

ANXIETY, DEPRESSION, STRESS, AND COPING STRATEGIES, IN ROMANIAN STUDENTS AFTER THE OUTBREAK OF THE COVID-19 PANDEMIC**DOI: <https://doi.org/10.26758/13.1.6>**

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Abstract

Objectives. The outbreak of the SarsCov-2 virus pandemic in March 2020, produced essential changes in the way of life for students in different countries. Each person has developed their own personal coping systems to adapt to the times. The purpose was to assess the magnitude of impact produced in behavioral and emotional life dimensions at the beginning of the COVID-19 lockdown.

Material and methods. Collecting data was based on a comprehensive online questionnaire, addressed to 19-25 years old, master's, and bachelor's students in Romania. The questionnaire includes standard psychological evaluation tools such as Depression, Anxiety, and Stress Scales, DASS – 21R, Cognitive-Emotional Coping Assessment Questionnaire (CERQ), and Strategic Approaches to Coping Scale (SACS), but also a series of demographic indicators. Statistic analyse was based on ANOVA, Levene Test, T-Test, and Pearson Correlations.

Results. The results revealed some differences between coping strategies male participants would choose, and those preferred by female participants, and small variances between age groups. The most commonly found coping strategy was social support. Maladaptive and passive coping strategies positively correlated to all mental health indicators. Self-blame ($p < .001$), rumination, catastrophizing ($p < .001$), and blaming others correlate positively with all DASS-21R subscales, depression, anxiety, and stress as well. Positive refocus negatively correlated to depression ($p = .020$), anxiety ($p = .009$), and stress ($p = .004$).

Conclusions. At the beginning of the COVID-19 lockdown most of the participants have chosen pro-social coping strategies. The impact of the pandemic on Romanian students was rather mild. Active coping strategies predict more adaptive behavior and feelings. The findings of the current study can be expanded (to some extent) to non-pandemic situations also.

Keywords: SarsCov2 pandemic, coping, depression, anxiety, stress.

Introduction

The use of coping mechanisms by young people is a current research topic, which already gathers several dozen studies in the last ten years. Various university centers have felt the need to identify ways to increase academic performance and perceived student well-being. High academic performance, in relation to a directly proportional state of well-being is considered a predictor of professional, academic, and personal success in later adulthood. A few studies that have addressed the variability of coping mechanisms in various situations of depression, anxiety, and stress are in the following.

Studying the prevalence of stress and anxiety among students aged 18-25 using 25 questions, Sarbeen and Jayaraj (2017) collected about 100 responses, based on which they concluded that the contemporary young population was more exposed to stress and anxiety due to competitiveness social. They identified as generating factors of depression, anxiety, and stress, several emotional components such as the feeling of incompetence, the lack of motivation to learn, or the difficulty of academic tasks. In another study, suicidal ideation was also identified in some of the students (Pawlaczyk, et.al. 2020).

In 2012 (Mahmoud, et. al.) published a study on the relationship between depression, anxiety, and stress on the one hand and coping mechanisms in students on the other. 508 students at a university in the United States of America responded by e-mail, assuming implicit (passive) consent, after 1700 requests to complete a questionnaire, accompanied by explanations of consent to participate, were sent. Based on the application of the Depression Anxiety and Stress Scales (DASS-21), the authors found that at least a quarter of the students was experiencing symptoms of depression, anxiety, or stress. Patias and colleagues (2021), applying to a group of 503 students the Inventory of Coping Strategies adapted for Brazil and the DASS-21, concluded that at younger ages acceptance of responsibility and escape are used more as coping strategies. Suggesting the existence of a cognitive growth effect associated with age, which allows the emergence of strategies considered adaptive, such as accepting responsibility.

Using the same instrument in a comparative study conducted on first-year medical students, 204 Polish and 101 English (127 male, 176 female), Pawlaczyk et al. (2020) found that in the case of Polish students, the intensity of depression, anxiety, and stress was significantly higher during the exam period compared to study periods, which was not noted in the English group. This was related to the age and life experience of the students, with the English reporting completion of various stages of university studies before enrolling in medicine and an average age of 24, while the Poles enrolled immediately after high school and the average age of the batch was 20 years.

Following research conducted between September 14 and October 19, 2020, on a sample of 1224 Brazilian students aged at least 18 years, to analyze the relationships between depression, anxiety, stress, and coping strategies, mental well-being, and satisfaction with life, Lopes and Nihei (2021) noted the high prevalence of symptoms of depression, anxiety, and stress. The authors also concluded that the mental health of Brazilian students was affected by the epidemiological evolution, but also the possibility that adaptive coping mechanisms had protective effects during the pandemic.

After a recent study on coping strategies with stress during the COVID-19 virus pandemic, carried out in Poland, on 577 students from 17 universities, the authors suggest the need to introduce mandatory courses in the university curriculum to develop students' coping skills to thus improving their skills, well-being, but also their resilience (Babicka-Wirkus, et. al., 2021). However, recommendations regarding the implementation of programs and strategies for student

support were made even in the 2000s (Apud. Mahmoud, et. al., 2012). Also in 2021, Cohen-Scali and Erby found, following a critical analysis of specialized literature, that "Job losses, social isolation, the inability to engage in normal social relations, and massive uncertainty about the future can challenge feelings of continuity and coherence, but also the feeling of self-worth" (pp. 5).

Analyzing 24 articles from 14 countries to identify effective coping strategies used by medical students, Sattar et al (2022) found that the coping strategies most used by respondents were: seeking support (both social and emotional), active coping (assertive action), acceptance, avoidance, substance abuse, religious coping, and involvement in sports activities.

Considering the above and the difficult situation generated by the COVID-19 pandemic, the present study aimed to identify the relationships between the values of symptoms of depression, anxiety and stress recorded by Romanian students and the coping strategies preferred by them to cope the situation.

Subject to this goal, the established research objectives were aimed at: identifying the coping strategies preferred by students; exploring the relationships between behavioral coping strategies and the types of cognitive-emotional coping adopted by students; exploring the relationships between anxiety, depression, stress, and preferred coping mechanisms.

Material and methods

Sample and tools used

The research target group was represented by 210 students and master's students enrolled in Romanian universities in the academic year 2019-2020, aged between 18 and 25 years of age.

The data were collected in May - July 2020, after the triggering of the restrictions due to the COVID-19 pandemic, through the establishment of the state of emergency in Romania on March 11, 2020. During that period, university studies were carried out online. Students learned online, starting with the Decree of the President of Romania, number 195 of March 16, 2020 (Decree, 2020, a), followed by the Decree of the President of Romania, number 240 of April 14, 2020 (Decree, 2020, b) and a series of legislative acts.

The study was carried out based on a set of questionnaires composed of an omnibus questionnaire with 4 sections: demographic information, information on sexual activity, information on alcohol consumption, and a section on information on physical movement, an international standardized survey test of alcohol consumption. At the same time, 4 psychological assessment tools licensed and validated on the Romanian population were used.

To achieve the objectives of this work, the data obtained from the following tools will be analyzed.

Depression, Anxiety, and Stress Scales (Lovibond, and Lovibond, 1995), DASS – 21R validated on the Romanian population (Perțe, coord. Albu, 2011). The instrument is a compact one, containing 21 items, equally structured for each of the undesirable psychological factors depression, anxiety, and stress.

Cognitive-Emotional Coping Evaluation Questionnaire (CERQ), an instrument that is validated on the Romanian population (Garnefski, et.al., 2002). The questionnaire is composed of 9 scales, of which 5 designate types of emotional coping considered adaptive: acceptance, positive refocusing, refocusing on planning, positive reappraisal, and putting into perspective. The other 4

scales include items referring to types of cognitive-emotional coping considered maladaptive (Bandadi, et. al., 2019).

The strategic coping approach scale (SACS), was also validated on the Romanian population (Budău and Albu, 2010). The scale contains nine subscales, one considered specific to the active attitude, assertive action, one specific to the passive avoidance attitude; three considered prosocial, social relating, seeking social support and cautious action, and two antisocial, antisocial action and aggressive action.

Collection procedure

To ensure a more balanced representation of the socio-geographical areas of Romania, collaboration agreements were made with several institutions of higher education in Romania. Through student connections, the research instrument and the informed consent form also reached students at universities other than those with which specific agreements were signed in this regard. Answers were collected from students enrolled in specializations in the fields of Education Sciences, Psychology, Sociology, Theology and Social Work, Economics, Physical Education and Sports, Letters, Geography, History, Biology, Media, Engineering, Art, Order and Defense, Political Science, and International Relations. Answers from students in Bucharest, Cluj-Napoca, Sibiu, Braşov, Pitesti, Iaşi, Constanţa, and Targoviste were processed. The data processed in this study were collected between May 10, 2020, and June 11, 2020.

The set of questionnaires was sent to the students through the coordinating teachers using an editable .pdf format. After completion, the participants sent them to coordinators involved in the collection. To preserve complete anonymity, each questionnaire received a code.

Ethical standards

The study complies with European and national standards for informing participants and processing data in each of the research stages. This fact is confirmed by certificate No. 136/11.11.2020, which certifies the approval of the Ethics Committee of the "Constantin Rădulescu-Motru" Institute of Philosophy and Psychology, within the Romanian Academy, Bucharest, Romania, on 03.12.2019. The consent was issued based on the research documents, the collection instrument, and the informed consent form. The informed consent form was assumed by each of the research participants by voluntarily submitting the answers.

Statistical methods

Data were entered manually using the statistical analysis software SPSS 27 (IBM Corp. 2020). Initial processing generated a range of descriptive data about the study sample and participant response. Comparative analyses were then run for the response categories of each variable. Subsequently, analyses were carried out regarding the significance of the variance between the response categories (ANOVA, Levene's Test, and T-Test) on the coping scales according to the socio-demographic items. In the last step, bivariate Pearson correlation analyses were run.

Hypotheses

The following working hypotheses were issued:

1. during the period of restrictions, the choice of maladaptive and passive coping strategies prevails.
2. there are statistically significant relationships between the preferred coping methods and the values of the psychological factors: stress, anxiety, and depression.
3. there are statistically significant relationships between the types of emotional coping and those of behavioral coping adopted.

The verification of the proposed hypotheses was achieved by addressing some research questions such as: What is the statistical significance of the homogeneity of the variance between the response groups to the socio-demographic items, for each subscale of the coping assessment scales (CERQ and SACS)? What is the relationship between the coping methods preferred by students in Romania and the stress perceived by them? How does declared anxiety correlate with the types of coping preferred by Romanian students? How do the categories of emotional coping relate to those of cognitive-behavioral coping in Romanian students?

Results

Internal consistency of collection instruments

A good and very good internal consistency of over 0.70 was found for all subscales of the Cognitive Emotional Coping Questionnaire (CERQ), four of the nine having coefficients even above 0.80. The resulting values are very close to those calculated in the tool's validation study on the Romanian population, rumination even surpassing them. The only subscale whose Cronbach's alpha coefficient was calculated below the value of 0.70 is catastrophizing, but its value of 0.68 is also very close to the standard. The internal consistency of the subscales of the Strategic Approach to Coping Scale (SACS) turned out to be very good, for five of the nine scales, the coefficient calculated is higher than the coefficient calculated in the validation study of the scale on the Romanian population. Only one scale obtained a coefficient below 0.70, Aggressive action. All the others have a coefficient above 0.73, two of them even above 0.80.

To find out if the effect size is statistically significant, the Levene's test and the t-test were run. Most of the results were not statistically significant. However, values of the p coefficient were recorded, below the significance threshold of 0.05 for the self-blame subscale (CERQ) depending on the environment of origin, for the prudent action and social relations subscale (SACS) depending on the level of education. Table 1 shows the significant results obtained from Levene's tests and the t-test.

Table 1

Statistically significant results following analysis of variance

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
CERQ_ Self-blame	Equal variances assumed	10,24	,002	-2,41	208	,017	-,27	,11	-,50	-,05
(environment of origin)	Equal variances not assumed			-2,21	110,46	,029	-,27	,12	-,52	-,02
SACS_Cautious_ action	Equal variances assumed	4,49	,03	-1,45	208	,14	-,25	,17	-,60	,09
(study level)	Equal variances not assumed			-1,96	26,24	,06	-,25	,13	-,52	,01
SACS_Social_net working	Equal variances assumed	4,29	,03	-1,35	208	,17	-,24	,17	-,59	,10
(study level)	Equal variances not assumed			-1,91	27,30	,06	-,24	,12	-,50	,01

Running an ANOVA analysis of variance yielded only two statistically significant values. These represent the importance of variation in responses between religious affiliation groups in relation to the self-blame subscale (CERQ) and the Aggressive Action subscale (SACS).

For the scores obtained on all other subscales of the coping strategies assessment tools, depending on the socio-demographic variables, the analysis of the variance of the scores showed rather a homogeneity.

The basic structure of the sample

210 participants aged between 18-25 years were registered, the average being 21.07 years, with a standard deviation of 1.633. The usefulness of constructing age categories was found, in table 2 the distribution of respondents according to several demographic variables is briefly described.

Table 2*Distribution of participants by age, gender, marital status, residence, and level of education*

Socio-demographic variables	N	%
Age groups		
18-21	146	69.5
22-25	64	30.5
Gender groups		
Male	48	22.9
Female	162	77.1
Marital status		
Married	6	2.9
Not married	183	87.1
Consensual union and cohabitation for over a year	21	10
Residence		
Urban	136	64.8
Rural	67	31.9
Study level (evolving at the time of data collection)		
Bachelor	190	90.5
Masters	17	8.1
Bachelor & Masters	2	1

Having into consideration the geographical area of the university where the respondents studied: 54 (25.71%) were enrolled in the Central Zone of the country (Braşov, Mediaş, Tg Mureş, Sibiu), in Bucharest and Ilfov there were 35 (16.66%), in the East (Iaşi, Neamţ, Galati, Brăila) 6 (2.85%), in the South (Piteşti, Târgovişte, Călăraşi) 11 (5.23%) respondents, and in the West (Cluj-Napoca, Oradea, Bistrita) 104 (49.52%).

Most of the study participants were enrolled in socio-humanities faculties (N=124; 59%), followed by those from engineering sciences (N=20; 9.5%), economic sciences (N=13; 6, 2%),

biological or biomedical sciences (N=12; 5.7%), sport and physical education science (N=9; 4.3%), etc.

Descriptive statistics revealed, in addition to the demographic data of the sample, presented above, information regarding the structure of the responses for each of the coping methods preferred by the respondents.

Identifying the coping strategies preferred by students during the restrictions imposed by the state of emergency.

Seeking to identify the most used coping strategies in the period immediately following the triggering of the state of emergency, due to the COVID-19 pandemic, it was found that the highest average scores were recorded in the positive reappraisal and refocusing on planning subscales of the Assessment Questionnaire Cognitive-Emotional Coping (CERQ) and assertive action within the Strategic Coping Approach Scale (SACS).

Exploring the relationships between age, gender, background, and preferred coping mechanisms, varied results emerged, some of them with high statistical significance.

Age

For most of the subscales of the coping questionnaires, the results did not reveal differences between the age groups, neither in terms of the minimum or maximum value nor in terms of the mean of the recorded scores. In the subscales of behavioral coping, however, responses with a lower minimum score were observed for Social Networking and Seeking Social Support, where the minimum value was registered in the 18-21 age category, with a significant difference compared to the minimum value registered in the category aged 22-25 years. In the subscales: Self-blame, Rumination, and Putting into perspective, in the case of cognitive-emotional coping, Cautious action, and Aggressive action as behavioral modalities, the participants in the 18-21 age category recorded significantly lower minimum scores than the older age category. For more details, see table 3.

Table 3

Mean scores on coping mechanisms by age

	Descriptive CERQ					95% Average confidence interval			
	Age	N	Mean	Std. Dev	Std. Err.	Low Bound	Upper Bound	Min	Max
Self-blame	19-21	146	11.16	3.175	,263	10.64	11.68	4	20
	22-25	64	10,92	3.238	,405	10.11	11.73	5	18
Acceptance	19-21	146	13.77	3.229	,267	13.25	14.30	7	20

	Descriptive CERQ					95% Average confidence interval			
	22-25	64	13,34	3.414	,427	12.49	14.20	6	20
Rumination	19-21	146	13,99	3.834	,317	13.37	14.62	5	20
	22-25	64	13,20	4.339	,542	12.12	14.29	6	20
Pozitive refocus	19-21	146	11,60	3.830	,317	10.97	12.22	4	20
	22-25	64	11,73	3.776	,472	10.79	12.68	4	20
Refocus on planning	19-21	146	14,76	3.314	,274	14.22	15.30	6	20
	22-25	64	14,67	3.682	,460	13.75	15.59	6	20
Pozitive reevaluation	19-21	146	14,72	3.612	,299	14.13	15.31	6	20
	22-25	64	14,88	3.566	,446	13.98	15.77	6	20
Putting into perspective	19-21	146	13,01	3.666	,303	12.41	13.61	4	20
	22-25	64	13,41	3.702	,463	12.48	14.33	6	20
Catastrophizing	19-21	146	8,79	3.274	,271	8.25	9.32	4	19
	22-25	64	8,31	2.624	,328	7.66	8.97	4	15
Blaming others	19-21	146	8,23	2.811	,233	7.77	8.69	4	19
	22-25	64	7,95	3.278	,410	7.13	8.77	4	20
Assertive action	19-21	146	29.79	4.279	.354	29.09	30.49	20	41
	22-25	64	29.72	4.829	.604	28.51	30.92	19	41
Social networking	19-21	146	16.36	3.776	.313	15.75	16.98	6	25
	22-25	64	16.05	3.596	.450	15.15	16.95	9	25
Seeking social support	19-21	146	22.83	5.756	.476	21.89	23.77	7	35
	22-25	64	22.80	5.381	.673	21.45	24.14	13	35

	Descriptive CERQ				95% Average confidence interval				
Cautious action	19-21	146	17.02	3.765	.312	16.40	17.64	7	25
	22-25	64	16.56	3.518	.440	15.68	17.44	9	25
Instinctive action	19-21	146	18.79	4.165	.344	18.11	19.47	8	30
	22-25	64	19.75	4.371	.546	18.65	20.84	8	28
Avoidance	19-21	146	14.39	4.291	.355	13.69	15.09	6	26
	22-25	64	14.54	4.305	.538	13.47	15.62	6	27
Indirect action	19-21	146	10.31	3.785	.313	9.69	10.93	4	20
	22-25	64	9.67	3.386	.423	8.83	10.52	4	20
Antisocial action	19-21	146	11.30	4.050	.335	10.63	11.96	5	23
	22-25	64	11.07	4.284	.535	10.00	12.14	5	25
Aggressive action	19-21	146	11.66	3.223	.267	11.14	12.19	5	22
	22-25	64	12.14	3.290	.411	11.32	12.96	6	19

Compared to the results used by the authors of the SACS calibration study, for the 18-40 age group, the means obtained by the respondents of the present study were very similar. They exceeded the difference of two points less than the benchmark scores: Assertive Action, Antisocial Action, and Aggressive Action, with a lower average in both age groups.

Gender - Male participants scored higher on self-blame, acceptance, planning re-focus, positive reappraisal, and other-blame, and girls scored higher on rumination, positive refocus, putting into perspective, and catastrophizing. As can be seen in Table 4, the results of the Cognitive-Emotional Coping Questionnaire (CERQ) show that male participants activated more coping mechanisms than female participants.

Table 4*Mean scores obtained on cognitive-emotional coping mechanisms according to gender*

	Gender:	N	Mean	Std. Deviation	Std. Error Mean
Self-blame	M	48	2.79	.76	.11
	F	162	2.76	.80	.06
Acceptance	M	48	3.42	.70	.10
	F	162	3.40	.85	.06
Rumination	M	48	3.25	.98	.14
	F	162	3.49	1.00	.07
Positive refocus	M	48	2.90	.77	.11
	F	162	2.91	.99	.07
Refocus on planning	M	48	3.73	.88	.12
	F	162	3.66	.84	.06
Positive reevaluation	M	48	3.77	.78	.11
	F	162	3.66	.92	.07
Putting into perspective	M	48	3.19	.78	.11
	F	162	3.30	.95	.07
Catastrophizing	M	48	2.10	.66	.09
	F	162	2.17	.80	.06
Blaming others	M	48	2.04	.67	.09
	F	162	2.03	.75	.05

Correlation of depression, stress anxiety and coping mechanisms

The relationships between the types of emotional coping and the mentioned psychological factors revealed that self-blame, rumination, catastrophizing, and blaming others correlate positively with all DASS-21R subscales. Depression correlated positively with self-blame, rumination, catastrophizing, and blaming others and negatively with positive refocusing. Stress correlated positively with self-blame, rumination, catastrophizing, and blaming others, and negatively with positive refocusing. Anxiety also correlated positively with self-blame, rumination, catastrophizing, and blaming others, and negatively with positive refocusing. Table 5 shows the results of the bivariate Pearson correlation analysis.

Table 5

Bivariate Correlations of Depression, Anxiety, and Stress with Preferred Ways of Emotional Coping (CERQ)

		DASS	DASS	DASS
		Depression	Stress	Anxiety
Self-blame	Pearson Correlation	,25**	,26**	,28**
	Sig. (2-tailed)	,000	,000	,000
Acceptance	Pearson Correlation	,07	-,00	,06
	Sig. (2-tailed)	,296	,943	,377
Rumination	Pearson Correlation	,23**	,19**	,24**
	Sig. (2-tailed)	,001	,005	,000
Pozitive refocus	Pearson Correlation	-,16*	-,19**	-,18**
	Sig. (2-tailed)	,020	,004	,009
Refocus on planning	Pearson Correlation	-,04	-,07	,00
	Sig. (2-tailed)	,516	,287	,974
Pozitive reevaluation	Pearson Correlation	-,07	-,11	-,08
	Sig. (2-tailed)	,280	,107	,238
Putting into perspective	Pearson Correlation	-,03	-,07	-,03
	Sig. (2-tailed)	,638	,257	,633
Catastrophizing	Pearson Correlation	,28**	,26**	,27**
	Sig. (2-tailed)	,000	,000	,000
Blaming others	Pearson Correlation	,14*	,14*	,14*
	Sig. (2-tailed)	,033	,032	,040

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Analysis of behavioral coping preferences also revealed several results. Assertive action correlates negatively with depression and stress. Indirect action correlates positively with anxiety. Antisocial action correlates positively with stress and anxiety. Avoidance correlates positively with depression, stress, and anxiety. Table 6 numerically presents the bivariate correlations between psychological factors of depression, anxiety, and stress with the types of behavioral coping.

Table 6

Bivariate correlations of depression, stress, and anxiety with preferred behavioral coping modalities

SACS		DASS Depression	DASS Stress	DASS Anxiety
Assertive action	Pearson Correlation	-,15*	-,14*	-,11
	Sig. (2-tailed)	,024	,032	,100
Cautious action	Pearson Correlation	-,03	-,057	-,08
	Sig. (2-tailed)	,644	,410	,235
Indirect action	Pearson Correlation	,09	,13	,13*
	Sig. (2-tailed)	,166	,057	,045
Social networking	Pearson Correlation	,06	,02	,06
	Sig. (2-tailed)	,345	,778	,359
Instinctive action	Pearson Correlation	,03	,03	,07
	Sig. (2-tailed)	,573	,638	,301
Antisocial action	Pearson Correlation	,12	,14*	,15*
	Sig. (2-tailed)	,076	,041	,027
Seeking social support	Pearson Correlation	,06	-,00	,03
	Sig. (2-tailed)	,368	,963	,570
Evitare	Pearson Correlation	,22**	,19**	,21**
	Sig. (2-tailed)	,001	,005	,002
Aggressive action	Pearson Correlation	-,01	,01	,05
	Sig. (2-tailed)	,863	,811	,438

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

For the interpretation of causal relationships, from the analysis of mediations, it was observed how maladaptive cognitive-emotional coping mediates the relationship between behavioral coping and undesirable psychological factors. The maladaptive coping subscales self-blame, rumination, and blaming others, on the one hand, mediate the relationships between anxiety, depression, and stress, on the other. Students with higher assertiveness scores experience

lower levels of depression and stress. The significant results of the mediation analysis reflecting the direct effects can be seen in table 7.

Table 7

Direct (unmediated) effects of SACS and DASS subscales on CERQ subscales

	Effect	se	T	p	Lower LCI	Upper LCI	c_ps	c_cs
<i>Catastrophizing subscale</i>								
Total effect of SACS_Ac of DASS_dep	-,1557	,0685	-2,2743	,0240	-,2906	-,0207	-,640	-,1558
Direct effect of SACS_Ac on DASS_dep	-,0969	,0680	-1,4246	,1558	-,2310	,0372	-,1643	-,0970
<i>Rumination subscale</i>								
Total effect of SACS_Ac of DASS_stress	-,1513	,0702	-2,1555	,0323	-,2897	-,0129	-,2505	-,1478
Direct effect of SACS_Ac on DASS_stress	-,2014	,0700	-2,8773	,0044	-,3394	,0634	-,3334	-,1967

Statistically significant indirect effects were also found in the subscales of the Cognitive-Emotional Coping Evaluation Questionnaire following the mediation analysis. The effect of assertive action through the mediation of depression on catastrophizing and through the mediation of stress on rumination generated statistically significant negative results. Students with higher assertiveness scores who also report higher levels of depression and stress report lower levels of maladaptive coping through catastrophizing and rumination. Table 8 reveals the statistically significant indirect effects.

Table 8

Mediated/indirect effects of SACS and DASS subscales on CERQ subscales

	Effect	BootSE	BootLowLCI	BootUppLCI
<i>Catastrophizing subscale</i>				
Indirect effect(s) of SACS_Ac on DASS_dep	-,0588	,0255	-,1145	-,0159
Partially standardized indirect effect(s) of SACS_Ac on DASS_dep	-,0997	,0413	-,1887	-,0279
Completely standardized indirect effect(s) of SACS_Ac on DASS_dep	-,0588	,0247	-,1112	-,0162

	Effect	BootSE	BootLowLCI	BootUppLCI
<i>Rumination subscale</i>				
Indirect effect(s) of SACS_Ac on DASS_stress	,0501	,0226	,0119	,0996
Partially standardized indirect effect(s) of SACS_Ac on DASS_stress	,0829	,0376	,0199	,1665
Completely standardized indirect effect(s) of SACS_Ac on DASS_stress	-,0489	,0216	,0118	,0958

Both SACS and CERQ coping strategies evaluation tools generated Cronbach coefficients with good and very good internal consistency, like the results obtained by Perțe (2010) and Budău and Albu (2010) when validating the tools.

Discussions

Three research objectives were established for the present study, which were achieved with specific results.

Sociodemographic

From the analysis of the data of the studied Romanian sample, according to age, there were few differences between the 18-21 years old category and the 22-25 years old category, contrary to the results found by Sheroun et al. (2020). The scores recorded in the types of coping are similar between the two age categories, as Freire and his collaborators (2016) found, in a sample of more than 1000 students in universities in Spain. In the Romanian sample, the exceptions are: Social relations and seeking social support, where younger respondents also recorded lower minimum scores. This shows the tendency towards autonomy and independence of young people upon entering university studies and perhaps increasing collaboration skills, and socialization in the next age stage.

A slight tendency of the respondents in the younger age category to choose less of a type of coping was also found in the present study for Self-blame, Rumination, and Putting into perspective, in the case of cognitive-emotional coping, Cautious action and Aggressive action as behavioral ways. The influence of age or the level of maturation can be explained by the fact that “autonomous, independent, self-confident people (...) most frequently resort to active coping strategies” (Budău & Albu, 2010, pp. 9). Another explanation could be the larger number of female respondents, it is known that men resort more often to active strategies, often doubled by aggression (Budău & Albu).

The analysis of the data by gender variable, of the sample of students from Romania, revealed that the male participants activated more types of coping, often from the sphere of adaptive and action coping, while the female participants activated fewer coping strategies, often maladaptive and passive. These results are different compared to those of the study conducted in India with students of the same age, in the same period (Sheroune, 2020).

As suggested by Höhne and his collaborators (2022), in the conclusions of the study on perceived stress and coping methods carried out on a group of students from Germany, similar in age and level of education to the one in Romania, the results become all the more valuable the

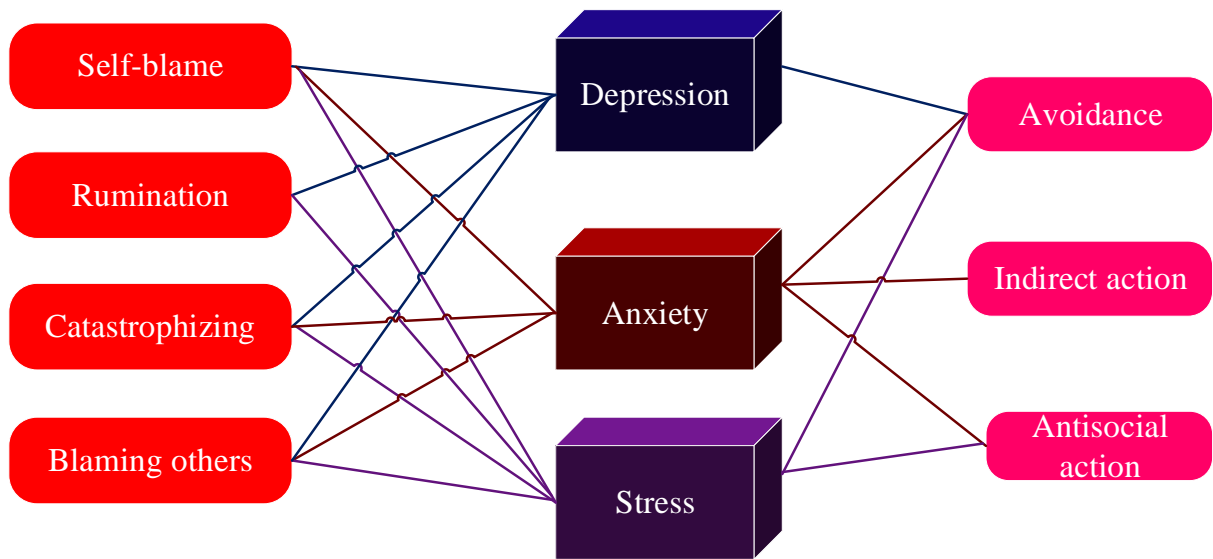
testing is repeated at time intervals, thus making it possible to compare the experiences of the subjects at different stages of the evolution of the COVID-19 pandemic.

Relationships between preferred coping methods and the values of psychological factors: stress, anxiety, and depression

In the graphic representation in figure 1, the influences of maladaptive coping strategies on the levels of depression, anxiety, and stress, in a positive sense, of growth were highlighted. Only statistically significant positive correlations are represented in the figure.

Figure 1.

Positive correlations between psychological factors anxiety, depression, stress, and preferred coping strategies

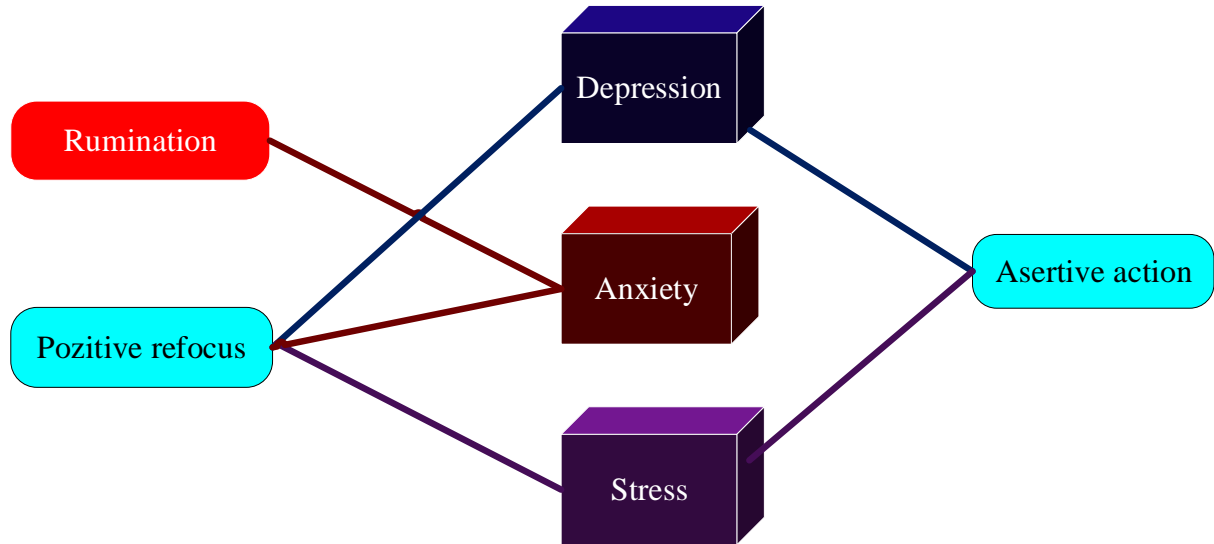


Resulting from the same statistical analyses: depression and stress correlated negatively with Positive Refocusing and Assertive Action, while Anxiety correlated negatively with Positive Refocusing, but also with Rumination.

By way of comparison, negative influences of preferred adaptive and maladaptive coping strategies on symptoms of stress, anxiety, and depression are represented in Figure 2.

Figure 2.

Negative correlations between the psychological factors of anxiety, depression, stress, and coping strategies.



Similar to the results found by Xu and Huang (2022), the present study found mediations of coping types on stress, anxiety, and depression symptoms. Assertive action, even by mediating depression, is a significant negative predictor of catastrophizing. Likewise, assertive action, through stress, is a significant negative predictor of rumination. In the study conducted by Hussong and colleagues (2021), they found that adolescents with higher self-efficacy and active problem-focused coping reported moderate increases in mental health symptoms, while youth with passive and experience-focused coping reported exacerbated increases in symptoms of mental health conditions. Similar results were presented by Hsieh and colleagues (2021). Similarly, in the present study, it was found that to reduce the symptoms of stress, anxiety, and depression, it is necessary to develop cognitive coping skills in the sphere of positive refocusing, and assertive actions, such as volunteering, playing sports, are suitable, etc., actions that also have an effect on educational performance, as noted by Rada (2017).

Exploring the relationships between anxiety, depression, stress, and preferred coping mechanisms in college students (19-25 years) also generated statistically relevant information. As in the study conducted by Patias et al (2021) the present research revealed positive but small correlations between some coping strategies and symptoms of depression, anxiety, and stress, suggesting that they were not always the best choice. Self-blame, rumination, catastrophizing and blaming others correlated positively with depression, anxiety, and stress. This fact suggests, on the one hand, that students who presented high values regarding the mentioned psychological factors, also showed a tendency towards maladaptive types of emotional coping. On the other hand, changing the types of coping used could influence/reduce the values of perceived depression, anxiety, and stress.

As Schwander-Maire et al. (2022) also concluded from a parallel study in Portugal and Switzerland, the present study also revealed that the pandemic had a "minor-medium impact" on students' mental health.

Looking at behavioral coping strategies, it was found that there are positive correlations at least between two undesirable psychological factors, anxiety, and stress on the one hand, and antisocial and passive strategies on the other. At the same time, negative correlations also suggest the possibility that changing coping strategies with rather pro-social and active ones can generate effective adaptive effects.

Relationships between behavioral coping strategies and types of cognitive-emotional coping

Like the results obtained by Hu and his collaborators (2016) and in the sample studied, it was found that students used more often ways of cognitive adaptation such as refocusing on planning, but not positive refocusing or catastrophizing. Catastrophizing was among the least chosen coping methods in the present study. The result is like those of the study by Sattar and his colleagues (2022), with the specification that the coping strategies considered by them were not assessed with the same instruments, but with similar ones.

The highest average scores were recorded for the emotional coping subscales positive reappraisal and refocusing on planning, both subscales being classified as forms of adaptive coping within the Cognitive-Emotional Coping Evaluation Questionnaire (CERQ). The highest scores were also recorded for assertive action, the subscale representative of active behavioral coping within the strategic coping approach scale (SACS). Higher scores were recorded in all pro-social behavioral subscales, this result being like other studies that revealed for example that the well-being of students was obviously supported during the pandemic by the support of social connections, "only endorsement of social connection predicted important well-being outcomes" (Logel et. all, 2021, pp.19).

The results of the present study differ from the results reported for the Chinese student population, where mental engagement strategies were used rather than those based on social support (Nurunnabi, et. all, 2020). This difference in results can of course be due to both the cultural specificity and the different measures applied to combat the pandemic in each country.

Regarding the relationships between the types of emotional coping and those of strategic coping adopted by Romanian students, it was found that regardless of the types of cognitive-emotional coping manifested, the respondents sought social support, this variable correlating with all 9 subscales of the CERQ. The results are like those found by Zsido et al (2022). This fact can be explained by the fact that the responses were obtained at the beginning of the declaration of a state of emergency due to the epidemiological situation of the CORONAVIRUS-19 pandemic, one of the essential measures imposed was the restriction to interact socially directly.

The hypothesis according to which there are statistically significant relationships between the types of emotional coping and those of behavioral coping adopted, was confirmed. The results are a partial confirmation of the theory of the circumplex coping model proposed by Stanisławski (2019). Except for rumination, all maladaptive cognitive-emotional coping strategies (self-blame, catastrophizing, and other-blame) correlated positively with avoidance, suggesting that these types of reasoning rather generate passive behavioural tendencies. Students whose judgments show the presence of adaptive cognitive-emotional coping strategies rather display balanced (socially desirable) and constructive behavioural coping strategies. The results suggest that the sample of students from Romania most often chose social relations, the search for social support, prudent action, instinctive action, and aggressive action (considered also as spontaneous, reactive, dominant behaviour, with obvious tendencies to impose), but less often the action assertive, very rarely avoidance and indirect action, and almost never antisocial action.

Conclusions

The analysis of the data according to the age variable, generated similar results comparing the two categories 18-21 years and 22-25 years. The gender variable revealed noticeable differences, with girls sometimes preferring passive and maladaptive coping strategies, thus partially confirming the first working hypothesis, unlike boys who rather choose adaptive and active coping strategies, but even more numerically. This fact suggests the need for offers of varied activities for students, but also the possibility of directing therapeutic approaches and psychological counseling, in similar situations, relative to gender.

Regardless of the types of cognitive-emotional coping shown, the respondents sought social support. Except for rumination, all maladaptive cognitive-emotional coping strategies (self-blame, catastrophizing, and other-blame) correlated positively with avoidance, suggesting that these types of reasoning rather generate passive behavioral tendencies. The results lead to the idea that the social isolation imposed by the pandemic has affected young people's fundamental need for communication and interaction with peers. Stimulating social, group activities could create a healthier psychological environment for students, implicitly a better reaction to unforeseen events.

The stress perceived by students in Romania, in the initial stage of the COVID-19 pandemic, correlated positively with all the maladaptive cognitive-emotional coping subscales, thus highlighting the increase in the level of stress depending on the increase in the activation of maladaptive reasoning. The same phenomenon has been observed with anxiety and depression. The effect of a new and overwhelmingly impactful situation, such as the SarsCov-2 virus pandemic, could be prevented to a certain extent by introducing life skills development programs into the educational systems, which would develop social interaction skills, communication, awareness, and expression of emotions.

Among the behavioral coping strategies, avoidance correlated significantly positively with depression, anxiety, and stress, suggesting that passivity is not a constructive way of responding to stressors, and adopting it only increases the values of undesirable psychological factors. Antisocial action was also significantly positively correlated with anxiety and stress, showing a reciprocal influence in the sense of growth.

Correlating the results of the two coping questionnaires, it was found that most of the maladaptive cognitive-emotional coping strategies (with one exception) correlated positively with avoidance. Behavioral passivity is therefore closely related to maladaptive reasoning. Activation, but especially behavioral self-activation, developed as a life skill, could positively influence the development of future coping strategies.

Compared to other studies consulted as documentation, Romanian students chose effective coping methods at the beginning of the pandemic to keep their levels of stress, anxiety, and depression at slightly elevated levels. The results of the present research recommend the development of programs to reduce symptoms of depression, anxiety, and stress in students. Analyzing the results of the other mentioned studies, it can be stated that deeper and long-term effects could be obtained by introducing self-activation skills training programs into the personal development curriculum, starting from younger ages (puberty, adolescence) behavioral.

In the context of the beginning of the isolation imposed by the outbreak of the COVID-19 pandemic, the Romanian students mainly chose generally good coping mechanisms, but the effects of the increase in exposure to COVID-19 and the duration of isolation are to be considered in a future analysis.

Limitation

The main limitations of the study are represented by the small sample included in the study and the unbalanced representation of the participants in the structure by age, gender, marital status, residence, and level of education.

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