



The Effectiveness of Mindfulness-Based Stress Reduction and Dialectical Behavior Therapy on Self-Determination Needs and Academic Burnout among Students Showing Depressive Symptoms

Farahnaz Sadat Mousavi¹, Fatemeh Sadat Marashian^{1*}, Saeed Bakhtiarpour¹

¹ Department of Psychology, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran.

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Abstract

Background: The satisfaction of self-determination needs and alleviation of academic burnout help students reduce/adjust the stress and psychological pressure resulting from studies and the university entrance examinations. The present study aimed to investigate the effectiveness of mindfulness-based stress reduction (MBSR) and dialectical behavior therapy (DBT) on self-determination needs and academic burnout among students showing depressive symptoms in Dehloran (Iran).

Methods: In this experimental study, the statistical population comprised all female twelfth-grade high-school students studying for the university entrance exam in Dehloran, Iran in the academic year 2020-21. The sample consisted of 45 students showing depressive symptoms who were selected by convenience sampling, and then randomly divided into two experimental (MBSR and DBT) and a control group (n=15 each). Either MBSR or DBT intervention was administered to the experimental groups, but the control group received no intervention. The research instruments included the self-determination needs scale, academic burnout scale, and Beck depression inventory-II (BDI-II). The data were analyzed via descriptive statistics and multivariate analysis of covariance (MANCOVA).

Results: The results showed that MBSR and DBT both positively affected the self-determination needs ($F=92.44$, $Pvalue=0.001$) and academic burnout ($F=68.54$, $Pvalue=0.001$) of students studying for the university entrance exam and showing depressive symptoms. According to the results, MBSR was more effective in students' self-determination and academic burnout ($Pvalue=0.01$).

Conclusions: It was found that both MBSR and DBT can help improve the self-determination needs and academic burnout of female high-school students studying for the university entrance exam and showing depressive symptoms.

Keywords: Mindfulness, Dialectical behavior therapy, Self-determination, Depression, Students.

*Corresponding to: FS Marashian, Email: fsadatmarashian@gmail.com

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Introduction

Students constitute a valuable human capital for all societies as they can contribute to development and progress with the skills and knowledge they acquire.¹ Adolescent high-school students experience unique biological, psychological, emotional, and social conditions in this critical period. Students

may face academic problems as well as psychological disorders (stress, worry, anxiety, etc.) due to the heavy load of studies, the wide-ranging cognitive tasks to perform, and the competition for the university admission.² The prospect of the university entrance exam exacerbates many emotional and psychological pressures, leading to academic problems and psychological distress.³

Twelfth-grade high-school students studying for university entrance exam need specific skills, mastery over the situation, and certain psychological variables to better learn and promote their academic performance. Self-determination needs are among the psychological needs and variables relevant to students' psychological states. Self-determination behavior refers to the voluntary agency allowing people to act as a primary agent to maintain and promote their quality of life. Self-determination can also be defined as one's ability to set and achieve goals based on self-knowledge and self-value.^{4,5} The self-determination theory posits three basic psychological needs for any human being: autonomy, competence, and connection. These inherent needs have a self-motivational basis and are essential to one's tendency for growth, progress, and well-being.⁶ Autonomy is a sense of will and self-confirmation in an activity; competence refers to the experience of being influential when dealing with the environment, and connection denotes the experience of mutual attention and relationship with others.⁷

Another variable relevant to twelfth-grade high-school students' states is academic burnout,⁸ defined as a sense of exhaustion when performing educational tasks and studying, harboring a pessimistic attitude towards education and educational tasks, and a sense of academic incompetence.⁹ This variable includes three components of academic exhaustion, disinterest, and inefficiency. Academic exhaustion is felt as pressure, especially as chronic fatigue due to excessive academic tasks as well as a cynic or indifferent attitude towards school work.¹⁰ Academic burnout has been shown to cause depression. Students and others who experience academic burnout lose interest in their studies, do not regularly take part in classes or class activities, lose the sense of meaning, feel incompetence in performing tasks, fail to learn new materials, and eventually, experience academic underachievement.^{11,12}

The satisfaction of self-determination needs and alleviation of academic burnout help students reduce/adjust the stress and psychological pressure resulting from studies, university

entrance examination, and the educational setting. Currently, however, the stressful and intense competition for university enrollment may cause worries, psychological distress, emotion dysregulation, and academic burnout in students, even predisposing some of them to psychological disorders.¹³

The mindfulness-based stress reduction (MBSR) program is a group treatment entailing a wide spectrum of mindfulness exercises, e.g., sitting meditation, body scan, yoga, and compassion meditation.¹⁴ Mindfulness refers to a special form of non-judgmental and purposeful attention at the moment. Mindfulness teaches people to be aware of their mental states at any moment and concentrate via diverse mental techniques.¹⁵ With mindfulness, people realize that most feelings, thoughts, and emotions are oscillating and transient, and pass like sea waves. People are encouraged to pay attention to their internal experiences at any moment, including bodily sensations, thoughts, and feelings.¹⁶ Various studies on mindfulness, and the MBSR program, in particular, confirm its effectiveness in alleviating psychological disorders.¹⁷ This program can help mitigate different problematic conditions, including stress, anxiety, relapse of depression, eating disorders, and academic problems.¹⁸

Dialectical behavior therapy (DBT) is another psychotherapy with widely confirmed effects in different clinical populations.¹⁹ DBT is a modified form of cognitive-behavioral therapy (CBT) that especially suits people with emotion dysregulation.²⁰ Through mindfulness, distress tolerance, emotion regulation, and interpersonal skills, DBT aims to ameliorate psychological, emotional, cognitive, behavioral, interpersonal, and communication deficits and problems.²¹ Various studies have confirmed the effectiveness and efficiency of DBT for various psychological conditions and among diverse clinical populations, especially students.^{22,23} According to Hung et al.²⁴, DBT is one of the best therapies for promoting autonomy, trusting one's self-image, hopefulness, and proper communication among students. Van strien et al.²⁵ also reported that DBT increases positive beliefs, motivation, hope, and meaning among female students with depression.

Regarding the above statements, the present study aimed to investigate the effectiveness of MBSR and DBT on self-determination needs and academic burnout among students showing depressive symptoms.

Materials and Methods

The study method was experimental with a pre-test and post-test design and a control group. The statistical population comprised all female twelfth-grade high-school students studying for the university entrance exam in Dehloran, Iran in the academic year 2020-21. The researchers first visited the department of education of Dehloran to explain the objectives of the study to those in charge for approval. Subsequently, they visited all-girls high schools in Dehloran and administered the questionnaire. Based on the variables' cut-off points, 45 female

twelfth-grade high-school students studying for the university entrance exam were finally selected for participation. The students then visited the counseling center (Saye-ye Omid-e Zendegi). The researchers explained the objectives of the study, ethical considerations (voluntary participation, the confidentiality of information, etc.), and received the participants' informed consent. The participants were then randomly allocated to the experimental and control groups. The questionnaires were administered, and the students were given enough time to fill them out. Next, one experimental group received group MBSR and the other experimental group received group DBT intervention one session a week based on the respective guidelines, whereas no psychotherapy or training was administered to the control group. At the end of the sessions, all three groups took the post-test.

Self-Determination Needs Scale: This 21-item scale developed by Sorebo in 2009 comprises three subscales of autonomy, competence, and perceived connection. The items are scored on a five-point Likert scale from "completely incorrect" (1) to "completely correct" (5). Ghadampour et al.²⁶ reported the internal consistency of this questionnaire equal to 0.81 based on Cronbach's alpha coefficient. In this study, Cronbach's alpha was 0.80 for the scale.

Academic burnout questionnaire: This 15-item scale developed by Bresó in 2007 measures academic burnout in three domains of emotional exhaustion, disinterest, and inefficiency. This questionnaire was rated based on the 5-point Likert scale (strongly disagree to strongly agree). Kordzanganeh et al.²⁷ reported the internal consistency of this questionnaire is equal to 0.87 based on Cronbach's alpha coefficient. In this study, Cronbach's alpha was 0.85 for the questionnaire.

Beck depression inventory-II (BDI-II): BDI-II is a short 13-item self-report developed by Beck in 1972 to assess depressive symptoms such as emotional, cognitive, motivational, and physiological depression. It comprises several groups of questions, with each question expressing a state. This questionnaire includes a four-item scale, with scores ranging from 0 to 39. Amiri et al.²⁸ reported the Cronbach's alpha of 0.84 for the inventory that indicates the good reliability of the inventory. In the present study, Cronbach's alpha was 0.82 for the inventory.

The first experimental group underwent eight 60-minute sessions of MBSR (one session per week), and the second experimental group underwent eight 90-minute sessions (one session per week) of DBT. Tables 1 and 2 presents a summary of sessions.

The effectiveness of MBSR and DBT on self-determination needs and academic burnout among students showing depressive symptoms was studied by multivariate analysis of covariance (MANCOVA). SPSS24 software was further used for analyzing the data.

Table 1. Content of MBSR sessions

Sessions	Content (sample exercises)
1	The participants are asked to deeply feel the process of eating a raisin and then discuss their feeling. This is followed by 30 minutes of body scan meditation (paying attention to a part of the body while breathing).
2	The participants are encouraged to perform body scan meditation and then discuss this experience and the experience of doing their homework. Barriers to the exercise (restlessness and wandering mind) and solutions to these problems (being non-judgmental and releasing intrusive thoughts) are discussed. The participants are then asked to perform sitting meditation.
3	The participants are requested to watch and listen non-judgmentally for 2 minutes. This task is followed by sitting meditation and breathing while paying attention to bodily sensations.
4	Identifying a higher power and establishing a better relationship with it, using self-encouraging and self-confirming coping thoughts, a list of coping thoughts, developing a coping plan for emergencies (confirming self-talk, exercise, sleep hygiene), increasing positive emotions, non-judgmental self-monitoring
5	The participants pay attention to breathing, the sounds of their bodies, and thoughts. Then, they discuss stress responses and reactions to difficult situations, as well as alternative attitudes and behaviors. Finally, they practice mindful walking.
6	The session begins with a three-minute breathing space exercise. The participants practice the theme of "The content of thoughts is largely unreal". Next, they perform four meditation exercises sequentially for 1 hour.
7	This session begins with four-dimensional meditation and awareness of whatever enters one's consciousness at the moment. The theme of this session is: "What is the best way to take care of myself?"
8	The theme of this session is: "Using what you've learned so far". This session starts with body scan meditation and is followed by a three-minute breathing space.

Table 2 of DBT sessions

Components/ Sessions	Skills	Content (sample exercises)
Fundamental core mindfulness (Sessions 1 and 2)	What skills, (Observe, describe, participate)	Conscious breathing, one-minute concentration, concentration on an object, the full concentration at the moment, wise mode, training, and practicing decision-making based on the wise mode
	How skills, (non-judgment, core mindfulness, effectiveness)	Practicing negative judgments and their positive forms, recognizing judgments and labels, training the daily mindfulness program, enhancing mindfulness skills through kindness and compassion, practicing meditation to attain peace and silence,
Distress tolerance (Sessions 3 and 4)	Crisis survival skills, (Distraction, self-soothing, improving the moment, pros and cons)	Distraction through counting, distracting one's attention from self-harming behaviors, self-soothing through the five senses, visualizing (imagining) a safe place, making a list of pleasurable activities, and including them in the weekly schedule
	Reality acceptance skills, (Radical acceptance, turning the mind. satisfaction)	Identifying a higher power and establishing a better relationship with it, using self-encouraging and self-confirming coping thoughts, a list of coping thoughts, developing a coping plan for emergencies (confirming self-talk, exercise, sleep hygiene), increasing positive emotions, non-judgmental self-monitoring
Emotion regulation (Sessions 5 and 6)	Identifying and naming the emotions, identifying barriers to changing emotions, reducing vulnerability to emotions, increasing positive emotional events	Identifying and recognizing the emotions, emotion identification exercise, recognizing the barriers to healthy emotions through the Thought, Feeling, and Behavior Model, recognizing emotions that lead to dangerous and harmful behaviors, thought-emotion balance by filling out a worksheet
	Promoting emotion awareness, opposite action, using distress tolerance skills and techniques	Non-judgmental mindfulness of emotions, dealing with emotions, recording the emotions and completing the emotion registration from, opposite action to intense emotional desires, completing the opposite action planning exercise, using the weekly worksheet to reduce vulnerability
Interpersonal relationship (Sessions 7 and 8)	Skills for expressing needs, Saying no firmly	Making a simple request (with practice), balancing one's and others' needs, adjusting the intensity of desires, practicing the skill of saying 'no', training negotiation, assertiveness skills,
	Coping or dealing with unavoidable interpersonal conflicts	Self-knowledge, valuing oneself, writing one's rights, identifying communication styles, interpersonal skills acquisition, identifying barriers to implementing interpersonal skills, identifying passive strategies in relationships (shyness), identifying interpersonal problems

Results

The participants included 45 girls' students showing depressive symptoms, aged 17.68±1.35 years old. Table 3 lists the mean and standard deviation (SD) of self-determination needs and academic burnout scores in the MBSR, DBT, and control groups on pre-test and post-test.

Table 3. Mean±SD of the variables in experimental and control groups

Variables	Phases	MBSR	DBT	Control
		M±SD	M±SD	M±SD
Self-determination needs	Pre-test	60.47±7.53	59.87±7.68	60.53±7.51
	Post-test	68.33±7.82	66.20±7.82	60.73±8.48
Academic burnout	Pre-test	52.07±4.97	55.60±4.48	54.20±4.31
	Post-test	44.47±5.19	50.27±4.28	54.07±4.09

First, the assumptions of the analysis of covariance (ANCOVA) were checked. To this end, five assumptions of ANCOVA, namely linearity, multicollinearity, homogeneity of variances, homogeneity of regression line slopes, and normal distribution of variables were investigated. The experimental and control groups had homogeneous variances before the intervention (on pre-test). The multivariate analysis of covariance (MANCOVA) revealed that the three groups significantly differed in at least one dependent variable (Table 4).

Table 5 presents the results of ANCOVA within MANCOVA on post-test scores of the dependent variables. Based on the results, the three groups differed in terms of self-determination needs ($F=92.44$, $Pvalue=0.001$) and academic burnout ($F=68.54$, $Pvalue=0.001$).

Table 4. Results of multivariate analysis of covariance on the scores of dependent variables in experimental and control groups

Variables	Value	df	Error df	F	Pvalue
Pillais trace	0.916	4	80	6.88	0.001
Wilks lambda	0.106	4	78	40.41	0.001
Hottelling's trace	8.23	4	76	78.26	0.001
Roy's largest root	8.21	4	40	164.26	0.001

Table 6 presents the Bonferroni post-hoc tests results to compare the adjusted means of self-determination needs and academic burnout in the three groups. The experimental groups significantly differed from the control group in terms of self-determination needs. In this variable, the comparison also revealed the superiority of the MBSR group to the DBT group. The experimental groups also significantly differed from the control group in terms of academic burnout. In this variable, the comparison once again revealed the superiority of the MBSR group to the DBT group.

Table 5. Results of one-way analysis of covariance on dependent variables in experimental and control groups

Source	Variables	SS	df	MS	F	Pvalue	η^2
Groups	Self-determination needs	497.19	2	248.59	92.44	0.001	0.82
	Academic burnout	447.73	2	223.86	68.54	0.001	0.77

Table 6. Bonferroni post-hoc test for pairwise comparison of the dependent variables

Variable	Groups	Mean difference	SE	Pvalue
Self-determination needs	MBSR - Control	7.80	0.61	0.001
	DBT - Control	6.03	0.60	0.001
	MBSR - DBT	1.76	0.63	0.023
Academic burnout	MBSR - Control	7.66	0.67	0.001
	DBT - Control	5.09	0.66	0.001
	MBSR - DBT	2.56	0.69	0.002

Discussion

This study aimed to investigate the effectiveness of MBSR and DBT on self-determination needs and academic burnout among students showing depressive symptoms in Dehloran (Iran). The findings suggested that MBSR and DBT both positively affected the self-determination needs of female twelfth-grade high-school students studying for the university entrance exam and showing depressive symptoms. This finding is consistent with the research results of DeCou et al.²⁹ and Chiodelli et al.³⁰

The role of mindfulness in mitigating reactivity and improving emotion regulation in stressful situations has been confirmed.³⁰ Mindfulness can resolve unpleasant emotional stimulants and promote emotional flexibility. It also enhances self-regulation through moment-to-moment and non-judgmental attention, as well as step-by-step awareness control.¹⁵ MBSR improves emotion regulation skills by enhancing the positive mood and modifies emotion regulation strategies by promoting attention, awareness, and acceptance of emotions.¹⁶ People with a high degree of mindfulness live in a balanced state of non-judgmental awareness that helps the recognition and acceptance of emotions and physical, mental, behavioral, and emotional phenomena as they occur. It also brings about acceptance and tolerance of negative emotions, which constitute emotion regulation skills.¹⁷ Those with a

higher level of mindfulness have a thorough knowledge of and insight into their cognitive processes and competencies. Owing to the deep mental relationship with emotions and effective task performance strategies, mindfulness increases awareness of self and others, emotions, and position at the moment, thereby positively affecting both dimensions of emotions. Overall, MBSR training can improve emotion regulation.

DBT uses cognitive techniques (relaxation, emotion regulation training to alleviate and deal with cognitive distortions, dealing with stress and negative thoughts, etc.), all of which help eliminate negative thoughts and contribute to the meaning of education and self-determination needs. DBT also utilizes behavioral techniques, e.g., exposure to and accepting reality to promote perceived communication competence. Through exposure and regular desensitization, clients learn to gradually incorporate relaxation when dealing with people with whom they feel uncomfortable and incompetent to connect; gradually reduce their stress, discomfort, and anxiety; and achieve a sense of competence and connection.²² DBT, therefore, promotes perceived competence and connection, thereby enhancing self-determination, through cognitive and emotional strategies.

It can help increase self-determination by improving mastery and competence. This method also deals with people's perception of their ability to change their behaviors, the level of

stimulation, thought patterns, and emotional reactions. Self-determination needs affect acceptance, maintenance, or modification of cognition in a wide spectrum of behaviors required to mitigate depression.²³ DBT trains skills and replaces nihilism and a lack of positive connection with perceived competence and connection, thereby alleviating depression. It teaches emotion regulation through efficient and healthy techniques. In the process of skills acquisition, the therapist assesses the deficits in target-oriented abilities and instructs the required skills by training and modeling. In this stage, the therapist supports the clients' acquired skills, increases their chance of using these skills, and in so doing, promotes their self-determination needs.

Due to their negative environment and communication, people with depression harbor more negative mental concepts about themselves and the environment. This cynicism is rooted in their negative view of themselves and others' negative view of them, which reduces perceived competence and disrupts connections. DBT uses re-conceptualization to prepare clients, acquire optimistic thinking skills, form new and positive concepts about themselves and others, and draw up a list of enjoyable activities, and in this way, improves their relationships and formation of optimistic attitudes.²⁹ This promotes the level of perceived connection and competence, leading to positive and constructive relationships with others and the world.

There are several possibilities for the alleviation of students' depressive symptoms through MBSR. Mindfulness helps people know themselves better and experience a non-judgmental, accepting, trusting, tolerant, and compassionate attitude, thereby making them aware of relationships, increasing their social contacts, and influencing their interpersonal relationships.³⁰ In other words, mindfulness promotes awareness of relationships which, in turn, alleviates stress. In this intervention, the common sources of stress in this age group and the proper reaction to stress were introduced, which enhances awareness of common stressful situations and, in some cases, eliminates these sources. Diaphragmatic breathing instructed in MBSR mitigates the negative impacts of stress. Drawing up a list of unreasonable thoughts and wishes promotes awareness of thoughts that induce anxiety and stress. Moreover, identifying and challenging these unreasonable thoughts lead to a more logical and realistic examination of them, which will alleviate anxiety.

A limitation of this study was that it recruited students in Dehloran only. The results should thus be generalized to other samples with caution.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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