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The relationship between test anxiety and academic procrastination among the dental students

Marjan Bolbolian, Shima Asgari¹, Fatemeh Sefidi², Ali Sarvari Zadeh¹

Abstract:

BACKGROUND: Test anxiety is a major educational problem among students all around the world. The purpose of this study was to investigate the relationship between academic procrastination and test anxiety among the dental students of Qazvin University of Medical Sciences.

MATERIALS AND METHODS: The present study was a descriptive–analytical study. The study sample consisted of 152 dental students; Solomon and Rothblum’s procrastination scale and Friedman’s test anxiety questionnaire were used to collect data. To analyze the data, descriptive and analytical statistics (analysis of variance, independent *t*-test, and Pearson’s correlation) were used at a significance level of $P < 0.05$.

RESULTS: The results of the present study showed that there is a significant relationship between procrastination and test anxiety and its components. The relationship between academic procrastination and gender was not significant, but a significant relationship was found between test anxiety and its dimensions with gender in terms of cognitive error and total test anxiety. No significant relationship was found between academic procrastination and test anxiety and their components with marital status, age, and grade point average.

CONCLUSION: According to the findings of the present study, people with academic procrastination have more test anxiety and fear of humiliation, irrational and negative thoughts, and more stress.

Keywords:

Procrastination, students, test anxiety scale

Introduction

Test anxiety is defined as an emotional reaction or state of stress that occurs before examinations and continues throughout the examination period.^[1,2]

In a comprehensive conceptualization, three cognitive, emotional, and behavioral dimensions can be considered for test anxiety. The cognitive dimension includes anxious thoughts about failure or poor performance in the examination position, the emotional dimension includes the excitement of anxiety and tension, and the behavioral dimension includes the

decline in a person’s performance in the examination situation or preparation beforehand.^[3]

Worldwide, problematic test anxiety is a common health problem among medical students. The magnitude of problematic test anxiety ranges from 25% to 40% in undergraduate medical students and has a detrimental effect on academic achievement and success of students.^[4,5]

Thomas *et al.*^[6] who found about 25% of undergraduate university students to be highly test anxious. These prevalence rates are alarming because test anxiety may debilitate academic performance and impair subjective well-being.^[7]

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Department of
Endodontics, Dental
Caries Prevention
Research Center, Qazvin
University of Medical
Sciences, Qazvin,
Iran, ¹Department of
Endodontics, Student
Research Committee,
Qazvin University of
Medical Sciences, Qazvin,
Iran, ²Department of
Educational Psychology,
Faculty of Education and
Psychology, Islamic Azad
University of Zanjan,
Zanjan, Iran

Address for correspondence:

Dr. Shima Asgari,
Student Research
Committee, Qazvin
University of Medical
Sciences, Bahonar
Blvd., Qazvin, Iran.
E-mail: shima.asgarii@
yahoo.com

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Research shows that fear of failing an examination, which is an anxiety response, causes a person's anxiety level to rise, and as a result, to reduce this anxiety, a person may have academic procrastination to delay their anxiety. The results of many studies show that anxiety can affect academic procrastination.^[8]

Rahardjo *et al.* examined the relationship between anxiety and academic procrastination among social science college students and reported that individuals with higher anxiety tend to be more procrastinating.^[9]

Social anxiety is positively associated with procrastination. The results revealed that individuals who suffer higher social anxiety procrastinate more. A possible explanation is that individuals tend to procrastinate to avoid aversive conditions or unpleasant states as well as when they fear failure or poor evaluation. People with higher social anxiety fear poor evaluation, failing to reach expectations, and disapproval and therefore might attempt to postpone tasks that involve interacting with people.^[10]

Procrastination involves delaying studies and homework.^[11] It is often believed that procrastinators perform poorly due to procrastination in the last hours and less time they have to prepare. Research has shown that academic procrastination is inversely predictable for academic achievement.^[12]

Most procrastinators see their delaying behaviors as inappropriate, problematic, and in need of change.^[13]

Procrastination is associated not only with negative consequences for the activity being delayed but also with decreased psychological well-being and performance and increased distress.^[14,15]

In academic contexts, procrastination occurs for tasks such as learning for an examination or writing an essay.^[16]

The appraisal of one's own capabilities to accomplish a specific task (e.g., studying successfully for an examination) might play an important role in the causation of test anxiety and subsequent procrastination.^[17]

Some studies have shown a correlation between anxiety and procrastination, but others have not supported anxiety as a source of procrastination. For example, some researchers, such as Cassady and Johnson,^[18] have reported that high-level anxiety students are more likely to be procrastinating than others. In another study, they found no significant correlation between procrastination and anxiety.^[19] In general, according to the results of researches on the role of anxiety on academic procrastination, it can be said that each

form of anxiety has a strong effect on the frequency of procrastination. Various forms of anxiety can be the cause of procrastination or can be caused by postponing homework.

Since procrastination is a common problem among students and causes major problems, especially academic failure, identifying factors related to academic procrastination can be used to prevent this phenomenon, and also, it is important and crucial for students to achieve progress and academic success.

Therefore, due to high level of anxiety and stress in the clinical and theoretical departments of dentistry and the lack of similar studies in this field, by determining the level of test anxiety of dental students, measures are taken to reduce the level of anxiety and increase the quality of education and helped to hold workshops to reduce students' anxiety and academic procrastination.

Materials and Methods

The present study was a descriptive study; among all dental students of Qazvin University of Medical Sciences in the academic year of 2018–2019, 152 students with no history of psychological problems and use of psychiatric drugs were included in the study as the study sample by simple sampling method.

Students who did not complete the questionnaire were excluded from the study.

The test anxiety questionnaire and the academic procrastination questionnaire were distributed among dental students to measure the relationship between them, and also, the relationship between students' demographic characteristics and test anxiety and academic procrastination variables was examined. To determine the test anxiety, Friedman's test anxiety questionnaire was used, which was developed by Friedman and Bandas Jacob in 1997.^[20] The test has 23 questions and includes three subscales of social humiliation, cognitive error, and tension. Questions 1–8 are about social humiliation, questions 9–17 are about the cognitive error, and questions 18–23 are about tension. This test is scored by the Likert method (from 0 to 3). In this study, the reliability using Cronbach's alpha method for subscales of social humiliation, cognitive error, and stress was 0.89, 0.77, and 0.84, respectively, and 0.90 for the whole questionnaire.

The scale of academic procrastination was developed by Solomon and Rothblum in 1984^[21] and has 27 items examining three components. The first component is preparing for examinations, which includes eight items. The second component is preparation for homework,

which includes 11 items, and the third component is preparation for end-of-term articles, which includes eight items. The validity of the academic procrastination scale was obtained through Cronbach's alpha coefficient of 0.64. The researchers obtained the validity of this scale as 0.84. In Iran and among the statistical population of students of this scale (using Cronbach's alpha coefficient) for the whole scale of 0.91 and its validity using Kaiser-Mayer-Olkin test in factor analysis method, it is equal to 0.88.^[22]

For quantitative analysis of data, questionnaires completed by the students were used. The data were entered into SPSS statistical software version 21 (SPSS Inc., Chicago, Illinois, USA); then, using descriptive statistical methods (mean, standard deviation, etc.), Pearson's correlation and analysis of variance were analyzed.

About ethical considerations in the questionnaire, the name and surname of the participants were not considered, questions that have a private aspect were avoided, and the results of the research remained confidential.

Results

The results showed that 91 people (59.9%) were female and 61 (40.1%) were male. 119 (78.3%) were single, 30 (19.7%) were married, and three did not respond. The average age of the participants was 23.79 ± 4.39 years. The age range of the participants was 18–42 years.

The mean of units passed of the studied subjects was 36.57 ± 31.78 units; the range of 111 units passed with a minimum of 9 and a maximum of 120 units. The mean total grade point average (GPA) announced by the sample was 15.24 ± 3.95 . Students reported that they had between 0 and 9 h of the study, and their average study time was 3.85 ± 2.37 h.

According to the guidelines of the Friedman's anxiety test questionnaire, the results of the study indicate

that the average scores of the participants studied in the tension dimension were 11.87 ± 3.29 , in the social humiliation dimension were 15.39 ± 5.18 , and in the cognitive error dimension were 16.59 ± 4.29 . The mean score of the test anxiety of the students surveyed was 44.4 ± 9.91 .

Further, in the academic procrastination test, according to the test instructions, the results of the study indicate that the average scores of the participants in the component of preparing for the examination were 23.64 ± 4.52 , for the component of preparing for the tasks were 32.61 ± 5.37 , and for readiness for the end-of-term articles were 23.92 ± 4.59 . The average score of academic procrastination of the students surveyed was 80.17 ± 11.97 .

Pearson's correlation test was used to investigate the relationship between test anxiety and its dimensions with negligence. The results showed that there was a significant relationship between procrastination and test anxiety ($P < 0.01$) [Table 1].

An independent *t*-test was used to compare gender between male and female, with academic procrastination and test anxiety. The results showed that the relationship between procrastination and gender components was not significant, but a significant relationship was found between procrastination and test anxiety with gender in terms of cognitive error and total test anxiety with gender. This means that anxiety was higher in women, but in other dimensions, the relationship was not significant [Table 2].

The relationship between marital status and academic procrastination and test anxiety and their dimensions did not make sense. Pearson's correlation test was used to investigate the relationship between test anxiety and its dimensions, procrastination, and its components with the average and age of the subjects. The results showed that there was no significant relationship between procrastination and test anxiety and their components with age and GPA ($P > 0.05$).

Table 1: The relationship between academic procrastination and its components with examination anxiety and its dimensions

Relationship rate (significant)	Variables						
	Homework preparation	Article preparation	Academic procrastination	Social humiliation	Cognitive error	Tension	Examination anxiety
Test preparation	0.395 (0.0001)	0.432 (0.0001)	0.704 (0.0001)	-0.266 (0.001)	-0.227 (0.005)	-0.228 (0.0001)	-0.333 (0.0001)
Homework preparation		0.764 (0.0001)	0.877 (0.0001)	-0.395 (0.0001)	-0.188 (0.02)	-0.241 (0.003)	-0.332 (0.0001)
Article preparation			0.889 (0.0001)	-0.326 (0.0001)	-0.226 (0.005)	-0.262 (0.0001)	-0.391 (0.0001)
Academic procrastination				-0.39 (0.0001)	-0.257 (0.0001)	-0.317 (0.0001)	-0.425 (0.0001)
Social humiliation					0.235 (0.004)	0.510 (0.0001)	0.794 (0.0001)
Cognitive error						0.724 (0.0001)	0.504 (0.0001)
Tension							0.817 (0.0001)

The analysis of variance test was used to investigate the relationship between academic resources and examination with academic procrastination and test anxiety and their dimensions. The results showed that there was no significant relationship between academic procrastination and academic resources. There was no significant relationship between test anxiety and tension dimension with academic resources, but there was a significant relationship between cognitive error and social humiliation with academic resources ($P < 0.01$). The lower the score, the more complete the resources also; students with more cognitive errors did not have complete learning resources [Figures 1 and 2].

Discussion

This study aimed to investigate the relationship between test anxiety and procrastination among

Table 2: The relationship between academic procrastination and examination anxiety and its dimensions in terms of gender

Variables	Gender	Mean±SD	Statistics <i>t</i>	Significant
Test preparation	Female	23.15±4.43	1.62	0.107
	Male	24.36±4.58		
Homework preparation	Female	32.54±4.81	0.205	0.83
	Male	32.72±6.15		
Article preparation	Female	23.89±4.29	0.92	0.1
	Male	23.96±5.03		
Academic procrastination	Female	79.58±10.43	0.74	0.46
	Male	81.05±14.00		
Social humiliation	Female	16.03±4.98	0.286	0.77
	Male	15.79±5.49		
Cognitive error	Female	17.56±3.86	3.49	0.001
	Male	15.16±4.54		
Tension	Female	12.19±3.34	1.51	0.13
	Male	11.37±3.19		
Examination anxiety	Female	45.79±9.77	2.14	0.03
	Male	42.32±9.83		

SD=Standard deviation

students. The results of the present study showed that there is a negative significant relationship between procrastination and test anxiety and its components so that, with increasing readiness for the test and readiness for homework, the rate of tension, social humiliation, and cognitive error decreases. The research of Kazemi Rezaei *et al.*^[23] to investigate the mediating role of test anxiety in the relationship between procrastination and high-risk behaviors showed the relationship between test anxiety and academic procrastination. The results of their regression analysis showed that test anxiety can significantly play a mediating role in the relationship between procrastination and high-risk behaviors.

The study of Hoseinzadeh *et al.*^[24] showed that there was a significant relationship between the variables of behavioral procrastination, decision procrastination, and cognitive avoidance with the variables of criteria. In other words, these variables predict the components of concurrent test anxiety. Further, the results of multiple regression analysis showed that the correlation between behavioral procrastination, decision procrastination, and cognitive avoidance with the tension component is significant. Social was meaningful. According to their research, behavioral procrastination and decision-making alone cannot predict social humiliation. Behavioral procrastination and decision-making significantly predicted social humiliation and cognitive error in students. Besides, behavioral procrastination and cognitive avoidance predicted tension.

In the present study, a significant inverse relationship was found between the components of social humiliation, cognitive error, and tension, which can be justified by the results of the study of Hoseinzadeh *et al.*^[24].

In addition, the relationship between procrastination and gender was not significant, but a significant relationship was found between test anxiety and its dimensions with

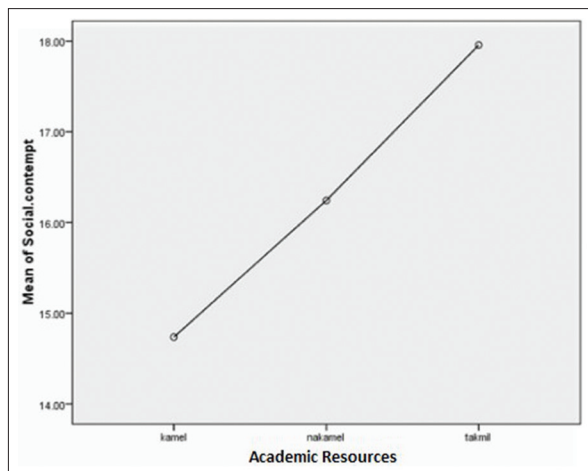


Figure 1: The relationship between social humiliation and academic resources

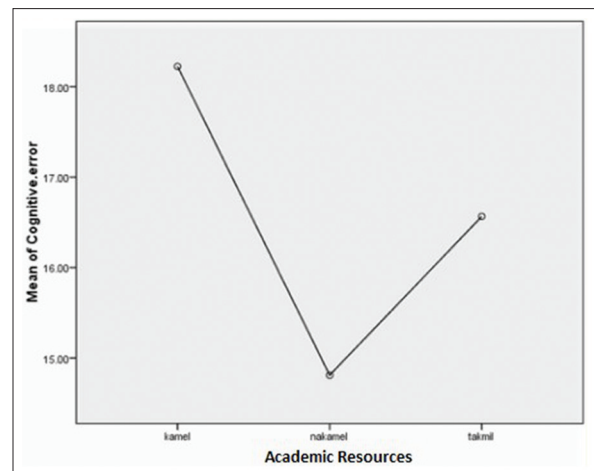


Figure 2: The relationship between cognitive error and academic resources

gender in terms of cognitive error and total test anxiety. Some research has shown that women are more likely to experience higher levels of test anxiety.^[25]

In this study, no significant relationship was found between procrastination and test anxiety and their components with marital status, age, and GPA. Another study found that there was a significant negative relationship only between the cognitive dimension of test anxiety and academic achievement.^[1]

According to educational psychologists and educators, low levels of anxiety as an effective motivating factor can increase a person's ability to work harder. In contrast, excessive anxiety has different effects and can disrupt a person's mental process, which is essential for proper functioning. Examination anxiety is a good factor in predicting and determining the motivation for progress. Some anxious people may not make the effort to do their job due to anxiety, despite their ability to do the job. Students who are motivated to make great strides overcome problems (including anxiety) due to high expectations of themselves as well as a lot of effort to achieve goals. As test anxiety decreases, students' motivation to progress increases.^[26]

A study by Dortaj *et al.*^[27] also showed that 11.9% of students had severe test anxiety, 40.3% had moderate anxiety, and 47.8% had low test anxiety. There was a significant relationship between gender and level of test anxiety as well as age with test anxiety. However, no relationship was observed between any of the variables of the study field, marital status, job, and parents' education with the level of students' anxiety.

In the present study, the Friedman's test was used, which did not specify the degree of anxiety; however, according to the overall test scores and the median incision point, it can be concluded that the mean scores of the sample group are higher than average. These results are somewhat consistent with studies that show that more than half of the people in the study showed moderate-to-severe anxiety.^[27]

Procrastination is associated with several types of unpleasant negative feelings that prevent a person from doing or starting a job. Negativity and low self-esteem often lead to fear of failure and can ultimately lead to procrastination.^[28]

Procrastination is particularly common among college students. A study estimated that approximately 80% of college students are procrastinators, and procrastination was identified as one of the most common problem behaviors requiring improved management.^[29]

Custer also found a moderate and significant correlation between test anxiety and academic procrastination in nursing students.^[30]

One of the cognitive factors associated with academic procrastination is motivation to progress. The more procrastination a person has, the less motivated their progress will be, and vice versa. The motivation for academic achievement, as one of the motivations for progress, is an inner force that leads the learner to comprehensively evaluate their performance according to the highest standards, striving for success in performance and having the pleasure that accompanies success in performance.^[31,32]

Participants in this study were PhD students in the School of Dentistry, so the generalizability of the results to all students is one of the limitations of this study. As a result, it is better to repeat the research in other populations and compare the results.

One of the limitations of this study was the lack of use of various data collection tools along with self-assessment questionnaires. It is suggested that other methods of data collection, including interviews, be used in future research.

There may be some factors, such as the mental states of individuals at the time of completing the questionnaire have distorted the accuracy of the research; therefore, the role of other cognitive, behavioral, and emotional variables in relation to procrastination should be considered.

Conclusion

According to the findings of the present study, people with academic procrastination have more test anxiety and fear of humiliation, irrational and negative thoughts, and more stress.

Finally, the lack of proper planning, clear goals, as well as appropriate problem-solving strategies, all of which are characteristic of procrastination and avoidance, can increase anxiety. On the other hand, procrastination leads to fruitless work, wastes time, and causes a person to feel guilty.

Due to the negative consequences of procrastination and the increasing prevalence of this phenomenon, and considering the little research in this regard, it is worthwhile to do more studies.

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Ethical statement

This study approved by ethical committee of Qazvin University of Medical Sciences, and there is no conflict with ethical considerations (IR.QUMS.REC.1397.347).

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Conflicts of interest

There are no conflicts of interest.

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