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RESEARCH ARTICLE

The Role of Acceptance and Planning in Stress Management for Medical Students

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Objective: The purpose of this study was to analyze the role of two coping mechanisms, namely Acceptance and Planning, in stress management among medical students. **Methods**: This research included two groups, a target group consisting of medical students (N = 100; Mage = 22.34) and a control group which was composed of physical education and sports students (N = 100; Mage = 20.11). For the target group, a low level of stress was induced, the students being informed that their overall behavior during an examination would be analyzed later by a group of psychologists, after which they were filmed while taking the exam. The students from the control group performed a physical exercise while they were filmed, and they were told that the correctness of the exercise would be evaluated by experts in physical education and sports on the basis of the recorded images. After completing the tasks, both the students in the target group and those in the control group completed the COPE questionnaire. **Results**: The statistical data interpretation revealed a significant statistical difference regarding the two coping mechanisms, namely Acceptance [M = 10.73; t (19) = 3.79, p <0.001; CI -1.91, -0.60], and Planning [M = 9.47; t (19) = 4.70, p <0.01; CI -1.99, -0.81]. According to statistical data analysis, we did not find another significant statistical difference among the remaining 13 coping mechanisms. **Conclusions**: To efficiently manage stress during exams, medical students use Acceptance and Planning coping mechanisms, which may increase their emotional regulation abilities and help them focus on problem solving.

Keywords: coping mechanisms, emotional regulation, problem solving, acceptance, medical students

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Introduction

The National Institute of Mental Health defines stress as the nonspecific response of the brain to any demand [1]. Lazarus highlighted the role of individual appraisal in stress reactivity for the first time [2]. Other authors suggest that stress response requires heightened arousal, perceived aversion of the experience and uncontrollability [3]. The relation between stress and performance is not straightforward, and the individual's appraisal of the stressor could be a potential moderator [4]. It has been shown that stress acts as an impediment in academic performance if students perceive stress arousal that way (i.e., as an obstacle), while reappraisal instructions which emphasize the benefits of stress arousal may improve performance [5,6]. Moreover, neurophysiological evidence indicates that although stress has no effect on performance effectiveness, it may impact its efficiency, due to the recruitment of increased mental effort [7]. Besides the cognitive processes involved in stress management, higher emotional skills also correlate with lower self-perceived stress levels and better academic performance [8]. Stress may be an internal experience such as positive emotion, self-efficacy [9], emotional stress, cognitive stress, perceptual stress, or it may have an external source like social network, lack of leisure time, financial problems, illness, fatigue, and natural disasters. Studies that involved university students outlined the following main stressors: unsuitable teaching methods, unsatisfactory study environment in college, fear of failure in examinations, social problems [10], lack of skills and knowledge, psychological stressors like tiredness, lack of self-confidence, learning difficulties [11], unrealistic expectations of future work [12], information overload, financial debt, insufficient relaxing time, work-related pressures as well as student abuse and harassment [13].

Management of stress using the appropriate coping style becomes important as students aspire to become professionals in the near future [14]. Three main coping mechanisms were identified in students: problem-focused (e.g., active coping, planning, suppression of competing activities, restraint coping, seeking instrumental social support), emotion-focused coping (seeking emotional social support, positive reinterpretation of events, acceptance, denial, turning to religion), which is thought to be more efficient [15], and avoidant coping styles (namely, cognitive and behavioral efforts directed towards minimizing, denying or ignoring a stressful situation) [16]. Students cope with stress using cognitive efforts, deal with problems accepting them, and employ behavioral efforts to reduce tension through direct expression of negative feelings [12]. However, according to Doulougeri, Panagopoulou & Montgomery (2016), medical students typically use different coping mechanisms for stress management, one of

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the most widely used strategy being inaction such as distraction or reappraisal [17]. Moreover, Chao indicated that students' problem-solving coping mediates the relation between high social support, stress and well-being [18]. Regarding acceptance-based strategies, there is evidence to suggest their benefits for the mental health of students [19, 20].

Overview of the present study

The present study aims to determine what types of coping mechanisms are used by medical students to cope with the examination stress, comparatively to students in physical education and sports. Other studies have investigated the relationship between stress and performance, specifically the relationship between stress and irrational beliefs [21-24], and the relationship between stress and biological factors [25, 26]. Most studies used stress inoculation in laboratory conditions. The present study is the first research that investigates the association between stress inoculation and coping mechanisms in a natural environment for medical students.

Objectives

One of the primary objectives of this study is to determine how medical students manage exam-generated distress, from the perspective of coping mechanisms. Secondly, we intend to determine which are the most used coping mechanisms in stressful exam situations for medical students, when compared to physical education and sports students.

Methods

Compliance with Ethical Standards

All students who participated in this research signed an informed consent before the inclusion in the study. This research was approved by the Ethics Research Commission from GE Palade UMFST, and confidentiality of participants was totally respected, given that all students were allowed to choose the "anonymous" option, in which case we collected only demographic data (gender, age, faculty).

Participants and Procedure

This research included a total number of 200 students, 100 attending the Faculty of Medicine and 100 attending the Faculty of Physical Education, Sport and Balneophysiotherapy. Two groups were formed. One of them was the target group (N = 100) and consisted of medical students, while the other was the control group (N = 100) and included sports and balenophysiotherapy students. The average age for the target group was Mage = 22.34 and the average age for the control group was Mage = 20.11. Therefore, this study was comprised of a young and dynamic sample. For both groups, the working procedure involved the inoculation of a low stress level and the immediate evaluation of coping mechanisms that students used to manage this type of stress. At the beginning of the task, two cameras were placed in the classroom. The students in the target group were instructed to answer the questions of an exam paper, knowing that a group of experts in behavioral sciences would watch the record and assess their behavior to determine their personality type afterwards. Immediately after completing the test students were asked to fill in the COPE questionnaire for the measurement of coping mechanisms. The procedure was similar within the control group, with the only difference that these students were told that they would be filmed while engaged in a set of physical exercises and that a team of experts in physical education and sports would evaluate their performance, according them some grades. Immediately after the end of the activity, the students from the control group filled in the COPE scale as well. For both the target group and the control group the tasks did not exceed a time duration greater than 12 minutes.

Measures

The COPE questionnaire was developed by Carver, Scheier and Weintraub and contains 60 items for the evaluation of 15 coping strategies. Validation of the questionnaire on the Romanian population indicates internal consistency values ranging from 0.72 to 0.84. The average Chronbach's alpha coefficient for the 15 subscales was 0.74 [27]. Using exploratory factor analysis for examining the individual scales of the COPE questionnaire, Carver, Scheier and Weintraub (1989) described four main factors:

1. problem-focused coping (including the following coping strategies: active approach, planning and suppression of competing activities);
2. emotion-focused coping (positive interpretation and growth, abstention, acceptance and adopting religious approaches);
3. coping that focused on seeking social support (seeking instrumental social support, using emotional social support and focusing on expressing emotions);
4. avoiding coping, which entails avoiding the problem or associated emotions (denial, mental disengagement and behavioral disengagement) [28].

Therefore, the COPE questionnaire merely reflects the coping strategies people use when they are in a stressful situation, without distinguishing between adaptive and maladaptive coping styles [29].

Statistical Analyzes

GraphPad Prism 8, Windows version, was used for the statistical interpretation of the results found in the present study. As a result of the scores distribution in the two independent samples, we chose the Student t test for statistical data analyzes.

Results

As shown in Table I, the average scores for the Acceptance coping dimension were M = 10.73 (SD = 2.44, Mdn = 10.50) for the target group, and M = 9.47 (SD = 2.23, Mdn

Table I. Average scores for acceptance coping dimension and planning coping dimension in the target and control group

Coping mechanism	Mean	Std. Deviation	Median
Acceptance TG	10.73	2.44	10.50
Acceptance CG	9.47	2.23	9.00
Planning TG	12.87	1.99	13.00
Planning CG	11.47	2.20	12.00

= 9.00) for the control group respectively. Therefore, this suggests that students in the target group used the Acceptance coping strategy more frequently during the stressful situation (M = 10.73), as oposed to students in the control group that used this coping strategy fewer times throughout the stress-generating situation (M = 9.47). Regarding the Planning coping dimension, the average values were M = 12.87 (SD = 1.99, Mdn = 13.00) for the target group, and M = 11.47 (SD = 2.20, Mdn = 12.00) for the control group respectively. These results indicate that the Planning strategy was also more frequently used in the target group during the stressful situation (M = 12.87), in contrast to students in the control group who employed this coping mechanism to a lower degree (M = 11.47) (Table I).

For this reason, our results demonstrate a statistically significant difference between the target group (M = 10.73) and the control group (M = 9.47) regarding the use of Acceptance coping strategy. The 95% CI ranges from -1.91 to -0.60, with a mean difference of -1.26 ± 0.33. The difference between the two groups is statistically significant, where t = 3.79, df = 198, P <.001. A statistically significant difference between the two groups was also observed for the Planning coping strategy, where 95% CI varies between -1.98 to -0.81, with a mean difference of -1.40 ± 0.29, and t = 4.70, df = 198, P < 0.0001 (Table II).

The results indicated no significant statistical differences between the two groups regarding the remaining coping strategies: active approach, suppression of competing activities, positive interpretation and growth, abstention, acceptance and religious approach, use of instrumental social support, use of emotional social support and focus on expressing emotions, denial, mental disengagement and behavioral disengagement.

Discussion

Exploring the obtained results, we noticed that emotional regulation (in the form of Acceptance coping strategy) and problem solving (in the form of Planning coping strategy) are the most commonly used coping mechanisms within the target group. These conclusions are in line with other research that indicates an obvious overlap between coping mechanisms and emotional regulation, as well as problem solving [18, 30, 31]. Consequently, our results show that medical students use two important mechanisms in stress-generating situations, as dealing with exam-related stress, namely emotional regulation and problem solving. This is important because the absence of emotional regulation and the emergence of emotional disturbance or anxiety may be powerful disruptive factors in stressful conditions, which may negatively influence the academic performance of medical students. Acceptance as a coping or emotional adjustment mechanism is characterized by the fact that students acknowledge the situation as something that cannot be changed and do not try to control it in any way. This helps students effectively manage their stress-generated emotions, recognizing that the outcomes may be negative when one tries to control his or her worries and emotions excessively (i.e., the emotions become more intense) [20, 32, 33]. Many medical students fail to regulate their emotions through the use of this strategy, seeking counseling or psychotherapy sessions to improve their emotional management skills [34, 35]. Nevertheless, problem solving is another coping mechanism that medical students commonly use to deal with stress [18, 35]. With the aid of this strategy, concrete solutions are sought for specific problems, or in other words, medical students try to find effective problems solving strategies which include choosing an appropriate learning style and prioritizing exams according to their degree of difficulty.

Limitations of the study

Some biases may be present in this research. For example, causes of stress may involve different factors across the two groups, such as the teachers' presence, highly compliance to the task, or anxiety sensitivity. Another limitation of this study refers to the different nature of stress inoculation techniques. While the method used in the first group with medical students focused on a personality traits aspect, the method used in the second group with physical education students focused on the main skills related to their future profession. A third limitation of the present study is the absence of participants' random assignment in the two groups, as they were already existent on the basis of their study specializations. Hence, the obtained results may be influenced by other variables besides the use of specific coping strategies. These may include the uniqueness of students' profiles and interests, as well as distinct stress levels at the beginning of the procedure in the present study.

Table II. Statistical analyses of T test for COPE Inventory Showing the Difference between Target group (Medical students) and Control group (Physical education and sport students) (N = 200).

	Target group		Control group				
Coping mechanism	M	SD	M	SD	t	p	Df.
Acceptance	10.73	2.44	9.47	2.23	3.79	<.001***	198
Planning	12.87	1.99	11.47	2.20	4.70	<.0001****	198

Note. * p < .05, two-tailed. ** p < .01, two-tailed. *** p < .001, two-tailed, ****p < .0001, two-tailed.

Conclusions

Acceptance and Planning may be classified as two coping mechanisms in the area of emotional regulation, and problem solving respectively. Through regular implementation of these mechanisms in stressful situations, medical students are able to focus more on problem solving processes rather than on the negative emotions they feel in a certain situation. These results may serve as a support for the elaboration of counseling or psychotherapy protocols aimed at training these two coping mechanisms, especially in the case of medical students who experience performance anxiety. Future studies should investigate the effectiveness of psychotherapeutic interventions that are focused on acceptance or problems solving techniques.

Authors' contribution

CP (Conceptualization; Methodology; Investigation; Formal analysis; Writing – original draft; Supervision)
AS (Conceptualization; Methodology; Investigation; Analysis and interpretation of data for the work; Writing – original draft;)
AR (Methodology; Analysis and interpretation of data for the work; Final approval of the version to be published)
SS (Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved; Final approval of the version to be published)
NS (Methodology; Project administration)
DAS (Acquisition, analysis and interpretation of data for the work)
CC (Conceptualization; Writing –review & editing)

Conflict of interest

None to declare.

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