

Effects of Stress Management Training on Cognitive Avoidance and Emotion Regulation Strategies in Female Students with Social Anxiety Disorder: A Mindfulness and Emotional Schema Therapy Approach

Samaneh Hayatipoor¹, PhD Candidate;  Sasan Bavi^{1*}, PhD;  Ali Khalafi², PhD; Zahra Dasht Bozorgi¹, PhD; Abdolamir Gatezadeh³, PhD

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

²Department of Psychology, Shadegan Branch, Islamic Azad University, Shadegan, Iran

³Department of Psychology, Susangerd Branch, Islamic Azad University, Susangerd, Iran

*Corresponding author: Sasan Bavi, PhD; Department of Psychology, Ahvaz Branch, Islamic Azad University, Postal code: 68875-61349, Ahvaz, Iran. Tel: +98 61 33348420; Fax: +98 61 33329200; Email: sassanbavi@gmail.com

Received: November 04, 2023; Revised: November 18, 2023; Accepted: December 10, 2023

Abstract

Background: Students with a social anxiety disorder (SAD) face a variety of problems such as early dropout, academic failure, and avoidance of social situations. The present study aimed to investigate the effects of mindfulness-based stress reduction training on cognitive avoidance and emotion regulation strategies in female students with SAD through an emotional schema therapy (EST) approach.

Methods: In this semi-experimental study, a Pretest-Posttest Control Group design was used. The study population included female high school students with SAD in Ahvaz, Iran, in 2023. Out of 120 students with SAD who met the inclusion criteria, 75 were randomly selected as the study participants and were then assigned to three groups of 25 (two experimental groups and one control group). Training sessions for mindfulness-based stress management and EST were conducted in eight 90-minute sessions twice a week. For data collection, the Cognitive Avoidance Questionnaire and Emotion Regulation Questionnaire were used. Data analysis was done using the ANCOVA test and SPSS version 23. P-value less than 0.05 was considered significant.

Results: In the posttest, mean±SD for cognitive avoidance, reappraisal, and suppression in the mindfulness-based stress reduction training group was 50.71±6.78, 32.87±2.65, and 14.08±5.68, respectively; suggesting a significant difference as compared with the control group (82.91±2.18, 12.53±6.75, and 20.81±2.74) (P<0.001). In addition, mean±SD for cognitive avoidance, reappraisal, and suppression in the EST group and the post-test phase was 61.52±5.71, 38.91±1.15, and 10.36±7.32, respectively; suggesting a significant difference as compared with the control group. The mindfulness-based stress management training was more effective than EST in reducing cognitive avoidance (P<0.001). By contrast, EST was more effective than mindfulness-based training in improving emotion regulation strategies (P<0.001).

Conclusion: The study results suggested that mindfulness-based stress management training and EST can effectively reduce cognitive avoidance and improve emotion regulation strategies in students with SAD.

Keywords: Mindfulness, Schema therapy, Cognitive, Emotions, Students

How to Cite: Hayatipoor S, Bavi S, Khalafi A, Dasht Bozorgi Z, Gatezadeh AA. Effects of Stress Management Training on Cognitive Avoidance and Emotion Regulation Strategies in Female Students with Social Anxiety Disorder: A Mindfulness and Emotional Schema Therapy Approach. Int. J. School. Health. 2024;11(1):40-49. doi: 10.30476/INTJSH.2023.100698.1357.

1. Introduction

Education is regarded as the primary means of acquiring knowledge, developing talent, and gaining insight into individuals, especially students. This has drawn the interest of mental health professionals, counselors, and statesmen (1). In this regard, studies have shown that competent teachers, motivated and diligent students, and an appropriate learning environment are all necessary for the dynamism of schools (2-4). In school psychology, a major concern is how students attempt to deal with social and academic issues (5). One of the most prevalent

and debilitating anxiety disorders is social anxiety disorder (SAD) (6). The typical age when this disorder begins is 13 years, with 75% of individuals affected experiencing its onset between the ages of 8 and 15. The annual and lifetime prevalence rates of SAD are roughly 7% and 13%, respectively (7). Girls are more likely than boys to suffer from this disorder (8). According to studies, individuals with SAD face a variety of issues and problems such as early dropout, academic failure, avoidance of social situations, rigid schemas about themselves and their surrounding world, low social class, domineering behaviors, low perceived intimacy in relationships

with peers, poor social support, and poor mental health and quality of life (6, 9, 10).

Cognitive avoidance can cause academic problems. When faced with social events and interpersonal contacts, people seem to opt for the cognitive avoidance strategy as a coping mechanism (11). Consequently, cognitive avoidance —i.e., a mental strategy that causes students to change their ideas during social communication—can result in procrastination, learning difficulties, and a decline in academic performance (12). McCurdy and colleagues (13) reported that both social interactions and academic performance are affected negatively by anxiety. Archbell and Coplan (14) found that the early diagnosis of SAD lowers its effects on students' daily functioning, and lessens the likelihood that anxiety will last into adulthood.

Emotion regulation strategies are among other factors affecting students' social anxiety (15). The ability to control one's emotional state through the use of specific cognitive strategies is known as emotion regulation (16). Cognitive emotion regulation strategies are the actions related to coping with stressful or unfortunate events (17, 18). Studies have shown that adaptive emotion regulation strategies, e.g., acceptance and positive reappraisal, can counteract the negative effects of adversity (19, 20). Adolescence is a dynamic period for the development of emotion regulation (21). According to Ford and Gross (22), who expanded theories on emotional regulation techniques, pathological outcomes will result from disruption and confusion in emotions and their regulation due to the intrinsic significance of emotions in daily life. Negative emotions and cognitive avoidance reduce students' awareness and mastery of the environment, and disrupt the thinking process (23). Given the damage caused by not controlling emotions and cognitive avoidance, early identification and control of these emotions, especially in students, is very important.

Mindfulness-based stress management training is a new psychological intervention that can help improve SAD. Mindfulness training aims to change the attentional processes that cause social anxiety (24). The primary mechanism sustaining anxiety in individuals is to increase attention to physical symptoms. In these situations, the mindfulness mechanism can specifically lessen the suffering of individuals with social anxiety

(25). Parsons and co-workers (26) reported that mindfulness-based programs can be an effective approach to assist with managing depression and stress in students. da Silva and colleagues (27) found that students experienced significant positive improvements in psychological distress, stress, and mental well-being after participating in mindfulness-based stress management training sessions. Emotional schema therapy (EST), a socio-cognitive model about understanding, interpreting, evaluating, and responding to one's own and others' emotions, is another treatment for SAD (28). Although everyone is susceptible to a wide range of "unpleasant emotions" such as anger, anxiety, sadness, frustration, jealousy, envy, and other feelings, not everyone suffers from psychotic disorders (29). According to the EST model, people devise different theories about emotions and adopt various emotion regulation strategies. These psychological theories can lead to the development of unhealthy coping mechanisms such as substance abuse, avoidance, rumination, depression, and suppression (30). Erfan and colleagues (31) stated that emotional schema therapy reduced the difficulty of emotion regulation in patients. Mohammadkhani and co-workers (28) found that emotional schemas can be an effective approach to improving psychological distress, resilience, and cognitive flexibility in students.

The growing prevalence of mental disorders and related cases, including social anxiety, which is more prevalent in female students, can negatively affect the academic, familial, and personal performance of girls. Therefore, it is necessary to pay special attention to this category of interventions and treatments. Therefore, the present study aimed to investigate the effectiveness of mindfulness-based stress reduction training and EST on cognitive avoidance and emotion regulation strategies in students with SAD.

2. Methods

This study used a semi-experimental design with pre- and post-tests and a control group. The statistical population included female junior high school students with SAD in Ahvaz, Khuzestan Province, Iran, in the academic year 2022–2023. Using simple random sampling technique, ten female junior high schools were selected from among female high schools in Ahvaz, Iran. Then, three classes were randomly selected from each

school. The students who demonstrated symptoms of social anxiety during the clinical interview with social anxiety levels higher than the mean standard deviation, measured by the social anxiety scale, were listed (120). Finally, 75 students were randomly selected as the study participants (Figure 1). The participants were then randomly assigned to one of the following groups: mindfulness-based stress management training, EST, and control (25 participants in each group). The sample size was determined through a test power of 0.90, a confidence level of 0.95, and an effect size of 0.85. The calculation of the sample size was based on the mean and standard deviation of suppression in the EST and control groups (23.79 ± 2.80 and 21.14 ± 1.89) (32). The calculation of the sample size was based on the mean and standard deviation of suppression in the EST and control groups (23.79 ± 2.80 and 21.14 ± 1.89). In this study, students were divided into experimental and control groups through simple randomization technique using a table of random numbers. The inclusion criteria were as follows: not having a serious physical illness, not attending any other psychotherapy

sessions for at least a month before the study, scoring one standard deviation above the average in social anxiety, and not having conditions such as severe depression, obsessive-compulsive disorder, general anxiety, chronophobia, anxiety caused by physical illness, anxiety caused by drug use, or psychosis. The exclusion criteria included absence in more than two sessions, participation in other psychotherapy sessions, and unwillingness to continue the treatment.

2.1. Procedure

Sampling began after securing the approval of Ahvaz Education Organization. The study enrolled female high school students with social anxiety disorder (SAD) who satisfied the inclusion criteria. The participants were included in the study only after obtaining both their personal consent and consent from their parents. After assigning the students to experimental and control groups, a pretest was conducted using cognitive avoidance and emotion regulation questionnaires. Training sessions for mindfulness-based stress management

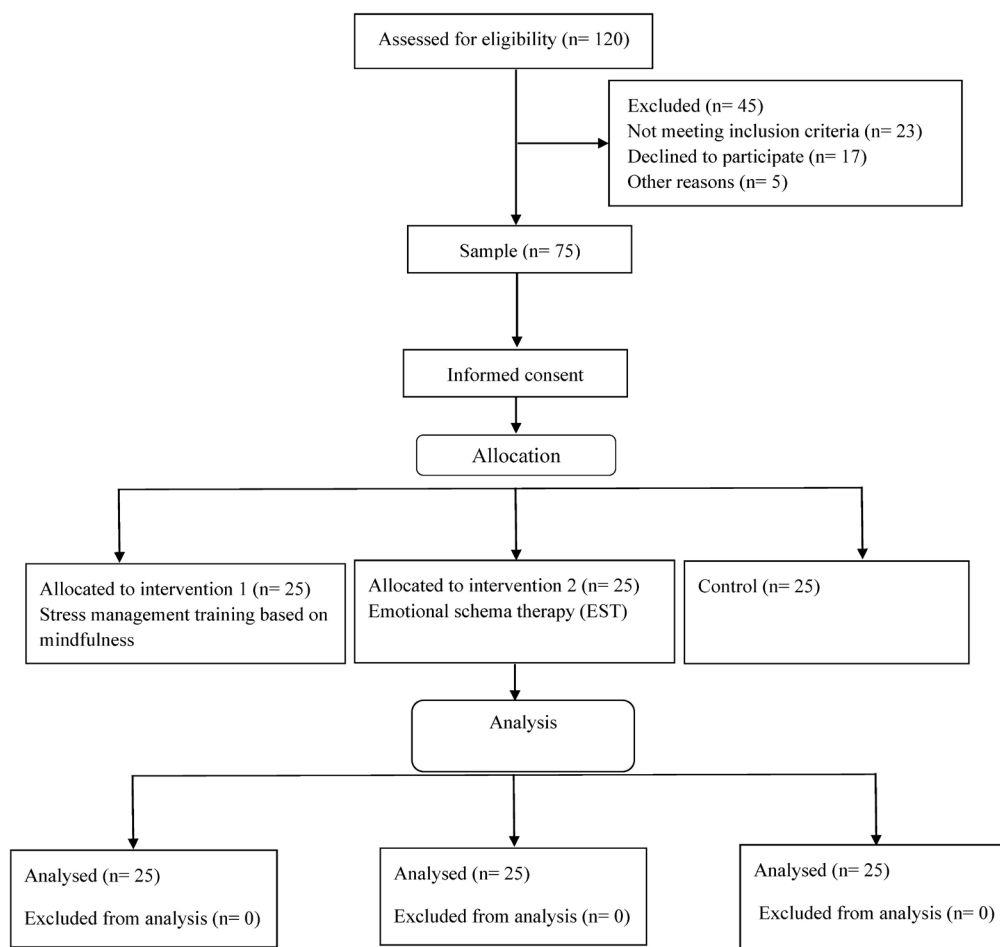


Figure 1: The figure shows the flowchart of participants' progress.

were planned based on Kabat-Zinn's approach (33) and were conducted in eight 90-minute sessions over a month. Table 1 presents an overview of mindfulness-based stress reduction management sessions. In addition, EST sessions were arranged based on the EST protocol proposed by Leahy (34). The training was implemented in ten 90-minute sessions twice a week over one and a half months. Table 2 summarizes EST sessions. The intervention sessions in the experimental groups were conducted separately by the first author in the Education Counseling Center of Ahvaz. The control group did not receive any intervention during the therapeutic interventions for the experimental groups. Following the completion of the treatment sessions, all participants underwent a re-assessment process using the study tools during the post-test phase.

2.2. Measurement tools

2.2.1. Cognitive Avoidance Questionnaire: This 25-item questionnaire is developed and validated by Sexton and Dugas (35). The questionnaire consists of five subscales that measure five cognitive avoidance strategies, i.e., thought substitution, thought suppression, distraction, avoidance of threatening stimuli, and transformation of images into thoughts. The items are scored on a 5-point Likert scale (from 1: totally wrong to 5: totally right). The Content Validity Index (CVI) (0.96) and Content Validity Ratio (CVR) (0.95) confirmed the Cognitive Avoidance Questionnaire's content validity (36). The reliability of the questionnaire was obtained using Cronbach's alpha at an acceptable level of 0.79 (36). In our study, the Cronbach's alpha coefficient of this

Table 1: Mindfulness-based stress management training sessions

Session	Description
1	Pretest, greeting, and conceptualization, explaining the necessity of mindfulness-based stress management training, relaxation training
2	Relaxation of 19 groups of body muscles: encouragement of sitting meditation, a mindfulness task as a pleasant event and sitting meditation; body checking
3	Relaxation of 19 groups of body muscles: it started with visual and auditory awareness exercises, then moved on to sitting meditation and body-aware breathing
4	Mindfulness of breathing training: training the inhalation and exhalation techniques in a calm, non-thoughtful manner, homework: breathing mindfulness before sleep for 24 minutes
5	Body monitoring technique: teaching the practice of observing how the body moves while breathing, with a particular emphasis on the movements of the body's parts
6	Mindfulness of thoughts training: learning to be aware of one's thoughts, either pleasant or unpleasant, positive or negative; homework: preparation of a list of positive and negative experiences without judging them
7	Full mindfulness: repeating exercises 4, 5, and 6 for a duration of 20 to 30 minutes each.
8	Summarization of previous sessions; posttest

Table 2: Emotional schema therapy sessions

Session	Description
1	Introduction, explanation of group rules, asking members' reasons for participating in this training and their concerns, acknowledging the emotions, psychoeducation regarding generalized anxiety disorder, pretest
2	Granting feelings validity; psychological instruction on emotion, how it differs from thought and behavior, and the reasoning behind EST; describing emotional schemas and how they affect people's attitudes and actions. describing how schemas contribute to people's anxiety
3	Emotion normalization, muscle relaxation technique, exercising the transience of emotions, muscle relaxation exercises
4	Correct definition of acceptance and its effects; explanation about acceptance of emotions, especially anxiety, using the guest metaphor to accept anxiety and the technique of riding the wave of anxiety
5	Challenging beliefs about mixed emotions, exercises for dealing with mixed feelings
6	Challenging false beliefs about emotion and teaching advocate techniques to challenge them (rumination control)
7	Challenging false beliefs about emotion and performing the technique of examining the evidence (rationalism), encouraging participants to give examples of the usefulness of using emotion alongside logic for decision-making
8	Examining problematic de-validation styles, practicing the technique of confirming one's own feelings; instructing others on how to properly accept credit from them; and using the compassionate mindfulness technique
9	Challenging false beliefs about emotion (guilt and superior values), employing the technique of climbing the value ladder, positive and negative metaphors, and employing the technique of reviewing evidence to challenge guilt about emotion
10	Talking about obstacles and setbacks can help consolidate the state of new learning, examining the goals and their accomplishments, discussing and expressing feelings about the end of treatment, posttest

questionnaire was determined to be 0.82.

2.2.2. Emotion Regulation Questionnaire (ERQ): Gross and John (37) developed the Emotion Regulation Questionnaire to measure emotion regulation strategies. ERQ consists of two subscales: suppression (4 items) and reappraisal (6 items). The questions are scored on a 7-point Likert scale, and higher scores indicate higher levels of emotion regulation. CVI (0.81) and CVR (0.91) confirmed the content validity of ERQ (38). Hasani (38) reported a Cronbach's alpha coefficient of 0.91 for the questionnaire. In the present study, Cronbach's alpha coefficient was determined as 0.85 for ERQ.

2.3. Data Analysis

To analyze the data, the statistical measures of mean, standard deviation, and analysis of covariance were employed using SPSS version 23. The Kolmogorov-Smirnov and Levene's test were used to check the normality of the data and the homogeneity of variances. Bonferroni post-hoc test was used for pairwise comparison of means. In addition, chi-square and independent t-test were used to compare groups in terms of demographic variables. The significance level was set to be $\alpha=0.05$.

3. Results

The mean age of students with SAD in mindfulness-based stress reduction training, EST, and control groups was 16.62 ± 1.45 , 16.09 ± 1.92 , and 16.41 ± 1.62 , respectively. In the mindfulness-based stress reduction training group, 6 (24.0%), 11 (44.0%), and 8 (32.0%) people were studying in the tenth, eleventh, and twelfth grades, respectively. Moreover, in the EST group, 5 (20.0%), 11 (44.0%), and 9 (36.0%) students were studying in the tenth, eleventh, and twelfth grades, respectively. In the control group, 7 (28.00%), 12 (48.00%), and 6 (24.00%) people were studying in the tenth, eleventh, and twelfth grades, respectively. Among all three groups, 48.0% of the participants had middle-income families. A comparison of experimental and control groups in terms of demographic variables showed that the groups were homogeneous. The demographic variables of students with SAD are reported in Table 3.

Table 4 presents descriptive statistics for variables associated with the experimental and control groups in the pre-test and post-test phases. According to the results, there was a significant difference between the experimental and control groups in cognitive avoidance ($F=14.69$, $P<0.001$),

Table 3: Comparison of demographic characteristics of students in experimental and control groups

Groups	Mean \pm SD age (years)	Grade			Socioeconomic level		
		10 th grade	11 th grade	12 th grade	Low	Medium	High
Mindfulness-based stress reduction training	16.62 \pm 1.45	6 (24.0%)	11 (44.0%)	8 (32.0%)	7 (28.0%)	12 (48.0%)	6 (24.0%)
EST	16.09 \pm 1.92	5 (20.0%)	11 (44.0%)	9 (36.0%)	7 (28.0%)	13 (52.0%)	5 (20.0%)
Control	16.41 \pm 1.62	7 (28.00%)	12 (48.00%)	6 (24.00%)	9 (36.0%)	11 (44.0%)	5 (20.0%)
P	0.276	0.910			0.959		

EST: Emotional Schema Therapy

Table 4: Mean (\pm SD) of cognitive avoidance, reappraisal, and suppression in experimental and control groups

Variables	Phases	Mindfulness-based stress reduction training	EST	Control group	P (between group)
		Mean \pm SD	Mean \pm SD	Mean \pm SD	
Cognitive avoidance	Pretest	82.37 \pm 2.26	81.45 \pm 2.82	83.52 \pm 2.07	0.107
	Posttest	50.71 \pm 6.78	61.52 \pm 5.71	82.91 \pm 2.18	0.001
P (within group)		0.001	0.001	0.315	-
Reappraisal	Pretest	12.64 \pm 6.70	11.05 \pm 6.89	11.66 \pm 6.99	0.615
	Posttest	32.87 \pm 2.65	38.91 \pm 1.15	12.53 \pm 6.75	0.001
P (within group)		0.001	0.001	0.656	-
Suppression	Pretest	21.56 \pm 2.31	23.79 \pm 2.80	21.14 \pm 1.89	0.485
	Posttest	14.08 \pm 5.68	10.36 \pm 7.32	20.81 \pm 2.74	0.001
P (within group)		0.001	0.001	0.622	-

EST: Emotional Schema Therapy

Table 5: Bonferroni post-hoc test for paired comparison of the research variables

Variables	Groups	Mean difference	SE	P
Cognitive avoidance	Mindfulness-based stress management training - EST	-11.67	2.54	0.001
	Mindfulness-based stress management training - Control	-33.93	3.37	0.001
	EST - Control	-22.26	2.12	0.001
Reappraisal	Mindfulness-based stress management training - EST	-7.66	1.27	0.005
	Mindfulness-based stress management training - Control	18.73	2.24	0.001
	EST - Control	26.39	3.18	0.001
Suppression	Mindfulness-based stress management training - EST	4.58	1.44	0.007
	Mindfulness-based stress management training - Control	-6.39	1.53	0.001
	EST - Control	2.43	2.43	0.001

EST: Emotional Schema Therapy, SE: Standard Error

reappraisal ($F=32.78$, $P<0.001$), and suppression ($F=28.18$, $P<0.001$). In other words, there was a significant difference in the three groups between the effectiveness of mindfulness-based stress management training, EST, and the control group ($P<0.001$).

Table 5 shows a significant difference between mindfulness-based stress management training and EST in the adjusted post-test mean score for cognitive avoidance ($P<0.001$). In conclusion, mindfulness-based stress management training was more effective than EST in the cognitive avoidance of female students with SAD. In addition, there was a significant difference between the experimental groups and the control group in terms of cognitive avoidance ($P<0.001$).

The results also indicated that there was a significant difference between mindfulness-based stress management training and EST in the adjusted post-test mean scores of reappraisal and suppression ($P<0.01$). Accordingly, the effects of EST on reappraisal and suppression were greater than that of mindfulness-based stress management training. Moreover, there was a significant difference between the experimental groups and the control group in terms of reappraisal and suppression ($P<0.001$).

4. Discussion

The present study aimed to investigate the effects of mindfulness-based stress reduction training and EST on cognitive avoidance and emotion regulation strategies in students with SAD. The study findings indicate a significant difference between the experimental groups (mindfulness-based stress management training and EST) and the control group in cognitive avoidance. In other

words, mindfulness training enabled students suffering from social anxiety to communicate with their fearful experiences. This finding is consistent with previous study by Malehmir and colleagues (39). Parsons and co-workers (26) reported that mindfulness-based intervention approaches are useful in reducing depression and stress in students. Oshima and colleagues (40) reported that schema therapy significantly reduced early maladaptive schemas and improved quality of life and social adjustment among youth with autism spectrum disorder. These exercises can teach sufferers to be aware of their body sensations and thoughts in order to avoid potential harm. When students dwell on the past or future, they lose sight of the present and become engrossed in those thoughts as though they were actually there (24). The students who practice mindfulness are more capable of setting aside their immediate future goals and focusing on the here and now rather than being fixated on the past or the future. Individuals can choose to practice mindfulness, which makes them more conscious of their surroundings and options (29). Additionally, mindfulness improves students' quality of life by helping them understand a given situation and by being nonjudgmental. At the same time, acceptance and commitment, one of the mindfulness-based stress management techniques used in this study, reduced cognitive avoidance in adolescents by reducing anxious thoughts and feelings, and improving their capacity to manage stress (29).

The therapist attempts to use a range of cognitive avoidance techniques to help clients push away troubling ideas about their social standing in an effort to lessen their anxiety. In EST, the therapist first determines which coping mechanisms are not working, such as cognitive avoidance and post-event processing, and then uses an acceptance

and mindfulness approach along with emotion validation. The symptoms experienced by clients make it easier for them to lose control over their anxious emotions, collective senses, and thoughts (29). Anxiety symptoms gradually disappear when the client is taught to observe their emotions rather than passing judgment on them. This finally reduced cognitive avoidance in participants.

The study results suggested a significant difference between the experimental and control groups in reappraisal and suppression. The results were consistent with the findings reported by Carroll and co-workers (41). In other words, one of the most crucial skills taught in a mindfulness-based stress management program is the enhanced awareness of the present moment, which promotes cognitive and behavioral flexibility and enables students to respond to situations adaptably with fewer habitual or impulsive responses (24). Emotions are actually a collection of bodily experiences coupled with ideas and visuals. One can learn to explore emotions in the same way that they are created in the body by employing the techniques of staying in physical sensations and paying attention to both pleasant and unpleasant sensations that arise during meditation (41). The capacity of students in this field is increased, and their emotions are regulated as a result.

Through psychological education, EST clients learn various ineffective strategies of emotion regulation. These strategies are unbelievable as they create temporary pleasant feelings that can be reverted, unpleasant emotions can be experienced with greater intensity and confirmation than before, and are reversible (34). The therapist emphasizes the need to tolerate negative emotions and assists the group in accepting their negative feelings. The participants are also provided with adaptive emotion regulation strategies, e.g., seeking social support, changing the content of thoughts (cognitive reconstruction), and doing enjoyable activities, to replace previous troublesome strategies in the face of difficult situations and emotions. The acceptance of emotions, mindfulness, and giving credit to emotions, as practiced in EST, can lead to a reduction in an individual's effort to control thoughts, physical senses, and anxious emotions (29). This approach alleviates the symptoms and signs of anxiety by teaching the clients to observe their emotions rather than passing judgment on them.

4.1. Limitations

Since this study was conducted on female high school students of Ahvaz, Iran, the findings should be generalized cautiously to other populations. Conducting intensive treatment courses that may affect the quality of the therapist's work was one of the practical limitations of this study. It is also likely that participants in the control group learned about the content of training programs through information sharing with those in the experimental groups, which might affect the study findings. Another limitation of the present study is using the questionnaire for collecting the data. It is recommended that future studies interview students or parents for a more detailed assessment. Also, it is recommended that similar studies be conducted in other cities on male students and other individuals with clinical symptoms of social anxiety.

5. Conclusion

The study findings indicated that mindfulness-based stress management and EST interventions can effectively reduce the cognitive avoidance of female students with SAD. They also improve emotion regulation strategies adopted by SAD students. Therefore, psychotherapy and counseling centers for students are recommended to employ mindfulness-based stress management and EST interventions to treat students suffering from SAD.

Ethical Approval

The Ethics Review Board of the university approved the present study with the code of IR.IAU.AHVAZ.REC.1402.003. Also, written informed consent was obtained from the participants.

Acknowledgement

The authors expressed their gratitude to all the participants in this research.

Authors' Contribution

Samaneh Hayatipoor: Acquisition of data, Study concept and design, analysis and interpretation of data, drafting the manuscript, critical revision of the manuscript for important intellectual content. Sasan Bavi: Study concept and design, analysis and interpretation of data, critical revision of the

manuscript for important intellectual content. Ali Khalafi: Acquisition of data, drafting the manuscript. Zahra Dasht Bozorgi: Study concept and design, analysis and interpretation of data, statistical analysis, and critical revision of the manuscript for important intellectual content. Abdolamir Gatezadeh: Study concept and design, analysis and interpretation of data, critical revision of the manuscript for important intellectual content, statistical analysis. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work, such as the questions related to the accuracy or integrity of any part of the work.

Funding: No funding.

Conflict of interest: None declared.

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