Research Article

The Effectiveness of Mindfulness-based Cognitive Therapy on Academic Emotions and Academic Optimism of Procrastinating Students

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Abstract

Background: Academic procrastination refers to the deliberate postponement of academic assignments despite being aware of the negative consequences.

Objectives: This study aimed to investigate the effectiveness of mindfulness-based cognitive therapy on academic emotions and academic optimism among procrastination students.

Methods: The present study was a semi-intervention type. The statistical population of the study consists of all procrastinating students of Payame Noor University, Bostan Abad Branch, who were studying in the academic year 2020. The study sample included 30 undergraduate students who were selected by convenience sampling and randomly divided into two groups (15 persons in the intervention group and 15 persons in the control group). Also, the intervention group was treated for eight sessions of one hour based on Kabat Zinn treatment protocol. To collect data, Tuckman Procrastination Questionnaire, Pekrun Academic Emotions (2002), and Academic Optimism Questionnaire were used. To analyze the data, covariance was used, which was analyzed with SPSS-23.

Results: The results showed that mindfulness-based cognitive therapy increased positive emotions such as pleasure (P < 0.01), hope (P < 0.01) pride (P < 0.01), and decreased negative emotions, i.e., anger (P < 0.01), anxiety (P < 0.01), shame (P < 0.01), disappointment (P < 0.01), and fatigue (P < 0.01) in the intervention group. Also, the results of the variable of academic optimism showed that cognitive therapy based on mindfulness was associated with an increase in the components of trust (P < 0.01) and academic emphasis (P < 0.01), while on the component of the sense of identity (P > 0.01) had no significant effect.

Conclusions: Based on the findings of the present study, it was found that mindfulness training can be used as an effective intervention to moderate positive academic emotions and increase students' academic optimism.

Keywords: Procrastination, Academic Emotions, Optimism

1. Background

One of the most common maladaptive behaviors that are observed in most life situations is "procrastination" (1). Among other dimensions, the findings show that academic procrastination is recognized as the predominant behavior among students, so 30 to 90% of students face this type of procrastination (2). Academic procrastination refers to the deliberate postponement of academic assignments despite being aware of the negative consequences (3). This behavior not only affects students' academic performance but also has an unpleasant effect on their psychological well-being and life satisfaction (1, 4, 5). On the other hand, due to the heavy costs of the educational system and the essential role of education in the scientific and spiritual training of the community's specialist persons, and paying to the effective factors in the educational process of learners, it has been considered one of the basic measures to optimize the educational system. As a result, the etiology of academic procrastination and solving problems related to the educational system can be used as a blow against this behavioral incompatibility and increase students' academic achievement (6).

In modern approaches, emotion is recognized as one of the basic components of procrastination, and failure to regulate it is considered one of the possible etiologies of procrastination (7). The study of theoretical foundations

also shows that procrastination is a type of emotional regulation that is done with the aim of reducing negative emotions (8). Intervention findings also suggest that procrastination is an emotionally related construct that is influenced by factors such as anxiety and shame (9, 10). Rahimi also examines the role of emotions in academic procrastination and reports the correlation between procrastination and negative emotions (such as anger, anxiety, shame, frustration, and fatigue) directly and inversely with positive emotions (pleasure, hope, and pride) (11). In fact, some believe that because emotions are a lasting and time-consuming phenomenon (that is, in the past, present and future), they can be an effective factor in the educational process and delay (12). Thus, consistent with theoretical foundations and research findings, one can expect negative (inactivating) emotions to be a facilitator, while positive emotions (especially activators) are a blow to academic procrastination (13). As a result, it may be argued that intervention in emotions, especially academic emotions, can be an effective factor in academic procrastination (14).

Other structures related to academic performance that are also closely related to emotions include "academic optimism" (15). Optimism is a construct related to most of the behavioral and psychological consequences, covering most aspects of life (16). Studies on the role of optimism in academic situations show that students with high optimism not only report lower rates of stressful symptoms but also a higher GPA and better academic performance are also acquired (17-19). Academic optimism is the result of the interaction between efficiency, academic emphasis, and academic confidence, the theory of which can be found in Bandura's theory of collective self-efficacy, Coleman trust, and academic emphasis (20). In fact, based on the basic concepts of academic optimism, it can be expected that having this emotion not only increases people's self-efficacy but also provides a basis for optimistic explanations of academic failure, which can be a blow to helplessness and procrastinating (21). Research findings also show that there is a direct and significant relationship between academic optimism and academic achievement (22, 23).

In general, based on theoretical foundations and research evidence, it was found that academic emotions and optimism can be considered effective factors in reducing procrastination and academic achievement, and students' mental health (24). Therefore, according to the mentioned cases, determining effective psychological interventions in academic emotions and optimism that may be associated with the reduction of academic procrastination seems necessary. However, studies show that most studies have directly intervened in procrastination and ignored the effective factors related to procrastination. Also,

despite the emotional nature of new etiologies of procrastination, most interventions from a cognitive-behavioral perspective have intervened in procrastination which has not gained significant clinical effectiveness in reducing it. This may be due to a lack of attention to the main dimensions of academic procrastination, such as emotions or optimism (2, 25, 26). On the other hand, due to the greater emphasis on the emotional dimension in third-wave therapies, it is thought that determining the effectiveness associated with this approach is necessary (25).

Mindfulness-based interventions are one of the new treatments that have gained attention in the last few decades for dimensions from business, social and clinical situations (27). Kabat-Zinn mindfulness is considered a state of consciousness in which a person has purposeful and non-judgmental attention to the present moment, which has a positive relationship with factors related to health and well-being and an inverse relationship with psychological stressors (28-30). However, the findings indicate that mindfulness has become more popular in educational situations that have been used with the aim of promoting attention, self-regulation, well-being, motivation, and societal behaviors (31, 32). Efforts made regarding the effectiveness of mindfulness on academic procrastination and related factors also indicate that these interventions have acceptable success in reducing procrastination and increasing psychological capital and academic optimism (33, 34).

In general, it seems that little research has been done regarding procrastination, the factors related to it and its role in the academic failure of students (35). Therefore, considering the increasing spread of procrastination and its negative consequences for students' life and career future and the lack of research in this field, the aim of this study was to investigate the effectiveness of mindfulness-based cognitive therapy on academic emotions and academic optimism among procrastination students.

2. Methods

The present study was a semi-intervention type. The statistical population of the research includes all undergraduate procrastinating students of Payame Noor University, Bostan Abad Branch, who were studying in the academic year 2020. The sample consisted of 30 undergraduate students (15 in the intervention group and 15 in the control group). First, 300 students were selected by Morgan's table. They completed the procrastination questionnaire, out of which 63 students obtained a procrastination score above 50% and had the inclusion criteria, but finally, 30 students were willing to cooperate and were randomly assigned to two intervention and control groups. To allocate students to the interventional and control groups, first

determined 30 lottery balls (with 15 balls for the control group and 15 balls for the intervention group). In the next steps, each student, with a choice of a ball, was randomly assigned to two groups. Inclusion criteria included procrastination, willingness to participate in the study, and no acute mental and physical problems based on personal reports. Absence in more than one session, simultaneous participation in other intervention programs, and dissatisfaction with continuing cooperation at each stage were considered exclusion criteria.

2.1. Data Collection Tools

2.1.1. The Tuckman Procrastination Questionnaire

This questionnaire is a 16-item self-report scale that was designed and standardized by Tuckman at the University of Toronto in 2001 to measure the students' procrastination. Based on the Likert scale, four options were designed from completely agree = 1 to completely disagree = 4. Getting a high score on this scale is a sign of high procrastination [36]. Stober and Joormann, in their research revealed that Cronbach's alpha of this questionnaire was 0.92 in a sample of 185 students [37]. In a study by Motii et al. on a sample of 600 students, Cronbach's alpha coefficient of Tuckman's procrastination questionnaire was reported as 0.72 [38].

2.1.2. Pekran Academic Emotions Questionnaire

This questionnaire was designed by Pekran et al. [12] and measured positive and negative emotions. This scale has 75 items and has three sections: Classroom emotions, learning, and exam. There are two dimensions of positive emotions (with three subscales of pleasure, hope, and pride) and negative emotions (with five subscales of anger, anxiety, shame, frustration, and fatigue) with a five-point Likert scale (from never = 1 to always = 5), and each substance has a value of between one and five. Pekrun et al. [12] reported that Cronbach's alpha of this questionnaire was 0.75 to 0.95 for subscales. Kadivar et al. reported Cronbach's alpha coefficients of this questionnaire between 0.74 and 0.86 [39].

2.1.3. Academic Optimism Questionnaire

This questionnaire was developed by Tschannen-Moran et al. [23] and had 28 questions that include three dimensions of students' academic emphasis, students' trust in teachers, and students' sense of identity towards school. The scoring of this questionnaire is based on a five-point Likert scale (from very low = 1 to very high = 5). The validity and reliability of the questionnaire in the study of Tschannen-Moran et al. [23] were 0.93, 0.96, and 0.97 for each of the subscales, which indicates that the reliability of the questionnaire is desirable. The reliability of the questionnaire in Moradi et al.'s research was 0.91, 0.86, 0.89 for each of the subscales, and for the whole instrument was 0.92 [40].

2.2. A summary of Mindfulness-based Cognitive Therapy Sessions

The mindfulness program was taught in eight sessions and each session for one hour, according to the Kabat-Zinn [28] mindfulness training protocol. Mindfulness-based cognitive therapy sessions are summarized in Table 1. The steps to run the program are as follows:

Finally, with the aim of preparing the post-test, the subjects answered the research questionnaire again. In the end, the collected data were analyzed using *t*-test. It should be noted that statistical analysis was performed using SPSS-23. Unfortunately, it should be mentioned that it was impossible to carry out the follow-up phase due to the time limit.

3. Results

The results of the analysis of 30 subjects showed that the mean ± standard deviation (SD) of age was 24.30 ± 5.93 in the study groups, respectively, and their minimum and maximum were 19 and 33. Also, the examination of demographic variables in Table 2 showed that the two groups were homogeneous. The Shapiro-Wilk test was used to check the normal distribution of the data. The significance level of all the research variables indicated the normal distribution of the research variables (P > 0.05). Levene's test was used to evaluate the homogeneity of variance of research variables. The results showed that the variances are homogeneous between groups (P > 0.05). As seen in Table 2, the two groups were in the same conditions in terms of gender and age distribution.

According to Table 3, the comparison between the group and the average of the detailed emotion components in the two groups shows that positive academic emotions have increased and negative emotions have decreased in the Intervention group.

The averages of all components (academic emphasis, P = 0.018; trust, P = 0.001 (except for the sense of identity (P > 0.05) increased significantly in the post-test stage, which provides the possibility of initial inference from the findings (Table 4). As seen in the descriptive tables, most of the variables were in the same conditions in the pre-test stage.

4. Discussion

The aim of this study was to determine the effectiveness of mindfulness-based cognitive therapy on academic

Table 1. A Summary of Mindfulness-based Cognitive Therapy Sessions

Sessions	The Content of the Sessions
Session 1	Pre-test implementation, communication, and problem conceptualization.
Session 2	Relaxation training.
Session 3	In this session, after a brief review of the previous session, as a relaxation session for the muscles, but in six groups of muscles, it is performed with the eyes closed and performed as follows: Relaxing body for arms and legs, legs and thighs, abdomen and chest, neck and shoulders, jaws and lips and forehead and eyes (50 minutes).
Session 4	In this session, after a brief review of the previous session, attention to breathing is taught. Mindfulness breathing techniques such as inhaling and exhaling are performed with relaxation without thinking about anything else and watching breathing with the eyes closed, respectively.
Session 5	In this session, after a brief review of the previous session, the body scanning technique is taught. Includes the technique of paying attention to the movement of the abdomen and chest while breathing (15 minutes), focusing on the limbs and their movements (20 minutes), and searching the sense of hearing through the ear to the surrounding sounds (15 minutes).
Session 6	After a brief review of the previous session, in this session, mindfulness of thoughts is taught in the following steps: Step 1: Focus on the mind without thinking about anything else by focusing on one point of the mind with a cross on a 4A sheet (15 minutes). Second stage: At this stage, a negative thought about oneself is instilled in persons through the trainer (30 minutes). How many times that thought is brought to mind and attention to this thought is put on the agenda and based on the instructional instructions, the instructor ends the thought.
Session 7	Full mindfulness. In this session, after a brief review of the previous session, the training of sessions 4, 5, and 6 (each for 20 to 30 minutes) is repeated.
Session 8	In this session, to end the sessions and perform the post-test, the subjects were asked to perform the existing techniques of mindfulness training in their daily lives and thus help improve their problems.

Table 2. Demographic Variables of Participants in the Two Study Groups [a, b]

Demographic Variables	MBCT (n = 15)	Control (n = 15)	P-Value
Gender			0.09 [*]
Male	7 (46.67)	6 (40)	
Female	8 (53.33)	9 (60)	
Age	25.07 ± 9.29	24.69 ± 8.83	0.17 [**]

[a] Values are expressed as mean ± SD or No. (%).
[b] [*] Chi-square test; [**] independent *t*-test.

emotions and academic optimism. Based on the first findings of the study, it was found that mindfulness was associated with an increase in positive emotions and a decrease in negative emotions. Studies conducted in relation to research background also indicate that the present finding is implicitly consistent with studies aimed at investigating the effectiveness of mindfulness on a wide range of psychological structures (30, 32, 41). Also in a study, Jokar et al. confirmed the effectiveness of mindfulness in reducing social anxiety and increasing self-confidence (42). Zandi et al. also report mindfulness intervention on reducing test anxiety and increasing happiness in students (43).

The effectiveness of mindfulness on academic emotions can be inferred from the mindfulness emotional regulation model (44). In fact, in this therapeutic approach, paying attention to and allowing the emotions as they are experienced and the lack of automatic reaction to the emotions and their triggering factors prevents the re-experiencing of the consequences of the emotion or the secondary emotions. It can also be said that by emphasizing the present in mind, one of the main causes of nega-

tive emotions (such as depression and anxiety), worry and rumination, is affected. Therefore, reducing rumination and anxiety either directly reduces negative emotions or can play a shocking role by mediating the relationship between stress and negative emotions (such as anger) (45).

Based on another finding of this research, it was found that mindfulness was associated with increased academic optimism in procrastinating students. A review of the research background shows that the present finding is, directly and indirectly, consistent with the studies of Hashemi et al. (34) and Li and Li (41). In a similar study, Kazemi et al. also confirmed the effectiveness of mindfulness in increasing educational optimism (46).

The results of the present study can be attributed to several factors, such as reducing negative emotions and increasing the mental health of procrastinating students. In fact, it can be said that a vicious circle of negative emotions and the consequences of procrastination, in the long run, can put students in a state of learned helplessness (1). Therefore, mindfulness-based exercises that directly and indirectly increase mental health and positive emotions can change a person's attitude toward himself and the world around him. As a result, the development of student social trust in educational settings can be seen in the form of increasing student optimism toward other learners and professors, as well as a sense of benevolence and honesty (20).

Another explanation is that mindfulness helps people in adjusting negative behavioral patterns and automatic thoughts and positive behavioral regulation, and by combining vitality and clearly seeing experiences, it can create positive changes in various characteristics, and by prevent-

Table 3. Descriptive Indicators of Academic Emotions with Intra-group and Inter-group Comparisons [a, b]

Variables and Phase	Intervention Group	Control Group	t	P-Value*
Pleasure				
Pre-test	21.20 ± 4.90	22.00 ± 5.48	1.21	0.161
Post-test	23.66 ± 7.71	23.00 ± 4.98	5.41	0.001
t	6.33	1.68		
P-value	0.001**	0.294**		
Hope				
Pre-test	15.80 ± 3.02	27.93 ± 9.16	-2.48	0.066
Post-test	22.33 ± 4.53	29.00 ± 3.97	4.68	0.001
t	4.56	0.93		
P-value	0.001**	0.254**		
Pride				
Pre-test	13.73 ± 6.11	15.46 ± 3.71	0.76	0.091
Post-test	21.06 ± 5.59	15.26 ± 2.10	2.19	0.001
t	2.93	1.22		
P-value	0.001**	0.334**		
Positive emotions (total)				
Pre-test	49.61 ± 5.05	50.80 ± 7.14	-1.13	0.215
Post-test	84.73 ± 6.49	52.53 ± 5.55	3.68	0.001
t	5.15	1.41		
P-value	0.011**	0.102**		
Anger				
Pre-test	31.20 ± 5.42	30.66 ± 8.12	-0.61	0.177
Post-test	19.13 ± 3.85	30.53 ± 6.89	2.18	0.001
t	-2.25	0.55		
P-value	0.001**	0.431**		
Anxiety				
Pre-test	36.73 ± 7.32	31.93 ± 5.90	1.47	0.083
Post-test	20.13 ± 5.27	31.53 ± 8.00	6.11	0.001
t	-4.29	3.15		
P-value	0.001**	0.381**		
Shame				
Pre-test	34.60 ± 6.65	30.40 ± 8.53	-2.48	0.074
Post-test	20.46 ± 4.98	31.86 ± 7.67	3.68	0.001
t	-4.67	2.19		
P-value	0.001**	0.194**		
Disappointment				
Pre-test	34.06 ± 8.58	34.60 ± 6.78	-0.51	0.145
Post-test	22.33 ± 5.23	29.53 ± 6.82	4.67	0.001
t	-7.19	0.98		
P-value	0.001**	0.071**		
Fatigue				
Pre-test	33.60 ± 8.53	31.06 ± 9.24	-3.16	0.091
Post-test	20.06 ± 3.53	32.66 ± 6.97	-5.91	0.001
t	3.15	1.13		
P-value	0.001**	0.101**		
Negative emotion (total)				
Pre-test	170.20 ± 14.79	159.66 ± 15.47	-0.88	0.113
Post-test	95.53 ± 7.69	156.13 ± 22.50	-3.19	0.001
t	4.67	0.78		
P-value	0.001**	0.117**		

[a] Values are expressed as mean ± SD unless otherwise indicated.
[b] * Independent *t*-test; ** paired *t*-test.

Table 4. Descriptive Indicators of Academic Optimism with Intra-group and Inter-group Comparisons [a, b]

Variables and Phase	Intervention Group	Control Group	t	P-Value*
Academic emphasis				
Pre-test	19.26 ± 4.93	26.40 ± 6.73	0.94	0.059
Post-test	26.20 ± 5.19	25.26 ± 4.74	1.76	0.018
t	4.33	1.37		
P-value	0.001**	0.281**		
Sense of identity				
Pre-test	23.26 ± 6.13	24.26 ± 5.04	1.45	0.092
Post-test	32.26 ± 6.32	25.46 ± 2.29	0.66	0.061
t	3.72	2.63		
P-value	0.001**	0.211**		
Trust				
Pre-test	23.00 ± 6.91	24.40 ± 13.29	0.97	0.021
Post-test	32.66 ± 5.96	27.00 ± 10.09	3.17	0.001
t	7.06	1.41		
P-value	0.031**	0.091**		
Academic optimism (total)				
Pre-test	65.53 ± 11.80	69.00 ± 9.39	1.20	0.814
Post-test	93.86 ± 10.75	67.39 ± 14.31	3.16	0.002
t	5.48	2.17		
P-value	0.001**	0.071**		

[a] Values are expressed as mean ± SD unless otherwise indicated.
[b] * Independent *t*-test; ** paired *t*-test.

ing the occurrence of negative thoughts, it spreads positive thoughts (47). Therefore, it seems that mindfulness exercises can lead to the reduction of negative thoughts and emotions, which are known to be an effective factor in the continuation and emergence of procrastinating behaviors. Therefore, it can be said that mindfulness training is one of the effective approaches to modifying and controlling thought processing. In other words, with this method, one's thoughts are experienced as mental events, and concentration and attention on breathing are used as a tool for living in the present. As a result, it seems that this method can be effective in improving academic characteristics such as academic optimism and its components, including trust, academic emphasis, and a sense of identity (34).

Overall, the findings of the analysis showed that mindfulness-based cognitive therapy was associated with an increase in positive emotions and optimism as well as a decrease in negative emotions. This finding may be due to increased psychological health or increased skills in emotion management.

Footnotes

Authors' Contribution: Study concept and design, S. A., A. P. and R. A.; acquisition of data S. A. and A. P.; analysis and interpretation of data, S. A., A. P. and R. B. G.; drafting the manuscript, A. P., R. A. and S. A.; writing, review, editing and confirmation, S. A., A. P., R. A. and R. B. G. All authors read and approved the final manuscript.

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