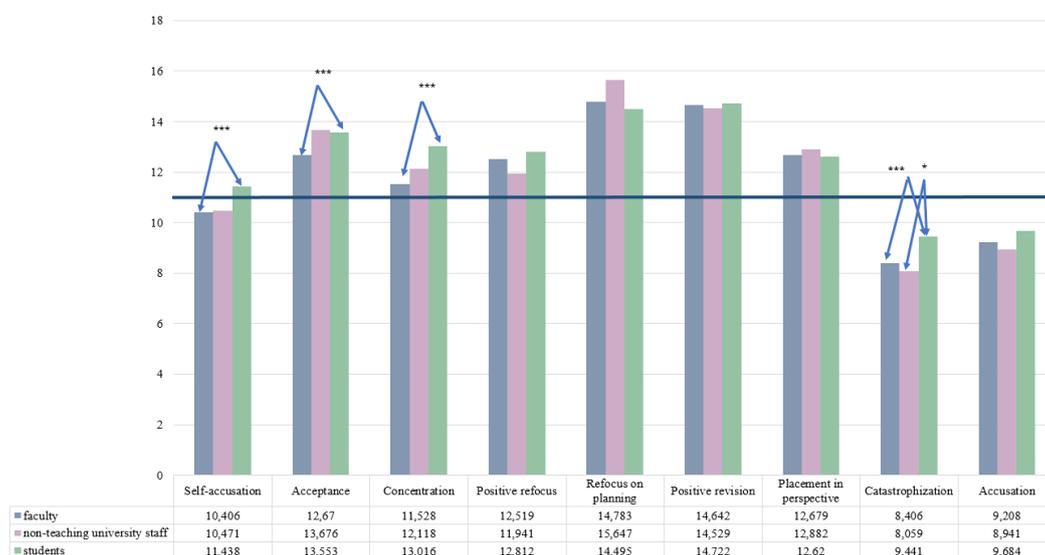
Note: The significance levels of pairwise comparisons using Dunn's method are indicated as follows: * - $p_{holm} < 0,05$; ** - $p_{holm} < 0,01$; *** - $p_{holm} < 0,001$; blue and green lines represent the lower and upper limits, respectively, of the average value ranges for the indicators.

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In examining the preference for various cognitive regulation strategies of emotions, it is evident that the least favored strategies are catastrophizing and blaming, while the highest scores are consistently observed on the positive refocusing and positive revision scales (Figure 3). Noteworthy distinctions primarily emerged within the student subgroup, where, in almost all cases, significantly higher frequencies were noted in the utilization of strategies such as acceptance, self-blame, concentration, and catastrophizing.

Figure 3

Comparative analysis of average values on the questionnaire test "Cognitive regulation of emotions" among the studied subgroups



Note: The significance levels of pairwise comparisons using Dunn's method are indicated as follows: * – $p_{holm} < 0,05$; ** – $p_{holm} < 0,01$; *** – $p_{holm} < 0,001$; blue horizontal line indicates the lower limit of the average value range for the studied indicators.

To investigate the role of emotional, personal characteristics, and metacognitive parameters as predictors of the subjective well-being of educational professionals, a multi-stage regression analysis was conducted.

Initial Stage: At the outset, a regression model was constructed, incorporating the subjects' group affiliation (students, faculty members, academic staff, and administrators) as a predictor. The interaction of this factor with other independent variables was calculated, revealing no significant interactions, except for "Consciousness" and the "Index of Acute Negative Emotions." Due to the multitude of predictors without significant

interactions and the absence of notable differences in the previous comparative analysis, these variables were excluded from further calculations.

Second Stage: A full regression model encompassing various predictors, including metacognitive inclusion, self-assessment of metacognitive behavior, B5-10 questionnaire scales, "Differential Emotions Scale," "Personality Differential" test, "Differential Type of Reflection" test, and "Cognitive Regulation of Emotions" questionnaire, was constructed (Table 1).

Table 1
Full Regression Model for the Studied Indicators

	Coefficient estimate	Standard error	t value	Significance level
(Free coefficient)	1,4874	0,253	5,885	8,04*10 ⁻⁹
Metacognitive involvement	0,0024	0,001	1,896	0,0586
Systemic reflection	0,0052	0,003	1,527	0,12746
Introspection	-0,0094	0,004	-2,31	0,02137
Quasi-reflection	-0,0031	0,003	-1,194	0,23331
Metacognitive skills level	0,0001	0,004	0,023	0,98133
Degree of awareness of using metacognitive skills	0,0142	0,007	2,133	0,03345
Self-accusation	-0,0086	0,007	-1,276	0,20258
Acceptance	0,0039	0,007	0,569	0,56945
Concentration	0,0003	0,007	0,047	0,96249
Positive refocus	0,0127	0,006	2,244	0,02536
Refocus on planning	0,0009	0,007	0,125	0,90089

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	Coefficient estimate	Standard error	t value	Significance level
Positive revision	0,0155	0,007	2,093	0,03697
Placement in perspective	0,0045	0,006	0,719	0,47238
Catastrophization	-0,0056	0,007	-0,806	0,42065
Accusation	-0,0025	0,007	-0,348	0,72795
Extraversion	0,0336	0,010	3,265	0,00118
Benevolence	0,0189	0,012	1,542	0,12387
Consciousness	0,0205	0,010	1,997	0,04644
Neuroticism	-0,0273	0,011	-2,558	0,01086
Openness to experience	0,0159	0,013	1,267	0,20593
Index of Positive Emotions	0,0275	0,003	8,073	6,99*10 ⁻¹⁵
Index of acute negative emotions	-0,0052	0,003	-1,811	0,07092
Index of Anxious-Depressive Emotions	0,0002	0,003	0,047	0,96245

Standard error of residuals: 0.3754 at 429 degrees of freedom

Coefficient of multiple determination R-square: 0.6021, Adjusted R-square: 0.5808

F-value: 28.23 at 23 and 429 degrees of freedom, p-value: < 2.2*10⁻¹⁶

Despite the overall significance of the model, a large proportion of coefficients proved insignificant. To optimize the model, a stepwise model selection was performed using the Akaike information criterion, resulting in a second model with a reduced number of predictors (Table 2).

Table 2
Reduced Regression Model for the Studied Indicators

	Coefficient estimate	Standard error	t value	Significance level
(Free coefficient)	1,4987	0,2379	6,299	7,26*10 ⁻¹⁰
Metacognitive involvement	0,0028	0,0010	2,782	0,0056
Introspection	-0,0117	0,0036	-3,282	0,0011
Degree of awareness of using metacognitive skills	0,0157	0,0063	2,492	0,0131
Positive refocus	0,0121	0,0052	2,33	0,0203
Positive revision	0,0211	0,0058	3,656	0,0003
Extraversion	0,0331	0,0099	3,346	0,0009
Benevolence	0,0220	0,0118	1,861	0,0634

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	Coefficient estimate	Standard error	t value	Significance level
Consciousness	0,0200	0,0100	1,994	0,0467
Neuroticism	-0,0270	0,0104	-2,606	0,0095
Index of Positive Emotions	0,0268	0,0032	8,263	1,69*10 ⁻¹⁵
Index of acute negative emotions	-0,0064	0,0023	-2,776	0,0057
Openness to experience	0,0171	0,0120	1,427	0,1544

Standard error of residuals: 0.3734 at 440 degrees of freedom

Coefficient of multiple determination R-square: 0.5962, Adjusted R-square: 0.5852

F-value: 54.13 on 12 and 440 DF, p-value: < 2.2*10⁻¹⁶

Notably, despite a significant reduction in predictors, key diagnostic metrics such as the standard error of residuals and the coefficient of multiple determination (Multiple R-squared) remained nearly unchanged, with a slight increase in the corrected Multiple R-squared. Most coefficients in the reduced model retained statistical significance.

Numerical diagnostics of the model indicated no statistically significant autocorrelation (Durbin-Watson test: DW = 2.0304, p-value = 0.7534), absence of residual outliers (Largest |rstudent|: Bonferroni p = 0.431), and even dispersion of residuals according to the studentized Bruschi-Pagan test (BP = 2.0588, df = 1, p-value = 0.1513). These results underscore the robustness and reliability of the model.

A model cross-validation procedure was executed by randomly partitioning subjects into three sections, predicting the dependent variable values in each section using model coefficients from the remaining two (Figure 4; Table 3).

Table 3

Results of Cross-sectional Analysis of Reduced Regression Model

	Number of Subjects (n)	Sum of Squares	Average Square
Part 1	151	24,68	0,16
Part 2	151	23,35	0,15
Part 3	151	20,41	0,14

Mean Square Error 0,1510747

The outcomes indicate high predictive accuracy of the model when the sample is randomly divided into three sections. Results from one section are effectively reproduced in the others, showcasing substantial consistency across all three models (Figure 4).

The graphical representation in Figure 5 illustrates the observed effects. Subjects displaying higher subjective well-being tend to exhibit elevated levels of positive emotions, increased metacognitive involvement, awareness of metacognitive skill utilization, extraversion, conscientiousness, agreeableness, and openness to experience. Additionally, positive emotional coping strategies such as positive refocusing and positive revision significantly contribute to higher well-being levels. Conversely, adverse effects were noted concerning introspection, neuroticism, and the index of acute negative emotions.

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Figure 4
Results of Cross-sectional Analysis of Reduced Regression Model

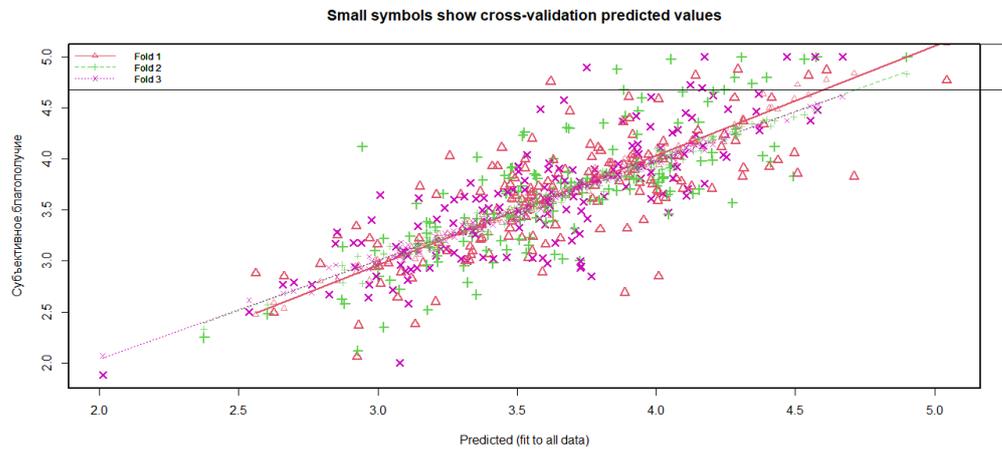
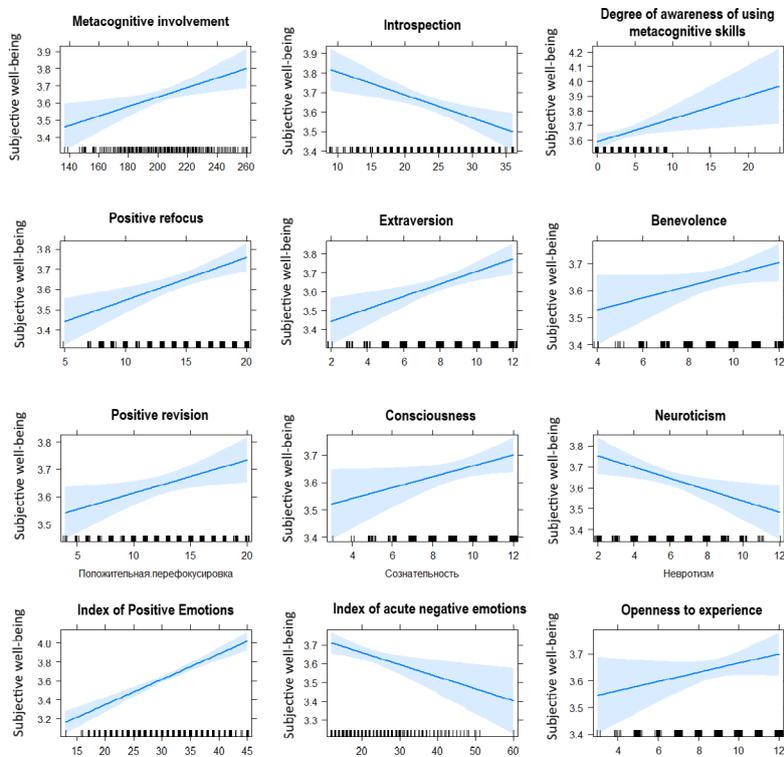


Figure 5
Analysis of Influence Nature of Personal Characteristics, Emotional Sphere, and Metacognitive Skills Awareness on Subjective Well-being



Discussion

The findings from this study underscore the substantial impact of personal characteristics, emotional state, and metacognitive skills on the subjective well-being of key figures in educational activities.

A comparative analysis of well-being, metacognition, and emotional regulation across the studied subgroups revealed limited differences. The lack of differences in the components and level of well-being between different subjects of educational activity contrasts somewhat with a study by V. N. Sofina and colleagues (2022). Their work suggested that, in comparison to working individuals, students exhibit the highest levels of emotional well-being but lower values in other components. Sofina and colleagues attributed this to students' potentially insufficiently formed notions about their personalities and societal roles (Sofina, Rastorgueva, Balasanyan, Gabova, 2022). In our study, significant differences were primarily observed between the student and teacher groups. The observed distinctions might be attributed not solely to the nature of the activity but potentially to age differences among respondents. Given that students are generally younger, their heightened interest in their inner world and a lower level of control over cognitive processes may contribute to these differences. Furthermore, young individuals often exhibit reduced coping differentiation and an exaggerated focus on the significance of negative experiences in the present (Regush et al., 2021).

Initially, we assumed that the structure of emotional-personal and metacognitive predictors could contain both universal components that determine the well-being of students, faculty and non-teaching university staff. However, as a result of analyzing the influence of the grouping variable in the regression model and analyzing its interactions with other predictors, significant effects were noted only for the indicators "Conscientiousness" and "Index of Acute Negative Emotions". Notably, previous analyses using covariance analysis separately on student and teacher samples revealed a similar significant impact of conscientiousness on well-being (Denisova, Ermakov, Abakumova, Sylka, 2022). Given the minimal disparities between groups, these findings potentially indicate the specificity of how personal conscientiousness and negative emotions interact within educational activities. The interaction of the grouping variable with the index of negative emotions might stem from distinct sources of negative experiences and varied emotional intensity across different age groups. The multifaceted nature of conscientiousness, encompassing reliability, responsibility, discipline, self-control, and organization, likely engages differently with the well-being of students, teachers, and other educational workers. These components might exhibit nuanced interactions within the unique dynamics of their respective roles and responsibilities.

Limitations of the Study

While striving for a comprehensive analysis of subjective predictors of well-being among educational professionals, this broad approach may have slightly compromised the

granularity of the results. The study's limitation lies in the reduced level of detail, which could impact the depth of the findings.

Research Prospects

Future investigations could benefit from considering additional factors such as gender, educators' tenure, educational level, and training format within the student sample. These factors could provide a more nuanced understanding of how subjective well-being operates within specific demographics or professional contexts.

Conclusions

The study aimed at comprehensively examining emotional, personal, and metacognitive predictors influencing the psychological well-being of students, teachers, and educational staff. The analysis reveals that higher subjective well-being aligns with elevated positive emotions, extraversion, conscientiousness, agreeableness, and openness to experiences. Lower levels of acute negative emotions, proficient control over cognitive processes, and awareness of metacognitive skill utilization strongly support well-being.

Moreover, constructive strategies that seek positive meaning in adverse events and focus on more positive aspects of life significantly contribute to well-being. Conversely, negative influences arise from tendencies toward introspection, getting caught in one's thoughts (introspection), and heightened neuroticism.

These findings align with existing well-being concepts and empirical data across various samples. The novelty lies in understanding which facets of metacognition and cognitive emotion regulation, alongside personal characteristics, exert the most significant positive influence on educational professionals' well-being.

This study's outcomes offer valuable insights for mitigating burnout and enhancing the well-being of students, teachers, and educational staff. Strengthening metacognitive involvement, fostering awareness of metacognitive skills, and cultivating constructive emotion regulation strategies can sustain higher psychological well-being and efficacy amid evolving socio-political and economic landscapes.

Main conclusions

- In the current climate of increased stress and instability, there is a need to shift the focus from objective, external factors to internal, subjective factors of well-being for students, educators and non-teaching university staff, which can be used as tools for increasing the level of stability, personal effectiveness and maintaining an adequate level of well-being;
- In modern circumstances personal characteristics, metacognitive parameters, and emotional regulation should be considered as predictors of well-being for students, educators and non-teaching university staff.

- Conscientiousness, extraversion, agreeableness, openness to experience, positive refocusing and positive reappraisal strategies, high levels of positive emotions, high levels of metacognitive engagement, and awareness of using metacognitive skills have a reliable positive effect on the level of subjective well-being of students, teachers, and other university workers.

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Igor Vladimirovich Kupriyanov – participation in data processing, mathematical and statistical data analysis, participation in the preparation of the final text of the article.

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Conflict of Interest Information

There is no conflict of interest to declare.