Cognitive Emotion Regulation Strategies as Mediators of the Relationship between Personality Traits and Depression, Anxiety, and Stress among Students

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A B S T R A C T

The aim of the study was to examine the extent to which cognitive emotion regulation strategies mediate the relationship between personality traits and students' mental health, operationalized through symptoms of depression, anxiety, and stress, in an academic setting. The sample consisted of 151 students, with a mean age of 22.24 years (*M* = 22.24, *SD* = 4.41). The instruments used included the Big Five Inventory, the Depression, Anxiety, and Stress Scale, and the Cognitive Emotion Regulation Questionnaire. Data were analyzed using mediation models with bootstrap estimation of confidence intervals. The results indicated that neuroticism was the strongest predictor of negative emotional states, with self-blame playing a significant mediating role in the relationships with symptoms of psychological distress. At the same time, extraversion, conscientiousness, openness to experience, and agreeableness were negatively associated with emotional distress, and these relationships were partially mediated by both maladaptive and adaptive emotion regulation strategies. The findings suggest that cognitive emotion regulation strategies represent a mechanism through which personality traits influence students' psychological functioning, highlighting the importance of their inclusion in preventive programs aimed at reducing emotional distress and strengthening adaptive mechanisms necessary for coping with academic demands.

Keywords: *personality traits, cognitive emotion regulation, depressive symptoms, anxiety, stress.*

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Introduction

The contemporary academic environment is characterized by increased educational demands, evaluative pressures, and uncertainties related to professional future, which makes students a particularly vulnerable population with regard to psychological functioning. Research indicates a growing prevalence of symptoms of depression, anxiety, and stress among students, which may have negative consequences for academic achievement, motivation, and overall mental health (Beiter, Clarahan, Linscomb, McCrady, Nash, Rhoades & Sammut, 2015; Asif, Mudassar, Pervaiz, Raouf & Shahzad, 2020; Abreu, Cardoso, Freitas, Meireles, Paula & Ribeiro, 2023). However, individual differences in responses to academic stressors point to the importance of personality traits and psychological coping mechanisms (Bradley, Harrad, Playfoot & Quigley, 2022). Particular attention in contemporary research has been given to cognitive emotion regulation strategies, which refer to conscious cognitive ways of managing emotional experiences in stressful academic situations (Alwesmi, Alanazi, Alomairi, Bayounes, Binrushaydan, Salem, & Youssef, 2024). These strategies may serve adaptive or maladaptive functions, depending on their nature and frequency of use, and they significantly contribute to individual psychological functioning. The aforementioned studies indicate associations between personality traits and the selection and effectiveness of emotion regulation strategies, as well as their associations with symptoms of emotional distress among students. Nevertheless, a relatively small number of studies simultaneously examine these constructs within mediation models, particularly in student populations. Understanding these relationships can contribute to a more precise comprehension of the mechanisms underlying students' psychological functioning, as well as to the development of preventive and counseling-oriented support programs in higher education.

Theoretical Framework

Cognitive Emotion Regulation

Cognitive emotion regulation represents an important aspect of an individual's emotional functioning and has a significant impact on mental health and the ability to adapt to stressful life circumstances. Fundamentally, it encompasses processes through which an individual consciously or unconsciously shapes, modulates, and manages emotional reactions in response to environmental demands (Gross, 2015; Morawetz et al., 2017). In this regard, a substantial contribution has been made by the research of Garnefski and colleagues (2001; 2007), who developed a model of cognitive emotion regulation strategies by identifying nine distinct modes of thinking that individuals may employ following a stressful or emotionally unpleasant event. These strategies are conceptually divided into adaptive and maladaptive, depending on their effects on mental health (Garnefski & Kraaij, 2006). Maladaptive strategies include self-blame, other-blame, rumination, and catastrophizing. Self-blame refers to the internalization of responsibility for a negative event, whereas other-blame denotes the external attribution of the cause of the problem. Rumination involves repetitive focusing on negative emotions, their causes, and consequences, while catastrophizing refers to the exaggeration of the severity and negative outcomes of stressors (Garnefski et al., 2002; Aldao, Nolen-Hoeksema & Schweizer, 2010). Frequent reliance on these strategies is significantly associated with increased levels of depression, anxiety, and stress (Joormann & Stanton, 2016; Schäfer et al., 2017). On the other hand, adaptive strategies include acceptance, planning, positive refocusing, positive reappraisal, and putting into perspective. Acceptance refers to the cognitive acceptance of reality without attempting to immediately change the situation. Planning involves thinking about specific steps that need to be taken to resolve a problem or mitigate the consequences of a stressful event and entails active preparation for future challenges, increasing the sense of control and thereby contributing to reductions in anxiety and depression (Garnefski et al., 2001; Webb et al., 2012). Positive refocusing entails shifting attention away from the stressful event toward pleasant, positive thoughts and memories. Positive reappraisal involves assigning a new, positive meaning to an unpleasant experience, often in the context of personal growth, whereas putting into perspective refers to relativizing the problem, that is, viewing it within a broader context and comparing it with other, potentially more severe situations. The use of these strategies is consistently associated with higher levels of psychological resilience, optimism, and self-confidence, and negatively associated with symptoms of psychological distress (Carver et al., 1989; Aldao & Dixon-Gordon, 2014; Compas et al., 2017).

Personality Traits

Personality in contemporary psychology is defined as a relatively stable and organized set of internal psychological traits and mechanisms that determine the way an individual perceives, interprets, and responds to their physical, social, and intrapsychic environment (Buss & Larsen, 2008; Costa & McCrae, 2003). One of the dominant approaches in contemporary personality research is the lexical approach, which served as the basis for the development of the Big Five Personality Traits model. The five fundamental personality dimensions include extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience (John & Srivastava, 1999).

Extraversion denotes a pronounced orientation toward the external world and includes traits such as sociability, communicativeness, energy, and positive affect. Neuroticism implies emotional reactivity and a tendency toward anxiety, depression, and emotional instability. Individuals who score high on this dimension more frequently experience stress and negative emotions (Lahey, 2009). Agreeableness refers to interpersonal characteristics such as empathy, kindness, and cooperativeness, and high levels on this dimension are associated with prosocial behavior. Conscientiousness encompasses organization, discipline, and a tendency toward goal-directed activity, as well as effective impulse control. Openness to experience includes imagination, intellectual curiosity, and a willingness to engage in new experiences. This dimension is often associated with creative and innovative thinking (Jang et al., 2022).

Several studies confirm that neuroticism represents the most significant negative predictor of emotional well-being, as it is associated with a greater propensity to experience emotional discomfort (Lahey, 2009; Ormel et al., 2013).

High neuroticism correlates with pronounced emotional instability, negative affectivity, and lower effectiveness in the use of adaptive coping strategies. In contrast, extraverted individuals, due to their tendency toward positive affect, exhibit higher levels of subjective well-being and resilience to stressful situations (Clark & Watson, 1997; Soto, 2019). Conscientiousness is associated with discipline, self-control, and organization, which enable more effective management of everyday demands and stressors (Bogg & Roberts, 2013). Individuals with high scores on the agreeableness scale, owing to empathy and a tendency to build harmonious interpersonal relationships, more frequently experience social support, which further contributes to psychological resilience (Javaras et al., 2012). Together, these traits influence the way students experience and process emotional information, shaping their responses to academic stressors and their level of mental health.

Depression, Anxiety, Stress

Symptoms of depression, anxiety, and stress are among the most prevalent and clinically most relevant psychological phenomena in contemporary society. These conditions are not limited exclusively to clinical populations but also occur at high rates within the general population, regardless of age, gender, or social status (Kessler et al., 2005; World Health Organization, 2023). Depression is defined as a more persistent state of emotional low mood, which includes decreased mood, loss of interest and pleasure, as well as a range of additional symptoms that significantly impair everyday functioning.

In addition to feelings of sadness, disturbances in sleep and appetite, feelings of guilt and worthlessness, difficulties in concentration, and slowed thinking are common. Anxious mood represents a state of pronounced internal tension, feelings of uncertainty, and heightened worry, most often occurring without a clearly defined cause. It is characterized by cognitive symptoms (e.g., difficulties in concentration, a sense of loss of control), emotional distress, and pronounced bodily reactions. Among physiological symptoms, the most common are increased heart rate, shallow breathing, sweating, trembling, dizziness, and muscle tension (Sareen & Stein, 2015; Craske et al., 2017).

Stress is described as the organism's response to external or internal demands that an individual perceives as threatening, burdensome, or exceeding personal adaptive capacities. Short-term stress may be beneficial, as it promotes alertness and prepares the organism for action, whereas chronic stress may contribute to the development of avoidant behavior, thereby impairing functioning in educational, occupational, and social environments (Dreihaus et al., 2023).

Method

Subject of the Study

The research problem concerns the insufficiently explored mediating role of cognitive emotion regulation strategies between personality traits and students' mental health. Understanding these relationships may contribute to a more precise insight into the mechanisms underlying students' psychological functioning, as well as to the development of preventive and counseling-oriented support programs in higher education.

Aim of the Study

The aim of the study was to examine the extent to which cognitive emotion regulation strategies mediate the relationship between personality traits and students' mental health, operationalized through symptoms of depression, anxiety, and stress in the academic environment.

Research Hypotheses

General Hypothesis:

Cognitive emotion regulation strategies play a significant mediating role in the relationship between personality traits and symptoms of depression, anxiety, and stress in students.

Specific Hypotheses:

H1: Personality traits are significantly associated with cognitive emotion regulation strategies.

H2: Personality traits are significantly associated with symptoms of depression, anxiety, and stress.

H3: Cognitive emotion regulation strategies are significantly associated with symptoms of depression, anxiety, and stress.

H4: Neuroticism is positively associated with maladaptive cognitive emotion regulation strategies and higher levels of depression, anxiety, and stress.

H5: Extraversion, conscientiousness, and agreeableness are negatively associated with symptoms of depression, anxiety, and stress, and positively associated with adaptive cognitive emotion regulation strategies.

H6: Maladaptive cognitive emotion regulation strategies (e.g., self-blame, rumination, catastrophizing) mediate the positive relationship between neuroticism and symptoms of depression, anxiety, and stress.

H7: Adaptive cognitive emotion regulation strategies (e.g., planning, positive reappraisal, putting into perspective) mediate the negative relationship between personality traits (extraversion, conscientiousness, and agreeableness) and symptoms of depression, anxiety, and stress.

Sample

The sample consisted of a total of 151 students studying at higher education institutions in the Republic of Serbia, of whom 24 (15.9%) were male and 127 (84.1%) were female, with a mean age of 22.24 years (M = 22.24, SD = 4.41).

The study was conducted using an online questionnaire, which students completed voluntarily after being informed in advance about the anonymity and confidentiality of all collected data.

Instruments

The following instruments were used in this study: *The Cognitive Emotion Regulation Questionnaire* (CERQ; Garnefski et al., 2001) is a multidimensional questionnaire designed to assess the cognitive strategies an individual employs after confronting a negative event or situation. The CERQ is a self-report measure that examines the way people think following the experience of a stressful or adverse life event. It consists of 36 items distributed across nine conceptually distinct subscales (self-blame, acceptance, rumination, positive refocusing, planning, positive reappraisal, putting into perspective, catastrophizing, and other-blame).

Participants rate on a scale from 1 (never) to 5 (always) how often, following an unpleasant experience, they use each of the described ways of thinking. In our sample, the questionnaire demonstrated generally satisfactory internal reliability, with Cronbach's alpha coefficients ranging from .58 to .79. The lowest reliability was observed for the Acceptance subscale (α = .58), while the remaining subscales showed satisfactory values.

The Big Five Inventory (BFI; Donahue et al., 1991) represents an operationalization of the personality traits in the Big Five model (extraversion, neuroticism, agreeableness, conscientiousness, openness to experience). The inventory consists of 44 statements accompanied by a five-point Likert scale for responses. The scales of the inventory demonstrated satisfactory reliability in our sample, with Cronbach's alpha coefficients ranging from .68 to .79.

The Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995) consists of 21 items encompassing three subscales: the depression subscale, which includes items assessing core symptoms of depression; the anxiety subscale, which covers items primarily related to symptoms of physiological arousal as well as the subjective experience of anxious affect; and the stress subscale, which assesses symptoms of general, non-specific arousal.

Participants rated the frequency of their feelings on a Likert scale from 0 (not at all) to 3 (mostly or almost always). In our sample, the scale demonstrated satisfactory reliability, ranging from .68 to .89.

Research Procedure

The study was conducted using appropriate psychometric instruments and an online questionnaire to assess the key variables, including cognitive emotion regulation strategies, personality traits, as well as depression, anxiety, and stress. Data were analyzed using the PROCESS macro within the IBM SPSS Statistics software package, specifically employing Model 4, which enables the examination of parallel multiple mediation effects.

Results

The following tables present the results of descriptive indicators of the examined variables, the correlations between the examined variables, as well as the results of the mediating role of cognitive emotion regulation strategies in the relationship between personality traits and symptoms of depression, anxiety, and stress, where cognitive emotion regulation strategies serve as mediators, personality traits as predictor variables, and depression, anxiety, and stress as criterion variables.

Table 1

Descriptive indicators of personality traits, cognitive emotion regulation strategies, and depression, anxiety, and stress

Variables	*Min.*	*Max.*	*M*	*SD*	*Sk*	*Ku*
Extraversion	14	40	27.13	6.00	0.15	-0.49
Neuroticism	9	37	22.75	5.61	0.05	-0.48
Agreebleness	17	43	34.83	5.04	-0.90	1.01
Conscientiousness	15	40	29.94	5.31	-0.27	-0.45
Openness to Experience	20	46	35.10	5.01	-0.45	0.31
Self-Blame	4	20	12.33	2.77	-0.15	0.11
Blaming Others	4	17	9.19	2.66	0.15	-1.23
Rumination	4	20	14.28	3.30	-0.49	-.03
Catastrophizing	4	20	10.23	3.50	0.17	0.20
Acceptance	4	20	14.95	2.60	-0.68	1.29
Planning	4	20	16.21	2.88	-1.03	1.76
Positive Refocusing	4	20	12.29	3.56	-0.73	-0.63
Positive Reappraisal	4	20	15.81	3.01	-0.49	0.32
Putting into Perspective	4	20	14.48	3.09	-0.14	0.26
Depression	0	38	8.30	8.48	1.27	1.05

Variables	*Min.*	*Max.*	*M*	*SD*	*Sk*	*Ku*
Anxiety	0	31	9.30	7.75	0.92	-0.05
Stress	0	41	14.21	9.14	0.61	-0.35

Note. *Min* – minimum observed value of the variable; *Max* – maximum observed value of the variable; *M* – arithmetic mean (average value); *SD* – standard deviation (a measure of variability of scores around the mean); *Sk* – skewness, that is, a measure of distribution asymmetry; *Ku* – kurtosis, a measure of the flatness/peakedness of the distribution.

The reported minimum and maximum scores correspond to the empirical range of the subscale total scores and are consistent with the theoretical ranges of the instruments used. Means and standard deviations indicate adequate variability in the results, allowing for further statistical analyses.

The skewness and kurtosis values for most variables fall within acceptable limits (Sk < 1.5; Ku < 1.5), indicating an approximately normal distribution of the results, which aligns with standard recommendations for research in the social and human sciences (Tabachnick & Fidell, 2021). Slight positive skewness in depression, anxiety, and stress is expected given the non-clinical nature of the sample.

The correlation analysis shows different patterns of associations between personality traits, cognitive emotion regulation strategies, and emotional outcomes among students. Neuroticism is positively and significantly associated with self-blame, rumination, catastrophizing, and other-blame, as well as with overall depression, anxiety, and stress. Extraversion shows negative correlations with neuroticism, depression, anxiety, and stress, and positive correlations with conscientiousness, agreeableness, and openness. Openness to experience is slightly positively associated with conscientiousness, acceptance, and rumination. Given the somewhat lower reliability of the Acceptance subscale, this can be explained by its conceptual heterogeneity, as this strategy may reflect both adaptive acceptance of a situation and passive resignation.

This ambiguity may affect the consistency of participants' responses. Accordingly, results involving this subscale should be interpreted with caution. Conscientiousness shows significant positive correlations with planning, putting into perspective, and positive reappraisal, but negative correlations with depression. Agreeableness is positively associated with adaptive strategies (planning, putting into perspective, positive reappraisal) and negatively with depression and stress.

Cognitive emotion regulation strategies such as self-blame, rumination, and catastrophizing are strongly interrelated and associated with negative outcomes, whereas adaptive strategies (planning, putting into perspective, positive reappraisal) show negative correlations with depression, anxiety, and stress. It can be concluded that the results indicate consistent patterns in line with theoretical expectations: personality traits are associated with cognitive emotion regulation strategies. In addition, cognitive emotion regulation strategies are related to students' emotional states.

Table 2

Correlations between the examined variables: personality traits, cognitive emotion regulation strategies, and depression, anxiety, and stress

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Neuroticism		-.37**	-.08	-.01	-.32**	.38**	.09	.40**	-.33**	-.09	.05	-.23**	.49**	.29**	.49**	.55**	.76**
2. Extraversion			.30**	.17*	.24**	-.12	.07	-.09	.21**	.19*	.05	.14	-.08	-.19*	-.38**	-.23**	-.27**
3. Openness to Experience				.06	.19*	.16*	.32**	.25**	.02	.45**	.15	.21**	-.00	.00	.01	.01	.01
4. Conscientiousness					-.00	-.10	.10	.06	.10	.26**	.16*	.13	.08	-.09	-.36**	-.14	-.02
5. Agreebleness						-.12	.12	.00	.22**	.17*	.15	.30**	-.07	-.20*	-.25**	-.25**	-.36**
6. Self-Blame							.42**	.44**	-.16*	.25**	.12	.02	.43**	.51**	.45**	.43**	.50**
7. Acceptance								.45**	.16*	.66**	.43*	.48**	.19*	.27**	.08	.16*	.14
8. Rumination									-.14	.34**	.29**	.11	.51**	.30**	.33**	.36**	.42**
9. Positive Refocusing										.31**	.19*	.55**	-.16*	-.13	-.32**	-.21**	-.33**
10. Planning											.42**	.56**	.02	.06	-.15	-.04	-.01
11. Putting into Perspective												.54**	.04	.01	-.07	.02	.06
12. Positive Reappraisal													-.13	-.12	-.20*	-.12	-.15
13. Catastrophizing														.40**	.32**	.40**	.50**
14. Blaming Others															.30**	.29**	.35**
16. Depression																.70**	.67**
16. Anxiety																	.77**
17. Stress																	

Note. $^{*}p < .05$; $^{**}p < .01$

Table 3

Mediating effect of cognitive emotion regulation strategies in the relationship between personality traits (X) and depression (Y)

X	M	b (X→M)	*p* (X→M)	b (M→Y)	*p* (M→Y)	Indirect effect	BootLLCI	BootULCI	*p*	b (X→Y)	*p* (M→Y)	R^2 (1)	R^2 (2)
Neuroticism	Self-Blame	.19	.00	.30	.00	0.14	0.04	0.25	.00	.43	.00	.27	.40
Extraversion	Self-Blame	-.09	.09	.25	.06	-0.07	-0.16	-0.01	.15	-.38	.00	.15	.39
	Planning	.15	.07	-.20	.08	-0.06	-0.15	0.00	.12	-.38	.00	.15	.39
Openness to Experience	Planning	-.25	.02	.22	.03	-0.17	-0.35	-0.02	.03	-.41	.00	.14	.34
Conscientiousness	Planning	-.24	.01	.28	.02	-0.09	-0.43	-0.06	.04	.12	.21	.04	.34
Agreebleness	Self-Blame	.07	.22	.18	.19	0.03	-0.04	0.10	.31	-.05	.31	.02	.34
	Planning	-.12	.11	-.15	.14	-0.05	-0.10	0.02	.18	-.05	.31	.02	.34

Note. X – personality traits (independent/predictor variable); M – mediator (cognitive emotion regulation strategies); Y – depression (dependent/outcome variable); b (X→M) – path coefficient from personality traits to the mediator; Indirect effect (X→M→Y) – indirect (mediated) effect of personality traits on depression through the mediator; BootLLCI/BootULCI – lower and upper bounds of the 95% confidence interval calculated using the bootstrap method; R^2 – coefficient of determination (explained variance) for the model with and without the mediator.

The mediation analysis indicates that cognitive emotion regulation strategies partially mediate the relationship between personality traits and depression. For neuroticism, self-blame is a significant mediator, while the direct effect of neuroticism on depression remains significant; the model including the mediator explains 40.3% of the variance in depression, compared to 27.4% when only neuroticism is considered. For extraversion, neither self-blame nor planning are statistically significant mediators, although the direct effect of extraversion negatively predicts depression; the model with mediators increases the explained variance from 15.7% to 39.3%. For the dimension of openness to experience, planning partially mediates the negative relationship with depression, while the direct effect remains significant, and the explained variance increases from 14.8% to 34.2%. In the case of conscientiousness, planning fully mediates the relationship with depression, as the direct effect is not significant, and the total model with the mediator explains 34.6% of the variance. For agreeableness, neither self-blame nor planning are significant mediators, and the direct effect is also not significant, while the model with mediators explains 34% of the variance in depression.

Table 4

Mediating effect of cognitive emotion regulation strategies in the relationship between personality traits (X) and anxiety (Y)

X	M	b (X→M)	*p* (X→M)	b (M→Y)	*p* (M→Y)	Indirect effect	BootLLCI	BootULCI	*p*	b (X→Y)	*p* (M→Y)	R^2 (1)	R^2 (2)
Neuroticism	Self-Blame	.19	.00	.34	.00	0.14	0.02	0.19	.00	.49	.00	.33	.41
	Planning	.10	.04	.22	.04	0.06	0.01	0.12	.04	.49	.00	.33	.41
Extraversion	Self-Blame	-.09	.09	.19	.11	-0.07	-0.16	-0.01	.15	-.20	.04	.08	.34
	Planning	.15	.07	-.18	.10	-0.06	-0.15	0.00	.12	-.20	.04	.08	.34
Openness to Experience	Planning	-.25	.02	.26	.02	-0.17	-0.35	-0.02	.03	-.41	.00	.14	.34
Conscientiousness	Planning	-.24	.01	.28	.02	-0.09	-0.43	-0.06	.04	.12	.21	.04	.34
Agreeableness	Self-Blame	.07	.22	.17	.18	0.03	-0.04	0.10	.31	-.05	.30	.02	.34
	Planning	-.12	.11	-.14	.15	-0.05	-0.10	0.02	.18	-.05	.30	.02	.34

Note. X – personality traits (independent/predictor variable); M – mediator (cognitive emotion regulation strategies); Y – depression (dependent/outcome variable); b (X→M) – path coefficient from personality traits to the mediator; Indirect effect (X→M→Y) – indirect (mediated) effect of personality traits on depression through the mediator; BootLLCI/BootULCI – lower and upper bounds of the 95% confidence interval calculated using the bootstrap method; R^2 – coefficient of determination (explained variance) for the model with and without the mediator.

The mediation analysis reveals different patterns of mediation by cognitive emotion regulation strategies in the relationship between personality traits and anxiety. For neuroticism, self-blame emerged as a significant mediator, while the direct effect of neuroticism on anxiety remained significant. Including the mediator increases the explained variance of the model from 33.1% to 41.6%, indicating partial mediation: neuroticism directly contributes to anxiety, but part of its effect occurs through self-blame.

Additionally, planning acts as an additional mediator for neuroticism with an indirect effect, suggesting a smaller yet significant mediating role of planning in the relationship between neuroticism and anxiety. For extraversion, the model with mediators increases the explained variance from 8.3% to 34.7%, indicating that the mediators contribute to the overall model variance, although individual mediators are not significant. For openness, planning is a significant mediator, and the model with the mediator explains 34.2% of the variance, indicating partial mediation. For conscientiousness, planning also partially mediates the relationship with anxiety, while the direct effect of conscientiousness is not significant. The total model with the mediator explains 34.6% of the variance, suggesting that the planning strategy transmits the effect of conscientiousness on anxiety. For agreeableness, the model with mediators explains 34% of the variance, indicating a minimal contribution of these strategies in predicting anxiety for agreeableness.

Table 5

Mediating effect of cognitive emotion regulation strategies in the relationship between personality traits (X) and stress (Y)

X	M	b (X→M)	*p* (X→M)	b (M→Y)	*p* (M→Y)	Indirect effect	BootLLCI	BootULCI	*p*	b (X→Y)	*p* (M→Y)	R^2 (1)	R^2 (2)
Neuroticism	Self-Blame	.19	.00	.31	.00	0.12	0.05	0.19	.00	.89	.00	.58	.64
	Planning	.10	.03	.20	.04	0.06	0.01	0.12	.04	.89	.00	.58	.64
Extraversion	Self-Blame	-.09	.09	.18	.11	-0.07	-0.16	-0.01	.15	-.27	.01	.10	.46
	Planning	.15	.07	-.17	.10	-0.06	-0.15	0.00	.12	-.27	.01	.10	.46
	Positive Refocusing	.15	.08	-.16	.09	-0.07	-0.14	0.00	.10	-.27	.01	.10	.46
Openness to Experience	Planning	-.11	.08	.15	.09	-0.05	-0.10	0.01	.09	-.46	.00	.12	.49
Conscientiousness	Planning	-.12	.11	-.14	.15	-0.05	-0.10	0.02	.18	-.46	.00	.12	.49
Agreebleness	Self-Blame	.18	.01	-.28	.01	-0.08	-0.18	-0.01	.00	-.46	.00	.12	.49

Note. X – personality traits (independent/predictor variable); M – mediator (cognitive emotion regulation strategies); Y – depression (dependent/outcome variable); b (X→M) – path coefficient from personality traits to the mediator; Indirect effect (X→M→Y) – indirect (mediated) effect of personality traits on depression through the mediator; BootLLCI/BootULCI – lower and upper bounds of the 95% confidence interval calculated using the bootstrap method; R^2 – coefficient of determination (explained variance) for the model with and without the mediator.

The mediation analysis indicates that cognitive emotion regulation strategies partially mediate the relationship between certain personality traits and stress levels. For neuroticism, self-blame is a significant mediator. The direct effect of neuroticism on stress remains significant, indicating that neuroticism influences stress independently of regulation strategies.

Mediation through planning is also significant, although the effect is smaller, suggesting that the planning strategy partially transmits the effect of neuroticism on stress. Including the mediators increases the explained variance in stress from 58.6% to 64.9%. The direct effect of extraversion is negative and statistically significant. The model with mediators increases the explained variance from 10.4% to 46.5%, indicating that mediators still contribute to the overall explained variance, although the effects of individual mediators are not significant.

Similarly, the direct effect of openness to experience is negative and statistically significant, with the model explaining 49.7% of the variance in stress. For the personality trait agreeableness, self-blame is the only significant mediator. The direct effect of agreeableness is negative and significant. The total model including the mediator explains 49.7% of the variance in stress.

Discussion

The study was based on the assumption that cognitive emotion regulation strategies mediate the relationship between personality traits and students' mental health, operationalized through symptoms of depression, anxiety, and stress in the academic environment.

The results indicate that personality traits are associated with students' psychological functioning, with their effects being partially exerted through cognitive emotion regulation strategies.

Neuroticism, linked to heightened emotional reactivity and chronic negative affect (Schneider, 2004; Amestoy, D'Amico & Fiocco, 2023; Grady, Manning, Steffens & Wu, 2023; Lahey, 2009; Ormel et al., 2013), emerged as the strongest predictor of emotional distress.

The model shows that the relationship is not direct, but mediated by self-blame: students with high neuroticism tend to attribute academic failures to their own shortcomings, which intensifies emotional distress.

Research indicates that this combination of affective reactivity and maladaptive cognitive processing is a key factor in the development of depressive symptoms (Joormann & Stanton, 2016).

A meta-analysis (Aldao, Nolen-Hoeksema & Schweizer, 2010) confirmed that strategies such as self-blame and rumination are among the strongest predictors of depression, often exerting a greater effect than personality traits themselves. Our findings support this model: neuroticism on its own is a risk factor, but its effect on depressive symptoms is significantly mediated by the way an individual cognitively processes emotional experiences.

Extraversion, conscientiousness, agreeableness, and openness play a protective role against psychological distress, partially mediated by adaptive emotion regulation strategies. Students high in extraversion and openness more often use planning and positive refocusing to cope better with academic stress.

The results showed that students with high scores in extraversion and openness to experience more frequently use strategies such as planning and positive refocusing, which enable more effective coping with academic stressors.

Our findings indicate that higher extraversion is associated with lower levels of depression, consistent with previous research showing that extraverted individuals, due to more positive emotional reactivity, exhibit greater psychological resilience (Kendler et al., 2006; Naragon-Gainey & Watson, 2014). At the same time, such individuals more frequently use planning as a strategy. Planning allows proactive problem-solving, reducing feelings of helplessness and negative affect (Dahlen & Martin, 2005; Aldao et al., 2010).

A similar pattern was observed for openness to experience, where the only significant mediating effect was through planning. Students high in openness to new experiences, ideas, and perspectives have greater cognitive resources and a more flexible approach to situations, which makes them more likely to actively plan their behavior for emotional regulation.

In this study, conscientiousness and agreeableness also showed a protective function regarding depressive symptoms, with part of this effect occurring indirectly.

Although the results do not highlight specific strategies as significant mediators, previous studies indicate that conscientiousness is often associated with the use of planning, positive reappraisal, and acceptance, which are linked to lower intensity of depressive symptoms (Dahlen & Martin, 2005; Garnefski & Kraaij, 2007).

Although this model does not show a direct link with depressive symptoms, an indirect effect is observed, indicating that students high in agreeableness more often use adaptive strategies (Garnefski et al., 2005; Denkova et al., 2012).

The study results also indicate that personality traits, particularly neuroticism and extraversion, make a significant contribution to explaining individual differences in the expression of anxiety among students. In addition to the direct effects of these traits, self-blame mediates their impact, highlighting the importance of cognitive processing of stress for anxiety symptoms.

Neuroticism has long been associated with heightened emotional reactivity and a tendency toward negative emotions (Ormel et al., 2013; Lahey, 2009).

Although this trait directly predicts higher levels of anxiety, a significant portion of this relationship occurs through self-blame. Students with high neuroticism tend to interpret stressful events in ways that further increase their distress. As expected, lower levels of extraversion are associated with higher anxiety, while higher extraversion has a protective effect.

However, this relationship is not solely direct; it is partially mediated by the use of self-blame. Higher extraversion is associated with less frequent use of negative strategies, greater psychological resilience, and better coping with academic stressors. Regarding stress prediction, neuroticism emerged as the strongest predictor. Individuals high in neuroticism tend to perceive neutral or moderately challenging situations as threatening and difficult to control (Lahey, 2009; Ormel et al., 2013).

Extraversion, on the other hand, is associated with lower stress levels, part of which is explained by a greater tendency for positive refocusing and reduced use of self-blame. Extraverted individuals more often perceive stressful events as challenges rather than threats, which allows them to maintain positive affect and greater emotional resilience (Tugade & Fredrickson, 2004).

Positive refocusing reduces the perception of stress by shifting attention from negative aspects to useful or pleasant elements of the situation. Agreeableness is also negatively associated with stress, with positive refocusing emerging as a significant mechanism that partially explains this relationship. Although in some models individual emotion regulation strategies did not achieve statistically significant mediating roles, their cumulative inclusion significantly increased the explained variance of depression, anxiety, and stress. This finding indicates that cognitive emotion regulation strategies make an important overall contribution to understanding students' psychological functioning.

The results further illuminate the mechanism through which personality traits contribute to psychological functioning. For example, the finding that neuroticism operates through self-blame suggests that the trait itself is not sufficient to explain distress; rather, the way individuals cognitively interpret experiences serves as a key mediator.

This contributes to a more precise understanding of the relationship between relatively stable dispositions and variable cognitive processes, carrying significant theoretical and practical implications. However, the findings should be interpreted in light of certain limitations. First, the sample was disproportionate in terms of gender, with a higher representation of women, which may affect the generalizability of the results.

Additionally, data were collected via online questionnaires, which carries the risk of self-report bias and limited control over the conditions under which participants completed the instruments.

These findings have significant practical implications for higher education, particularly in the areas of pedagogical practice, student support, and the promotion of mental health in academic settings.

Higher education institutions should not focus solely on academic achievement but also on the development of students' emotional and self-regulation skills.

Additionally, the results of this study have implications for teachers and academic staff, highlighting the importance of a pedagogical climate that encourages a constructive approach to academic failures. Reducing the transmission of implicit messages that promote self-blame can also contribute to the preservation of students' mental health.

Considering the above, the findings of this study can serve as an empirical basis for improving student policies, support programs, and pedagogical practices in higher education. Additionally, future research could examine the effects of specific interventions aimed at developing adaptive emotion regulation strategies to determine their effectiveness in reducing psychological distress among students.

Conclusion

The results of the study highlight the significant role of personality traits in explaining symptoms of depression, anxiety, and stress among students, with cognitive emotion regulation strategies playing an important mediating role. Neuroticism stands out as a strong predictor of psychological vulnerability in the academic environment, while extraversion, conscientiousness, agreeableness, and openness to experience serve a protective function.

The findings indicate that maladaptive strategies, such as self-blame, amplify negative emotional states, whereas adaptive strategies, such as planning and positive refocusing, contribute to the reduction of psychological distress.

These results confirm that emotion regulation is a key mechanism for students' adjustment to academic demands and stressors.

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