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Original research paper

TEST ANXIETY, COPING, AND ACADEMIC ACHIEVEMENT: MALADAPTIVE PERFECTIONISM AS A MODERATOR

Ana Genc*

University of Novi Sad, Faculty of Philosophy, Department of Psychology, Serbia

ABSTRACT

The educational process is saturated with evaluative situations, which often provoke a specific subtype of anxiety known as test anxiety. Since test anxiety is not a reliable direct predictor of achievement, contemporary research has consistently highlighted the need to explore how this situation-specific trait indirectly affects success through various mediation and moderation processes. The goal of this study was to determine the existence and nature of complex moderated and mediated relationships between the level of test anxiety, coping mechanisms, maladaptive perfectionism, and academic achievement. The survey was conducted on a sample of 263 students. The instruments used for data collection included the Test Anxiety Inventory, the Coping Inventory for Task Stress, and the Discrepancy subscale from the Almost Perfect Scale-Revised. Academic success was expressed through the number of points achieved on a pre-exam knowledge test. According to the results, maladaptive perfectionism proved to be a statistically significant moderator in the relationship between test anxiety and avoidance as a coping mechanism. In students with moderate maladaptive perfectionism, test anxiety indirectly predicted lower achievement through emotion-focused coping mechanisms. In subjects with high levels of maladaptive perfectionism, test anxiety indirectly predicted better performance through avoidance. The article discusses educational guidelines for reducing the negative effects of test anxiety and maladaptive perfectionism on achievement.

Key words:

test anxiety, coping, maladaptive perfectionism, academic achievement, students.

* E-mail: agenc@ff.uns.ac.rs

■ INTRODUCTION

Evaluative situations in which knowledge and skills are tested are omnipresent in the lives of students (Ne’Eman-Haviv & Bonny-Noach, 2019). Considering that they often significantly contribute to the youth’s professional development, they commonly induce heightened levels of a specific subtype of anxiety known as test anxiety (Akar, Doğan & Üstüner, 2018). Test anxiety is a complex, multidimensional, situation-specific trait that represents a set of phenomenological, physiological, and behavioral reactions accompanied by concern about possible failure on the exam and potential, consequent, long-term negative consequences (Putwain & Symes, 2018; Zeidner, 1998). Individuals who are prone to intense anxiety before, during, and after knowledge evaluation exhibit signs of greater activation of the autonomic nervous system as well as various cognitive, emotional, and behavior problems including intrusive thoughts, difficulties in reproducing and organizing relevant information, doubts about one’s own competence, fear, helplessness, and an urge to escape the unpleasant situation (Erceg Jugović & Lauri Korajlija, 2012; Klug, Tolgou, Schilbach & Rohrmann, 2021; Mavilidi, Ouwehand, Riley, Chandler & Paas, 2020). Thus conceptualized text anxiety can be methodologically treated as a particular kind of stressor (Stöber, 2004).

According to the results of a meta-analysis (von der Embse, Dane, Devlina & James, 2018) test anxiety negatively correlates with indicators of academic achievement, such as the grade point average and achievement on standardized tests. However, certain studies have suggested that test anxiety in itself is a relatively weak *direct* predictor of academic achievement (Cohen, Ben-Zur & Rosenfeld, 2008; Owens, Stevenson, Hadwin & Norgate, 2014). It would appear that mechanisms for coping with evaluative stress (particularly emotion-focused strategies) constitute significant mediator variables in the relation between test anxiety levels and cognitive performance (Ader & Erktin, 2010; Genç, 2017). Furthermore, it has been shown that students with test anxiety are particularly prone to avoidance behaviors, especially procrastination (Burcaş & Creţu, 2020; Pate *et al.*, 2021; Wuthrich, Jagiello & Azzi, 2020).

Therefore, based on empirical research focusing on the relation between test anxiety and academic achievement, it is impossible to claim with certainty that there is a causal link between these two phenomena (Erceg Jugović & Lauri Korajlija, 2012). That is why many contemporary researchers have chosen to study the mediation and moderation effects of other variables that potentially shape the complex relationship between these two scientific concepts (Rice, Ray, Davis, DeBlaere & Ashby, 2015). In this context, the most commonly studied mediator and moderator variables include the abovementioned coping mechanisms as well as certain (relatively) stable personal dispositions, such as neuroticism, optimism, locus of control, and self-efficacy (Colodro, Godoy-Izquierdo & Godoy, 2010; Matthews *et al.*, 2006;

Thompson & Gaudreau, 2008). The past three decades have seen a considerable rise in perfectionism (Curran & Hill, 2019), with substantial empirical data indicating a positive link between certain forms of perfectionism and test anxiety. Hence, it comes as no surprise that education researchers and practitioners have shown a growing interest in the potential moderator role of perfectionism forms in the relationship between evaluation anxiety and academic success (Burcaş & Creţu, 2020; Kurtović & Baborac, 2017; Linnett & Kibowski, 2020; Overholser & Dimaggio, 2020).

Perfectionism is most commonly defined as a tendency towards setting exceptionally high personal standards, with the constant presence of concern about actual and subjectively perceived mistakes, along with overwhelming dissatisfaction with any success that is less than perfect (Abdollahi, 2019; Linnett & Kibowski, 2020; Milojević, Stojiljković, Todorović & Kašić, 2009). Perfectionists nearly obsessively strive to meet their megalomaniacal expectations and almost exclusively perceive their own worth through the prism of achievement. Since in reality, perfection is unattainable, perfectionists are often plagued by negative autoreferential thoughts and feelings (Hewitt, 2020; Osenk, Williamson & Wade, 2020; Smith *et al.*, 2022).

The study of perfectionism has progressed significantly with the introduction of its multidimensional conceptualization, which recognizes two higher-order dimensions of this phenomenon: adaptive and maladaptive perfectionism (Dunkley, Starrs, Gouveia & Moroz, 2020; Thakre & Sebastian, 2021, Stojiljković, Todorović, Dosković & Todorović, 2011). Although different theoretical models use different terms for negative perfectionism (perfectionistic concerns, evaluative concerns, self-critical perfectionism, and discrepancy), conceptual similarities between them far outweigh the differences, which justifies the use of *maladaptive perfectionism* as an umbrella term (Woodrum & Kahn, 2022).

Adaptive perfectionists set high personal standards, but do not judge themselves in situations in which they fail to meet their own expectation nor do they experience a decrease in motivation for future cognitive tasks (Thakre & Sebastian, 2021). Conversely, maladaptive perfectionists often set unattainably high personal goals and they are extremely self-critical when their pursuit of perfection proves unsuccessful (Moate, Gnilka, Westa & Rice, 2019). These individuals are constantly afraid of making mistakes and doubt their own abilities. They are primarily motivated by their fear of failure, they are often overcome by shame and guilt in the face of (subjectively perceived) failure, and they worry about the potentially unfavorable opinions others might have of them (Abdollahia, Faraba, Panahipourb & Allenc, 2020; Dunkley *et al.*, 2020; Kurtović, Vrdoljak & Idžanović, 2019). Even when their achievements are admirable, they are dissatisfied with themselves and they are highly prone to a dichotomous way of thinking: “If I am not perfect, I am worthless” (Erceg Jugović & Lauri Korajlija, 2012). In terms of coping mechanisms, maladaptive perfectionists most often use avoidance behaviors and they are particularly inclined to delay

academic tasks, exhibiting a tendency towards the form of self-handicapping known as procrastination (Abdollahia *et al.*, 2020; Kurtović *et al.*, 2019).

The results of extant research suggest that maladaptive perfectionism has significant direct and indirect (moderation and moderation-mediation) effects on experiencing bio-psycho-social consequences in various kinds of stressful transactions (Hewitt, 2020; Linnett & Kibowski, 2020). It contributes to signs of burnout, emotional dysregulation, lower levels of emotional wellbeing, interpersonal problems, and generally heightened stress levels (Kamushadze, Martskvishvili, Mestvirishvili & Odilavadze, 2021; Madigan, 2019; Moate *et al.*, 2019). Likewise, numerous studies have decisively demonstrated a positive link between maladaptive perfectionism and various psychopathological categories, such as eating disorders, obsessive-compulsive disorder, agoraphobia, panic disorder, social phobia, narcissistic personality disorder, and depression (Limburg, Watson, Hagger & Egan, 2017; Overholser & Dimaggio, 2020; Smith *et al.*, 2022; Starley, 2019).

In the educational context, research has established links between perfectionism dimensions and their various predictors, correlates, and outcomes (Burcaş & Crețu, 2020). In most studies, correlations between negative perfectionism and indicators of cognitive success have been ambiguous (Smith *et al.*, 2022). Although Madigan's (2019) recent meta-analysis speaks in favor of the existence of a statistically significant (although weak) negative correlation between maladaptive perfectionism and both achievement on individual exams and the grade point average, not all relevant studies have identified these regularities (Brown *et al.*, 1999; Grzegorek, Slaney, Franze & Rice, 2004).

In the context of this paper, of particular importance is the study conducted by Osenk and colleagues (2020). Examining the links between different perfectionism subtypes and indicators of academic achievement, the authors assessed perfectionism using subscales from three different questionnaires. Each of the employed instruments operationalized perfectionism dimensions in slightly different ways. To assess maladaptive perfectionism, the authors used subscales from the *Frost Multidimensional Perfectionism Scale* (FMPS, Frost *et al.*, 1990) and Hewitt and Flett's *Multidimensional Perfectionism Scale* (MPS, Hewitt & Flett, 1991), along with the Discrepancy dimension from the *Almost Perfect Scale-Revised*, APS-R, Slaney, Rice, Mobley, Trippi & Ashby, 2001). Slaney defines discrepancy as a sense of inconsistency between high personal standards and the perception of one's actual achievement. The abovementioned study found no statistically significant negative correlations between most measures of maladaptive perfectionism and academic achievement. However, the Discrepancy subscale proved to be an important predictor of poor grades, heightened test anxiety, tendency towards procrastination, and dissatisfaction with one's achievement. Therefore, it would seem that maladaptive perfectionism operationalized using the Discrepancy subscale has the most harmful effects in the

educational context. Thus, the present research employed this dimension of the Almost Perfect Scale as the measure of an unhealthy pursuit of perfection.

Reviewing the literature on the scientific constructs encompassed by this research, we found only several sufficiently broad and comprehensive studies that simultaneously analyzed test anxiety, coping mechanisms, maladaptive perfectionism, and academic achievement. Most research designs thus far have encompassed only some of the abovementioned variables. Due to this molecular approach, findings in this domain have taken the form of a fragmented mosaic, failing to offer a sufficiently clear and coherent picture of the problem at the molar level. Striving to overcome this flaw, this study aimed to examine the complex interrelations among the examined variables that coexist within real-life situations. Accordingly, the research problem was formulated in the following manner: What are the relations between the experience of test anxiety, mechanisms for coping with this kind of evaluative stress, maladaptive perfectionism (operationalized through the concept of discrepancy), and academic achievement (achievement on a midterm exam)? In the model designed for the purpose of this research, the stressor was the level of test anxiety experienced while taking the midterm exam, coping mechanisms were assumed to act as mediator variables, while discrepancy was the hypothesized moderator variable that changed the direction and strength of correlations between the stressor and the mediators, between coping strategies and achievement on the midterm exam as the output variable, and between test anxiety and achievement on the midterm exam.

■ METHOD

Research Sample and Organization

The research was conducted on a convenient sample comprising 263 students of the Department of Psychology ($n = 156$) and the Department of German Studies ($n = 107$) at the Faculty of Philosophy in Novi Sad. The sample was heterogenous in terms of gender (most participants were female students – $n = 230$) and participant age ranged from 19 to 24 years ($AM = 23.32$, $SD = .91$).

The data were collected during a midterm exam. Such an evaluative situation is viewed as an actual stressful situation for most students (Burcaş & Creţu, 2020), since achievement on midterm exams greatly contributes to the final grade in a course. Before taking the knowledge test, students filled out the TAI, which allowed for the assessment of the level of test anxiety immediately before the evaluative situation. Immediately after taking the exam, participants filled out the questionnaire for the

assessment of coping strategies that they relied on during the evaluative situation, along with the Discrepancy subscale from the APS-R. Achievement on the midterm exam was expressed in the number of points scored on the knowledge test.

After giving the standard instructions for the introduction into the test situation, we particularly emphasized that participation was anonymous and voluntary (all participants have their written consent).

Instruments

To measure **test anxiety**, we employed *the Test Anxiety Inventory* (TAI, Spielberger, 1980);¹, which is considered to be the most commonly used instrument for identifying test anxiety levels in high school and university students (Szafranski, Barrera & Norton, 2012). The questionnaire was translated into Serbian by Genc (2017). The TAI comprises 20 items („The thought that I might do badly interferes with my concentration during exams.“). Responses are given on a four-point Likert-type scale. Participants were asked to determine whether and to what extent they experienced the emotions and thoughts described in statements in the given test situation (1 – not at all, 4 – completely). On our sample, Cronbach’s alpha coefficient of internal consistency was .92 for the entire scale.

To measure **stress coping strategies**, we used the *Coping Inventory for Task Stress* (CITS, Matthews & Campbell, 1998). The instrument is free to use and it has been translated into Serbian (Genc, 2017). This questionnaire differs from most coping assessment instruments in that the items directly relate to coping with situations that involve performing various cognitive tasks. This makes the CITS particularly suitable for identifying attempts to overcome test anxiety. The CITS includes 21 statements distributed across three subscales: Task-Focused Coping (“I have worked out a strategy for successful performance.”), Emotion-Focused Coping (“I blamed myself for becoming too emotional.”), and Avoidance (“I acted as though the task was not important.“) (Matthews *et al.*, 2006). The instrument employs a five-point Likert-type scale. Participants were expected to state to what extent they relied on certain strategies for coping with test anxiety while taking the midterm exam (0 – not at all, 4 – almost the entire time). On our sample, Cronbach’s alpha coefficient was .80 for the Task- Focused Coping subscale, .85 for the factor operationalizing Emotion- Focused Coping, and .77 for the Avoidance dimension.

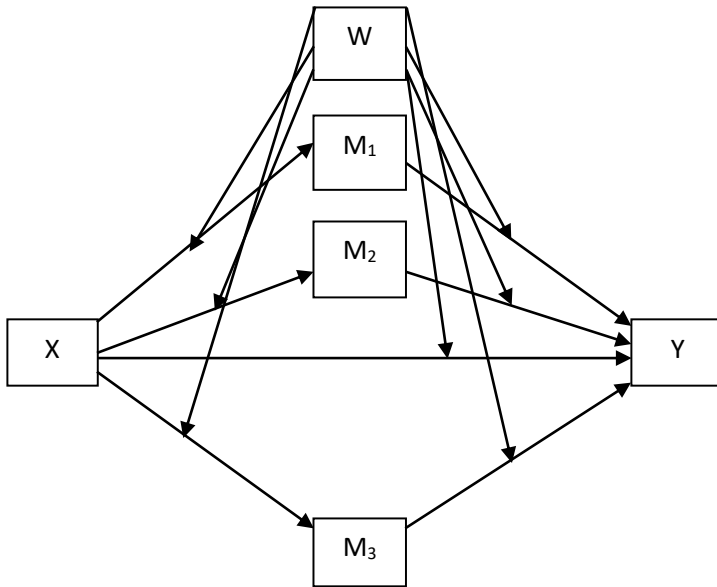
¹ The use of the TAI was approved by the official distributor of this questionnaire (Mind Garden, Inc.).

To measure **maladaptive perfectionism**, we employed the Serbian adaptation of the Discrepancy subscale from *the Almost Perfect Scale-Revised* (APS-R, Slaney, Rice, Mobley, Trippi & Ashby, 2001; Genc, 2018), which comprises 12 items, with responses provided on a seven-point Likert-type scale (1 – I completely disagree, 7 – I completely agree). Participants with high scores on this dimension set particularly high personal standards, but they are overwhelmed by the feeling that they are not able to meet their own expectations (“I am not satisfied even when I know I have done my best.”). On our sample, Cronbach’s alpha reliability coefficient was .94 for the Discrepancy subscale.

Statistical Data Processing

For statistical data processing, we used SPSS for Windows, v. 15.0, and the PROCESS macro (Hayes, 2013). In line with the research problem, we conducted a moderated mediation analysis. This form of a conditional process analysis is used to determine whether the moderator variable alters the mediated relations between the examined variable sets and identify the moderator level at which statistically significant moderated mediation can be observed (Hayes, 2013). The data were processed using the PROCESS macro, with the employment of Model 59 (Figure 1). This model is used to determine whether and at what level the moderator variable modifies: a) relations between the input variable and the mediators, b) relations between the mediators and the output variable, c) the direct relation between the input variable and the output variable in the presence of the mediators, and d) all indirect relations between the input variable and the output variable established through mediator effects. We corrected for heteroscedasticity and based significance evaluations on bootstrapping ($K = 5000$).

Figure 1: The Statistical Diagram of the Moderated Mediation Analysis



Note. X – Input Variable (Test Anxiety); M_1 – Mediator 1 (Task- Focused Coping); M_2 – Mediator 2 (Emotion- Focused Coping); M_3 – Mediator 3 (Avoidance); Y – Output Variable (Achievement on the Midterm Exam); W – Moderator Variable (Discrepancy).

■ RESULTS

Table 1 shows descriptive indicators in the form of raw scores for all the variables measured in the present research. The values of skewness and kurtosis indicated no violations of the statistical assumptions necessary for conducting further analysis.

Table 1: Descriptive Statistics for the Measured Variables (Test Anxiety, Task-Oriented Coping, Emotion-Oriented Coping, Avoidance, Discrepancy, and Achievement on the Midterm Exam)

Variable	AM	SD	Sk	Ku	Min	Max
Test Anxiety	46.11	12.25	.22	-.58	20	78
Task- Focused Coping	18.68	5.20	-.57	-.04	1	28
Emotion- Focused Coping	8.65	6.37	.76	.10	0	28
Avoidance	5.32	4.87	1.36	1.63	0	25
Discrepancy	38.45	15.78	.53	-.39	12	79
Achievement	69.29	21.15	-.69	-.20	6.52	100

Note: AM – Arithmetic Mean; SD – Standard Deviation; Sk – Skewness; Ku – Kurtosis; Min – Minimum; Max – Maximum

Prior to the main statistical analyses, we tested the multicollinearity of all the measured variables. The obtained results showed that even when simultaneously observing test anxiety as the predictor, all three categories of coping mechanisms as the mediators, and discrepancy as the moderator within the same analysis, VIF coefficients did not exceed the most commonly used critical values (5 or 10, v. Kutner, Nachtsheim, Neter & Li, 2004). Among the measured variables, the highest value was 1.69. Accordingly, we determined that the multicollinearity of the variables did not significantly affect the results of the research presented in this paper.

Based on the obtained results, discrepancy did not prove to be a statistically significant moderator ($B = .001$, $p = .0588$; 95% CI [-.003, .005]) of the relations between test anxiety and task-focused coping mechanisms. In this operationalization, maladaptive perfectionism also failed to statistically significantly moderate ($B = -.001$, $p = .533$; 95% CI [-.005, .003]) the relations between test anxiety and emotion-focused coping strategies. The results indicated that discrepancy performed the role of the moderator ($B = -.003$, $p = .041$; 95% CI [-.006, -.000]) in the relation between test anxiety and avoidance. However, this moderation proved statistically significant only when discrepancy levels were high ($B = -.060$, 95% CI [-.115, -.005]) or very high ($B = -.096$, 95% CI [-.173, -.018]). Therefore, the higher the discrepancy levels were, the lower the avoidance levels were as predicted by test anxiety.

In the subsequent part of the analysis, we examined the moderator role of discrepancy in the effects of test anxiety ($B = -.002$, $p = .783$; 95% CI [-.020, .015]), task-focused coping strategies ($B = .014$, $p = .413$; 95% CI [-.019, .046]), emotion-focused coping mechanisms ($B = .007$, $p = .750$; 95% CI [-.034, .048]), and avoidance

($B = -.007, p = .728; 95\% \text{ CI } [-.045, .031]$) on achievement on the midterm exam. The obtained results showed that none of the examined relations changed significantly depending on discrepancy levels.

In our **moderated mediation analysis**, the level of test anxiety was the input variable (X in Figure 1), the three categories of coping mechanisms were the mediators ($M_1, M_2,$ and M_3), achievement on the midterm exam was the output variable (Y), while discrepancy was hypothesized to be the moderator of all the assumed relations (W).

The results of the moderated mediation analysis are presented in Table 2. It is evident that test anxiety had no statistically significant indirect effects on achievement on the knowledge test mediated by task-focused coping strategies and depending on the level of discrepancy as the moderator variable. The basis for this conclusion can be found in the presented CI values, which indicate the absence of statistically significant relations at all levels of maladaptive perfectionism.

Table 2: Indirect Effects of Test Anxiety on Achievement on the Midterm Exam Mediated by Task- Focused Coping Mechanisms, Depending on Discrepancy Levels

Moderator Level (Discrepancy)	B	Standard Error	95% CI	
			Lower	Upper
Very low (the 10th percentile)	-.001	.024	-.066	.042
Low (the 25th percentile)	.002	.020	-.032	.055
Moderate (the 50th percentile)	.009	.020	-.023	.060
High (the 75th percentile)	.022	.031	-.027	.102
Very high (the 90th percentile)	.039	.057	-.043	.195

Note: B – unstandardized indirect effect at the given moderator level; 95% CI – confidence interval of effect size.

Moderator levels were as follows: the 10th percentile – a very low level of Discrepancy, the 25th percentile – a low level of Discrepancy, the 50th percentile – a moderate level of Discrepancy, the 75th percentile – a high level of Discrepancy, and the 90th percentile – a very high level of discrepancy.

Table 3 presents the results on the indirect effect of test anxiety on achievement on the midterm exam mediated by emotion-focused coping, depending on the level of discrepancy as the moderator. Observing the values of the lower and upper CI, it is clear that the signs only match at the moderate moderator level. Therefore, a statistically significant indirect relation was only observable at this level of discrepancy, while the effect was not statistically significant at other moderator levels. The negative values of the B coefficient indicate a negative relation between test anxiety and achievement on the midterm exam, mediated by emotion-focused coping mechanisms.

Table 3: Indirect Effects of Test Anxiety on Achievement on the Midterm Exam Mediated by Emotion-Focused Coping Mechanisms, Depending on Discrepancy Levels

Moderator Level (Discrepancy)	B	Standard Error	95% CI	
			Lower	Upper
Very low (the 10th percentile)	-.198	.153	-.552	.048
Low (the 25th percentile)	-.179	.114	-.445	.007
Moderate (the 50th percentile)	-.153	.077	-.323	-.022
High (the 75th percentile)	-.122	.083	-.291	.032
Very high (the 90th percentile)	-.096	.123	-.350	.128

Note: B – unstandardized indirect effect at the given moderator level; 95% CI – confidence interval of effect size.

Table 4 presents the results on the indirect effect of test anxiety on achievement on the midterm test mediated by avoidance behaviors, depending on the level of discrepancy as the moderator. The positive values of the CI indicated that a statistically significant correlation was only observable at high and very high levels of discrepancy as the moderator variable. The positive B coefficient at these two moderator levels revealed the existence of a positive indirect correlation between test anxiety and achievement on the midterm exam, mediated by avoidance. This indirect correlation was stronger at the very high level of discrepancy.

Table 4: Indirect Effects of Test Anxiety on Achievement on the Midterm Exam Mediated by Avoidance, Depending on Discrepancy Levels

Moderator Level (Discrepancy)	B	Standard Error	95% CI	
			Lower	Upper
Very low (the 10th percentile)	-.027	.040	-.134	.038
Low (the 25th percentile)	-.008	.033	-.077	.058
Moderate (the 50th percentile)	.022	.028	-.025	.089
High (the 75th percentile)	.068	.040	.009	.170
Very high (the 90th percentile)	.116	.073	.011	.314

Note: B – unstandardized indirect effect at the given moderator level; 95% CI – confidence interval of effect size.

■ DISCUSSION

In this study, we aimed to determine whether and at what levels discrepancy as a specific form of maladaptive perfectionism modified the direction and/or strength of the existing complex relations among the examined variables: test anxiety, strategies for coping with evaluative stress, and academic achievement measured through achievement on a midterm exam.

In accordance with the research problem, our primary interest lies in the results on the moderated and mediated relations. Still, we also take into account the findings on *regular moderation effects*. In this study, discrepancy moderated the relation between test anxiety and avoidance, but the correlation was statistically significant only at high and very high discrepancy levels. Furthermore, the higher the discrepancy levels were, the lower the avoidance levels were as predicted by test anxiety. Therefore, students who were distressed and concerned about possible failure before the exam and were prone to self-discrediting due to high levels of maladaptive perfectionism (“It seems that even when I do my best, it is not enough.”, “I rarely manage to meet the high standards I set for myself.”) did not choose coping strategies from the avoidance category. This finding may seem surprising at the first glance. Namely, studies have relatively consistently shown that in threatening situations, maladaptive perfectionists most commonly use avoidance, or more precisely, procrastinations as a specific form of avoidance (Abdollahia *et al.*, 2020; Dunn, Whelton & Sharpe, 2006; Kurtović *et al.*, 2019; Smith *et al.*, 2022). Procrastination is defined as unnecessary, conscious delaying of tasks in spite of the person’s painful awareness of the negative consequences of this self-handicapping

behavior (Coutinho, Menon, Ahmed & Fredricks-Lowman, 2022; Sederlund, Burns & Rogers, 2020). This irrational tendency towards postponing positively correlates with characteristics of maladaptive perfectionism such as hesitation and fear of mistakes, thus contributing to lower levels of academic achievement (Zhang, Bai & Yang, 2022). Referring back to the items encompassed by the Avoidance dimension of the questionnaire we used to assess coping (CITS), it is clear that they do not contain even the slightest hint of participants relying on procrastination when coping with test anxiety. Most items within this subscale describe cognitive mechanisms of minimizing the importance of the evaluative situation and one's achievement in the given context ("I told myself that the test is not worth stressing over," "I acted as though the task was not important."). Hence, the CITS does not operationalize the avoidance type that has so far proven to be the most common coping strategy among individuals with high discrepancy levels. From a logical point of view, it does seem unlikely for a student with high test anxiety and low satisfaction with personal abilities and achievement, which increase rumination over these unpleasant thoughts, to somewhat leisurely minimize the importance of a midterm exam and personal achievement on the exam. Furthermore, this raises the question of how exactly the items should be formulated to assess procrastination in the time-limited situation of taking an exam. Considering the fact that by definition, procrastination involves a longer period of delaying academic tasks, it would seem that its identification would require focusing on a longer time interval encompassing the processes of studying and preparing for the exam. However, if a researcher still wanted to attempt to measure certain forms of procrastination during acute evaluative stress, it would seem at least slightly more adequate to choose statements that pertain to students' tendency to delay giving answers to exam questions until the very last moment.

The **moderated mediation analysis** yielded the most significant findings, given that its results simultaneously reflected the interrelations among all the examined phenomena. We found that test anxiety indirectly, through emotion-focused coping mechanisms, predicted lower levels of achievement on the midterm exam only among students with moderate levels of discrepancy. At all other levels of this unhealthy form of perfectionism, this regularity failed to reach statistical significance. In line with previous findings, our results showed that heightened test anxiety before the evaluation situation combined with a focus on (unpleasant) emotions during the very exam contributed to lower achievement levels (e.g., Genc, 2017). With the introduction of a moderate tendency towards maladaptive perfectionist reasoning into the model, the situation remained equally unfavorable for participants, that is, they still had low scores on the knowledge test. Moreover, most studies have shown that maladaptive perfectionists tend to exhibit lower levels of academic achievement (Madigan, 2019; Osenk *et al.*, 2020). According to the obtained results, it would seem that a moderate tendency towards self-criticism and dissatisfaction with personal abilities somewhat contribute to the negative effects of test anxiety and an orientation

towards unpleasant feelings on achievement. The fact that the present study only identified statistically significant indirect negative effects at moderate discrepancy levels does not necessarily suggest that high levels of maladaptive perfectionism do not negatively affect achievement on an exam. According to a possible interpretation, it is probable that other relevant intervening variables (which were not assessed in this research, such as motivation for achievement, other personality traits, and intelligence) were dominant and thus masked the predictive contribution of maladaptive perfectionism. Likewise, we cannot rule out the possibility that the absence of a significant moderated mediation effect of discrepancy at other levels represented a sort of a statistical artefact as a possible consequence of insufficient sample size. To avoid speculation and offer a more reliable and precise interpretation of this finding, it would be advisable to increase the statistical strength of the finding, that is, to conduct the same analysis on a larger student sample.

We further found that heightened test anxiety mediated by avoidance indirectly predicted higher achievement levels, but only in students with high and very high levels of discrepancy. Moreover, students with very high discrepancy levels exhibited higher levels of achievement than students with high discrepancy levels. Within the previously discussed moderated mediation analysis, we determined that students with heightened evaluative anxiety and high or very high maladaptive perfectionism rarely chose coping strategies from the avoidance category. However, based on the results of the analysis, it would seem that students who are particularly anxious about a specific exam and particularly prone to self-criticism and dissatisfaction with personal achievement manage to relax if they convince themselves that the task is not overly important and should not be taken too seriously. The minimization of the importance of the exam situation contributes to cognitive reevaluation of the stressor, making the experience of taking the knowledge test seem less daunting. It is probable that this relaxation mainly affects the aspect of perfectionism related to an increased investment of effort into achieving outstanding success, thus freeing up the cognitive capacities that were previously in charge of negative autoreferential thoughts and diminishing the undesirable effects of the fear of failure. The resulting cognitive-emotional state allows the student to focus on the exam and manage to offer quality answers on the knowledge test. Therefore, this research revealed the (at least short-term) protective role of the kind of avoidance assessed using the CITS.

This interpretation of this result can be substantiated by frequently confirmed empirical findings. Namely, it is well known that persons with high discrepancy levels often have automatic thoughts relating to the urge to achieve the impossible, that is, the ideal, while simultaneously being plagued by excessive, interfering beliefs about their own incompetence (Park, Heo, Kim, Rice & Kim, 2020). Due to the considerable conceptual overlap, these sticky thoughts are also present in students with test anxiety, in whom they block higher-order cognitive processes such as concentration, attention, and logical reasoning, leaving limited meta-cognitive resources for solving exam tasks (Besser, Flett, Guez & Hewitt, 2008; Mavilidi *et al.*, 2020; Silaj, Schwartz & Siegel & Caste, 2021). Furthermore, Flett and Hewitt (2006) highlight the somewhat ignored fact that in persons with high levels of perfectionism, adaptive and maladaptive forms of this trait most often coexist. Therefore, in reality, it is quite unlikely for positive and negative perfectionism not to be simultaneously present in a person. The finding that maladaptive perfectionists who relied on the kind of avoidance operationalized by the CITS still exhibited satisfactory levels of achievement suggests that these persons can use more adaptive characteristics of their perfectionism and avoid being blocked by the harmful properties of unhealthy perfectionism. If these students relied on self-sabotaging procrastination instead of reframing their primary cognitive evaluation of a threat as a challenge, this coping mechanism probably would not have performed a protective function.

■ CONCLUSION

One of the advantages of the present research is reflected in the fact that unlike most studies in this domain, it involved a simultaneous and parallel exploration of a large number of variables relevant to the stress process related to test anxiety. Although the choice of a more complex research design came at the expense of the appealing methodological elegance, the study entered the sphere of more nuanced results, which may sometimes be more difficult to interpret. By conducting a moderated mediation analysis, we were able to examine not only *direct* correlations between several dependent and independent variables, but also the more important, *indirect* relations. Another strong point of this research lies in real-time data collection, taking place as students faced actual test anxiety. This increased the ecological validity of the obtained results and eliminated the effects of memory distortion that plague research designs in which participants recall their past experiences (Levine & Safer, 2002).

Apart from the abovementioned advantages, this study has several limitations. Even though the sample (263) was not small *per se*, it would be advisable for future research to replicate the same statistical analysis on a larger sample in order to reinforce the statistical strength of the findings. Likewise, there was a striking gender imbalance in the sample. Even though the present study did not aim to examine the existence and nature of gender differences in all the measured variables, it would be useful for future studies to use the same statistical procedures on a sample of students that would include more male participants. Furthermore, since we have previously discussed potential drawbacks of the used questionnaire for the identification of coping mechanisms (especially the Avoidance dimension from the CITS), future research should purposefully employ other instruments for the evaluation of this construct. Most existing studies on test anxiety have been conducted in the Western countries, primarily the US, which has several crucial implications. In comparison to our society, there are great differences in terms of the education system, the characteristics of the higher education process, the types and nature of knowledge assessments, and the consequences of exam failure. Research conducted in the Western countries has most commonly assessed evaluative anxiety in the context of high-stakes testing. It is rightly considered that such exams constitute more threatening circumstances with more grave consequences of failure (e.g., students who fail the exam cannot continue their studies). In the present research, the exam-taking situation acted as a stressor. Having in mind that the Serbian interpretation of the Bologna Process allows students to take midterm exams multiple times, it is clear that the stressor operationalized in this manner most probably was not as intense and terrifying for most participants.

Based on the results of this research, we can derive several practical implications and pedagogical-psychological guidelines for minimizing the undesirable effects of the phenomena under scrutiny. It would be useful to design educational seminars and training courses for participants in the processes of education and upbringing (members of the teaching faculty, pedagogues, and psychologists) with the aim of informing them about the negative effects of high levels of test anxiety, maladaptive perfectionism, and procrastination on students' achievement as well as mental health. Adequately educated professionals would be equipped to help children and the youth change their cognitive assessments of evaluative stressors and replace unrealistic standards, delaying academic tasks, and self-judgement with healthier ways of striving for success. It seems that various techniques stemming from cognitive-behavioral treatment protocols would yield the best results. Interventions directed at cognitive reframing and different relaxation techniques such as autogenic training and progressive muscle relaxation could contribute

to more adaptive interpretations of evaluative stress as well as relaxation, which would result in a more adequate use of cognitive resources and potentially better achievement.

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