International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

The Role of Psychological Resilience, Coping Mechanisms and Locus of Control in Managing Students' Perceived Stress During Exams

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Abstract:
With this study we provide conclusive evidence on the importance of psychological resilience, coping mechanisms, self-esteem and locus of control for optimal adaptation in situations of intense psychological stress, such as the stress perceived by students in exam situations. The data reveal that out of 120 students included in the study group, 29 students, i.e., 33.2 ⁒ were in the high stress zone and 4 students, i.e., 3.3 ⁒ were in the dangerously high stress zone, which can be explained by the poor functioning of some coping mechanisms and psychological resilience. For example, self-blame as a variable of coping mechanisms has a negative influence on the level of perceived stress and explains 49.72% of the stress level. Also, by comparison, some variables play a positive role in stress management and explain in different proportions the level of perceived stress, such as perspective-taking (35.64%), positive reappraisal (27.64%), positive refocusing (20.25%) or self-esteem (12.33%). The study also revealed that females better manage specific manifestations of perceived stress in exam situations, proving that they more easily establish interpersonal relationships, which in turn can support some healthy response behaviors, how to solve specific tasks and adapt more easily to some specific demands of academic work.

Keywords: coping mechanisms; psychological resilience; developing/increasing resilience; locus of control; self-esteem; perceived stress.

1. Introduction

In our approach we start from the following puzzles: Why is it that some adolescents or young people when confronted with an intense demand show some manifestations specific to stress-related disorders and traumatic events, while for others life events, even severe ones, are a developmental factor? Why do some people fail, even in the presence of a higher G-Factor, while others succeed at almost everything, regardless of their G-Factor level or how many obstacles they face? The answer could take into account the existence, maturation and functioning of sanogenesis mechanisms, i.e. psychological defense or coping mechanisms and positive coping or development of psychological resilience, which can be evidenced by the results obtained from the application of appropriate psychological assessment tools.

In order to better understand and explain the way of functional reporting to the situation, we will guide the elaboration of the study with the stress-vulnerability model as theoretical foundation, being the most widely used theoretical-applicative model of information processing, which proposes to consider that

certain life events interact with some psychological or biological vulnerabilities of the person and generate dysfunctional cognitions and emotions, as well as maladaptive behavioral manifestations.

Adapting the mentioned model to the present study, we appreciate that life events may be represented by some psychosocial stressors generated by the students' examination situation, and the vulnerabilities of the person may be of cognitive nature, such as reduced ability to process stimuli/information, negative and catastrophic automatic thoughts. So information processing, conditioned by the factors listed above, may generate some dysfunctional negative emotions such as fear, anxiety, lack of self-confidence, etc., followed by some maladaptive behaviors such as withdrawal into self, withdrawal into substance use etc.

For an easier understanding of the theoretical model, we summarize how it works in Figure 1, which includes examples of stressors, vulnerabilities and consequences (Ungureanu, Prisăcaru & Glăveanu, 2021) [1].

Figure 1 - Relief of the stress-vulnerability model

Stressors:	→	**Vulnerabilities:**	→	**Consequences:**
- physical; - environmental; - biological; - physiological; - emotional; - university environment.		- dysfunctional cognitive schemas; - irrational cognitive style; - low self-esteem; - underdeveloped coping mechanisms; - low psychological resilience; - poor interpersonal skills.		a) at the cognitive level: automatic negative thoughts; difficulty concentrating etc.; b) at emotional level: anger; guilt, anxiety, etc.; c) at the action level: withdrawal; substance use etc.

Stressors can be in the categories: physical, work, biological, physiological and emotional. Vulnerabilities are evidenced by dysfunctional cognitive schemas, low self-esteem, underdeveloped psychic defense/coping mechanisms, low psychological resilience, irrational cognitive style and poor interpersonal skills. The consequences will be felt: a) at the cognitive level, through automatic negative thoughts, difficulty concentrating, etc.; b) at the emotional level, through anger; guilt, anxiety etc.; c) at the action level, through withdrawal, substance use etc.

Psychic defense/coping mechanisms are thought to play a significant role in coping, ensuring the elimination or specific interpretation of the unpleasant influence, minimizing the feelings of anxiety that arise as a result of awareness of the inner conflict. Anna Freud (2006) [2], believes that psychic defense mechanisms are everyday psychic means of neutralizing painful sensations, preventing psychically triggered disturbances and increasing the body's resistance capacity.

Again Ionescu, Jacquet & Lhote (2002) [3], states that: "defense mechanisms are unconscious psychic processes aimed at reducing or nullifying the unpleasant effects of real or imagined dangers, by altering the internal and/or external reality, whose manifestations through behaviors, ideas or affections, may be conscious or unconscious".

Psychological resilience, on the other hand, refers to an individual's ability to cope with and adapt to stress, traumatic events and difficulties, while maintaining an adequate level of psychological functioning (Prisăcaru & Dogărel, 2024) [4].

A commonly used definition is that proposed by Masten & Reed (2002) [5], which defines psychological resilience as "an individual's ability to withstand stressful events and/or to recover and adapt positively in spite of them".

Also, Steven J. Stein & Paul T. Bartone [6] with their 2020 paper, *Mental toughness: make stress your ally in achieving your goals, they bring to our attention the concept of hardiness*. The concept of hardiness was originally described as a personality characteristic possessed by people who successfully cope with severe distress, making it a transformative force that manifests itself cognitively, emotionally, and behaviorally (Kobasa, 1979) [7].

Later, the concept was enriched with new facets, and the theoretical model called the 3 C's consists of Commitment, Control and Challenge, which form the hard core of psychological resilience, describing them as follows (Steven & Bartone, 2020):

- *engagement* refers to the tendency of people to engage voluntarily in activities, driven by a curiosity for knowledge and a developed sense of their own competence (White, 1959) [8]; lack of engagement is a strong predictor of PTSD (Zerach, Karstoft, & Solomon, 2017) [9], it is also a strong predictor of career success (Steven & Bartone, 2020);
- *challenging* refers to the tendency to engage in activities, the presence of a genuine interest in curiosity about the surrounding world, which implies the belief that events have meaning and significance; people with this tendency are characterized by cognitive flexibility, rationality and pragmatism, involving a range of positive and constructive perspectives on a problematic situation;
- *control* refers to a person's belief that they can influence events in their life through their own effort and the tendency to act in a planned, coordinated and efficient way; good impulse control facilitates healthy relationships, a healthy lifestyle, higher social status and higher income (Bartone, 2020).

Another great author appreciates that resilience is seen, on the one hand, as a characteristic of the person who has experienced or is experiencing a traumatic event or chronic adversity and shows good adaptability, and on the other hand, it is seen as the result of an interactive process between the person, family and environment (Ionescu, 2013) [10].

Also, the American Psychological Association (2023) [11] defines resilience as the process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioural flexibility and adjustment to external and internal demands. In other words, being resilient is 'bo bouncing back' from difficult experiences, representing the process of coping positively in the face of difficulties, trauma, tragedy, threats or significant sources of stress, such as family and relationship problems, serious health problems or stressful events at work (www.apa.org/topics/resilience).

Therefore, the better we know people's individual psychological characteristics and resources, as well as their professional demands, the better we can design appropriate psychoeducation/psychoprophylaxis programs, programs to develop psychological resilience (Salomo, Sutarto & Arianti, 2023) [12] etc., in order to prevent the onset of manifestations related to stress and/or traumatic events.

In this sense, Popa (2015, p.35) [13] states that adaptation refers to the relationship between individual factors and organizational-situational factors, which materializes at the individual level through a series of adaptive responses, referring to increased performance, commitment, persistence, etc. or maladaptive responses, consisting of low performance, non-compliance, counterproductive behaviour, leaving the organization etc.

On the other hand, representatives of the cognitive-behavioral school bring attention to the concept of resilience building, which involves consciously changing one's way of thinking and behavior through appropriate techniques, such as cognitive restructuring (David, 2012) [14].

Even the American Psychological Association (2024) [15] abode increase resilience based on 10 strategies, as follows (www.apa.org/pubs/databases):

- maintaining good and close relationships with family, friends etc.;
- avoiding exposure to stressful events that lead to dysfunctional reactions and manifestations;
- Accepting situations that cannot be intervened;
- guiding lifestyle towards realistic goals;
- thorough preparation of decisions in critical situations;
- self-awareness, including functional coping mechanisms and their use as opportunities for overcoming situations with significant distress;
- increasing confidence in one's own strengths and resources;
- approaching life situations by changing perspective;
- keeping an optimistic outlook and visualizing a more friendly future;
- engaging in self-treatment (when needed) or engaging in mental, physical, emotional and spiritual self-care practices.

In this context we could conclude: we are not born resilient but we can become resilient if we consider some strategies and techniques to develop resilience physically, mentally, socially and spiritually, such as:

- Identifying the stressor and becoming aware of the problem causing the stressful state;
- self-awareness and personal development through knowing strong vs. weak psychological characteristics, increasing self-esteem, working on goals, understanding and accepting the meaning of life;
- effective time management by planning and prioritizing professional and family activities;
- using relaxation through controlled breathing exercises, progressive muscle relaxation, mindfulness techniques;
- developing assertive communication by expressing needs and desires in a direct, non-aggressive manner, including when tasks become overwhelming or uncomfortable;
- regular participation in sport such as walking, cycling, going to the gym, dancing, exercise in any form;
- connecting emotionally with family and friends, taking into account the role and importance of emotional support from someone close to us, especially when facing difficult situations;
- identifying and practicing hobbies by allocating time to satisfying needs, joys, pleasures or rewarding activities;
- allocating time for rest, recognizing that sleep can help to reduce stress and some manifestations of sleep disorders;
- practicing a healthy lifestyle by eating a healthy and balanced diet, reducing excessive consumption of high calorie foods, coffee, alcohol etc.

2. Methodology

2.1. Research objectives

The general objective of the research aims to highlight the role of coping mechanisms, locus of control, self-esteem and psychological resilience in the management of specific manifestations of stress generated by the students' exam situation, taking into consideration three work objectives, as follows:

- **Objective 1** aims to study the relationship, role, influence and importance of coping mechanisms and locus of control on the development of psychological resilience, psychological characteristics that can facilitate optimal stress management;
- **Objective no. 2** aims to highlight that the optimal functioning of coping mechanisms and psychological resilience developed at an optimal level can help students to manage their cognitive and affective processes to prevent dysfunctional action behaviors specific to stressors in exam situations;
- **Objective no. 3** aims to highlight the difference between students, according to gender, on how they influence, predict and explain the occurrence of stress through the prism of psychological resilience, coping mechanisms and locus of control.

2.2. Research hypothèses

To fulfill the research objectives we proposed the following hypotheses:

Hypothesis no. 1 - We assume that between coping mechanisms and the stress perceived by students during exams there are some interdependent relationships.

Hypothesis no. 2 - We assume that between psychological resilience and students' perceived stress during exams there are some interdependent relationships.

Hypothesis no. 3 - We assume that between locus of control, self-esteem and students' perceived stress during exams there are some interdependent relationships.

Hypothesis no. 4 - We assume that there are some gender-specific differences in the level of stress accumulated by students in exam situations.

Hypothesis no. 5 - We assume that coping mechanisms, psychological resilience, self-esteem, and locus of control play a significant role in predicting how students manage their perceived stress during exams.

2.3. Structure and description of the research lot

The target population for the research sample was selected from among master's students at a university in Bucharest. The research sample was constituted according to the non-probabilistic (non-randomized) technique, i.e. the convenience technique, which does not take into account the requirement of indicating the probability of case selection, as a result, there is no guarantee that the sample is composed of cases that faithfully describe the reference population. At the same time, the technique involves the inclusion of accessible and available cases, based on voluntariness, and is the least rigorous but also the most commonly encountered in the practice of limited-purpose research such as this study.

Thus, the research sample consisted of 120 individuals with the following characteristics:

- gender balanced, i.e. 61 females and 59 males;
- heterogeneous in age perspective, with ages ranging from 22 to 33 years and an average age of 28 years, of which 58 students (48%) aged between 22 and 27 years (age category 1) and 62 (52%) aged between 28 and 33 years (age category 2).

Data collection was conducted online using Google Forms, and the questionnaires/scales were opened for two weeks at the end of January 2024, close to the examination session.

Respondents were asked for their consent to collect and process data for the purpose of conducting scientific research, and all ethical rules were followed.

2.4. Tools used to measure variables

Six standardized psychological assessment instruments were used to collect the data needed to prove the hypotheses:

2.4.1. The Julian Melgosa Stress Inventory - Adapted (F.S.J.M.A.)

The initial form of the Stress Stress Inventory (F.S.-J.M.) is by Julian Melgosa (2000) [16], adapted for the Romanian population and used by a team of specialists (Cracsner, Prisăcaru, Cană & Negură, 2004, p. 136-139) [17]. The Inventory consists of 96 items, grouped in 6 scales, as follows: Lifestyle (V), items 1-16; Environment (M), items 17-32; Symptoms (S), items 33-48; Job/Occupation (O), items 49-64; Relationships (R), items 65-80; Personality (P), items 81-96.

The responses are given on a four-step Lickert scale, and for scoring and interpretation, a separate score (NB) is calculated for each of the six scales, then the expressed intensities are summed, obtaining a total score (Tg), which estimates the intensity of the stress experienced by the person being assessed. The total score (Tg) obtained by each person assessed is related to a yardstick to define the stress zone in which they fall.

2.4.2 Cognitive Emotional Coping Questionnaire (C.E.R.Q.)

The questionnaire is designed in 2001 by Garnefski, Kraaij and Spinhoven and contains 36 items. It has been calibrated and validated on the Romanian population by Perțe and Țincaș and is included in the Development Evaluation Platform - PEDb (Cognitrom, 2021a) [18]. The questionnaire assesses nine cognitive coping strategies, namely: self-blame, acceptance, rumination, positive refocusing, refocusing on planning, positive reappraisal, perspective-taking, catastrophizing, and blaming others. The scoring guidelines aim at calculating the score for each of the nine strategies, taking into account the score given to each item in the subscales.

2.4.3. Scale of locus of control (S.L.C.R.-A.)

The scale was developed by Julian B. Rotter in 1966, based on the concept of "locus of control" in the description of personality, highlighting the psychological characteristics that give a certain direction to the person's behavior, aiming to attribute the causes of behavior to factors that are in the subjective sphere, internal to the individual or outside him, in the objective world. The scale has been translated, adapted and used by a group of specialists (Cracsner, Prisăcaru, Cană & Negură, 2007, p. 245-248) [19], comprising 29 items with two response options each. The scoring guidelines aim at calculating the score for each of the two dimensions, i.e. for externality and internality, taking into account the score of each item in the subscales.

2.4.4. Self-Esteem Scale (S.E.S.)

The scale was taken from the website www.researchcentral.ro and used to collect data on some important aspects of the evaluation of personal merit and worth, positive or negative self-orientation, characteristics developed through individual life experiences specific to adults. Self-esteem is a component of the self-concept, defined as the totality of individual thoughts and feelings with reference to oneself as an object. In addition to self-esteem, self-efficacy and self-identities are important parts of self-concept. The process of self-concept formation is mainly based on the following theoretical concepts: appraisal, social comparison, self-attribution and egocentrism. The scale consists of 10 items with 4 possible answers, ranging from strongly disagree (1 point) to strongly agree (4 points). Scores can range from 10 to 40, representing: 10-16 - low self-esteem; 17-33 - medium self-esteem; 34-40 - high self-esteem.

2.4.5. Scala Hardiness Resilience Gauge (H.R.G.)

The scale was taken from the website www.researchcentral.ro, contains 28 items with 5 possible answers, ranging from strongly disagree (0 points) to strongly agree (4 points), structured to assess three components: challenge, control and commitment.

The initial form of the scale was developed by Steven J. Stein & Paul T. Bartone (2020) to provide insight

into an individual's ability to cope with stress and can be used to identify staff who may be particularly vulnerable to experiencing the consequences associated with stressful occupations, such as potentially traumatic activities. When potentially vulnerable individuals focus on developing psychological resilience, they can mitigate the negative consequences of exposure to job-specific stress. The main psychological factor contributing to resilience is psychological resilience. Mental resilience is the general way of functioning that influences how people interpret the world and their experiences.

2.4.6. Brief Resilience Scale (B.R.S.)

The B.R.S. scale was constructed in 2008 by Smith, Dalen, Wiggins, Wiggins, Tooley, Christopher & Bernard and is composed of 6 items that assess the level of resilience in young people. In 2015 it was translated and adapted by Robu and Pruteanu only on the population of adolescents in the municipality of Iași, and in 2024 it was translated, adapted and used on the Romanian population by Glăveanu (2024) [20].

2.5. Procedure

The research was guided by quantitative research landmarks, being established the independent variables and dependent variables translated into research hypotheses, as well as the statistical apparatus for data analysis, as follows:

- the dependent variables are represented by the subdimensions of stress perceived by the students, namely lifestyle, environment, symptoms, occupation, relationships and personality;
- the independent variables are coping mechanisms (self-blame, acceptance, rumination, positive refocusing, refocusing on planning, positive reappraisal, putting into perspective, catastrophizing and blaming others), locus of control, psychological resilience and self-esteem.

For statistical data processing, using the program S.P.S.S.S. version 18.00, correlation analysis, statistical mean difference and regression analysis were used.

In the preliminary data analysis phase, aimed at ensuring the correctness of data recording, checking marginal values, identifying missing data/values and analyzing the normality of the distribution, no special situations were identified.

3. Findings and Discussion

In order to prove Hypothesis no. 1, with the following content *We assume that between coping mechanisms and the stress perceived by students during exams there are some interdependence relations*, the statistical technique called Pearson correlations was used, and the results are presented in table no. 1 and table no. 2. At the same time, table no. 3 presents the results obtained by the participants of the study regarding the level of perceived General Stress, as well as the yardstick presented in table no. 4 regarding its psychological significance.

Table no. 1 - Descriptive statistics for coping mechanisms variables and perceived stress variables (N=120)

Variables of coping mechanisms coping	Mean	Std. Deviation	Perceived stress variables	Mean	Std. Deviation
Self-blaming	9.99	2.912	*Lifestyle*	20.39	4.523
Acceptance	13.09	3.936	*Environment*	15.13	4.154
Rumination	12.14	4.032	*Symptom*	12.70	5.296
Positive refocusing	12.47	4.225	*Occupation*	11.90	5.678

Refocus on planning	15.59	3.429	*Contact*	17.02	5.079
Positive reassessment	15.68	3.447	*Personality*	14.21	4.819
Putting into perspective	12.24	3.748	*General Stress*	92.73	22.866
Catastrophe	6.51	2.962			
Blame others	7.35	3.286			

Table no. 2 - Correlation coefficient values between coping mechanism variables and perceived stress variables (N=120)

Variables of coping mechanisms coping	Perceived stress variables						
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Self-blaming	.201*	.188*	-.017	.164	-.231*	.071	.072
Acceptance	.060	-.004	-.059	-.302**	-.355**	-.242**	-.226*
Rumination	-.279**	-.429**	-.220*	-.300**	-.204*	-.284**	-.370**
Positive refocusing	-.358**	-.433**	-.504**	-.290**	-.200*	-.568**	-.522**
Refocus on planning	.017	-.034	.108	-.010	-.303**	-.033	-.043
Positive reassessment	-.508**	-.435**	-.206*	-.563**	-.462**	-.498**	-.584**
Putting into perspective	-.312**	-.134	-.083	-.369**	-.590**	-.192*	-.383**
Catastrophe	.327**	.216*	.258**	.074	.611**	.381**	.404**
Blame others	.178	.019	.126	.081	.502**	.147	.241**

**. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

Legend : Lifestyle (1); Environment (2); Symptoms (3); Occupation (4); Relationships (5); Personality (6); General Stress (7).

Table no. 3 - Frequency of significant responses to the perceived General Stress variable

Perceived General Stress Score		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	48	13	10.7	10.8	10.8
	72	4	3.3	3.3	14.2
	74	8	6.6	6.7	20.8
	79	16	13.2	13.3	34.2
	89	2	1.7	1.7	35.8
	91	3	2.5	2.5	38.3
	93	14	11.6	11.7	50.0
	97	16	13.2	13.3	63.3
	100	5	4.1	4.2	67.5
	103	6	5.0	5.0	72.5
	107	10	8.3	8.3	80.8

	109	2	1.7	1.7	82.5
	114	3	2.5	2.5	85.0
	122	6	5.0	5.0	90.0
	124	5	4.1	4.2	94.2
	130	3	2.5	2.5	96.7
	141	4	3.3	3.3	100.0
	Total	120	99.2	100.0	

Table no. 4 - The yardstick of the perceived General Stress variable (Cracsner et.al., 2004, p. 136-139) [17]

Stress zone	Perceived General Stress Score	The psychological significance of the stress zone
Z.1	0-48	Dangerously low stress level
Z.2	49-72	Low stress
Z.3	73-99	Normal stress zone
Z.4	100-140	High level of stress
Z.5	≥ 141	Dangerously high stress level

For data interpretation, in agreement with Colton (1974, p.167) [21], the values of the correlation coefficients have the following meanings: a correlation coefficient from -0.25 to 0.25 means weak or no correlation; a correlation coefficient from 0.25 to 0.50 (or from -0.25 to -0. 50) means an acceptable degree of association; a correlation coefficient of 0.50 to 0.75 (or -0.50 to -0.75) means moderate to good correlation; a correlation coefficient greater than 0.75 (or less than -0.75) means very good association or correlation.

From the data presented in table no. 2 we can observe statistically significant relationships between some variables of coping mechanisms and some variables of perceived stress, as follows:

- between positive refocusing (coping mechanism) and symptoms, personality, general stress (variables of perceived stress), the Pearson linear correlation coefficient has a negative sign (one variable increases and another decreases) and the value r=-.504**, r=-.568** and r=-.522** (p<.01), which highlights the presence of a statistically significant relationship between these variables, and the statistical relationship is significant .01 (99% confidence);
- between positive reappraisal (coping mechanism) and lifestyle, occupation, general stress (perceived stress variables), the Pearson linear correlation coefficient has a negative sign (one variable increases and another decreases) and the values r=-.508**, r=-.563** and r=-.584** (p<.01), which indicates a statistically significant .01 (99% confidence);
- between perspective-taking (coping mechanism) and relationships (perceived stress variable), the Pearson linear correlation coefficient has a negative sign and the value r=-.590** (p<.01), which indicates statistically significant relationships;
- between catastrophizing (coping mechanism) and relationships (perceived stress variable), the Pearson linear correlation coefficient has a positive sign and r=.611** (p<.01), which indicates a statistically significant relationship;

- between blaming others (coping mechanism) and relationships (perceived stress variable), the Pearson linear correlation coefficient has a positive sign (both variables increase or decrease at the same time) and the value r=-.502** (p<.01), showing statistically significant relationships, and the statistical link is statistically significant .01 (99% confidence);
- also, acceptable values of Pearson correlation coefficient are evidenced, as for example in the relationship between rumination and environment (r=-.429**), between positive refocusing and environment (r=-.433**), between positive reappraisal and environment (r=-.435**), between positive reappraisal and personality (r=-.498**), indicating an acceptable degree of association .01 (99% confidence).

At the same time, by relating the data in table 3 to the standard presented in table 4, we can conclude that, out of 120 students included in the study group, 29 students, i.e. 33.2 ⁒ are in the high stress zone, and 4 students, i.e. 3.3 ⁒ are in the dangerously high stress zone. This fact can be explained by the poor functioning of coping mechanisms, as well as through the prism of other psychological characteristics included in the present study, which will be further detailed in the demonstration of Hypothesis 5.

Partial conclusion: At this stage of the research, it can be stated that after analyzing the data on the relationship between coping mechanisms variables and perceived stress variables, it has been shown that it is statistically supported or that there are interdependent relationships between them, and the data presented constitute evidence for the demonstration of hypothesis no. 1.

To prove Hypothesis no. 2, with the following content *We assume that between psychological resilience and stress perceived by students during exams there are some interdependence relationships*, the statistical technique called Pearson correlations was used, and the results are presented in table no. 5 and table no. 6.

Table no. 5 - Descriptive statistics for psychological resilience variables and perceived stress variables (N=120)

Mental resilience variables	Mean	Std. Deviation	Perceived stress variables	Mean	Std. Deviation
Challenge	29.04	6.008	*Lifestyle*	20.39	4.523
Control	26.41	3.825	*Environment*	15.13	4.154
Commitment	30.49	5.623	*Symptom*	12.70	5.296
Resilience	16.88	7.653	*Occupation*	11.90	5.678
			Contact	17.02	5.079
			Personality	14.21	4.819
			General Stress	92.73	22.866

Table no. 6 - Values of correlation coefficients between psychological resilience variables and perceived stress variables (N=120)

Mental resilience variables	Perceived stress variables						
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Challenge	-.380**	-.507**	-.368**	-.383**	-.359**	-.390**	-.516**

Control	-.450**	-.597**	-.576**	-.532**	-.433**	-.547**	-.673**
Commitment	-.473**	-.526**	-.447**	-.433**	-.438**	-.497**	-.600**
Resilience	.100	.275**	.047	.517**	.116	.008	.249**

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

Legend : Lifestyle (1); Environment (2); Symptoms (3); Occupation (4); Relationships (5); Personality (6); General Stress (7).

The following conclusions can be drawn from the data presented in table no. 6:

- between the challenge (variable of psychological resilience), environment and personality (variables of perceived stress), the Pearson correlation coefficient has negative sign (one variable increases and the other decreases) and the value r =-.507**, respectively r =-.516** (p<.01), which emphasizes the presence of statistically significant relationships, and the statistical relationship is significant .01 (99% confidence);
- also, significant negative values of Pearson correlation coefficient are highlighted in the relationship between control (psychological resilience variable) and some variables of perceived stress, such as environment (r =-.597**), symptoms (r =-.576**), occupation (r =-.532**), personality (r =-.547**), general stress (r =-.673**), which indicates significant statistical relationship .01 (99% confidence);
- between commitment (psychological resilience variable), environment and general stress (perceived stress variables), the Pearson correlation coefficient has a negative sign (one variable increases and the other decreases) and the value r = -.526**, respectively r = -.600** (p<.01), which indicates the presence of statistically significant relationships, and the statistical relationship is significant .01 (99% confidence);
- between resilience (psychological resilience variable) and occupation (perceived stress variable), the Pearson correlation coefficient has a positive sign and r = .517**, which indicates the presence of a statistically significant relationship, and the statistical relationship is significant .01 (99% confidence).

Partial conclusion: After analyzing the data on the role of resilience variables in relation to perceived stress variables, it can be appreciated that they have increased relevance in students' stress management during exams, and they become facilitators for involvement in daily professional activities, demonstrating that hypothesis no. 2 is statistically supported.

To prove Hypothesis no. 3, with the following content *We assume that between the locus of control, self-esteem and stress perceived by students during exams there are some interdependence relations*, the statistical technique called Pearson correlations was used, and the results are presented in table no. 7 and table no. 8.

Table no. 7 - Descriptive statistics for locus of control, self-esteem and perceived stress variables (N=120)

Place of control and self-esteem variables	Mean	Std. Deviation	Perceived stress variables	Mean	Std. Deviation
Internalitate	13.40	3.754	*Lifestyle*	20.39	4.523
Externality	10.06	3.931	*Environment*	15.13	4.154

Self-esteem	30.64	7.664	*Symptom*	12.70	5.296
			Occupation	11.90	5.678
			Contact	17.02	5.079
			Personality	14.21	4.819
			General Stress	92.73	22.866

Table no. 8 - Correlation coefficient values between locus of control, self-esteem and perceived stress variables (N=120)

Place of control and self-esteem variables	Perceived stress variables						
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
Internalitate	-.319**	-.344**	-.242**	-.387**	-.342**	-.452**	-.471**
Externality	.221*	.271**	.138	.399**	.286**	.357**	.381**
Self-esteem	-.279**	-.302**	-.461**	.020	-.584**	-.479**	-.438**

**. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

Legend : Lifestyle (1); Environment (2); Symptoms (3); Occupation (4); Relationships (5); Personality (6); General Stress (7).

The following conclusions can be drawn from the data presented in table no. 8:

- between self-esteem and relationships (perceived stress variable), the Pearson correlation coefficient has a negative sign (one variable increases and the other decreases) and r value =-.584**, which emphasizes the presence of a statistically significant relationship, and the statistical relationship is significant .01 (99% confidence);
- also, good negative values of Pearson correlation coefficient are shown in the relationship between self-esteem and some perceived stress variables such as symptoms (r =-.461**), personality (r =-.479**), general stress (r =-.438**), which indicates a good statistical relationship .01 (99% confidence);
- between internality (variable of locus of control), personality and general stress (variables of perceived stress), the Pearson correlation coefficient has a negative sign (one variable increases and the other decreases) and the value r =-.452**, respectively r = -.471** (p<.01), which indicates a good statistical relationship .01 (99% confidence);
- between externality (variable of locus of control), occupation and general stress (variables of perceived stress), the Pearson correlation coefficient has a negative sign and the value r = .399** and r = .381**, respectively, which shows a good statistical relationship .01 (99% confidence), but lower compared to internality.

Partial conclusion: After analyzing the data on the role of locus of control and self-esteem in relation to perceived stress variables, it can be appreciated that internality and self-esteem have higher relevance in students' stress management during exams, while externality has lower relevance, showing that hypothesis 3 is statistically supported.

In order to prove Hypothesis no. 4, with the following content We assume that there are some gender-specific differences in the level of stress accumulated by students in exam situations, the statistical technique called Independent Samples Test was used, and the results are presented in table no. 9 and table no. 10.

Table no. 9 - Descriptive statistics for perceived stress variables by gender (N=120)

Variables	*Gender*	*N*	*M*	*Std. Deviation*	*Std. Error Mean*
Lifestyle	1	61	19.97	4.791	.599
	2	59	20.88	4.187	.559
Environment	1	61	14.75	4.383	.548
	2	59	15.55	3.870	.517
Symptoms	1	61	12.72	5.013	.627
	2	59	12.68	5.648	.755
Occupation	1	61	10.52	5.474	.684
	2	59	13.48	5.537	.740
Relationships	1	61	16.34	5.458	.682
	2	59	17.79	4.536	.606
Personality	1	61	13.89	4.828	.603
	2	59	14.57	4.827	.645
General Stress	1	61	89.45	23.688	2.961
	2	59	96.46	21.489	2.872

Table no. 10 - Values of statistical mean differences (Independent Samples Test) on perceived stress variables by gender (N=120)

Variables	$t_{calculated}$	*df*	*Sig. (2-tailed)*	*Mean Difference*	*Std. Error Difference*	*95% Confidence Interval of the Difference*	
						Lower	*Upper*
Lifestyle	-1.096	118	.275	-.906	.827	-2.544	.731
Environment	-1.058	118	.292	-.804	.760	-2.308	.701
Symptom	.041	118	.967	.040	.973	-1.887	1.967
Occupation	-2.946	118	.004	-2.967	1.007	-4.961	-.972
Contact	-1.561	118	.121	-1.442	.924	-3.271	.387
Personality	-.771	118	.442	-.681	.883	-2.430	1.068
General Stress	-1.689	118	.094	-7.011	4.152	-15.233	1.211

From the data presented in table no. 9 we can observe that the statistical averages obtained by females (noted with 1) on some dimensions are slightly lower than those of males (noted with 2), as follows:

- for females: $M_{occupation} = 10.52$, $M_{general\ stress} = 89.45$, $M_{relations} = 16.34$;
- for males: $M_{occupation} = 13.48$, $M_{general\ stress} = 96.46$, $M_{relations} = 17.79$.

- The following conclusions can be drawn from the data presented in Table 10:
- - concerning the variable general stress, the difference between means is -7.011, corresponding to a $t_{calculated}$ = -1.689 and a threshold of significance Sig. (2-tailed) = 0.094;
- for the occupation variable, the difference between means is -2.967, aferent unui $t_{calculated}$ = -2.946 and a threshold of significance Sig. (2-tailed) = 0.004;
- on the relationships variable, the difference between means is -1.442, corresponding to a $t_{calculated}$ = -1.561 and a threshold of significance Sig. (2-tailed) = 0.121;
- for the mean variable, the difference between means is -.804, corresponding to a $t_{calculated}$ = -1.058 and a threshold of significance Sig. (2-tailed) = .292.

Although the values of the calculated difference between the statistical means are not large, it can be concluded that females may have a lower level of perceived general stress in the exam situation compared to males, supported by the variables occupation, relationships, lifestyle and personality. In other words, we can appreciate that females establish interpersonal relationships more easily, which in turn may support some healthy response behaviors, adapt more easily to some specific academic demands, establish some appropriate lifestyle cues etc.

Partial conclusion: After analyzing the results of the significance test between the statistical means obtained by the two subgroups of individuals, it can be concluded that hypothesis 4 is statistically supported.

To prove Hypothesis No. 5, with the following content We assume that coping mechanisms, psychological resilience, self-esteem and locus of control play a significant role in predicting how students manage their perceived stress during exams, the statistical technique called Simple Linear Regression was used and the results obtained are presented in table no. 11.

Table no. 11 - Values of regression coefficients on the direct relationship between coping mechanisms, psychological resilience, locus of control, self-esteem and general perceived stress (N=120)

	B	**Std. Error**	**Beta**	**t**	**Sig.**
General perceived stress					
Constant	217.794	34.000		6.406	.000
Self-blaming	4.972	.695	.633	7.155	.000
Acceptance	-.191	.366	-.033	-.521	.603
Rumination	-.691	.343	-.122	-2.014	.047
Positive refocusing	-2.025	.598	-.374	-3.387	.001
Refocus on planning	-.574	.766	-.086	-.749	.455
Positive reassessment	2.764	.754	.417	3.668	.000
Putting into perspective	-3.564	.870	-.584	-4.098	.000
Catastrophe	-1.302	1.685	-.169	-.773	.441
Blame others	.955	.785	.137	1.217	.227
Self-esteem	-1.233	.404	-.413	-3.050	.003
Challenge	.303	.490	.080	.618	.538
Control	-2.854	.345	-.477	-8.266	.000

Commitment	.462	.452	.114	1.022	.309
Resilience	.718	.188	.240	3.829	.000
Internalitate	-2.959	.675	-.486	-4.385	.000
Externality	-1.006	.619	-.173	-1.626	.107

Dependent Variable: General perceived stress.

Considering the values of the regression coefficients mentioned in table no. 11, we can conclude that each variable of coping mechanisms, psychological resilience, locus of control, and self-esteem explain and predict in different proportions the level of general stress perceived in the examination situation.

For example, self-blame as a variable of coping mechanisms has a negative influence on the level of perceived stress in the proportion of 49.72%, compared to some variables that have a positive role in stress management, such as putting into perspective (35.64%), positive reappraisal (27.64%), positive refocusing (20.25%) or self-esteem (12.33%).

We deduce that the level of stress perceived by students in exam situations can be managed through the prism of psychological characteristics, such as those related to resilience, coping mechanisms, self-esteem, recognized by many authors as individual psychological resources, which each of us have in different proportions.

Partial conclusion: the data mentioned in table no. 11 and the interpretation presented above allow us to state that hypothesis 5 is statistically supported.

5. Conclusions

The objectives of this research aimed to analyze the relationship between coping mechanisms, psychological resilience, some psychological characteristics such as self-esteem and locus of control in relation to the stress perceived by students in exam situations, but also to customize the analysis by gender in order to identify potential needs to increase resilience or directions for some training and development programs that help facilitate student success in situations of intense demand.

Optimal levels of stress, as well as average and even high levels of perceived stress were identified in the student group, results that justify the need for further investigation of psychological resilience, coping mechanisms and self-esteem.

The research results demonstrate and support the association of psychological resilience with certain coping mechanisms that facilitate functioning, coping and coping with perceived stress, such as high levels of perspective-taking, positive reappraisal, positive refocusing or self-esteem, but also high levels of coping mechanisms that support dysfunction.

The analysis by gender revealed some differences in the level of perceived stress, for example females may have a lower level of general perceived stress in exam situations compared to males, supported by the variables occupation, relationships, lifestyle and personality, which makes it possible to appreciate that females establish interpersonal relationships more easily, which in turn may support some healthy response behaviors, adapt more easily to some specific academic demands, establish some appropriate lifestyle cues, etc.

At a deeper level of analysis, corresponding to hypothesis no. 5, it is found that the level of perceived stress can be predicted and explained by the simultaneous contribution of coping mechanisms, psychological resilience, locus of control and self-esteem, characteristics investigated in this research.

Based on these results, a series of programs can be proposed with the aim of identifying students' dysfunctional coping mechanisms, the formation and development of functional coping mechanisms, and psychological characteristics that support adaptation and development in the face of various life challenges.

In conclusion, the present research provides evidence for the scientific validation that some students in a demanding situation, such as an exam situation, accumulate a high level of general stress, explained by some dimensions of specific stress, such as task, environment, relationships and personality.

The research also shows that some coping mechanisms, such as perspective-taking, positive reappraisal and positive refocusing, and psychological resilience are effective in such situations, and students who have these mechanisms will more frequently show low levels of stress, which helps us to conclude that they will benefit from optimal coping in the examination situation.

In a different vein, we also note that research has shown that females accumulate a lower level of perceived stress than males, explained by the fact that they have more developed psychological resilience and coping mechanisms that support functioning.

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