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Development of Psychology Students' Self-Regulation in the Process of Professional Training

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ABSTRACT

The paper presents the results of an empirical study of the dynamics of self-regulation indicators of first-year psychology students in the process of studying the course "Psychology of self-regulation." The study aims to clarify how the indicators of self-regulation ability of first-year psychology students change during the study of a semester course, "Psychology of self-regulation" (from late February to early June 2021), and to find out how the correlations between individual parameters of self-regulation alter. Research results of students (which are made at the beginning and the end of the study of the course) are described and compared according to theoretical, empirical (psychodiagnostic), and statistical methods. The following indicators of self-regulation are studied: self-control in the emotional sphere, self-control in activity, self-control in behavior (social self-control), and a few coping ways (confrontational coping, search for social support, problem-solving planning, self-control, distancing, positive reassessment, acceptance of responsibility, escape-avoidance), as well as alexithymia. It was found that (at the beginning of the study) psychology students had mostly the average level of all studied indicators, except for the coping way "escape-avoidance" (which was at a high level) and a level of alexithymia (a little higher). After studying the course "Psychology of self-regulation," which took place during one semester along with the study of other psychological courses,

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changes in the studied indicators were revealed: the indicators of self-control and confrontational coping increased; the level of escape-avoidance decreased. Correlation analysis was performed between all scales of the first and second surveys.

Keywords: Coping ways, correlation analysis, scales, self-control, self-regulation

INTRODUCTION

Self-regulation is a skill necessary for everyone, as it contributes to better interact with others, maintaining mental health, and adaptation to current living conditions (Baumeister et al., 1994; Kırkıç & Demir, 2020; Marfu'i et al., 2018; Vizniuk et al., 2021; Zimmerman, 2008). The skills of self-regulation are of special professional importance for psychologists. In their activity, they must constantly interact with the mental worlds of different people, for whom they often have to act as a kind of behavioral model of self-control and self-expression (Blumenfeld et al., 1982; Havrylkevych et al., 2021). In addition, due to the specifics of professional practice, the psychologist deals mainly with negative, disharmonious, difficult experiences of other people who expect compassion, understanding, and empathy from the psychologist. The psychologist must be able to respond emotionally to the client's experience and maintain the inner balance and clarity of mind, that is, skillfully master his/her mental, emotional, and behavioral processes to provide the clients with what they need. On the other hand, even having a high level of expertise, the psychologist (in the process of interacting with the client) is not completely protected from emotional infection, which can lead to mental exhaustion and emotional burnout of the psychologist. Therefore, the ability to regulate own mental state is a skill that ensures a high level of professionalism for the psychologist and his/her mental health and well-being (Abdullahi et al., 2021; Alam et al., 2021; Rashtchi, 2021).

It is advisable to start developing the skills of conscious self-regulation while studying in the specialty during studentship (Kundu, 2020; Li & Yu, 2002; Vasylenko et al., 2020). For this purpose, special training courses are useful, such as "Psychology of self-regulation," "Psychology of emotions with emotional stability training," "Psychohygiene and psychoprophylaxis," "Psychology of health," as well as training sessions, lectures, workshops, and master classes.

Among the scientific papers on the problem of mental self-regulation published in the last 5 years, theoretical and empirical studies were found. This paper does not attempt to generalize modern views on mental self-regulation and build a theoretical concept of this phenomenon. Instead, the published results of empirical studies of psychology students' self-regulation are considered.

Grinchenko (2017), with the help of the questionnaire "Style of self-regulation of behavior" by Morosanova, investigated features and dynamics of self-regulation of psychology students from the first to the

fifth year of study and found that in senior years of study, the indicators of psychology students on all scales of the style of self-regulation are much higher than that of first-year students.

The study of Latkina and Podkorytova (2018) presented the results of the empirical study of the self-regulation level of students of the socioeconomic sphere (psychologists and social workers). In this study, it was found that most of the surveyed students (32 people) have average and high indicators of the studied parameters of self-regulation. Thus, 75% have a high level of voluntary self-regulation, and 53.1% are the average indicator of general self-regulation. According to some indicators of self-regulation by a technique "Style of self-regulation of behavior," it is revealed that most students have a high level of planning (50%) and medium—for modeling (50%), programming (65.6%), evaluation of results (50%), flexibility (75%), independence (53.1%).

Igumnova (2019) conducted an empirical study of coping behavior strategies and features of the system of self-regulation of psychology students with different coping strategies and found that different coping strategies correspond to different levels of development of the components of the self-regulation contour.

Igumnova and Yaroslavska (2019) investigated the psychological features of emotional intelligence and self-regulation of future psychologists. In particular, it was found that 1) planning, programming, control, flexibility, and independence are more developed in the group of students with a high level of interpersonal emotional intelligence, and 2) planning, modeling, and flexibility are more developed in the group of students with a high level of intrapersonal emotional intelligence.

Rudyuk (2020) studied the stylistic features of self-regulation of the behavior of future psychologists at different stages of their professional training and found that the degree of development of basic regulatory processes and regulatory-personal properties of fourth-year students compared with first-year students was significantly higher.

As seen from the review above, the features of self-regulation of psychology students in the learning process are already sufficiently studied, especially with the help of Morosanova's questionnaire "Style of self-regulation of behavior." Studies on the dynamics of self-regulation indicators show how these indicators change in different years of study. Are there any noticeable changes in the system of mental self-regulation of modern psychology students within one year of study and even within one semester? The answers to this question have not been found in modern scientific publications.

The Purpose of the Study

The purpose of our study is to clarify how the indicators of self-regulation ability of first-year psychology students change in the learning process, in particular, during the study of a semester course "Psychology of self-regulation" (from late February to early June 2021) and to find out how the

correlations between individual parameters of self-regulation alter.

MATERIALS AND METHODS

Research Methods

The following methods were used to study the features of mental self-regulation of psychology students: (1) theoretical: analysis, classification, comparison and generalization, (2) empirical: psychodiagnostic methods: the ways of coping questionnaire (adaptation of WCQ methods; Malikova et al., 2008); questionnaire "Self-control determination in the emotional sphere, activity and behavior" (Nikiforov, 1989); Toronto alexithymic scale, adapted from the Bekhterev Institute (Raigorodsky, 2004), and (3) statistical (statistical data processing was performed using Microsoft Excel software, in particular, the following methods were used: calculation of arithmetic mean, standard deviation and mean error; determining the nature of the distribution of performance characteristics in the studied samples, which has shown that it does not differ from the normal distribution; assessment of statistical significance of differences between the average values of the studied parameters of students at the beginning and the end of the semester using the student's t-test for dependent samples; correlation analysis of the relationships between the studied parameters of emotional self-regulation).

A brief description of the psychodiagnostic methods mentioned above is given as follows.

Questionnaire "Self-control determination in the emotional sphere, activity and behavior," developed by Nikiforov (1989), contains 36 questionnaire items and allows one to determine the level of self-control according to three scales: self-control in the emotional sphere, self-control in activity, self-control in behavior. In general, this psychodiagnostic method helps to determine the extent to which the respondent's emotional phenomena are controlled by his/her conscious will and how they are manifested outside and affect his/her activity and behavior. In this questionnaire, each scale corresponds to a different number of questionnaire items: self-control in the emotional sphere (11 items), self-control in activity (12 items), and self-control in behavior (13 items). The distribution of indicators of these scales on three levels of self-control is shown in Table 1.

The ways of a coping questionnaire (adaptation of WCQ methodology; Malikova et al., 2008) make it possible to identify the

Table 1
Distribution of indicators of self-control in the emotional sphere, activity, and behavior by three levels of expression

Scale	Level	Range of scores
Self-control in the emotional sphere	High	15–22
	Average	8–14
	Low	0–7
Self-control in activity	High	16–24
	Average	9–15
	Low	0–8
Self-control in behavior	High	18–26
	Average	9–17
	Low	0–8

most commonly used methods of emotional self-regulation. This questionnaire consists of 50 statements divided into eight scales (Table 2).

For each item of the questionnaire, the respondent may receive from 0 to 3 scores depending on his/her answers about the choice of ways of reacting in difficult life situations. This psychodiagnostic method also quantifies the questionnaire items unevenly on diagnostic scales. However, with the questionnaire for each scale, there are test norms determined by a statistical method in the sample of 381 people over 20 years of age and 219 people under 20 years of age (Table 3).

The Toronto Alexithymic Scale, adapted from the Bekhterev Psychoneurological

Table 2
The ways of a coping questionnaire (adaptation of WCQ methodology)

Scales	Characteristics	No of items
Confrontational control of the situation	Aggressive efforts to change the situation, a certain degree of hostility, and a willingness to take risks	6
Search for social support	Efforts to gain emotional comfort and information from others	6
Problem-solving planning	Arbitrary problem-focused efforts aimed at changing the situation, including an analytical approach to solving the problem	6
Self-control	Efforts to regulate the feelings and actions	7
Distancing	Cognitive efforts to move away from the situation and reduce its significance	6
Positive reassessment	Efforts aimed at creating a positive meaning of the problem situation, focusing on self-growth	7
Acceptance of responsibility	To accept the role in attempts to solve the problem	4
Escape-avoidance	The desire in thoughts and behavioral efforts to escape or avoid the problem rather than distancing from it.	8

Table 3
Test norms of the ways of coping questionnaire

Ways of coping	Low values		Average values		High values	
	a	b	a	b	a	b
Confrontational coping	1–6	0–7	7–11	8–11	12–17	12–16
Distancing	1–6	1–7	7–11	8–11	12–17	12–16
Self-control	4–11	1–10	12–16	11–15	17–21	16–19
Search for social support	0–7	0–7	8–13	8–13	14–18	14–17
Acceptance of responsibility	0–5	0–5	6–9	6–9	10–12	10–12
Escape-avoidance	3–7	1–7	8–13	8–14	14–23	15–22
Problem-solving planning	2–10	3–9	11–15	10–13	16–18	14–18
Positive reassessment	3–9	1–9	10–15	10–14	16–21	15–19

Note. a – sample (n = 381 people over 20 years); b – sample (n = 219 people under 20 years).

Institute, makes it possible to determine the general level of alexithymia. Alexithymia is a reduced ability or difficulty verbalizing a person's emotional states (Lumley et al., 2007). The Toronto Alexithymic Scale contains 26 statements. Therefore, total scores can range from 26–130**.** According to the authors of this psychodiagnostic method, the "alexithymic type" of personality receives 74 scores or more. The "non-alexithymic" personality type receives 62 scores or less. Thus, scientists of the Bekhterev Psychoneurological Institute, who adopted the method, found the average alexithymia values in several groups: the control group of healthy people (59.3 ± 1.3), group of patients with psychosomatic disorders (72.09 ± 0.82), and a group of patients with neuroses (70.1 ± 1.3).

Description of the Sample

The empirical part of our study involved 30 first-year students (average age: 17.7 years) majoring in Psychology at a public university in Ukraine: 26 unmarried girls (12 girls: 17 years old, 14 girls: 18 years old, average age: 17.5 years); 4 single boys (3 boys: 18 years old, 1 boy: 20 years old, average age: 18.5 years).

The experimental sample included students who studied the course "Psychology of Self-Regulation" in accordance with the curriculum of the specialty "Psychology," and those who expressed a desire to participate voluntarily in empirical research. All students who wished to participate in the empirical study belonged to the same age group from 17 to 20 years. There were no people with mental disabilities or special educational needs among these students.

Research Procedure

As mentioned above, the empirical part of our study involved 30 first-year psychology students at a public university in Ukraine. At the beginning of the second semester, they were asked to fill in paper forms with the texts of the methods described above. During this semester, from late February to early June 2021, students studied the following courses: Foreign Language, General Psychology with a workshop, Fundamentals of Anatomy and Physiology of the Nervous System, Fundamentals of Psychological and Pedagogical Research, Age Physiology and Valeology, Psychology of Self-Regulation, Physical Education.

The following is the description of the course "Psychology of self-regulation."

In the process of studying the course "Psychology of self-regulation," students were given eight lectures on the following topics: (1) theoretical and methodological foundations of self-regulation: (a) history of scientific research of human mental self-regulation (one lecture); (b) methodological principles and approaches to the study of human mental self-regulation (one lecture), (2) psychosomatic self-regulation: (a) psychophysiological mechanisms of psychosomatic self-regulation (one lecture), (b) methods of psychosomatic self-regulation: progressive muscle relaxation (according to Edmund Jacobson), conscious self-suggestion (according to Emile Cue), autogenic training (according to Johann

Heinrich Schultz), biological feedback training (one lecture), (3) emotional self-regulation (one lecture), (4) mental self-regulation (one lecture), (5) moral self-regulation (one lecture), (6) basics of self-improvement (1one lecture).

Lectures were held once every two weeks. Each lecture lasted 80 minutes. Once every two weeks, students had two double labs, separated by a fifteen-minute break. Each laboratory session lasted 80 minutes. In total, sixteen laboratory classes took place during the semester. During the practical classes, students (under the supervision of a teacher) conducted their academic group mini-training (prepared by them) to develop conscious self-regulation. Each such mini-training lasted about 40 minutes. Only in the first two double laboratory classes students worked under the direct guidance of a teacher, who told them about the plan and principles of studying the course "Psychology of self-regulation," the educational tasks they had to perform. The teacher also offered them to perform some psychomotor self-regulation exercises and coordinated with students' organizational issues of lectures and laboratory classes, as well as homework.

This organization of laboratory classes was intended to provide students (future psychologists-practitioners) with (1) the ability to train their mechanisms of conscious self-regulation and (2) gain experience in coaching activities aimed at transferring their knowledge and experience of conscious self-regulation to other people.

Homework for students, which they had to do independently, included (1) study of theoretical material on relevant topics, (2) preparation of mini-trainings for the group, which were then conducted during laboratory classes, (3) keeping a diary of self-observation and self-regulation, in which students were asked to write in any form their daily observations of processes and states occurring in their psychomotor, emotional, mental and moral spheres during the study of the course "Psychology of self-regulation."

During the semester, each student from the group conducted one training with its corresponding written design in the form of a plan summary of the training (which was to be written before the practical training) and the protocol of the practical training reflecting the student's observations of himself/herself and the group during the training work, analysis of the conducted training work with the relevant conclusions and recommendations for himself/herself to improve his/her coaching skills further.

We assumed that the study of the above-described course and other psychological courses would have a positive effect on self-regulation.

At the end of studying the course "Psychology of self-regulation," students were asked to re-examine the questionnaire "Self-control determination in the emotional sphere, activity, and behavior," the ways of a coping questionnaire (adaptation of WCQ), and the Toronto alexithymic scale.

Adherence to the Ethics of Psychological Research

Students' participation in the study was voluntary. Students were invited to join the

survey at their request. Respondents were warned that the results of the study would be made public. Despite the fact that during the survey, students indicated their last and first names (which was necessary for data identification and further comparative analysis), the principle of confidentiality in this publication is fully preserved.

RESULTS

The results of each method used, obtained from the first survey of students (at the beginning of studying the course "Fundamentals of Self-Regulation"), are presented below.

According to the questionnaire "Self-control determination in the emotional sphere, activity and behavior," it was found that psychology students had the following averages for each of the scales: self-control in the emotional sphere—13.6 points out of 22 (62%), self-control in activity—15.2 points out of 24 (63%), self-control in behavior (social self-control)—14.9 points out of 26 (57%). These percentages were calculated for convenience and clarity of comparison; the calculation was performed according to the proportion, where 100% is the maximum number of points on each scale. The generalized data are presented in Table 4.

As seen from Table 4, self-control in the emotional sphere and the sphere of activity of the studied students is almost at the same level, and self-control in behavior is slightly lower. All indicators correspond to the average level.

For each scale of *the ways of a coping questionnaire (adaptation of WCQ technique)*, the following average indicators were revealed: (1) confrontational coping (CC)—8.75 points, or 48.6%, out of 18, (2) search for social support (SSS): 10.9 points—60.6% out of 18, (3) problem-solving planning (PSP): 12.6 points, or 70%, out of 18, (4) self-control, or efforts to regulate the feelings and actions (SC): 14 points—66.7% out of 21, (5) distancing (D): 11.3 points—62.8% out of 18, (6) positive reassessment (PR): 13.2 points—62.9% out of 21, (7) acceptance of responsibility (AR): 8.5 points—70.8% out of 12, and (8) escape-avoidance (E-A): 14.3 points, or 59.6%, out of 24.

As in the analysis of the results of the previous questionnaire (for the convenience of comparing indicators), all points were translated into percentages (Table 5).

Most obtained averages on the scales of *the ways of a coping questionnaire* (adaptation of the WCQ method) are within the average level. The average on the escape-

Table 4
Average indicators on the scales of the questionnaire "Self-control determination in the emotional sphere, activity and behavior" at the beginning of studying the course "Fundamentals of self-regulation"

Scales	Self-control in the emotional sphere	Self-control in activity	Self-control in behavior (social self-control)
Average indicator	13.6	15.2	14.9
Relative indicator (%)	61.8	63.3	57.3

avoidance scale corresponds to a high level. The indicator on the scale "distancing" is slightly above the average level. Thus, in the studied sample, such ways of coping as "escape-avoidance" and "distancing" prevail. Other ways are presented at almost the same level. The distribution of students by low, medium, and high levels on the scales of *the ways of a coping questionnaire* (in %) is presented in Figure 1.

According to the scale "confrontational coping" (CC): students with an average level of this way of coping prevail significantly (60%), surveyed students with low levels are almost three times less (23.3%) and with a high level (only 10%).

According to the scale "search for social support" (SSS), the following distribution of respondents took place: those with an average level prevail (56.7%), students with a high level are almost twice less (23.3%), and respondents with a low level, only 13.3%.

The same number of students with an average level (56.7%) was found on the scale "problem-solving planning" (PSP).

Table 5

Average indicators on the scales of the ways of a coping questionnaire (adaptation of the WCQ method) at the beginning of studying the course "Fundamentals of self-regulation"

Scales	CC	SSS	PSP	SC	D	PR	AR	E-A
Average indicator	8.75	10.9	12.6	14.0	11.3	13.2	8.5	14.3
Relative indicator (%)	48.6	60.6	70.0	66.7	62.8	62.9	70.8	59.6

Note. CC – confrontational coping, SSS – search for social support, PSP – problem-solving planning, SC – self-control, D – distancing, PR – positive reassessment, AR – acceptance of responsibility, EA – escape-avoidance

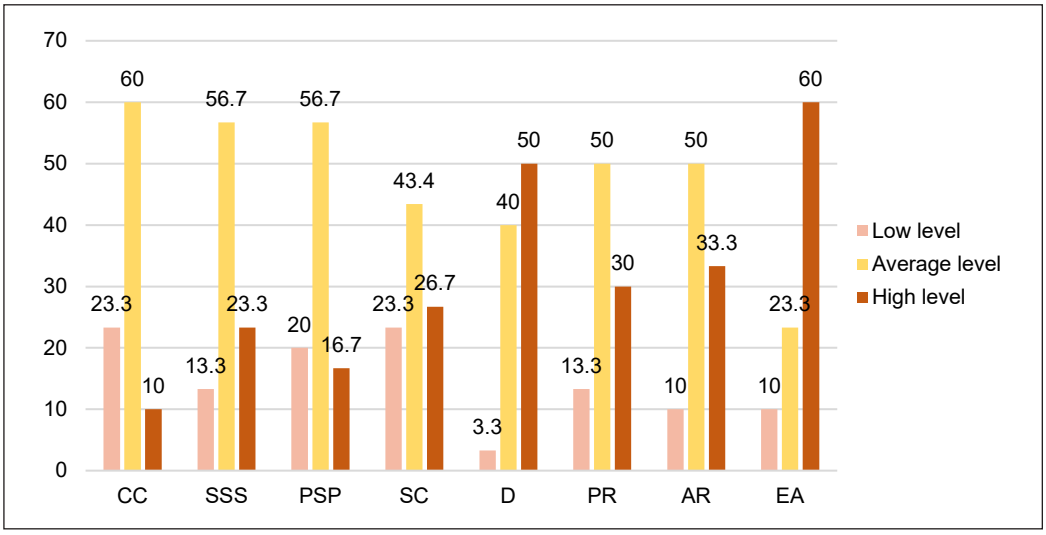


Figure 1. Distribution of students by levels on the scales of the ways of a coping questionnaire (adaptation of the WCQ method)

Note. CC – confrontational coping, SSS – search for social support, PSP – problem-solving planning, SC – self-control, D – distancing, PR – positive reassessment, AR – acceptance of responsibility, EA – escape-avoidance.

The number of students with a low level is slightly higher (20%) and slightly less with a high level (16.7%).

On the scale "self-control" (SC), a slightly smaller scatter of data is revealed: also dominated by those with a medium level (43.3%), and those with low and high levels are almost the same number, 23.3%, and 26.7%, respectively.

Interestingly, the scale "distancing" (D) revealed the lowest number of students with a low level (only 3.3%) and those with a high level, slightly more than the average (50% vs. 40%, respectively).

Respondents again dominate the scale "positive reassessment" (PR) with an average level (50%), students with a high level, slightly less (30%), and the least respondents with a low level of 13.3%.

Similar results were obtained on the scale "acceptance of responsibility" (AR)—the number of students with an average level is 50%, with a high level (33.3%) and with a low level (10%).

The scale "escape-avoidance" found the largest number of students with a high level (60%), students with medium and low levels, and much less (23.3% and 10%, respectively).

Thus, at the beginning of studying the course "Fundamentals of self-regulation," students' leading ways of coping were "escape-avoidance" and "distancing," which partially confirms the results of the study by Igumnova (2019), who also found that avoidance is a leading coping strategy for psychology students. Among other ways of coping, it is possible to note a fairly high level of "acceptance of responsibility" and "positive reassessment." In our opinion, the predominance of the coping way "escape-avoidance" in the sample needs to be corrected, as it is a way that leads neither to the solution of the problem nor to its integration into personal experience.

The study also used the Toronto alexithymic scale *(adapted from the Bekhterev Institute, St. Petersburg).* The overall level of students' "alexithymia" by this method was 66.6 points. This figure is 4.6 points higher than the upper limit of non-alexithymia (62 points) but does not reach the level inherent in the "alexithymic type" of personality (74 points or more). That is, the average value of the Toronto alexithymic scale in the study sample is moderately high. It is completely in line with our practical experience of pedagogical work with students: it is often difficult for them to describe their feelings and emotions in words.

Correlation analysis was performed for all indicators identified in the study. The results obtained are presented in Table 6.

Table 6 shows that the highest indicator of correlation ($r = 0.73$, $p < 0.001$) in the studied sample is between the scales "positive reassessment" (PR) and "problem solving planning" (PSP) of the ways of coping questionnaire (adaptation of the WCQ method). The average positive correlation ($r = 0.54$, $p < 0.01$) was determined between the scales of self-control in the emotional sphere (SE) and self-control in behavior (social self-control) (SB) of the questionnaire "Self-control

Table 6

Correlation between the studied indicators of students' self-regulation at the beginning of studying the course "Fundamentals of self-regulation" (first measurement)

Scales	SE	SA	SB	CC	SSS	PSP	SC	D	PR	AR	E-A
SA	0.20, *p>0.10*										
SB	0.54, *p<0.01*	0.49, *p<0.01*									
CC	-0.23, *p>0.10*	-0.05, *p>0.10*	-0.26, *p>0.10*								
SSS	-0.48, *p=0.01*	-0.03, *p>0.10*	-0.41, *0.01<p<0.05*	0.31, *0.05<p<0.1*							
PSP	0.25, *p>0.10*	0.45, *0.01<p<0.05*	0.43, *0.01<p<0.05*	0.48, *p = 0.01*	-0.04, *p>0.10*						
SC	0.31, *0.05<p<0.1*	-0.03, *p>0.10*	0.26, *p>0.10*	0.06, *p>0.10*	-0.30, *0.05<p<0.1*	0.32, *0.05<p<0.1*					
D	0.31, *0.05 < p < 0.1*	-0.06, *p>0.10*	-0.07, *p>0.10*	0.08, *p>0.10*	-0.28, *p>0.10*	0.28, *p>0.10*	0.32, *0.05<p<0.1*				
PR	0.21, *p>0.10*	0.19, *p>0.10*	0.31, *0.05<p<0.1*	0.45, *0.01<p<0.05*	-0.07, *p>0.10*	0.73, *p<0.001*	-0.02, *p>0.10*	0.26, *p>0.10*			
AR	-0.08, *p>0.10*	-0.01, *p>0.10*	-0.22, *p>0.10*	0.35, *0.05<p<0.1*	-0.07, *p>0.10*	0.24, *p>0.10*	-0.02, *p>0.10*	0.19, *p>0.10*	0.27, *p>0.10*		
E-A	0.00, *p>0.10*	0.20, *p>0.10*	-0.29, *p>0.10*	0.08, *p>0.10*	0.01, *p>0.10*	0.05, *p>0.10*	0.15, *p>0.10*	0.26, *p>0.10*	0.03, *p>0.10*	0.24, *p>0.10*	
Al	-0.16, *p>0.10*	-0.45, *0.01<p<0.05*	-0.25, *p>0.10*	0.12, *p>0.10*	0.00, *p>0.10*	0.16, *p>0.10*	0.06, *p>0.10*	0.15, *p>0.10*	0.07, *p>0.10*	0.24, *p>0.10*	0.31, *0.05<p <0.1*

Note. SE – self-control in the emotional sphere, SA – self-control in activity, SB – self-control in behavior (social self-control), CC – confrontational coping, SSS – search for social support, PSP – problem-solving planning, SC – self-control, D – distancing, PR – positive reassessment, AR – acceptance of responsibility, EA – escape-avoidance, Al – alexithymia.

determination in the emotional sphere, activity and behavior."

A moderate correlation (0.30 <r <0.49) (Sidorenko, 2002) was found between the following scales: (1) self-control in the emotional sphere (SE) and such ways of coping as "self-control" and "distancing" (r = 0.31, 0.05 < p < 0.1), as well as "search for social support" (SSS) (r = -0.48, p = 0.01), (2) self-control in activity (SA) and self-control in behavior (SB) (r = 0.49, p < 0.01), (3) self-control in activity (SA) and such a way of coping as "problem solving planning" (PSP) (r = 0.45, 0.01 < p < 0.05), (4) self-control in activity (SA) and alexithymia (Al) (r = -0.33, 0.05 < p < 0.1), (5) self-control in behavior (SB) and such ways of coping as "problem solving planning" (PSP) (r = 0.43, 0.01 < p < 0.05), "positive reassessment" (PR) (r = 0.31, 0.05 < p < 0.1), "seeking social support" (SSS) (r = -0.41, 0.01 < p < 0.05), (6) the way of coping "confrontational coping" (CC) is moderately correlated with "problem solving planning" (PSP) (r = 0.48, p = 0.01), "positive reassessment" (PR) (r = 0.45, 0.01 < p < 0.05), "acceptance of responsibility" (AR) (r = 0.35, 0.05< p < 0,1) and "seeking social support" (SSS) (r = 0.31, 0.05 < p < 0.1), (7) "search for social support" (SSS)—inverted with the way of coping "self-control" (SC) (r = -0.30, 0.05 < p < 0.1), (8) "problem solving planning" (PSP) and "self-control" (SC) (r = 0.32, 0.05 < p < 0.1); 9) "self-control," in turn, directly correlates with "distancing" (r = 0.32, 0.05 < p < 0.1), and (10) "escape-avoidance" moderately correlates only with alexithymia on the Toronto alexithymic scale (r = 0.31, 0.05 < p < 0.1).

All other correlations are weak (0.20 <r <0.29) and very weak (r <0.19) (Sidorenko, 2002).

The following patterns were revealed in the direction of correlation: (1) all scales of self-control of the questionnaire "Self-control determination in the emotional sphere, activity, and behavior" have a direct correlation between different levels (medium, moderate and weak) (see Table 6), (2) all scales of self-control are inversely correlated with alexithymia and such ways of coping as "seeking social support" (moderate and weak), "acceptance of responsibility" (weak) and "confrontational coping" (weak). It is characterized by certain aggression, hostility, and willingness to take risks, (3) such ways of coping as "confrontational coping" (CC) and "problem-solving planning" (PSP) are directly correlated with all other ways of coping (PSP inversely correlates only with SSS), (4) the way of coping "search for social support" (SSS), on the contrary, is inversely correlated with all other ways of coping, except for "confrontational coping."

The data obtained in the correlation analysis confirm our opinion that "escape-avoidance" (E-A) as a way of coping is of little use because it is directly related to alexithymia (Al). When a person seeks to avoid problems, he/she avoids his/her feelings and emotions, perhaps displacing them. However, this assumption needs to be tested on a larger sample using additional diagnostic techniques.

Self-control in the emotional sphere (SE), activity (SA), and behavior (SB), on the contrary, may slightly reduce alexithymia (AL) (see Table 6). It may be due to the fact that for better self-control and self-regulation, students need to understand the emotions and feelings they are experiencing.

The results described above, as noted, were obtained at the beginning of the second semester, during which students studied several courses listed in the section of the Research procedure. Among these courses, there was a course called "Psychology of self-regulation," which directly relates to the subject of our study and aims to improve it.

According to the questionnaire "Self-control determination in the emotional sphere, activity, and behavior," it was found that all averages (according to the studied scales) increased slightly: self-control in the emotional sphere became 15 points (13.6 points); self-control in activity: 15.9 (was 15.2 points); social self-control: 16.6 (was 14.9 points). All results for comparison are shown in Table 7.

As can be seen from Table 7, in the process of studying the psychological disciplines, the level of students' self-control has increased slightly, especially in the field of self-control in behavior (social self-control) ($p< 0.01$) and emotions. Self-control in activity has hardly changed ($p< 0.001$).

Changes were also found in the coping questionnaire (adaptation of the WCQ method). Thus, the averages increased on the scale of "confrontational coping" (CC); they decreased on the scales of "distancing" (D) and "escape-avoidance" (E-A). The averages on the scale "search for social support" (SSS) slightly decreased. The averages on the scales of "problem-solving planning" (PSP), "self-control" (SC), and "acceptance of responsibility" (AR) increased slightly. The averages on the scale of "positive reassessment" (PR) remained unchanged. The generalized data are presented in Table 8.

As can be seen from Table 8, the average values of coping ways have changed a little; the difference between all arithmetic means presented in Table 8 is statistically insignificant ($p> 0.05$). Compared to others, the rate of confrontational coping increased, and the rate of escape avoidance decreased. Such changes may be related to features of student age, including an increased risk appetite.

Changes in the distribution of high, medium, and low levels on each scale of the

Table 7
Average indicators on the scales of the questionnaire "Self-control determination in the emotional sphere, activity and behavior" at the beginning and the end of studying the course "Fundamentals of self-regulation"

Average indicator	Scales		
	Self-control in the emotional sphere	Self-control in activity	Self-control in behavior (social self-control)
At the beginning	13.6	15.2	14.9
At the end	15	15.9	16.6
Difference	1.4	0.7	1.7

coping questionnaire (adaptation of the WCQ method) were revealed (Figure 2).

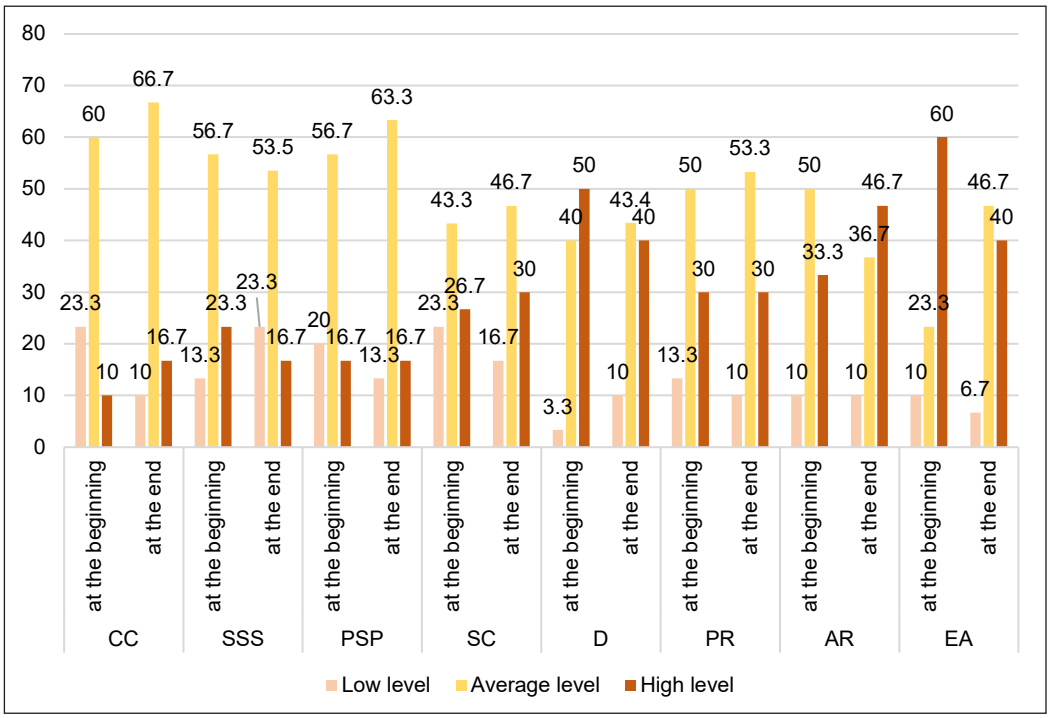
Figure 2 shows that a slight dynamic of indicators is revealed in the studied sample. Thus, according to the scales "confrontational coping" (CC) and "self-control" (SC), the number of respondents with medium and high indicators increased, and the number of respondents with low indicators decreased (according to confrontational coping, almost twice). On the scale of "search for social support" (SSS), trends are slightly

Table 8

Average indicators on the scales of the ways of a coping questionnaire (adaptation of the WCQ method) at the beginning and the end of studying the course "Fundamentals of self-regulation"

Average indicator	Scales							
	CC	SSS	PSP	SC	D	PR	AR	E-A
At the beginning	8.75	10.9	12.6	14	11.3	13.2	8.5	14.3
At the end	9.4	10.6	12.9	14.2	10.9	13.2	8.8	13.5
Difference	0.65	-0.3	0.3	0.2	-0.4	0	0.3	-0.8

Note. CC – confrontational coping, SSS – search for social support, PSP – problem-solving planning, SC – self-control, D – distancing, PR – positive reassessment, AR – acceptance of responsibility, EA – escape-avoidance



Note. CC – confrontational coping, SSS – search for social support, PSP – problem-solving planning, SC – self-control, D – distancing, PR – positive reassessment, AR – acceptance of responsibility, EA – escape-avoidance

Figure 2. Distribution of levels on the scales of the ways of a coping questionnaire (adaptation of the WCQ method) at the beginning and the end of studying the course *"Fundamentals of self-regulation"*

different: the number of respondents with low indicators increased, and with medium and high indicators decreased. On the problem-solving planning (PSP) scale, the number of respondents with low indicators decreased, medium indicators increased, and high indicators remained unchanged. According to the "distance" scale (D), the number of students with low and medium indicators increased, and with high indicators decreased. According to the scale "positive reassessment" (PR), the number of students with low indicators decreased, with medium indicators increased, and with high indicators remained unchanged. On the scale of "acceptance of responsibility" (AR), the number of students with low indicators did not change; with medium indicators, it decreased slightly, and with high indicators, it slightly increased. Furthermore, on the scale of "escape-avoidance," the number of respondents with low and high indicators decreased and almost doubled with the averages.

Minor changes in coping ways (in the studied sample) may be due to the fact that it takes more time to change coping ways, as they may be related not only to the skills of conscious self-regulation but also to unconscious self-regulatory mechanisms and individual typological personality traits.

According to the Toronto alexithymic scale (adapted from the Bekhterev Institute, St. Petersburg), no changes in the level of "alexithymicity" were detected: 66.6 points before and after studying the course. Obviously, it takes more time and possibly special exercises to reduce the rate of alexithymia as a personality trait and ability development to realize and name the feelings and emotions.

A re-correlation analysis of the data obtained was also conducted at the end of studying the course "Fundamentals of self-regulation" (Table 9).

Checking the results of students' tests at the beginning and the end of the academic semester using the t-test for dependent samples revealed a statistically significant difference in the arithmetic mean of the self-control in the emotional sphere (SE) ($p \leq 0.001$) and self-control in behavior (SB) ($p \leq 0.001$). The difference in average arithmetic indicators on other scales is statistically insignificant ($p > 0.05$).

In Tables 6 and 9, changes in the correlations between most studied scales are found.

Thus, the correlation between all scales of self-control has increased: 1) between self-control in behavior (SB) and self-control in the emotional sphere (SE) $r = 0.65$, $p<0.001$ (was 0.54, $0.001<p<0.01$); – between self-control in behavior (SB) and self-control in activity (SA) – $r = 0.51$, $0.001<p<0.01$ (was 0.49, $p < 0.01$); 2) between self-control in the emotional sphere (SE) and self-control in activity (SA) the correlation index became moderate ($r = 0.30$, $0.05 < p < 0.10$) and was weak ($r = 0.20$, $p>0.10$).

It can be assumed that the study of the course "Fundamentals of self-regulation" and other courses during the semester contributed to the development of mechanisms of self-control and the links between them.

Table 9

Correlation between the studied indicators of students' self-regulation after studying the course "Fundamentals of self-regulation"

Scales	SE	SA	SB	CC	SSS	PSP	SC	D	PR	AR	E-A
SA	0.30, *0.05<p<0.1* ↑										
SB	0.65, *p<0.001* ↑	0.51, *0.001<p<0.01* ↑									
CC	-0.50, *0.001<p<0.01* ↑	0.1, *p>0.10*	-0.18, *p>0.10*								
SSS	-0.42, *0.01<p<0.05*	-0.22, *p>0.10*	-0.29, *p>0.10* ↓	0.24, *p>0.10* ↓							
PSP	0.45, *0.01<p<0.05* ↑	0.37, *p=0.05*	0.54, *0.001<p<0.01* ↑	-0.03, *p>0.10* ↓	0.14, *p>0.10*						
SC	0.42, *0.01<p<0.05*	0.06, *p>0.10*	0.58, *p≥0.001* ↑	-0.47, *0.01<p<0.05* ↑	-0.07, *p>0.10* ↓	0.41, *0.01<p<0.05*					
D	-0.004, *p>0.10* ↓	-0.53, *0.001<p<0.01* ↑	-0.15, *p>0.10*↑	-0.003, *p>0.10*	0.32, *0.05<p<0.1* ↑	0.27, *p>0.10*	0.12, *p>0.10* ↓				
PR	0.27, *p>0.10*	0.13, *p>0.10*	0.31, *0.05<p<0.1*	0.05, *p>0.10* ↓	-0.03, *p>0.10*	0.54, *0.001<p<0.01* ↓	0.07, *p>0.10*	0.31, *0.05<p<0.1* ↑			
AR	-0.07, *p>0.10*	0.25, *p>0.10*	0.31, *0.05<p<0.1* ↑	0.16, *p>0.10* ↓	-0.10, *p>0.10*	0.23, *p>0.10*	0.11, *p>0.10*	-0.16, *p>0.10*	0.54, *0.001<p<0.01* ↑		
E-A	-0.24, *p>0.10*	-0.34, *0.05<p<0.1* ↑	-0.33, *0.05<p<0.1* ↑	0.32, *0.05<p<0.1* ↑	0.01, *p>0.10*	-0.13, *p>0.10*	-0.31, *0.05<p<0.1* ↑	0.35, *0.05<p<0.1* ↑	0.06, *p>0.10*	-0.17, *p>0.10*	
Al	0.14, *p>0.10*	0.41, *0.01<p<0.05*	-0.02, *p>0.10*	0.06, *p>0.10*	-0.09, *p>0.10*	0.36, *0.05<p<0.1* ↑	-0.11, *p>0.10*	-0.22, *p>0.10*	0.24, *p>0.10*	0.17, *p>0.10*	0.02, *p>0.10* ↓

Note. ↑ – an increase of correlation force, ↓ – a decrease of correlation force, 0,14 –change of correlation direction, SE – self-control in the emotional sphere, SA – self-control in activity, SB – self-control in behavior (social self-control), CC – confrontational coping, SSS – search for social support, PSP – problem-solving planning, SC – self-control, D – distancing, PR – positive reassessment, AR – acceptance of responsibility, E-A – escape-avoidance, Al – alexithymia

Changes in the force and direction of the correlation between the scales of self-control and coping ways are detected: (1) self-control in the emotional sphere (SE) and "confrontational coping" (CC)—the correlation between these scales was weak (r = -0.23, $p>0.10$), and increased to medium (r = -0.50, $0.001<p<0.01$), (2) self-control in the emotional sphere (SE) and "problem solving planning" (PSP), was weak (r = 0.25) and increased to moderate (r = 0.45, $0.01<p<0.05$), (3) self-control in the emotional sphere (CE) and "escape-avoidance" (E-A)—the correlation was absent (r = 0.00), but became weak (r = 0.24, $p>0.10$), (4) self-control in activity (SA) and "distancing" (D)—weak correlation (r = -0.06, $p>0.10$) increased to medium (r = -0.53, $0.001<p<0.01$), (5) self-control in activity (SA) and "acceptance of responsibility" (AR)—a very weak indicator (r = -0.01, $p>0.10$) increased to weak (r = 0.25, $p>0.10$), (6) self-control in activity (SA) and "escape-avoidance" (E-A)—the correlation from weak (r = 0.20, $p>0.10$) increased to moderate (r = -0.34, $0.05<p<0.1$) and became inverse, (7) self-control in behavior (SB) and "search for social support" (SSS), the correlation decreased was moderate (r = -0.41, $0.01<p<0.05$), and became weak (r = -0.29, $p>0.10$), (8) self-control in behavior (SB) and "problem solving planning" (PSP), the correlation was moderate (r = 0.43, $0.01<p<0.05$) and increased to medium (r = 0.54, $0.001<p<0.01$), (9) self-control in behavior (SB) and "self-control" (SC) as a way of coping—the correlation was weak (r = 0.26, $p>0.10$), and increased to medium (r = 0.58, $p\geq0.001$), (10) self-control in behavior (SB) and "acceptance of responsibility" (AR)—the correlation was weak (r = -0.22, $p>0.10$) and inverse, but became moderate (r = 0.31, $0.05<p<0.1$) and direct, (11) self-control in behavior (SB) and "escape-avoidance" (E-A)—the correlation from weak (r = - 0.29, $p>0.10$) increased to moderate (r = -0.33, $0.05<p<0.10$).

There have been changes in the correlations between different ways of coping. In particular, all the connections of confrontational coping (CC) with other ways of coping have changed. For example, the correlation with self-control (SC) has increased to moderate (r = -0.47, $0.01<p<0.05$) and has become inverse; the correlation with the search for social support (SSS), positive reassessment (PR), acceptance of responsibility (AR) has decreased to weak and very weak.

All the connections between the way of coping with "self-control" and other ways of coping have also changed: the correlation has increased to moderate and has become inverse with escape-avoidance (E-A); decreased to weak with distancing (D); the correlation with the acceptance of responsibility (AR) and positive reassessment (PR) became direct but remained very weak.

There was also a significant increase in the correlation from weak (r = 0.27, $p>0.10$) to medium (r = 0.54, $0.001<p<0.01$) between acceptance of responsibility (AR) and positive reassessment (PR).

The correlation between alexithymia and other scales has changed, but

insignificantly. In particular, the correlation "alexithymia (Al)—escape-avoidance (E-A)" from moderate (r = 0.31, $0.05<p<0.1$) decreased to very weak (r = 0.02, $p>0.10$) and "Alexithymia (Al)—problem-solving planning (PSP)" increased from weak (r = 0.16, $p>0.10$) to moderate (r = 0.36, $0.05<p<0.1$). Some changes in the direction of correlation were also revealed. Thus, the relationships between "alexithymia (Al) and self-control in the emotional sphere (CE)" and "alexithymia (Al) and self-control in activity (SA)" became direct. On the contrary, the relationships between alexithymia (AL) and the search for social support (SSS), self-control (SC), and distancing (D) changed to inverse.

Hence, at the end of studying the course "Fundamentals of self-regulation," students' self-control indicators have increased, and the relationships between different ways of coping have changed. The changes obtained are related not only to the study of this course but also to the cycle of all other courses and personal changes due to the process of professional training in general.

DISCUSSION

The conducted empirical research revealed the dynamics of changes in the indicators of self-regulation of first-year psychology students in the process of studying the course "Psychology of self-regulation." Similar data were obtained in our previous studies (Latkina & Podkorytova, 2018) and the works of other researchers (Igumnova, 2019). According to the study of the level of self-regulation of 32 students of the socioeconomic sphere (psychologists, social educators, social workers; Latkina & Podkorytova, 2018), it was found that most respondents had medium and high self-regulation. Researchers have suggested that this result is due to the fact that students of the socioeconomic sphere during their professional studies master the courses aimed at developing self-regulation skills. Our current study confirms that studying such a course as "Psychology of self-regulation" and other psychological courses (during one semester) helps improve students' self-regulation. It has been shown conclusively that such indicators as self-control in the emotional sphere and self-control in behavior (social self-control) have improved. There was also a tendency to slightly improve other indicators of self-regulation, in addition to the index of alexithymia (which has not changed). Nevertheless, this trend in our study was statistically insignificant. To achieve statistically significant improvements in other indicators of self-regulation, a more purposeful influence on these aspects of self-regulation needs to be implemented during the educational process.

The correlation analysis between the studied indicators also revealed changes at the beginning and the end of studying the course. In particular, the relationship between different coping ways changed. For example, the relationship between acceptance of responsibility (AR) and positive reassessment (PR) has increased (r = 0.27, $p> 0.10$ at the beginning of studying "Psychology of self-regulation" and r =

0.54, $p< 0.01$ – at the end). It also indicates a positive trend in the development of students' self-regulation.

The study of the average arithmetic indicators according to the t-test revealed that statistically significant changes occurred in the indicators of self-control in the emotional sphere ($p \leq 0.001$) and self-control in behavior ($p \leq 0.001$), which makes it possible to assume that the study of the basics of Self-regulation, in particular, and psychological disciplines in general, has the greatest effect on these indicators.

Let us notice that the identified changes are both multifaceted and, at the same time, somewhat chaotic. It, however, corresponds to the general features of student age, particularly personal instability and trends toward self-search and self-cognition (Alam et al., 2021; Rudyuk, 2020; Vasylenko et al., 2020). At the same time, the changes in the indicators of psychology students' self-regulation (described by us) show that professional skills development is quite intensive, even during one semester.

It is clear that the development of self-regulation was influenced not only by one course, "Psychology of Self-Regulation," but by the whole complex of professionally oriented courses that students studied throughout the semester, as well as internal changes related to the professionalization of their personality.

Based on the results of our study, the future psychologists' effective development of self-regulation and other professional skills depends on (1) the increase of several professionally oriented courses in the curriculum of Psychology and (2) teaching students' self-regulation, not only during the special course but also during other psychological courses.

CONCLUSION

Thanks to empirical research, it is found that the indicators of mental self-regulation of first-year psychology students changed even during one semester, during which they, along with other courses, studied the course "Psychology of self-regulation." In particular, the students showed increased self-control and some coping ways, especially confrontational coping. On the contrary, the level of manifestation of such a way of coping as "escape-avoidance" has decreased slightly. The identified changes are diverse and, to some extent, chaotic. Nevertheless, such changes are fully consistent with the characteristics of student age: personal instability, self-knowledge, self-search, active trends of self-disclosure, self-realization, and self-creation. The obtained data show that the maturation and personal development of students, including professional (the development of their professionally important personal qualities and skills) during training, is quite intense and noticeable even during one semester.

Research Prospects

It is advisable to expand the sample of students, diagnostic tools, research, and compare the results of students of different years of study, as well as to identify gender patterns in the peculiarities of students' self-regulation.

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