



The effectiveness of adolescent-oriented mindfulness training on academic burnout and social anxiety symptoms in students: experimental research

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Abstract

The aim of this study was to investigate the effectiveness of adolescent-oriented mindfulness training on academic burnout and social anxiety symptoms in students. The current study was a semi-experimental type with a pretest–posttest design with a control group with the measurement at baseline after the intervention and a 3-month follow-up. The statistical population included all high school students with symptoms of social anxiety who were studying in Tehran in the academic year 2022. Among the students, 100 students were selected as a sample by purpose-based sampling and randomly assigned to two experimental and control groups (50 people). The tools of this research were a researcher-made demographic questionnaire, social anxiety questionnaire, academic burnout questionnaire, and adolescent-oriented mindfulness protocol. Data analysis was performed using analysis of variance with repeated measures. The results showed that adolescent-oriented mindfulness training had a significant effect on reducing academic burnout and social anxiety symptoms of students ($P < 0.001$). Based on the findings of the research, it can be said that adolescent-oriented mindfulness training is effective in reducing academic burnout and social anxiety symptoms of students.

Keywords: academic burnout, adolescent-oriented mindfulness training, social anxiety, students

Introduction

As the basic pillar of the country's education system, students have a special role and position in achieving the goals of the education system^[1]. In the current society of students (about 40%), anxiety is considered one of the problematic factors in students^[2]. Social anxiety disorder is defined as a specific, consistent, and persistent fear of being embarrassed or evaluated in social situations or while performing an activity in front of others^[3].

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HIGHLIGHTS

- Adolescent-oriented mindfulness training is effective in reducing academic burnout and social anxiety symptoms of students.
- The training of techniques based on mindfulness by encouraging people to practice repeated attention focused on neutral stimuli and deliberate awareness of the body and mind frees anxious people from mental preoccupation with threatening thoughts and worries about their behavior and takes their minds out of automatic gear.
- These techniques reduce anxiety and physiological tension in a person by increasing the person's awareness of the experiences of the present moment and returning attention to self-cognition and more efficient processing of information.

People diagnosed with social anxiety in different social situations are always afraid that others will consider them anxious, weak, and disturbed people^[4]. The main fear of a person in this situation is that he is afraid to behave in a way that will humiliate and shame him or be evaluated negatively. For this reason, they mostly avoid these situations due to the intense anxiety they bring^[5,6]. Although research on social anxiety disorder has attracted the attention of psychologists and researchers in recent years, such research has mainly focused on the adult community. But it is believed that social phobia also has a great impact on

teenagers and is associated with significant harm for teenagers, which probably hinders the natural development of their personal and social relationships and, as a result, causes them to avoid school^[7]. Also, teenagers who suffer from social anxiety have reported a lot of depression and suicidal thoughts^[8]. In addition, social anxiety in adolescents is related to an increase in the level of behavioral problems such as truancy, running away from home, and lying, high dropout rates, and reduced health, employment, job performance, socioeconomic status, and quality of life^[9]. Students who have social anxiety usually experience symptoms such as academic burnout, unwillingness to continuously attend class, lack of participation in class activities, frequent absences, and feelings of meaninglessness and incompetence in learning course material^[10,11].

One of the problems of the educational system at all levels of education, which causes the weakening of academic performance, and waste of human resources and expenses, is academic burnout. Burnout can be called a disorder that occurs in a person due to long-term exposure to environmental stress, and its symptoms appear in physical, psychological, emotional, and mental dimensions^[12]. It has been mentioned in a study that burnout is caused by hard and unmotivated work, and its symptoms appear in the form of different symptoms, and these symptoms and their severity are different from one person to another. Academic burnout among school students is the feeling of being tired from the demands and requirements of education (fatigue), having a pessimistic sense (apathy), and feeling incompetent as a low-performing student, which can be considered a chronic reaction in students who first, they are involved with the requirements of the study period, and it is caused by a difference between students' abilities and their expectations of others for their success in education^[13,14]. Various reasons caused academic burnout to be considered an important research field, including the impact of burnout on academic performance, students' commitment to educational activities at school, interest

in continuing education, and scientific participation after graduation^[15].

Mindfulness programs refer to a specific subset of meditation practices that have received increasing attention in recent years. Currently, the word 'mindfulness' is used to describe a special way of paying attention to the present moment, which is associated with a receptive and nonjudgmental state. The term is often used to describe a specific type of meditation practice that focuses on attending to present experiences in the here and now^[16]. The goal of these interventions is to create a clear and nonjudgmental awareness of what is happening in perception every successive moment. The meaning of perception includes a range of possible phenomena from internal psychological states and processes (such as thoughts, feelings, memories, and emotions) and information issued from the body to the external stimulus entered into the senses. As discussed, this approach is rooted in Buddhist beliefs that see psychological suffering as arising from a judgmental mind that divides experiences into good and bad and that must be fought or avoided, thus leading to levels of frustration, distress, and anxiety and depression^[17].

Sapthiang *et al.*^[18] managed to improve the mental health of high school students during a mindfulness training course^[5]. Roux and Philippot^[19], in a quasi-experimental study, showed that a training course based on mindfulness led to a reduction in behavioral disorders in adolescents^[9]. Therefore, considering that several studies have shown that mindfulness-based programs may have promising benefits for adolescents. However, by reviewing the research done inside and outside the country, the researchers found that the research that investigated the impact of adolescent-oriented mindfulness training on academic burnout and social anxiety among female students of the second secondary level has been neglected. Therefore, the purpose of this research was to answer this question, does adolescent-oriented

Table 1
The structure of the adolescent-centered mindfulness training protocol.

Session	Summary of content
First session: Be more present (attention and five senses)	In this session, after introducing the clients, they talk about stimulating visual attention and visual awareness, stimulating nonvisual or nonvisual attention, paying attention to the five senses, and conscious eating
Second session: Focusing the wandering mind	This session talks about focusing the wandering mind, walking and breathing consciously, mental awareness in daily life, and using visual reminders
Third session: Guiding and strengthening awareness	In this session, we talk about directing and strengthening awareness, mindfulness of the sound of breath and body, listening to music, concentration, and mindfulness of the sound of breath and body, the practice of stopping, walking in nature, and paying attention to the surroundings
Fourth session: Listening to the body	In this session, we will talk about awareness of body movement and senses and focusing on them, learning to listen to the body, body scanning, conscious movement, conscious walking, soft smile practice, getting a massage, working with difficult body senses, and focusing on physical pain
Fifth session: Mind observation	This session is about awareness and concentration on thoughts, the mind like the sky, observing thoughts under a tree, the mind like an ocean, and the imagination of thought. Creating a space for a moment of grace, maintaining balance through acceptance and change, judgmental thinking, the mutual impact of judgmental thoughts on a person, developing compassionate and supportive thinking, blaming others or blaming oneself are discussed
Sixth session: Emotion management	In this session, we will talk about focus and mindfulness on emotions, observation of anxiety and pain, practicing rain, meditation, and kindness, response to emotions, self-love, patience, forgiveness, and positive emotions
Seventh session: Establishing a skillful relationship	In this meeting, we talk about conscious listening and speaking, examining sensitivity to criticism, communication in relationships, nonviolent communication, goal setting, and conscious presence
Eighth session: Slowing down is much more effective	This session is about operations and thoughtful decisions, using the practice of stopping in doing things, mountain meditation, conscious self-coaching, finding motivation and moving toward it, using music, paying attention to core feelings, prioritizing tasks and doing work, rewarding self-completion, creating good habits, time management, the sequence of choosing, starting to do, and finishing a task are talked about with mindfulness

mindfulness training affect students' academic burnout and social anxiety?

Method

The present study was a semi-experimental study with a pretest-posttest design with a control group and a 3-month follow-up. The statistical population included all female high school students with symptoms of social anxiety who were studying in the city of Tehran in the academic year of 2022. The sample of the current research is based on purpose-based sampling and includes 100 people (50 people in each group; experimental group and control group). The criteria for entering the research in this study were: no history of psychological and mental illness, history of hospitalization (checked through clinical interview and examination of the student's file), having a diagnosis of social anxiety disorder, the desire to be a colleague, and the criteria for dropping out of the study for the experimental group were failure to attend intervention sessions for more than two sessions, unwillingness to continue attending intervention sessions. To comply with the ethical considerations of this research, written informed consent was obtained from the student's parents and the confidentiality of all the participants' information was announced to the subjects in writing. Data analysis was done by repeated measures analysis of variance using SPSS version 22 software. The content of the sessions is described in Table 1.

Tool

Social anxiety questionnaire

The adolescent social anxiety scale was developed by La Greca^[20], which includes 18 items and consists of three subscales, fear of negative evaluation, social avoidance and sadness in new situations, and social avoidance and general sadness. Using factor analysis, the creators identified three factors. Fear of negative evaluation by peers, dimension of social avoidance, and sadness in new situations, dimension of social avoidance, and general sadness are determined.

The scoring method of the social anxiety questionnaire scale is based on a five-point Likert scale [from the score (5) completely like me (4) somewhat like me (3) I have no opinion (2) different from me (1) completely different from me]. High scores on this scale indicate higher anxiety. The validity of the social anxiety questionnaire was confirmed by its creators. Its validity is also reported using Cronbach's α coefficient as 0.87^[21].

Table 2
Comparison of the mean and SD of pretest, posttest, and follow-up of social anxiety and academic burnout, according to control and experimental groups.

The dependent variable		Experimental group		Control group	
		Mean	SD	Mean	SD
Social anxiety	Pretest	58.03	1.61	58.02	6.03
	Posttest	31.08	2.63	55.51	8.59
	Follow-up	40.64	4.36	61/05	5.81
Academic exhaustion	Pretest	58.11	0.18	57.12	0.61
	Posttest	36.14	0.37	56.93	0.35
	Follow-up	45.87	0.42	56.89	0.34

Table 3
The results of the Shapiro–Wilks test by the control and experimental groups.

The dependent variable		Experimental group		Control group	
		Statistics	Significance	Statistics	Significance
Social anxiety	Pretest	0.98	0.977	0.96	0.787
	Posttest	0.97	0.919	0.93	0.427
	Follow-up	0.97	0.916	0.94	0.533
Academic exhaustion	Pretest	0.93	0.366	0.95	0.686
	Posttest	0.88	0.077	0.93	0.344
	Follow-up	0.85	0.034	0.94	0.447

Maslakh's academic burnout questionnaire

Maslakh's academic burnout questionnaire was used to evaluate three areas of academic burnout, including school fatigue, school apathy (pessimism), and school inefficiency. The questionnaire has 15 items, which were scored on a 7-point Likert scale ranging from 'never to always'. School fatigue has five items, 'all lessons are boring'; school apathy has four items, 'I feel that I am not interested in lessons'; and school inefficiency has six items, 'I feel that I cannot cope with the course problems'. Items 1, 4, 7, 10, and 13 are related to the subscale of emotional exhaustion, items 2, 5, 11, and 14 are related to the subscale of pessimism (apathy), and items 3, 6, 8, 9, 12, and 15 are related to the subscale of school inefficiency. As the school efficiency scale (i.e. positive statements) is used for this subscale, the items of this subscale are reversely scored^[22]. In Iran, this questionnaire was translated by Ziari *et al.*^[23], and the results indicated a good level of validity and reliability. Moreover, Shamloo *et al.* evaluated the item total correlation and internal consistency (total α), which were 0.79, 0.85, and 0.87, respectively. The interclass correlation coefficient was 0.87, indicating good test-retest reliability ($r=0.87$, $P < 0.01$)^[24].

Statistical analysis

Data analysis was performed using analysis of variance with repeated measures.

Results

In this research, the effectiveness of adolescent-oriented mindfulness training on the components of social anxiety and academic burnout was investigated on 100 female students in the

Table 4
The results of Levene's test to check the homogeneity of error variance.

The dependent variable		Levene's test	df1	df2	Significance
Social anxiety	Pretest	2.57	1	22	0.138
	Posttest	4.05	1	22	0.061
	Follow-up	2.71	1	22	0.124
Academic exhaustion	Pretest	0.99	1	22	0.345
	Posttest	0.87	1	22	0.374
	Follow-up	1.73	1	22	0.209

Table 5
df, degrees of freedom. The results of multivariate tests to investigate the effectiveness of adolescent-oriented mindfulness training.

Test	The amount of	F	df	Significance	Eta squared (η^2)
Pillai's trace	0.81	45.61	21	0.001	0.813
Wilks' lambda	0.19	45.61	21	0.001	0.813
Hotelling's trace	4.34	45.61	21	0.001	0.813
Roy's largest root	4.34	45.61	21	0.001	0.813
Pillai's trace	0.78	37.32	21	0.001	0.78
Wilks' lambda	0.22	37.32	21	0.001	0.78
Hotelling's trace	3.55	37.32	21	0.001	0.78
Roy's largest root	3.55	37.32	21	0.001	0.78

df, degrees of freedom.

second year of high school (50 in the control group, 50 in the experimental group). Examining the frequency of parents' education status and income level in the two groups indicated that the demographic variables were the same in the two groups.

The results of Table 2 showed that in the control group, there is no noticeable difference between the average scores of the pretest, posttest, and follow-up dependent variables, and there is no significant difference between the pretest of the control group and the test, which means that the group is homogeneous; approves control and testing.

Before examining the hypotheses of the research, the data of the research was first separated into groups (control-experiment) and positions (pretest-posttest follow-up) in terms of the normality of the data using the Shapiro-Wilk test (Table 3).

The results of the Shapiro-Wilks test in Table 3 show that the assumption of normality of the data in the dimensions of social anxiety and academic burnout in the pretest, posttest, and follow-up situations has a normal distribution ($P < 0.05$).

The results of Table 4 indicate the homogeneity of the two groups in the pretest stage, and also the findings in Table 5 showed that the dependent variables have a normal distribution. Therefore, to investigate the effectiveness of adolescent-oriented mindfulness training on social anxiety and academic burnout, repeated measurement variance analysis was used. First, the assumptions of repeated measurement variance analysis were examined. The results of the Mbox test were checked to check the assumption of homogeneity of the covariance matrix, which showed that this assumption is not valid for the investigated components, but considering the high sample size of the two groups, it can be said that this test is resistant to the violation of this assumption. Then, the assumption of sphericity was implemented using Mochli's test for all the investigated variables, and the results of this test showed that it was valid for the variables of

academic burnout and social anxiety ($P < 0.05$). Then, the assumption of homogeneity of error variance was checked using Lune's test, and the results of this analysis showed that this assumption is valid for the components of social anxiety and academic burnout ($P < 0.05$). The results of this analysis are presented in Table 4.

The results of multivariate tests in Table 5 showed that the training of adolescent-oriented mindfulness in the time factor [Eta square (η^2) = 0.813, $P < 0.001$, $F = 45.61$] and the interactive effect of time and group ($\eta^2 = 0.78$, $P > 0.001$, $F = 32.37$) is significant. These results show that the intervention of the adolescent-centered mindfulness training model is effective in the investigated dimensions.

The results of the intergroup effect test in Table 6 showed that in the two control and experimental groups, the social anxiety variable ($P < 0.001$, $F = 7816$) and academic burnout ($P < 0.001$, $F = 2.8327$). There is a significant difference between the two experimental and control groups. The results of the within-group effect test showed that the effect of the time factor was significant for the variables of social anxiety ($P < 0.001$, $F = 43.16$) and academic exhaustion ($P < 0.001$, $F = 7451.9$). The interaction effect of time \times group is also significant, and the results of this analysis are fully presented in Table 7. These results indicate the effectiveness of the adolescent-oriented mindfulness training intervention on the investigated dimensions, and the comparison of the averages indicated a decrease in social anxiety and academic burnout in the experimental group compared to the control group.

After the effects of time, group, and interaction became significant, the three modes of pretest, posttest, and follow-up were compared and analyzed separately for each variable, and the results are reported in Table 7.

The findings in Table 7 show that there is a significant difference between the pretest and posttest in three variables of social anxiety and academic burnout ($P < 0.001$); in other words, the effect of the intervention is confirmed. Also, there is a significant difference between the pretest and follow-up in all three variables ($P < 0.001$); in other words, the effect of time is confirmed. There is a significant difference between the posttest and follow-up in the two variables of social anxiety and academic burnout ($P < 0.001$).

Discussion

The present study aimed to investigate the effectiveness of adolescent-oriented mindfulness training on academic burnout and social anxiety among female students of the second secondary level. The results of this research are in line with previous research that investigated the effectiveness of this method of intervention

Table 6
The results of the test to compare the intragroup and intergroup effects in the two experimental and control groups.

The dependent variable	Source of changes	Sum of squares	df	Mean square	F	Significance	Eta squared (η^2)
Social anxiety	Group	4101.03	1	4101.03	7816.8	0.001	0.897
	Time	2559.07	2	1279.53	43.16	0.001	0.662
	Time \times Group	2118.68	2	1059.34	35.73	0.001	0.619
Academic exhaustion	Group	5416.21	1	5416.21	8327.2	0.001	0.923
	Time	1476.17	2	738.08	7451.9	0.001	0.853
	Time \times Group	1419.97	2	709.98	7168.2	0.001	0.836

df, degrees of freedom.

Table 7
The results of the Bonferroni follow-up test to investigate the effectiveness of adolescent-oriented mindfulness training over time.

Comparison	Social anxiety			Academic exhaustion		
	Mean difference	Standard error	Significance	Mean difference	Standard error	Significance
Pretest–posttest	14.60	1.49	0.001	11.06	0.081	0.001
Posttest follow-up	4.42	1.62	0.001	4.82	0.091	0.001
Pretest follow-up	7.17	1.59	0.001	6.23	0.099	0.001

on the psychological characteristics of adolescents^[18,19,23]. In explaining this finding, it can be said that the training of techniques based on mindfulness by encouraging people to practice repeated attention focused on neutral stimuli and deliberate awareness of the body and mind frees anxious people from mental preoccupation with threatening thoughts and worries about their behavior and take their minds out of automatic gear. That is, these techniques reduce anxiety and physiological tension in a person by increasing the person's awareness of the experiences of the present moment and returning attention to self-cognition and more efficient processing of information^[25,26]. Mindfulness is a nonjudgmental and indescribable and present-based awareness of an experience that is within the scope of a person's attention at a particular moment, and in addition, it includes acknowledging and accepting said experience. And increasing mindfulness is effective in improving the components of positive adolescent development, considering the growth of acceptance, understanding, and personal growth in mindfulness, and allows a person to respond to events involuntarily and recklessly. Respond with thought and reflection and make them more capable of recognizing, managing, and solving everyday problems. Mindfulness training, by increasing a person's awareness of the present, through techniques such as paying attention to breathing and the body, as well as directing awareness to the here and now, affects the cognitive processing system and information processing and reduces rumination and ineffective attitudes. It happens in people. It also makes people aware of their unnecessary thoughts and re-directs their thoughts to other aspects of the present, such as breathing, walking with the presence of the mind, or environmental sounds, thereby reducing rumination. That these positive changes in the individual increase the components of positive adolescent development, including competence, confidence, communication, character, and care. The primary goal of adolescent-oriented mindfulness training is to prepare patients by teaching meditation techniques to cultivate and develop the quality of mindfulness. Therefore, the main focus of adolescent mindfulness training is to teach participants different meditation techniques that lead to the expansion of mindfulness. Although these different mindfulness techniques differ somewhat in method, they share the same goal of becoming more aware of your thoughts and feelings and changing your relationship with them. Mindfulness meditation is used to expand the view that thoughts and feelings are considered mental events and not aspects of the self or true reflections of reality. In the early days of adolescent-centered mindfulness training, Kabat-Zinn extensively evaluated and structured mindfulness meditation programs. Adolescent-centered mindfulness training using Buddhist intranasal meditation techniques first developed in medical fields and then extended to general and psychological fields^[27].

Conclusion

Based on the findings of the research, it can be said that adolescent-oriented mindfulness training is effective in reducing academic burnout and social anxiety symptoms of students. This research also faced some limitations. In this research, adolescents with social anxiety disorder were included in the research, and therefore, the generalization of the results to other adolescents is limited. Also, despite full supervision and providing explanations by the researcher, teenagers may not be accurate in filling out self-report questionnaires due to anxiety. It is suggested to use other age groups in future research. Also, in future research, normal teenagers will be used and the results will be compared with the findings of the current research. Considering the effectiveness of the training, it is suggested that such a training program should become part of the written treatments of counseling centers for children and adolescents, and by holding training workshops, the therapists would have sufficient knowledge in this field. It is also suggested to conduct correlational research using structural equation modeling to find mediating variables in the relationship between mindfulness and social anxiety or the components of academic burnout in teenagers.

Ethical approval

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. All procedures involving human subjects/patients were approved by Research Ethics Committees of Payame Noor University (Ethical code: IR.PNU.REC.1401.211).

Consent

Written informed consent was obtained from the patient for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Author contribution

Z.A. and M.B.A.: designed the study; M.G.H., E.M.M., and N.R.: collected the data; M.B.A., M.M.S., and M.B.A.: analyzed the data; Z.A. and M.B.A.: interpreted the results and wrote and approved the final draft.

Conflicts of interest

The authors declare no conflicts of interest.

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Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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