

Research Article

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Procrastination and Mental Health Status Among Students in Serbia: A Cross-Sectional Study

Medo Gutić^{1,2}, Branimir Vukčević³, Aleksandar Stevanović⁴, Ardea Milidrag¹, Ivana Bulatović^{1,5}, Teodora Safiye^{1*}

¹Faculty of Medical Sciences, University of Kragujevac, Kragujevac, Serbia

²Public Health Institution Health Center "Dr Branko Zogović", Plav, Montenegro

³High School of Culinary Arts and Tourism with Dormitory, Vrnjacka Banja, Serbia

⁴Catholic University of Murcia, Murcia, Spain

⁵Clinic of Neurology, Clinical Center of Montenegro, Podgorica, Montenegro

*Corresponding Author

Teodora Safiye, Department of Neuroscience, Faculty of Medical Sciences, University of Kragujevac, Svetozara Markovića 69, 34000 Kragujevac, Serbia.

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Abstract

Objectives: Procrastination or avoidance of important tasks is a relatively common phenomenon, especially in the student population. Researchers believe that anxiety and distress are triggers of chronic procrastination because putting off unpleasant tasks and obligations leads to immediate relief, despite the negative long-term effects of such behavior. This study aimed to examine whether indicators of mental health – depression, anxiety, and stress are significant predictors of procrastination among students.

Methods: The sample included 658 students, of which 548 were female and 110 were male. The average age of the respondents was 23.16 years (SD = 3.02). The following instruments were used: the General Procrastination Scale (GPS), the Depression, Anxiety and Stress Scale (DASS-21), as well as the Sociodemographic Data Questionnaire, which was created for the purposes of this study.

Results: It was shown that depression in the female subsample was a significant predictor of procrastination (β =0.54, p<0.01), which means that depression increases procrastination in female students. Anxiety and stress, as well as the age of the students, did not prove to be significant predictors of procrastination in either male or female students.

Conclusion: The obtained findings may have important practical implications for institutions whose domain of work is providing psychological support and counseling to students, then, for a better understanding of the factors that are important for understanding the problem of procrastination, as well as for the development of preventive programs for recognizing and overcoming early signs of procrastination in students.

Keywords: Students, Mental Health Status, Depression, Anxiety, Stress, Procrastination

Introduction

Procrastination is conceptualized as a maladaptive pattern of behavior, and refers to the performance of an activity that is different from the intended one [1]. It is difficult to give a generally accepted definition of procrastination, but most researchers agree with the idea that it is an irrational delay, that is, a deliberate postponement of a planned activity despite the expectation of a worse outcome due to the delay [2]. In the discussions of procrastination undertaken by Knaus, Lay, Steel and other well-known researchers of the phenomenon, procrastination is defined as the deliberate delay in starting or completing a task or work, leaving it for later, despite the knowledge of the negative con-

sequences of such an act [2-5]. Such a view of procrastination can be interpreted in concert with human neurobiology. Namely, long-term intentions are primarily formed in the prefrontal cortex but can be suppressed by impulses from the limbic system, which is particularly sensitive to stimuli that cause immediate gratification [2, 6, 7]. The result is that the individual intends to work, but due to a sudden change in preferences, he discards his original intention. Behaviors that were never seriously intended to be performed are not considered procrastination, because there is no intrapsychic conflict or discrepancy between intention and behavior [8].

Avoidance of important tasks is a relatively common occurrence, especially in the student population. It has been estimated that the student population's procrastination frequency ranges from 50% to 90% [8, 9]. Some findings indicate that almost half of college students spend half of their day procrastinating [8, 10].

Several studies have shown that depression, anxiety, and distress are phenomena associated with procrastination [2, 11-14]. Several authors define these phenomena as follows: a) depression of an individual is characterized by experiences of dysphoria, hopelessness, devaluation of oneself and life as a whole, impoverishment of social life, and anhedonia; b) anxiety is a mental state characterized by a subjective experience of apprehension, a feeling of helplessness and a high level of excitement of the organism; c) negative stress in this context represents a state of high arousal of the organism that occurs as a result of one or more threatening events, with strong negative emotions on the mental level [15-18]. Research indicates that a greater degree of procrastination was accompanied by a greater degree of depression, anxiety and negative stress [2, 11-14]. One study compared a group of students with high procrastination to a group with low procrastination and found that students with high procrastination suffered from greater anxiety and were more likely to experience physical symptoms of anxiety [19].

Researchers believe that anxiety and negative stress are triggers of chronic procrastination because postponing unpleasant tasks and obligations leads to immediate relief, despite the negative long-term effects of such behavior [2, 20]. According to Covington, procrastination among students is one mechanism for dealing with the stress associated with student obligations, as delaying the fulfillment of obligations represents the avoidance of strong unpleasantness, but on the other hand, it has been shown that delaying obligations is one of the main causes of negative stress among students [21]. Van Eerde reports a moderate positive correlation of procrastination with depressive and anxiety states, and points out that there is no evidence of the direction of causality between procrastination and negative affectivity variables. It is difficult to distinguish when procrastination is a consequence of depression or anxiety, or when procrastination itself plays a role in promoting these conditions [13].

Research indicates that students should procrastinate less as they age and learn [2]. Haycock, McCarthy, and Skay report that younger students are more prone to procrastination because they have not had time to adopt good study habits [22]. When it comes to gender differences in procrastination, Ozer, Demir, and Ferrari showed that male students are more inclined to procrastinate than female students [23]. Significantly more female students than male students reported greater are procrastination due to fear of failure and laziness, and male students reported more procrastination as a result of risk-taking and rebellion against parental control. Another study found that men show more aggressive behavior than women in response to psychological and social pressures, so these findings indicate that girls procrastinate less than boys because they more easily accept parental control of their behavior [24]. In his meta-analytic study, Steel states that men generally procrastinate more than women [2]. Lamba believes that an important factor in procrastination is

the gender role, i.e. gender, not sex itself [25]. Gender roles are formed during childhood and become significant during adolescence [26]. At the same time, girls are subject to greater parental control, in terms of achieving their social roles, for example at school, and are more focused on household chores and interpersonal relationships, while male children are tolerated by their parents with greater autonomy and are given incentives for activities outside the home that achieve a better social status [23, 27]. Hence the possible differences in procrastination between male and female students, because female students more easily accept parental and generally social pressure to complete their activities on time.

Although the aforementioned findings suggest that there are gender differences in the degree of procrastination, there are no studies that deal with the question of whether the factors, i.e. sources of procrastination are different for men and women. Bearing that in mind, the primary aim of this paper was to examine whether indicators of mental health status, more precisely depression, anxiety and stress, are significant predictors of procrastination, separately for male and female students. The secondary aim was to examine whether age is a predictor of procrastination in students. The hypotheses were that depression, anxiety and stress are significant predictors of procrastination due to a significant positive correlation, and that the age of the subject is a significant predictor of procrastination due to a significant negative correlation. Examining depression, anxiety, stress and age as possible predictors of procrastination in each gender separately, makes this work not only significant from the point of view of psychological counseling and psychotherapy but also a completely original scientific work.

Methods Sample and Procedures

The research was conducted as a cross-sectional study. The required sample size was calculated using Raosoft Sample Size Calculator (Available online: http://www.raosoft.com/sample-size.html, accessed on March 1, 2022). According to the assumption of a margin error of 5% and a confidence level of 95%, a sample of 377 respondents was calculated. The criteria for inclusion in the research sample were students, who at the time of the research are actively studying at one of the universities in Serbia.

The final research sample included 658 students, of which 548 were female and 110 were male. The average age of the respondents was 23.16 years (SD = 3.02). The youngest respondent was 19 years old and the oldest 34 years old.

The study was conducted during the second semester of 2022. The research was conducted anonymously and online, through the Internet platform Google Docs. The snowball sampling method was used, so that the authors of the paper shared the link to the online questionnaire on the websites of various universities in Serbia, as well as on student groups on social networks. The usual measures of descriptive statistics (minimum, maximum, mean, standard deviation, skewness, kurtosis) were used, and as a measure of the reliability of the scales used, the measure of internal consistency, Cronbach's alpha coefficient was exam-

ined. Correlation analysis and multiple linear regression analysis were used as data processing and analysis techniques. Statistical analysis was performed using SPSS Statistics software (IBM SPSS Statistics for Windows, Version 22.0, Armonk, NY, USA).

Measures

Procrastination was examined with the General Procrastination Scale (GPS) created by Clarry Lay, which consists of 20 questions [3]. The question is answered by choosing one of the offered answers on a Likert-type scale ranging from 1 – does not apply to me at all, to 5 – completely applies to me. It can be applied to adults and adolescents. Respondents answer the questions based on how they feel in the last few days. A higher score on the scale means a greater tendency to procrastinate. Procrastination was set as a dependent variable in the regression analysis.

Indicators of mental health – depression, anxiety and stress were operationalized by scores on the Depression, Anxiety and Stress Scale (DASS-21), created by Lovibond and Lovibond [15]. The DASS-21 consists of 21 items and includes three subscales: depression, anxiety, and stress. Respondents were asked to rate how they felt in the last week on a 4-point Likert-type scale, from 0 – not at all, to 3 – mostly or almost always. In this research, depression, anxiety, and stress were predictor (independent) variables.

The questionnaire of sociodemographic data was created for the purposes of this study, and among others, it contained questions concerning gender and year of birth. Gender was the control variable, while the age of the respondents was the fourth predictor variable.

Results

Table 1 shows the measures of descriptive statistics for the scales used in the research. According to the data provided by the authors of the DASS-21 scale, as well as according to the findings of numerous studies, the values of the mean of an anxiety subscale in the normal population range from 0 to 3, the mean subscale of depression is from 0 to 4, while the mean subscale of stress is not above 7 [15, 17]. The mean values of all subscales of DASS-21 (depression, anxiety, and stress) in this study were above the stated values.

The reliability of the procrastination scale in our sample is high, the alpha coefficient is 0.83, which is in line with previous findings [1, 3]. All three DASS-21 subscales have high reliability, the alpha coefficient of each scale is above 0.80, which is consistent with previous findings [16-18].

Table 1: Descriptive Statistics of Used Measures

Scales	Min.	Max.	Mean	SD	Skew	Kurt	α
Procrastination	20.00	95.00	51.83	13.89	0.32	0.06	0.83
Depression	0.00	21.00	6.81	5.67	0.71	-0.47	0.88
Anxiety	0.00	21.00	5.62	5.09	0.92	-0.03	0.84
Stress	0.00	21.00	11.13	5.71	0.01	-1.03	0.87

Table 2 shows that the phenomena examined by DASS-21 are interconnected by statistically significant positive correlations, which means that stress, anxiety and depression are highly interconnected phenomena, so that with the increase in the experience of one of them, the experience of the remaining two becomes stronger, as and vice versa, with the reduction of one of them, the remaining two are reduced. The results show that the stress subscale and the anxiety subscale have 51.84% of com-

mon variance (r=0.72, p<0.01), and that these subscales were very similar to the respondents in this research. When the correlation between the scales is over 0.70, it is suspected that the scales measure the same phenomenon because they overlap over 50% of the variance. Procrastination and the age of the subjects were not significantly related to other phenomena that were examined in boys.

Table 2: Correlations Between Research Variables on the Male Subsample

Variables	Age	Depression	Anxiety	Stress	
Depression	-0.18				
Anxiety	-0.02	0.55**			
Stress	-0.05	0.51**	0.72**		
Procrastination	-0.03	0.11	0.25	0.13	
Note: ** correlation is significant at the 0.01 level					

Examination of the female part of the sample shows that the subscales of DASS-21 are statistically significantly related to each other with positive correlations (Table 3), which indicates that stress, anxiety and depression are highly interrelated phenomena in girls, so that as one increases, the other two also increase, as already noted with boys. Correlations of the stress subscale with the remaining two DASS-21 subscales also indicate that

the phenomenon measured by this subscale is very similar to depression (r=0.69, p<0.01) and even more so to anxiety (r=0.71, p<0.01). The just-mentioned high positive correlations indicate that the stress subscale does not examine a phenomenon that is significantly different from the phenomena examined by the anxiety and depression subscales.

Table 3: Correlations Between Research Variables on the Female Subsample

Variables	Age	Depression	Anxiety	Stress	
Depression	-0.07				
Anxiety	0.01	0.58**			
Stress	-0.08	0.69**	0.71**		
Procrastination	-0.07	0.22**	0.11	0.06	
Note: ** correlation is significant at the 0.01 level					

Girls' age is not significantly related to any other research variable, which is the same as for boys. However, procrastination in girls is associated with depression with a low and statistically significant positive correlation (r=0.22, p<0.01). This finding suggests that these two phenomena in girls are interdependent, so that an increase in the degree of procrastination occurs together with an increase in the degree of depression and vice versa, a decrease in procrastination implies a decrease in the degree of depression at the same time.

Table 4 shows the results of the regression analysis for both sexes. There were no statistically significant results in the male part of the sample. In the female part of the sample, 8% of the variance of procrastination was explained by the used predictors, and depression was singled out as a significant predictor of procrastination (β =0.54, p<0.01). This result indicates that in girls, depression affects procrastination: with greater depression in girls, procrastination also increases, and vice versa, a decrease in the degree of depression leads to less procrastination.

Table 4: Depression, Anxiety, Stress, and Age as Predictors of Procrastination

Male students			Female stud	Female students			
	R ²	β		R ²	β		
Predictors	0.01		Predictors	0.08**			
Depression		-0.03	Depression		0.54**		
Anxiety		0.35	Anxiety		0.02		
Stress		-0.13	Stress		-0.22		
Age		-0.04	Age		-0.02		

Note: R^2 – adjusted coefficient of multiple determination; β – standardized regression coefficient; ** statistical significance level of 0.01

Discussion

The primary aim of this study was to examine whether indicators of mental health – depression, anxiety, and stress are significant predictors of procrastination in a sample of students of both sexes. The secondary aim was to examine whether age predicts procrastination in students.

Analyzes of correlations between variables in this research, both on the male and female part of the sample, showed that between the tested indicators of mental health, i.e. depression, anxiety, and stress, there are statistically significant, high positive correlations, while the age of the respondents was not statistically significantly related to either negative affectivity or procrastination. Some authors believe that procrastination could be a common factor affecting the comorbidity between depression and anxiety, which contributes to the high correlation between the dimensions of depression, anxiety and stress obtained in this research [8]. Although depression and anxiety are often viewed as independent concepts, there is increasing recognition of the need to consider their conceptual and dynamic overlap [11].

Based on previous research, it was expected that with a higher degree of depression, anxiety and distress, the degree of procrastination in students of both sexes would be higher, while with a higher age of the respondents, a lower degree of procrastination was expected [4, 5, 11-14]. The findings in this paper indicate

that only the relationship between depression and procrastination in girls confirmed the hypothesis that procrastination increases with greater depression, and vice versa, that procrastination decreases as depression decreases. The finding that depression, anxiety, stress and the age of the respondents are not significant predictors of procrastination in the male part of the sample, indicates that these phenomena are not the sources of procrastination among the guys in this sample.

The finding that depression in girls is a significant predictor of procrastination shows that the lack of willpower and motivation in girls is the source of their procrastination, which is in line with explanations in which the causes of individual procrastination are found in the weaknesses of their motivation [2, 28]. In one such type of explanation (Temporal Motivation Theory), the following is indicated: a) the less faith in one's abilities to successfully perform activities, the greater the degree of procrastination; b) the more flaws the target has, i.e. the smaller the value of the reward for realizing the goal, the greater the procrastination; c) the greater the impulsivity of a person, the greater the procrastination; d) the longer the goal is, the greater the procrastination [2, 28]. Experiences within the framework of depression in girls, which include distrust in one's own abilities and belittling one's own goals, contribute to the appearance of procrastination, which then occurs as a replacement of less pleasant activities with those activities that bring immediate satisfaction and thus

compensates for the negative affect [2, 20]. The regulation of negative affects with procrastination in the long run leads to a deepening of the experience of failure and less personal value, which leads again to procrastination, making a circulus vitiosus [2, 6, 7].

The just-considered finding indicates that the growth of procrastination in girls meant the strengthening of experiences that are characteristic of depression, such as feelings of depression, hopelessness, dysphoria and impoverishment of social life. For girls, procrastination, as postponing work and activities, was associated with the experience of personal failure, lower selfworth and life as a whole. It seems that girls, unlike boys, have stronger or more frequent feelings of guilt and regret in case of not fulfilling or postponing their obligations and goals, as well as weaker unconscious defense mechanisms that regulate these feelings. In accordance with the mentioned differences in gender roles, girls are more strictly controlled than parents and have more intimate communication with close people, usually parents, close friends or emotional partners, in which they consider their personal problems, goals and obligations [23, 25, 29]. Therefore, connecting negative self-evaluation and other depressing experiences with procrastination is harder for girls to avoid than for boys.

Anxiety and stress did not prove to be factors of procrastination even among girls. This finding indicates that procrastination in girls is generally not triggered by stress or fear, nor that procrastination leads to anxiety, which is inconsistent with earlier findings [2, 11-14, 19]. In other words, in the girls in this research, procrastination was not in the service of regulating anxiety or stress in terms of immediate relief, nor did procrastination increase anxiety and negative stress. However, given the high correlation between depression, anxiety and stress, an idea is born here for a new research that would include the possibility that anxiety and negative stress have an indirect effect on procrastination, primarily by increasing depression. Depressiveness could be a mediating variable of the effect of anxiety and stress on the one hand, on procrastination, on the other hand.

The finding that the age of the respondents is not a predictor of procrastination indicates that older respondents have not learned to cope with procrastination better than younger respondents, which is not in accordance with the findings of previous research [2, 22]. The findings suggest that older subjects did not improve compared to younger ones in overcoming procrastination, but to answer the question of whether procrastination decreases with age, research with a longitudinal strategy is needed. The stated assumptions should be viewed in the context of the limitations of this research and checked by other, new research.

The findings of this study are limited due to the non-representative nature of the sample and the weakness of the DASS-21 instrument in terms of construct validity. The sample is convenient and obtained through an internet survey, which eliminates the possibility of generalizing the results to the entire population of students in Serbia. Anxiety, depression and stress as subscales of the DASS-21 instrument showed a too high correlation, which indicates that in the following researches on the relationship be-

tween the dimensions of negative affectivity and procrastination, the DASS-21 should first be improved or a better instrument should be used.

Conclusion

This was one of the few studies that examined the predictors of procrastination in university students based on mental health dimensions. The research results confirmed that the dimension of depression in girls was a statistically significant predictor of procrastination. Anxiety and stress, as well as the age of the students, did not prove to be significant predictors of procrastination in either boys or girls.

The aforementioned findings may have important practical implications for institutions whose domain of work is providing psychological support and counseling to students, then, for a better understanding of the factors that are important for understanding the problem of procrastination, as well as for the development of preventive programs for recognizing and overcoming early signs of procrastination in students.

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