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Mental Self-Regulation and Personality Changes of Students

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Abstract

Introduction. The article presents data on the understanding of metacognitive awareness in the management of change necessary for self-development of young people in the period of intensive change in society. The aim of the study was to identify indicators of different spheres of mental self-regulation and personal changes of students. **Methods.** The participants of the study (130 students aged 17–20 years: 53 boys and 77 girls) were examined using the following methods: «Metacognitive awareness» (E.I. Perikova, V.M. Byzova), «Emotional intelligence» (D.V. Lyusin), «Self-regulation styles» (V.I. Morosanova), «Self-change styles» (T.Y. Bazarov, M.P. Sycheva), «Self-change potential» (V.R. Manukyan, I.R. Murtazina, N.V. Grishina). **Results.** The main role of metacognitive awareness is to promote dynamic interdependence between the phases of metacognitive knowledge, which is reflected in the structure of girls' mental regulation. Girls are distinguished by the expression of the regulatory process modeling in comparison with boys. Significant differences in styles of reaction to changes in boys and girls were revealed. Girls are distinguished by the expression of the conservative style (the attitude to approve of change), and boys are distinguished by the expression of the innovative style (the attitude to perceive changes). According to the data of content analysis, the student groups evaluated changes differently. Positive evaluation of changes corresponded to high indicators of potential and ability for self change, and negative evaluation corresponded to high indicators of the possibility of self-change. The correlation structure of the system of mental self-regulation and peculiarities of self-change of young men is formed by metacognition, components of emotional intelligence and styles of response to change, while the similar structure of girls is distinguished by interrelations of metacognitive

regulation, modeling process and styles of response to change. **Discussion.** Our study analyzed the specificity of mental self-regulation and self-change in study groups of different training directions. It was revealed that students who are included in different study groups discover different resources for accepting changes. The shown structural interrelations of components of mental self-regulation and peculiarities of response to changes in young men and girls reflect the peculiarities of the ability to metacognitively regulate current changes. The role of metacognitive awareness in different evaluations of experience of forthcoming changes is found out.

Keywords

personality self-change, metacognitive awareness, emotional intelligence, styles of response to change, mental self-regulation

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Introduction

The conditions of modern social reality are labeled as changeable. Summarizing the known concepts of social change, P. Sztompka concludes that it is necessary to systematize the existing approaches to understanding change as a necessary attribute of progress, growth and development (Sztompka, 1996).

A number of methodological difficulties are encountered when studying changes. G.M. Andreeva argues that the research of social changes is limited to the study of human perception of these changes (Andreeva & Leontiev, 2018), their perception by a member of the group when he/she builds an image of the social world (Andreeva, 2005). The practical significance of changing research as the study of life problems and human situation, which is always social and changing, is also emphasized (Andreeva & Leontiev, 2018).

G.M. Andreeva distinguishes three levels of change: radical transformations of the type of social relations; changes in specific areas of social activity; changes affecting the life activities of small groups or individuals. According to the author, the third level of social change falls into the field of study of both social and general psychology. Changes involve a person in an internal dialog or internal struggle in order to master the changes and preserve personal self-esteem (Andreeva & Leontiev, 2018).

Changes also fall within the field of view of social psychology of health. I. N. Gurvich notes that the impact of social changes on population health is considered as an

integral damaging factor. The understanding of changes is reduced to the results of the functioning of social systems. They are the source of greater problems than the activity of psychological systems proper. And the development of personality provides readiness to overcome life changes. The author describes the concept of «conservative impulse» as the loss of «habitual patterns of social relations, which makes one avoid changes» (Gurvich, 1999).

The importance of studying the perception of changes is confirmed by numerous empirical studies. I.S. Burikova et al. assert the global nature of manifestation of changes in the human need and motivational spheres (Burikova, Pushkina & Yurieva, 2009). T.A. Polyakova emphasizes the connection between economic, technological and social changes and qualitative changes in the person himself (Polyakova, 2009). Personality changes are understood in the context of life creation (Leontiev & Miyuzova, 2016), in the comparison of their perception by men and women (Shemanova, 2008).

The phenomenon of self-change is actively investigated (Grishina, 2018; Manukyan & Murtazina, 2020), tools for changing the features of change are constructed (Manukyan, Murtazina & Grishina, 2020; Bazarov & Sycheva, 2012). With the help of new tools, empirical studies have been conducted (Zaleskaya & Grishina, 2020, Bazarov et al., 2012) and it is concluded that personal changes occur due to the active role of personality (Manukyan, Murtazina & Grishina, 2020).

The problem of changes interests foreign researchers as well. Studies are conducted in the context of life changes (Bleidorn, 2012), from the point of view of self-regulation in ongoing changes (Denissen et al., 2013), perception of life events (De Vrie, Spengler, Frintrup & Mussel, 2021), changeability-stability of personality in the process of change (Johnson, 1997).

It is possible to consciously manage change for the purpose of growth and development. We have conducted some research on the links between the characteristics of change and the system of mental self-regulation (Byzova, Perikova & Lovyagina, 2019). However, the role of metacognitive inclusion in change management as an effective strategy for managing new everyday experiences remains not fully clarified.

The concept of metacognitive monitoring was proposed by J. Flavell as «a new territory» for cognitive research (Flavell, 1979). The author emphasizes the problematics of metacognitive monitoring of intellectual activity, includes four classes of phenomena in the model: metacognitive knowledge, goals (tasks), actions (strategies), and metacognitive experience.

Metacognitive knowledge is defined as the portion of stored knowledge about the world that includes a variety of cognitive tasks, goals, actions, and experiences. Goals relate to a cognitive task. Actions (or strategies) relate to cognitions or other behaviors that are applicable to achieve them. Metacognitive experiences (experiences) include any conscious cognitive or affective experiences that relate to intellectual activities (Flavell, 1976).

J. Flavell explains the content of metacognitive experiences: a person believes (feels) that he or she has learned instructions; inadequately expresses feelings to a friend;

suddenly finds himself or herself stumped while trying to understand what he or she has read; takes a long time to solve what seems at first to be an easy task, etc. The author notes the importance of studying the differences in the content of the experience of human cognitive problem solving and the quality of metacognitive monitoring (Flavell, 1979). The works reveal the practical significance of the outlined concept (Flavell & Flavell, 2004; Flavell, 1985).

Purpose and hypotheses of the study

The purpose of our study was to investigate the assessment of change experience, characteristics of conscious self-regulation, metacognitive awareness and students' self-change.

The subject of the study was the system of mental self-regulation (metacognitive awareness, conscious self-regulation, emotional intelligence) and characteristics of personality self-change. The object of the study is student youth included in different educational groups.

The main hypothesis of the study was the assumption that there are significant differences in the characteristics of the system of mental self-regulation and self-change in students included in different study groups. Particular hypotheses were also formulated:

- there are significant differences in the components of the system of mental self-regulation in young men and young women;
- components of the system of mental self-regulation and self-change in personality form dense significant interrelationships.

Methods

Theoretical and methodological bases of the study were: the theory of metacognitive monitoring by J. Flavell (1979), the concept of social change by G.M. Andreeva (2005); the attitudinal approach to identifying the socio-psychological characteristics of participants in the process of change (Bazarov & Sycheva, 2012).

Participants and research design

The total sample included 130 students, including 53 males and 77 females between 17 and 20 years old (mean age – 19.1 years, SD = 0.7). During two years (2022–2023), data collection was conducted among second-year students of humanitarian and natural science majors (departments of psychology, biology, tourism, physical education and sports) of St. Petersburg and Vyatka State Universities.The samples were formed into 6 study groups (Table 1)

.**Table 1**

Description of the composition of the groups included in the sample

Learning profile	Age		Sex (%)		Выборка (%)
	M	*SD*	Young men	Girls	
1. «Bachelors – psychologists»	19,3	1,5	14	18,2	16,5
2. «Bachelors – biologists»	19,4	0,7	42	0	16,5
3. «Bachelors – athletes»	18,1	0,5	6	18,2	13,1
4. «Bachelors – tourism»	19,3	0,8	14	18,2	16,5
5. «Specialists – psychology SPB»	18,9	0,5	20	26	23,6
6. «Specialists – psychology Kirov»	20,0	0,0	4	19,5	13,4
Total	19,1	0,7	100	100	100

Note. *M – mean value; SD – standard deviation.*

Table 1 presents the gender and age characteristics, as well as the percentage of groups in the sample. According to the results of comparative analysis (Student's criterion, $p \leq 0.05$), no significant differences were found between boys (mean age = 19.1 years, standard deviation = 0.5) and girls (mean age = 19.08, standard deviation = 0.08) by age.

The research procedure involved writing an essay («What changes have happened to you recently?») and completing paper questionnaires in a classroom setting. Participation in the study was voluntary and there was no reward.

Methods

To identify the characteristics of the system of mental regulation and self-change, we used a set of methods:

- «Metacognitive awareness» questionnaire by G. Schraw and R. Dennison (Schraw & Dennison, 1994) in the adaptation of A.V. Karpov, I.M. Skityaeva (2005) and subsequent modification by E.I. Perikova, V.M. Byzova (2022), aimed at assessing indicators of metacognitive involvement in activity (Perikova & Byzova, 2022);
- «Style of self-regulation of behavior» questionnaire aimed at assessing the expression of regulatory processes and regulatory-personal properties (Morosanova, 2022);

- «Emotional Intelligence» questionnaire by D.V. Lucin, aimed at measuring the ability of an individual to understand and manage his/her own emotions and emotions of other people (Lucin, 2009);
- «Style of reacting to changes» questionnaire designed to assess the expression of conservative, innovative, reactive and realizing styles (Bazarov, Sycheva, 2012);
- «Self-Change Potential» questionnaire, aimed at measuring the potential for self-change of its components: the need for self-change, the possibility of self-change, the ability for conscious self-change, the belief in the possibility of self-change (Manukyan, Murtazina & Grishina, 2020).

Mathematical and statistical analysis of the obtained data was carried out using the program SPSS Statistics, 24.0. We applied descriptive statistics, conjugation tables, comparative analysis (Student's criterion, univariate and multivariate ANOVA) and correlation analysis.

Results

At the first stage of the study, the average values of the indicators of the system of mental regulation (metacognitive awareness, conscious self-regulation, emotional intelligence) and self-change of students were considered. The data were analyzed both for the sample as a whole and for young men and girls separately (Table 2).

Table 2
Average values of indicators of the system of mental self-regulation

Indicators	For the group as a whole		Young men		Girls	
	M	*SD*	*M*	*SD*	*M*	*SD*
Metacognitive awareness	123,9	17,8	129,0	16,9	121,8	17,9
Metacognitive knowledge	44,93	6,3	45,88	6,9	44,56	6,06
Metacognitive regulation	78,9	13,7	83,18	11,7	77,33	14,3
Declarative knowledge	18,9	3,0	19,41	2,9	18,8	3,05
Procedural knowledge	10,8	1,9	11	2,2	10,7	1,9
Conditional knowledge	15,2	2,3	15,7	2,3	15,02	2,1
Planning	16,4	1,9	16,12	2,1	16,56	1,9
Information management strategy	7,9	1,3	6,18	0,8	7,8	1,4

Indicators	For the group as a whole		Young men		Girls	
	M	*SD*	*M*	*SD*	*M*	*SD*
Component control	23,9	3,6	24,4	4,01	23,7	3,4
Error correction structure	15,8	2,0	16,29	4,01	23,7	3,4
Evaluation	15,3	3,08	15,65	2,5	15,16	3.2
Conscious self-regulation	30,8	5,5	30,3	5,9	31,2	5,1
Regulatory process planning	6,0	1,8	6,05	1,9	6,07	1,7
Regulatory process modeling	6,1	1,8	5,7	1,7	6,5	1,9
Regulatory process programming	6,3	1,5	6,3	1,5	6,2	1,5
Regulatory process outcome evaluation	6,2	1,5	6,0	1,4	6,4	1,6
Flexibility	5,7	1,8	5,6	1,6	5,8	2,0
Independence	5,5	1,9	5,5	2,0	5,4	1,8
Emotional intelligence						
Interpersonal	47,1	9,9	49,4	12,0	44,8	7,0
Intrapersonal	44,8	11,2	50,4	11,5	39,7	7,8
Understanding emotion	45,3	10,9	49,54	12,6	41,5	7,5
Managing emotion	45,2	10,2	48,9	11,3	41,5	7,3

Note. *M – mean value; SD – standard deviation*

According to the data presented in Table 2, a comparative analysis (T-criterion, $p \leq 0.05$) was conducted for young men and girls. Significant differences were revealed for the indicators of conscious self-regulation. The indicators of the regulatory process «Modeling» in girls (M = 6.55; SD = 1.9) were significantly higher (p = 0.045) compared to young men (M = 5.7; SD = 1.7).

Significant differences in the indicators of emotional intelligence were also revealed. The interpersonal intelligence scores in young men (M = 49.4; SD = 12) are higher (p = 0.044) than girls (M = 44.8; SD = 7); in terms of intrapersonal intelligence scores, young men (M = 50.4; SD = 11.5) are different (p = 0.000) from girls (M = 39.7; SD = 7.8); on measures of emotion understanding (p = 0.001), young men (M = 49.5; SD = 12.6) are

significantly different from girls (M = 41.5; SD = 7.5); as well as on measures of emotion management: Young boys (M = 48.9; SD = 11.3) are significantly higher (p = 0.001) different from girls (M = 41.6; SD = 7.3).

No significant differences were found for metacognitive awareness between young men and girls (t-test, p>0.05).

The obtained averages were analyzed (Table 3). The results presented in Table 3 reflect that the averages for all indicators of meta-inclusion in activities are significantly lower than the averages presented by E. I. Perikova and V. M. Byzova (Perikova, Byzova, 2022).

Table 3

Results of comparative analysis of mean values of metacognitive awareness (Samples 2022 and 2023).

	Study 2023 (N=130)		Study 2022 (N=268)		T-criterion p-value
	M	*SD*	*M*	*SD*	
Metacognitive awareness	123,9	17,8	194.7	34,15	0,000
Metacognitive knowledge	44,9	6,3	94.7	16,7	0,000
Metacognitive regulation	78,98	13,7	100.1	18,15	0,000
Declarative knowledge	18,97	3,0	29.6	5,6	0,000
Procedural knowledge	10,82	1,9	14.35	3,0	0,000
Conditional knowledge	15,22	2,3	18.5	3,7	0,000
Planning	16,43	1,9	26.3	5,3	0,000
Information management strategy	7,9	1,3	37.3	6,8	0,000
Component control	23,9	3,621	26.9	5,2	0,000
Error correction structure	15,8	2,076	20.05	3,7	0,000
Evaluation	15,30	3,082	21.5	4,5	0,000

Note. *M – mean value; SD – standard deviation*

A comparative analysis of the indicators of metacognitive awareness and its components for young men and girls was also carried out. It was revealed that all indicators of the sample are reliably significantly lower than those published earlier. The exception is the component control scores for males, which are virtually unchanged from those reported in 2022.

The results of the data analysis of the self-change characteristics are presented in Table 4.

Table 4
Mean values for self-change indicators for young men and young women

Self-change indicators	For group		Young men		Girls	
	M	*SD*	*M*	*SD*	*M*	*SD*
Reactive style of reacting to change	18,02	4,5	16,4	5,1	22,3	5,3
Conservative style of responding to change	21,3	5,0	18,65	3,0	22,3	5,3
Innovative style of responding to change	17,9	5,1	20,3	3,4	16,9	5,3
Realizing style of responding to change	19,4	4,1	16,4	5,1	18,6	4,2
Self-change potential	48,7	10,1	46,7	11,1	49,8	9,5
Need for self-change	22,7	3,3	22,7	3,7	22,6	3,3
Ability for self-change	23,5	3,5	22,8	3,7	23,8	3,4
Belief in self-change	20,0	4,3	18,7	4,9	20,8	3,8
Possibility of self-change	17,5	4,0	16,8	4,2	17,8	4,0

Note. *M – mean value; SD – standard deviation.*

According to the results (Table 4) of the comparative analysis, significant differences in the characteristics of self-changes of young men and girls were revealed (t-criterion, $p \leq 0.05$). The indicators of conservative style of responding to change of young men (M = 18.6; SD = 3.0) were significantly lower (Tukey, p = 0.002) compared to those of girls (M = 22.3; SD = 5.3). Whereas the scores in innovative styles of responding to change of young men (M = 20.3; SD = 3.4) are higher (Tukey, p = 0.018) compared to girls (M = 16.9; SD = 5.3).

On measures of self-change potential, significantly significant differences for males and females were found on measures of belief in self-change (Tukey, p = 0.009). Girls had more belief in self change (M = 20.8; SD = 3.8) compared to young men (M = 18.7; SD = 4.9).

In the second stage of the study, a content analysis of the essay texts was conducted. According to the results, the categories that reflect the options for evaluating the experience of change were highlighted: «Change affects me negatively» (24.0%); «Change is negative, but the result is positive» (32.0%) and «Change is positive for me» (48.0%). The content of the identified categories is presented in Table 5 and Table 6.

Table 5

Results of content analysis of the texts of essays on «Changes recently» in the sample of young men.

Category	Content
«Change is having a negative impact on me». (24,0%)	«Every day something changes, and this new thing leaves an imprint on the personality: surrounding people are lost, and with them the circle of interests, character traits, characteristics of the nervous system. I try to grab hold of any person to change the feeling of loneliness. But every time there is a feeling that I am not understood»; «Very hard changes. A lot has been piled on my shoulders, study, work, lab. Very strong decline of strength, lost the desire to do something, drowsiness, desire to drink»; «As a result of the changes, the feeling of certainty, confidence in the future disappeared. Became less inquisitive, put everything off for later».
«The changes are negative, but their result is positive». (32,0%)	«My relationship has moved to the status of civil marriage. It has changed my life a lot. It was difficult in the beginning, but now I have started to really enjoy the change» «The first year changed me —I was afraid, doubted my abilities. University gave me the opportunity to meet new people, I got a better understanding of the world through science»; «Compared to school, the rhythm of my life changed. This new frightened me. And in the end I felt more confident in my abilities».

Category	Content
«The changes are positive for me». (44,0%)	«I started to learn more new and interesting things, I became easier to relate to everything. I have become stronger; the year has taught me to try harder»; «Over the last year a lot of changes that have made life interesting and rich. The main one is going to university. Thanks to this I have gained a lot of acquaintances, I am striving for self-improvement»; «The changes are related to moving and living completely independently. All of them are joyful and cover my needs in many spheres».

Table 6

Results of content analysis of the texts of essays on the topic «Changes recently» in the sample of girls

Category	Content
«Change is negatively affect on me». (16,9%)	«Because of the changes, increased anxiety about the world, control of everything, realizing the reasons for negative attitudes towards myself»; «I feel less satisfaction with life and am always in a reduced mood»; «Social circle has shrunk. I realized how susceptible I am to manipulation. I realized that I don't understand anything»; «The things that have changed have become meaningful, lost their meaning. It becomes more difficult to restrain emotions. I felt how much I was afraid of loneliness»; «There is no need to change —security is more valuable than gains through loss».
«Change is negative, but the result is positive» (32,5%)	«Compared to school I became more introverted, withdrawn, sad. It has become hard»; «I became more selective with friendships. But because of more interesting studies I became more diligent and responsible. It became easier to treat my appearance, to think less about my shortcomings»; «As a result of the changes, my usual way of life has changed, but I have become more emotionally stable, I have found strength in myself, I have found a new hobby that develops my abilities, I have become more comfortable being in a team».

Category	Content
«The changes are positive for me» (50,6 %)	«I believe that the changes have been for the better. I have reconsidered many processes and attitudes»; «I have become more tolerant to changes and people around me, I regulate my emotional state independently. Now I easily make new acquaintances and deepen existing relationships»; «I have become more independent, better time management, my anxiety level has significantly decreased, my self-esteem has increased, I am more excited about life».

According to the results of the analysis of essays, it was revealed that all the changes noted by the respondents were related to entering the university, inclusion in educational activities, and changes in lifestyle. According to the results of analyzing the distribution of categories of assessments of self-change among young men and girls, no significant differences were revealed (X2, $p>0.05$). No content differences in the assessment of changes were found.

Also were analyzed (ANOVA, $p\leq0.05$) indicators of the system of mental self-regulation and self-change personality of respondents who evaluate changes differently. According to the results of multiple comparison (Tukey $p\leq0.05$), it was revealed that the indicators of self-change capacity of the group «Change positively affect me» ($M = 51.7$; $SD = 9.1$) were significantly higher ($p = 0.029$) compared to the group «Change is negative but the consequences are positive» ($M = 46.5$; $SD = 9.5$) and compared ($p = 0.009$) to the group «Change negatively affects me» ($M = 44.8$; $SD = 12.1$).

Self-change ability scores of the «Change positively affect me» group ($M = 24.0$; $SD = 3.2$) are higher compared ($p = 0.028$) to the «Change negatively affects me» group ($M = 21.8$; $SD = 4.0$). Self-change capability scores of the «Change negatively affects me» group ($M = 18.5$; $SD = 4.7$) are higher compared to those of the «Change positively affects me» group ($M = 16.4$; $SD = 3.4$). No differences in the expression of styles of responding to change were found among respondents who differently assessed change (ANOVA, $p \geq 0.05$).

A multivariate ANOVA was conducted to analyze the differences identified. This resulted in a statistically significantly significant model (Pillai's Trace $p = 0.014$). This model at the base shows the mutual influence of the factors «Evaluation of the experience of change» and «Inclusion in the group», and the dependent variables are interpersonal intelligence and regulatory process - modeling.

According to the results of the analysis of inter group effects, it is shown that the factor «Evaluation of the experience of change» influences the regulatory process of modeling (F, $p = 0.004$). Whereas the factors «Group membership» (F, $p = 0.014$) and «Evaluation of the experience of change» (F, $p<0.000$) have a mutual influence on interpersonal

intelligence. Moreover, the reciprocal influence of the above factors on interpersonal intelligence (F, p = 0.043) is significantly significant, whereas for the regulatory process of modeling was found at the level of trend (F, p = 0.054).

Multivariate comparison showed (Tukey, p ≤0.05) that «undergraduate biologists» who rated the experience of change as positively differed in interpersonal intelligence scores (M = 49.0; SD = 3.1) compared to undergraduate psychologists (M = 44.0; SD = 4.5) at a reliable level of significance (p = 0.041).

Whereas, the group of «undergraduate athletes» who rated the experience of change as positive distinguished high scores of the modeling process (M = 9; SD = 1.5) compared to the group of «undergraduate psychologists» who rated the experience of change as negative (M = 4.2; SD = 2.3), (p = 0.005) and the group of "undergraduate biologists" who rated the experience of change as negative but the consequences as positive (M = 4.0; SD = 1.6) (p<0.000).

No statistical significance was found when the factor «Age» was added to the model (F, p≥0.05).

Correlation analysis of the indicators of the system of mental self-regulation and features of self-change was also carried out. Correlations r> 0.330 and p ≤0.05 were considered. The analysis was performed for boys (Table 7) and girls (Table 8).

Table 7

Correlation structure of metacognitive awareness, conscious self-regulation, emotional intelligence and peculiarities of self-change of young men.

	Metacognitive Knowledge	Metacognitive Regulation	Process Programming	Process Modeling	Interpersonal Intellect	Intrapersonal Intellect	Understanding Emotions	Management Emotions	Potential Self-Change	Innovative Style	Reactive Style Realizing Style	Realizing Style	Conservative Style
Metacognitive awareness	,831 ,000	,943 ,000	,445 ,065	,243 ,332	,319 ,197	,318 ,198	,268 ,282	,332 ,178	,200 ,427	,002 ,995	-,357 ,146	,389 ,110	-,107 ,673

		Metacognitive Knowledge	Metacognitive Regulation	Process Programming	Process Modeling	Interpersonal Intellect	Intrapersonal Intellect	Understanding Emotions	Management Emotions	Potential Self-Change	Innovative Style	Reactive Style	Realizing Style	Conservative Style
Metacognitive knowledge		1	,598 ,009	,344 ,163	,451 ,060	,526 ,025	,612 ,007	,442 ,066	,623 ,006	,610 ,007	,350 ,154	-,528 ,024	,530 ,024	-,411 ,090
Metacognitive regulation		,598 ,009	1	,435 ,071	,080 ,752	,145 ,566	,092 ,716	,122 ,630	,107 ,673	-,077 ,762	-,207 ,410	-,198 ,431	,244 ,329	,092 ,718
Conscious regulation		,213 ,397	,211 ,401	,353 ,025	,272 ,089	,282 ,078	,219 ,174	,316 ,047	,193 ,233	,209 ,195	-,153 ,544	,067 ,792	-,093 ,713	,191 ,448
Self-change potential		,610 ,007	-,077 ,762	,150 ,355	,353 ,026	,411 ,008	,473 ,002	,384 ,014	,542 ,000	1	,515 ,029	-,622 ,006	,563 ,015	-,450 ,061

Note. *Statistically significant correlations are highlighted in font.*

Table 7 presents the correlations: It was found that metacognitive knowledge reveals correlations with interpersonal intelligence (r = 0.526; p = 0.025), intrapersonal intelligence (r = 0.612; p = 0.007), emotion management (r = 0.623; p = 0.006), self-change potential (r = 0.610; p = 0.007), realizing style of responding to change (r = 0.530; p = 0.024), and negative relationship with reactive style of responding to change (r = -0.538; p = 0.024).

The self-change potential correlations found were important: Positive relationships with metacognition (r = 0.610; p = 0.007), modeling process (r = 0.353; p = 0.026), interpersonal intelligence (r = 0.411; p = 0.002), intrapersonal intelligence (r = 0.473; p = 0.002), understanding emotions (r = 0.384; p = 0.014), innovative style of responding to change (r = 0.515; p = 0.029), realizing style of responding to change (r = .563; p = 0.015) and negative relationship with reactive style of responding to change (r = -0.622; p = 0.015).

The correlations between the system of mental self-regulation and the features of girls' self-change are presented in Table 8.

Table 8

Correlation structure of metacognitive awareness, conscious self-regulation, emotional intelligence and peculiarities of girls' self-change

	Metacognitive Knowledge	Metacognitive Regulation	Process Programming	Process Modeling	Interpersonal Intellect	Intrapersonal Intellect	Understanding Emotions	Management Emotions	Potential Self-Change	Innovative Style	Reactive Style Realizing Style	Realizing Style	Conservative Style
Metacognitive awareness	**,715 ,000**	,955 ,000	,492 ,001	,120 ,444	,231 ,135	,332 ,030	,315 ,040	,287 ,062	,418 ,005	,017 ,915	-,266 ,084	,251 ,104	-,006 ,971
Metacognitive knowledge	1	,476 ,001	,501 ,001	,075 ,632	,539 ,000	,316 ,039	,347 ,023	,505 ,001	,284 ,065	,148 ,344	-,298 ,052	,282 ,067	-,096 ,542

	Metacognitive Knowledge	Metacognitive Regulation	Process Programming	Process Modeling	Interpersonal Intellect	Intrapersonal Intellect	Understanding Emotions	Management Emotions	Potential Self-Change	Innovative Style	Reactive Style Realizing Style	Realizing Style	Conservative Style
Metacognitive regulation	,476 ,001	1	,406 ,007	,119 ,448	,063 ,690	,284 ,065	,249 ,108	,147 ,347	,405 ,007	-,042 ,791	-,209 ,179	,196 ,207	,033 ,832
Conscious regulation	,441 ,003	,314 ,040	,708 ,000	,577 ,000	,250 ,102	,474 ,001	,412 ,005	,364 ,015	,147 ,341	,061 ,695	-,258 ,090	,291 ,055	-,012 ,939
Self-change potential	,284 ,065	,405 ,007	,168 ,276	,310 ,041	-,025 ,872	,250 ,102	,092 ,555	-,002 ,990	1	,508 ,000	-,386 ,010	,364 ,015	-,474 ,001

Note: *Statistically significant correlations are highlighted in font.*

First of all, the correlations of metacognitive involvement in activity with the regulatory process modeling (r = 0,492; p = 0,001), intrapersonal intelligence (r = 0,332; p = 0,030), and self-change potential (r = 0,481; p = 0,005) were revealed. Self-change potential forms correlations with metacognitive regulation (r = 0.405; p = 0.007), innovative style of responding to change (r = 0.508; p = 0.000), realizing style of responding to change (r = 0.364; p = 0.015) and negative relationships with reactive (r = -0.386; p = 0.010) and conservative style of self-change (r = -0.474 p = 0.001).

Discussion

Our research interest in analyzing the features of personality self-modifications and mental self-regulation in the context of students' metacognitive engagement correlates with the goals of current research (Bui & Johnson, 2024; Faisal khellab, Demirel & Mohammadzadeh, 2022).

Analysis of the mean values of the components of the mental regulation system components revealed significant differences in the performance of boys compared to girls. Girls are distinguished by the expression of the regulatory modeling process. The indicators of emotional intelligence are higher in boys.

The sample mean values of the components of metacognitive awareness as well as the indicators in the sample of both young men and girls in our study are significantly lower than the normative averages presented in the studies of 2022 (Perikova & Byzova, 2022). This fact may be related to the fact that the 2022 data reflect the average indicators of a sample of older respondents.

The peculiarities of self-change indicators of boys and girls have been revealed, which correlates with the conclusions of the authors of the methodology «Potential for Self-Change» (Manukyan, Murtazina & Grishina, 2020). Girls are distinguished by a higher value of belief in self-changes compared to young men. Also, girls are distinguished by the expression of conservative style (the attitude of asserting change), and young men are distinguished by the expression of innovative style (the attitude of perceiving change). The results obtained differ from the data published by T.Y. Bazarov and M.P. Sycheva, obtained on a sample of managers (2012).

According to the results of content analysis of essay texts, different aspects of respondents' assessment of changes were revealed: «Changes negatively affect me», «Changes are negative, but the result is positive», «Changes are positive for me». It is shown that positive assessment of changes is significantly expressed in the sample (48.0%). No significant differences in the assessment of changes by boys and girls were revealed. Shemanova N.A. shows that at older ages sex differences exist (Shemanova, 2008).

Students who evaluate changes positively are characterized by high indicators of potential and ability to change themselves. Students who evaluated change negatively are characterized by high scores of self change capacity. Zhr. Gurat states, failure to use metacognitive strategy correctly leads to intense negative emotions, confusion, or frustration (Gurat & Medula, 2016).

The obtained model showing the mutual influence of the factors «Belonging to a group» and «Evaluation of changes» shows that respondents who are distinguished by high values of emotional intelligence and regulatory process modeling evaluate changes positively. The specificity of mental self-regulation and self-change in different study groups has not been investigated before and is an important result of our study. It is shown that different resources can be found in groups that allow members to reflect the real social situation. M. Tomasello argues that the acquisition of cognitive flexibility is an important outcome, a consequence of young people's attempts to metacognitively regulate different social perspectives within group interaction (Tomasello, 2024).

We also analyzed the results of the analysis of the interrelationships between the indicators of the mental regulation system and the self-change of young men and women for the first time. Different structures of interrelationships between young men and girls were revealed. In the sample of girls, the potential for self-change forms significant relationships with metacognitive awareness (metacognitive regulation) and styles of responding to changes. The structure of interrelations of young men is formed with metacognitive awareness (metacognition), components of emotional intelligence and styles of reaction to changes. J. Flavell writes, «Metacognitive experiences may be brief or long in duration, simple or complex in content, but they form a belief (faith) about the success or failure or progress you are making or can make in the future» (Flavell, 1979).

Contemporary researchers note that executive processes control and manage actions and attention at the executive level (Gurat, Cesar & Medula, 2016). Metacognitive processes control and manage executive processes at the metacognitive level – both levels contribute to effective and efficient behavioral decision making (Tomasello, 2024).

Limitations of the findings of the study are the quantitative, gender, age, and psychometric characteristics of the sample. Prospects of the study include organizing a longitudinal study of students in study groups at different stages of education.

Conclusion

The researchers' conclusions about the possibility of managing the perception of changes, as well as about the influence of this perception on the psychological health of the general population open the field of research on effective ways of change perception. Our study shows that there are differences in students' experiences of change. The identified features of metacognitive monitoring (use of metaknowledge or meta-regulation) suggest that there are different change management strategies that contribute to the psychological well-being of young people.

Our study shows that respondents aged 17 to 20 years old are characterized by low values of metacognitive awareness. At the same time, the structure of the indicators of the system of mental regulation and self-change of girls is characterized by dense connections of components, involvement in metacognitive regulation and styles of responding to changes, while the structure of young men reveals connections of metacognitive knowledge, emotional intelligence and styles of responding to changes.

Such differences reflect different metacognitive monitoring capabilities. Researchers of metacognitive awareness argue that metacognitive knowledge enhances performance during individualized problem solving, which is represented by different levels of metacognitive monitoring: preparatory, productive, and evaluative.

The main role of metacognitive awareness is to promote dynamic interdependence between the phases of metacognitive knowledge, which is reflected in the structure of girls' mental regulation.

References

Andreeva, G. M. (2005). Social psychology and social change. Psychological Journal, 26(5), 5–15. (in Russ.)

Bazarov, T. Y., Golynchik, E. O., Lipatov, S. A., Nesmeyanov, R. K. (2020). Styles of response to change and teachers' perceptions of organizational culture and conflict in school. Bulletin of Moscow University. Psychology Series, 14(3), 85–118. https://doi.org/10.11621/vsp.2022.03.06 (in Russ.)

Bazarov, T. Y., Sycheva, M. P. (2012). Creation and approval of the questionnaire "Styles of regulation on change". Psychological Research, 5(25). (in Russ.)

Burikova, I. S., Pushkina, M. A., Yuryev, A. I. (2009). Psychology of global changes in viewership. Vestnik of St. Petersburg State University, 12(I, II), 36–40. (in Russ.)

Byzova, V. M., Perikova, E. I., Lovyagina, A. E. (2019). Metacognitive involvement in the system of mental self-regulation of students. Siberian Psychological Journal, 73, 126–140. https://doi.org/10.17223/17267080/73/8 (in Russ.)

Grishina, N. V. (2018). "Self-change" of personality: possible and necessary. Vestnik of St. Petersburg University. Psychology and Pedagogy, 8(2), 126–138. https://doi.org/10.21638/11701/spbu16.2018.202 (in Russ.)

Gurvich, I. N. (1999). Social psychology of health. St. Petersburg University Press. (in Russ.)

Zaleskaya, M. A., Grishina, N. V. (2020). The experience of self-change is a component of the life experience of the individual. Scientific Research of Graduates of the Faculty of St. Petersburg State University, 8, 27–36. (in Russ.)

Karpov, A. V., Skityaeva, I. M. (2005). Psychology of metacognitive processes in personality. IP RAS. (in Russ.)

Leontiev, D. A., Miyuzova, A. E. (2016). Personal changes as a result of life work. Counseling Psychology and Psychotherapy, 24(1), 44–63. https://doi.org/10.17759/cpp.2016240104 (in Russ.)

Lucin, D. V. (2009). EmIn emotional intelligence questionnaire: new psychometric data. In Social and emotional intelligence: from process to measurement (eds. D. V. Lucin, D. V. Ushakov). Institute of Psychology, Russian Academy of Sciences. (in Russ.)

Manukyan, V. R., Murtazina, I. R. (2019). Self-change: psychological status and possibilities in change. Bulletin of St. Petersburg University. Psychology, 9(4), 331–345. https://doi.org/10.21638/spbu16.2019.401 (in Russ.)

Manukyan, V. R., Murtazina, I. R., Grishina, N. V. (2020). A questionnaire for diagnosing the potential in personality self-change. Counseling Psychology and Psychotherapy, 28(4), 35–58. https://doi.org/10.17759/cpp.2020280403 (in Russ.)

Morosanova, V. I. (2022). Psychology of conscious self-regulation: from origins to modern research. Theoretical and Experimental Psychology, 15(3), 57–83. (in Russ.)

Perikova, E. I., Byzova, V. M. (2022). Factor structure of the Russian-language version of the Metacognitive Involvement in Activity questionnaire. Cultural-Historical Psychology, 2, 116–126. (in Russ.)

Polyakova, T. A. (2009). Global changes in society cause qualitative changes in man himself – an interview with D. I. Feldstein. Psychological Science and Education, 14(3), 103. (in Russ.)

Shemanova, N. A. (2008). Changes in the mental life of middle-aged men and women. Psychological Science and Education, 13(1), 14–22. (in Russ.)

Sztompka, P. (1996). Sociology of social change (translated by V. A. Yadov). Aspect Press. (in Russ.)

Andreeva, G. M., Leontiev, A. N. (2018). Methodological problems in the study of the psychological aspects of social change. Psychology. Journal of the Higher School of

Economics, 15(4), 646–654. https://doi.org/10.17323/1813-8918-2018-4-646-654

Bleidorn, W. (2012). Hitting the road to adulthood: Short-term personality development during a major life transition. Personal Social Psychology Bulletin, 38, 1594–1608. https://doi.org/10.1177/014616721245670

Bui, T. H., & Johnson, N. F. (2024). Self-regulation and metacognition in a flipped classroom: EFL students' perspectives at a Vietnamese university. Issues in Educational Research, 34(1), 19–36. http://www.iier.org.au/iier34/bui.pdf

Denissen, J. J. A., van Aken, M. A., Penke, L., & Wood, D. (2013). Self-regulation underlies temperament and personality: An integrative developmental framework. Child Development Perspective, 7, 255–260. https://doi.org/10.1111/cdep.12050

De Vries, J. H., Spengler, M., Frintrup, A., & Mussel, P. (2021). Personality development in emerging adulthood—How the perception of life events and mindset affect personality trait change. Frontiers in Psychology, 12, 671421. https://doi.org/10.3389/fpsyg.2021.671421

Gurat, M. G., & Medula Jr., C. T. (2016). Metacognitive Strategy Knowledge Use through Mathematical Problem Solving amongst Pre-Service Teachers. American Journal of Educational Research, 4, 170-189.

Schraw, G., & Dennison, R. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475. https://doi.org/10.1006/ceps.1994.1033

Tomasello, M. (2024). An agency-based model of executive and metacognitive regulation. Frontiers in Developmental Psychology, 2, 1–11. https://doi.org/10.3389/fdpys.2024.1367381

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Yana E. Vinogradova – conceptualized the study, conducted the research, prepared and processed the data, and wrote the article.

Valentina M. Byzova – developed the concept, conducted the research, edited the text, and approved the final version.

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Conflict of Interest Information

The authors have no conflicts of interest to declare.