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Prevalence of Academic Procrastination and Its Association with Metacognitive Beliefs in Zanjan University of Medical Sciences, Iran

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Abstract

Background & Objective: Procrastination is defined as the tendency to avoid and postpone timely activities. Academic procrastination is the most common form of this issue, which is a dominant, frequent tendency among learners to delay educational activities.The present study aimed to investigate the prevalence of academic procrastination and its association with metacognitive beliefs in Zanjan University of Medical Sciences, Iran.

Materials and Methods: This descriptive-correlational study was conducted on the students at Zanjan University of Medical Sciences during 2015-2016 (n=3,500). In total, 210 students were selected randomly. Data collection tools were the Academic Procrastination Scale Solomon and Ruth Bloom (1984) and metacognitive beliefs about procrastination questionnaire (MCPQ). Data collection was performed in accordance with ethical principles.

Results: Prevalence of academic procrastination was 63% among the students. In addition, regression analysis indicated that 5% of the variances on academic procrastination was explained by cognitive beliefs (R^2=0.047). Positive metacognitive beliefs by a factor of B=0.445 (P=0.022) and negative metacognitive beliefs by a factor of B=0.409 (P=0.009) were the predictors of academic procrastination.

Conclusion: According to the results, about 63% of the students faced the challenge of procrastination in their academic fields, and 5% of the variances relating to academic procrastination could be explained by cognitive beliefs.

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Introduction

Postponing activities is a common problem for many individuals; however, the issue might become habitual in some cases. Procrastination is defined as the tendency to avoid and postpone activities, as well as apologizing to justify the due delay (1). As a disagreeable behavioral habit, procrastination is prevalent among various groups, while many individuals have even adopted a lifestyle based on this issue (2). Since procrastination is a noticeably frequent problem, it has been considered a human predilection (3). In general, about 95% of the populace occasionally procrastinate their tasks, and procrastination is constantly an issue in 15-20% (4). According to statistics, procrastination is a prevalent in 80-90% of university students (5).

Procrastination is of various types, including general procrastination due to complex, cognitive, emotional, and behavioral components (6), procrastination in decision-making, neurotic procrastination, obsessive procrastination (7), and academic procrastination (8). Academic procrastination is the most common type of procrastination, which was first introduced by Rothblum and Solomon. Academic procrastination is defined as a perpetual tendency among learners to postpone educational activities, which leads to anxiety and stress in almost all the cases.

Academic procrastination is a common, serious issue in students, which gives rise to internal consequences (anxiety, confusion, self-reproach, despondency, and remorse). Furthermore, the external consequences of academic procrastination may be irreversible (e.g., missing educational opportunities, disruption of interpersonal relationships) (9) and hinder the educational progress of students (10). According to the literature, more than 50% of students have reported a tendency to procrastinate their assignments (11, 12). Therefore, it could be inferred that academic procrastination could be a significant negative predictor for the grade point average (GPA) of students.

Previous studies in this regard have denoted that procrastination does not involve time management problems only, but rather, it is a complicated process encompassing emotional, cognitive, and behavioral components (13). Some researchers believe that procrastination is a cognitive problem; accordingly, procrastination is primarily based on irrational thoughts and false beliefs about the conditions and results of activities.

Cognitive approaches emphasize on the role of beliefs and negative attitudes in

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procrastination although they cannot explain the exact effect of such beliefs on the cognitive process involved in procrastination. However, the metacognitive perspective of procrastination could elucidate the process in detail. Metacognition is defined as the stable knowledge or beliefs of one's own cognitive system regarding the influential factors in the performance of the system, as well as the knowledge of the current situation and realizing the importance of ideas and memories in the setting (14). Metacognition research and theory have been developed in the fields of psychology and cognitive development (15, 16). Recently, the research and theories in this regard have been the basis for the evaluation and treatment of mental lexicon (17).

The first metacognitive theory of psychological dysfunction was proposed by Wells and Matthews, who argued that a psychological disturbance is maintained by a combination of preservative thinking styles, maladaptive attentional routines, and dysfunctional behaviors that constitute a cognitive-attentional syndrome (CAS). CAS is rooted in the metacognitive beliefs of the individual, which are activated in the face of challenging situations to drive the necessary coping mechanisms. Metacognitive beliefs refer to the information held by individuals regarding their own cognition, internal states, and the coping strategies that affect these parameters (17-19).

According to Flavell, metacognition is the knowledge or a recognition process that contributes to the assessment, review, and cognitive control processes, thereby regulating the cognitive function. Most theorists consider two separate aspects for metacognition; the first aspect is metacognitive knowledge, which includes the information on the self-realization of the learning strategies and factors associated with the individual’s tasks. The second aspect is metacognitive regulation, which refers to a number of administrative actions (e.g., attention, reviewing, and planning to identify the errors that affect cognitive performance). Therefore, procrastination could be linked to metacognition from two perspectives; first, procrastination may be considered a strategy for the regulation of cognition and negative emotions. Second, several studies have reported procrastination to be associated with negative emotions, considering it a strategy adopted by individuals in order to avoid and regulate negative emotions (20).

Based on the metacognitive theory, metacognitive beliefs are divided into two

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broad subcategories of positive and negative, which are essential to maintaining the psychological dysfunction of an individual. Positive metacognitive beliefs consist of the information on the coping strategies that affect cognition and internal states (e.g., "*Worrying will help me get things sorted out in my mind.*" (21), "*Rumination will help me solve the problem.*"). Such beliefs are conceptualized as antecedent to the initiation of maladaptive coping mechanisms and are essential to their strategic selection. Negative metacognitive beliefs entail the meaning and consequences of engaging in a specific coping mechanism and the subsequent intrusive thoughts and feelings (e.g., "*My anxiety is uncontrollable!*", " *Rumination will damage my mind.*") (22).

According to the literature, cognitive beliefs are indispensably associated with procrastination. In a study, Porridge Fernie et al. claimed that positive beliefs about procrastination were positively associated with procrastination in decision-making, while the negative metacognitive beliefs about procrastination were positively associated with procrastination in decision-making and procrastination in communication (23). Moreover, Golestani Bakht and Shekari denoted that among the main components of metacognitive beliefs, cognitive uncertainty could predict academic procrastination (20).

Given the importance of procrastination and its consequences, and considering the findings that denote metacognitive beliefs as the predictors of procrastination, the present study aimed to provide more evidence in this regard by examining the association of metacognitive beliefs and academic procrastination and assess the prevalence of academic procrastination in Zanjan University of Medical Sciences, Iran.

Materials and Methods

Participants and procedures

This descriptive-correlational was conducted on the students in Zanjan University of Medical Sciences, Iran (n=3500) during 2015-2016. Considering that descriptive research requires a minimum sample size of 100 (24, 25), 210 participants were selected randomly. Initially, the metacognitive beliefs questionnaire about procrastination (MCPQ) was administered in 20% of the samples (n=40) to ensure the required reliability for evaluation (up to 0.70). Afterwards, the Academic Procrastination Scale Solomon and Ruth Bloom was completed by all the participants (n=210) in accordance with ethical principles to determine the prevalence

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of academic procrastination and its association with cognitive beliefs.

Research Measures

Procrastination Assessment Scale-Students (PASS):

The procrastination assessment scale-students (PASS) has been developed by Solomon and Ruth Bloom with 27 items, which includes three components. The first component is exam preparation, consisting of eight items ("*I tend to fantasize when I am studying for an exam.*", "*Focusing is difficult for me.*"). The second component is assignment preparation, which contains 11 items (postponing tasks from session to session), and the third component is preparation for the final papers with eight items ("*When I have a thesis to prepare, I tend to postpone it*.").

In PASS, items 2, 3, 5, 9, 11, 13, 15, 16, 21, 23, and 25 were scored inversely. Reliability of PASS has been confirmed at the Cronbach's alpha of 0.64 in the study by Solomon. In addition, Solomon verified the validity of the scale using internal consistency at the obtained coefficient of 0.84 (26). Jokar and Delavarpoor used factor analysis and correlation with the total score to assess the validity and reliability of PASS for the Iranian population. Accordingly, factor analysis by principal component analysis indicated a general factor and significant correlation on a moderate level. In the study by Jokar and Delavarpoor, the reliability of PASS was reported to be 0.92 (27).

Metacognitive Beliefs about Procrastination Questionnaire (MCPQ):

Items in the metacognitive beliefs about procrastination (MCPQ) have been derived from the responses of the participants in the study by Fernie and Spada, based on the clinical experience of the authors and theory-based deduction. In total, 22 items were developed in the form of statements, based on which the respondents could express their level of agreement on a four-point Likert scale ("Do Not Agree", "Slightly Agree", "Partially Agree", "Strongly Agree"). Using factor analysis, the number of the items reduced to 16.

MCPQ has two components, including positive beliefs (items 1-8) ("*Procrastination allows creativity to look more natural.*") and negative beliefs (items 9-16) ("*My procrastination is out of control.*"). Internal reliability of MCPQ has been reported in two studies by Ferny et al. In the first study performed on 230 students at the University of London, the inter-rater reliability was determined at the Cronbach's alpha of 0.87

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and 0.84 for positive and negative metacognitive beliefs, respectively (23). In the present study, the internal reliability of MCPQ in the students of Zanjan University of Medical Sciences (n=210) was calculated based on internal reliability (Cronbach's alpha). Reliability coefficient was higher than 0.7 in the pilot study (n=40) and main study for the positive and negative metacognitive beliefs, which confirmed the reliability of the questionnaire in this regard. Moreover, the validity of MCPQ was confirmed based on internal reliability (Cronbach's alpha)

Statistical analysis

Data analysis was performed in SPSS version 20 using Pearson's correlation-coefficient and multivariate regression analysis to determine the prevalence of academic procrastination among the students and verify the mean, frequency, and percentage of academic procrastination and metacognitive beliefs.

Results

In total, 210 students at Zanjan University of Medical Sciences were enrolled in the study, 51% of whom were female. In terms of marital status, 81.4% the participants were single, 16.7% were married, and 1.9% were divorced. Regarding the education status, 13.3% were advanced diploma students, 48.1% were undergraduate, 8.1% were postgraduate students, and 29.9% were PhD candidates. Mean age of the participants was 23.35±5.35 years. Mean academic procrastination and its components (positive and negative metacognitive beliefs) are presented in Table 1.

Table 1: Mean and standard deviation of the measured variables

variables	components	M ± SD
Academic procrastination	Total score	46.19 ± 10.4
	Procrastination in preparing for exams	13.88 ± 3.14
	Procrastination in preparing assignments	19.3 ± 4.92
	Procrastination in the preparation of final paper	13 ± 3.72
	Feel uncomfortable towards procrastination	9.15 ± 2.37
	The desire to change the habit of procrastination	9.45 ± 2.36
Metacognition	positive	12.25 ± 3.75
	negative	21.27 ± 4.65

M= Mean, SD= Standard Deviation

According to the findings, 36.6% of the participants had low academic procrastination, while 63% had significant problems with academic procrastination; among these subjects, level of academic procrastination was above average in 54.8%, and severe procrastination was reported in 8.6% (Figure 1).

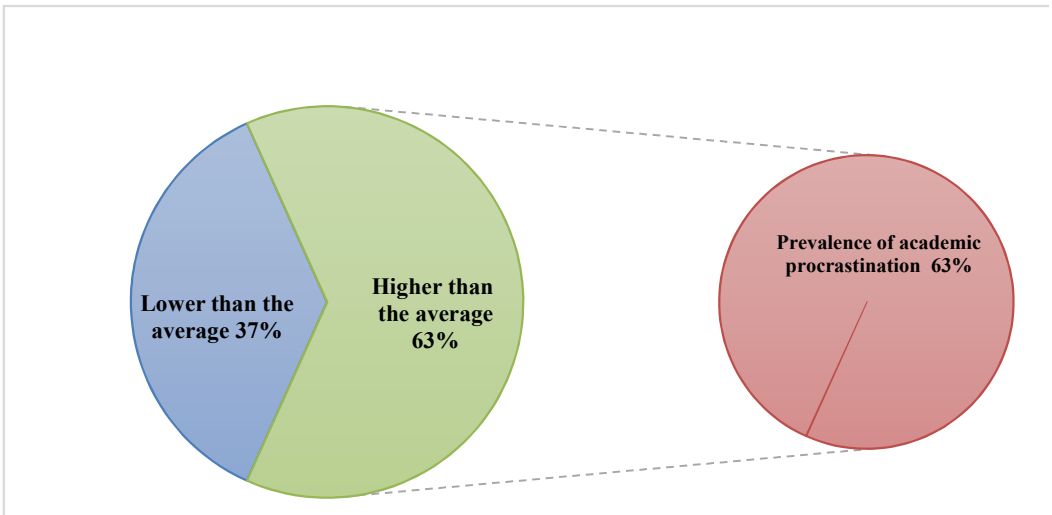

Figure 1: The prevalence of academic procrastination

The results of Pearson's correlation-coefficient indicated no significant association between positive metacognitive beliefs and overall academic procrastination and the components of exam preparation, assignment preparation, and procrastination in the preparation of the final papers (P≤0.05). On the other hand, a significant negative correlation was observed between positive metacognitive beliefs, discomfort with procrastination (P=0.004), and the willingness to change the habit of procrastination (P=0.008). Correspondingly, as the positive beliefs toward procrastination increased, discomfort with habitual procrastination and willingness to change the habit decreased.

A direct, significant correlation was observed between negative metacognitive beliefs, overall academic procrastination (P=0.031), the components of exam preparation (P=0.013), and preparation for the final papers (P=0.001). Therefore, increase in academic procrastination and its components would enhance the positive beliefs in this regard. However, no significant relationship was noted between positive metacognitive

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beliefs and the component of assignment preparation (P=0.722). Our findings indicated a significant correlation between negative metacognitive beliefs, discomfort with procrastination (P=0.004), and the willingness to change habitual procrastination (P=0.008) (Table 2).

Table 2: Correlation matrix examine the relationship between metacognition and academic procrastination

Academic procrastination	Metacognition			
	Positive Metacognition		Negative Metacognition	
	R	P.value	R	P.value
Total score of Academic Procrastination	0.122	0.079	0.149*	0.031
Procrastination in exam preparation	0.128	0.063	0.172*	0.013
Procrastination in assignments preparation	0.110	0.110	0.025	0.722
Procrastination in final paper preparation	0.085	0.219	0.237**	0.001
Discomfort of Procrastination	- 0.198**	0.004	0.258**	0.000
The desire to change the habit of procrastination	- 0.185**	0.008	0.296**	0.000

**P<0/01, *P<0/05.

In the present study, we used simultaneous regression analysis to evaluate whether met cognitive beliefs could predict academic procrastination, assuming the normal distribution of data. A linear relationship was observed between the predictive variables and the criterion of scale. Moreover, measuring the scale of the criterion and predictive and default variables was relative, while the number of participants was at least ten times higher than the number of the predictive variables. As a result, a linear relationship was noted between the predictive variables according to the tolerance interval and variance inflation factor.

Findings of the study indicated the significance of the observed F value (ANOVA) (P=0.007), and 5% of the academic procrastination variance could be explained by cognitive beliefs (R^2 =0.047) (Table 3).

Table 3: Analysis of variance associated with the regression metacognition and academic procrastination

Model		Sum of Squares	df	Mean Square	f	P.value	R	R^2	SE
1	Regression	1056.958	2	528.479	5.7**	0.007	0.216	0.047	10.2
	Residual	21558.799	207	104.149					
	Total	22615.757	209						

**P<0/01, *P<0/05.

Considering the significance of the regression metacognitive beliefs with regard to academic procrastination, positive beliefs by a factor of B=0.445 (t=3.2; P=0.022) and negative beliefs with a coefficient of B=0.409 (t=2.63; P=0.009) could predict academic procrastination (Table 4).

Table 4: Linear regression analysis to predict academic procrastination based on metacognitive beliefs

Model	Unstandardized Coefficients		Standardized Coefficients	t	P.value	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	32.029	4.506		7.109**	0.000		
Positive Metacognition	0.445	0.192	0.161	2.314*	0.022	0.954	1.048
Negative Metacognition	0.409	0.155	0.183	2.634**	0.009	0.954	1.048

**P<0/01, *P<0/05.

Discussion

According to the results of the present study, the prevalence of academic procrastination among the students in Zanjan University of Medical Sciences (n=210) was 63%. In other words, 63% of students at Zanjan University of Medical Sciences were faced with the issue of academic procrastination, the rate of which showed to be higher in 55%, while 7% of the students had severe procrastination. Despite the use of different instruments, our findings regarding the prevalence of academic procrastination among the students are in line with the previous studies.

In a research, Steel and Obrien reported that 80-90% of students were faced with the problem of procrastination (4, 5). However, this is considered a common behavior in general. Approximately, 75% of the population consider themselves neglectful, and about 50% of procrastinations are regular and problematic (5). Furthermore, the findings of Shahni Yeylagh et al. indicated a high rate of academic procrastination among students (17% of male and 14% female students) (28). Similarly, the study by Tavakoli showed that 70.8% of students dealt with average procrastination, and 14% had severe procrastination (29).

The high prevalence of academic procrastination affects various aspects of individual and social life, as well as educational and economic domains, thereby deteriorating psychological and physical health. If Iran is looking to grow and progress on different levels, policymakers and authorities must pay special attention to the

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issue of academic procrastination in students. Procrastination is a problematic behavior that is likely to prevail and adversely affect the career and professional opportunities of students in the future, which will give rise to tremendous consequences for enterprises.

With respect to the role of metacognitive beliefs in predicting academic procrastination, the results of Pearson's correlation-coefficient in the current research demonstrated a direct, significant association between academic procrastination and negative metacognitive beliefs, while no such relationship was observed between positive metacognitive beliefs and academic procrastination.

In the present study, the variance analysis of the regression of metacognitive beliefs and academic procrastination suggested the significant regression of metacognitive beliefs in academic procrastination, and 5% of the variances relating to academic procrastination could be explained by metacognitive beliefs. Based on the coefficients of the prediction equation of positive and negative metacognitive beliefs, academic procrastination could be properly predicted, although this is not considered a strong attribute. This finding is consistent with the studies of Fernie et al. and Golestani Bakht and Shekary despite the use of different instruments (20, 30). According to Fernie et al., positive metacognitive beliefs about procrastination were positively associated with procrastination in decision-making. Moreover, negative metacognitive beliefs about procrastination had a significant, positive relationship with procrastination in decision-making and procrastination behaviors. Although the correlation-coefficient is low (<0.3) in the two mentioned studies, it is statistically significant due to the large sample sizes. Furthermore, the results of the mentioned studies indicated that 5% of the variances relating to academic procrastination could be explained by metacognitive beliefs, so that approximately 95% of the variance of academic procrastination was explained by other variables, with the exception of metacognitive beliefs.

In another research, Kareshki and Pakmehr claimed that metacognitive beliefs (i.e., knowledge or cognitive processes) were involved in the evaluation, review, and control of cognition, regulating the cognitive function and predicting mental health (31). Other studies in this regard have also denoted that metacognitive beliefs play a pivotal role in anxiety and disruption, which in turn reduce the rate of academic success (32). To justify these findings, it could be stated that

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students who have procrastination behaviors in their assignments often lack metacognitive and self-regulation skills, which leads to failure in assignments. In addition, a large portion of procrastination intensifies these behaviors due to the excess of irrational and negative thoughts; as mentioned earlier, procrastination is essentially associated with irrational cognitive processes (33).

The metacognitive perspective toward procrastination could clarify these processes. In general, metacognition has two aspects, including metacognitive knowledge, which is the held information by the individuals on the cognition of the factors associated with assignments and learning strategies and metacognitive regulation, which encompasses a variety of administrative actions (attention, reviewing, planning, and identifying the errors in performance, thoughts, and behaviors affecting cognitive activities) (34). Therefore, metacognitive beliefs are among the variables that are associated with academic procrastination, while they only slightly explain this issue.

Conclusion

According to the results, 63% of the students at Zanjan University of Medical Sciences had the problem of academic procrastination. The high prevalence of procrastination adversely affects various aspects of individual and social life, as well as educational and economic domains, eventually leading to poor psychological and physical health. Furthermore, the alarming rate of academic procrastination among students may prevail and disrupt their career in the future. Considering the severe consequences of this issue for organizations and communities, it is recommended that stout measures be taken in order to identify the students facing the challenge. Moreover, effective treatment methods and appropriate training are vital for reducing the rate of procrastination.

Findings of the present study indicated that metacognition is one of the most significant variables associated with academic procrastination although only explains it partially. In other words, several other factors are involved in academic procrastination, and it is recommended that the role of other variables be evaluated in this regard.

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