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Comparison of the Effectiveness of Shame-Awareness Therapy and Cognitive-Behavioral Therapy on Self-Regulation Behaviors and Psychological Symptoms in Adolescent Girls with Gender Dysphoria

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A B S T R A C T

Objective: The study aimed to compare the effectiveness of stress-based mindfulness training and acceptance and commitment therapy (ACT) on reducing social anxiety and increasing perfectionism among female high school students.

Methods and Materials: This experimental study employed a pre-test, post-test, and one-month follow-up design with a control group. The sample consisted of 45 female high school students from District 4 of Tehran, selected using convenience sampling and randomly assigned to two experimental groups and one control group (15 participants per group). The Social Phobia Inventory (SPI) by Connor et al. (2000) and the Positive and Negative Perfectionism Questionnaire by Terry-Short et al. (1995) were used to measure the dependent variables—social anxiety and perfectionism—before and after the intervention. The interventions consisted of eight sessions of stress-based mindfulness training and ACT. Covariance analysis (ANCOVA) was used to analyze the data.

Findings: The ANCOVA results indicated a significant difference between the experimental and control groups regarding social anxiety reduction ($F(1,27) = 95.365$, $p < .001$) and an increase in perfectionism ($F(1,26) = 98.719$, $p < .001$) after controlling for pre-test scores. The findings confirmed that both stress-based mindfulness training and ACT effectively reduced social anxiety and increased perfectionism, with significant differences observed between the two interventions and the control group.

Conclusion: The study concluded that both stress-based mindfulness training and ACT are effective interventions for reducing social anxiety and increasing perfectionism in female high school students. The results suggest that these interventions can be valuable tools in educational and therapeutic settings to enhance students' psychological resilience and well-being. The findings also highlight the importance of incorporating these approaches into the curriculum of

psychology and counseling programs to better prepare future professionals in managing anxiety and perfectionism.

Keywords: *Stress-Based Mindfulness Training, Acceptance and Commitment Therapy, Social Anxiety, Perfectionism.*

1. Introduction

Social anxiety is one of the most prevalent anxiety disorders, which has garnered significant attention in recent decades, leading authors and researchers to engage in diverse theoretical and scientific discussions about it. Beck (1985) proposed that dysfunctional beliefs are the foundation of this disorder, suggesting that the activation of these beliefs through social situations creates a vicious cycle that perpetuates social anxiety (Newman et al., 2023). Hartman (1983) presented a cognitive model of social anxiety in which socially anxious individuals become so engaged in self-focused processes during social situations that it interferes with satisfactory social functioning (Bakhshi & Sedighi Arfaei, 2021). Rapee and Heimberg (1997) argued that socially anxious individuals fundamentally assume that others are inherently critical and will evaluate them negatively. The Clark and Wells model (2001) offers the advantage of explaining why social anxiety persists even when individuals inevitably face social situations (Khorrami et al., 2019). This model identifies three processing stages crucial in the maintenance of social anxiety: in-situ processing, anticipatory stage, and post-event stage. The model proposed by Haug, Kessler, and Heimberg, which is supported by empirical evidence, posits that self-focused attention and its consequences play a role in the maintenance of social anxiety. The presence of these individuals in social situations and the resultant physiological arousal increase their self-focus (Caldiroli et al., 2023).

Central to cognitive-behavioral models of social anxiety is the concept of fear of negative evaluation. Rector, Kocovski, and Ryder (1998) asserted that the fear of negative evaluation stems from concern about causing discomfort to others. McGee et al. (1998) concluded that the fear of causing discomfort to others significantly impacts social anxiety through the fear of negative evaluation (Khorrami et al., 2019).

Wiggs (2004) attributed anxiety related to performance improvement to the attention drawn from group members, which subsequently triggers competitive feelings and behaviors—a characteristic closely linked to perfectionism. Over the past decade, the construct of perfectionism has attracted considerable attention, prompting authors and researchers to engage in a wide range of theoretical and practical discussions. Burns (2003) proposed the unidimensional nature of perfectionism, which is broadly associated with psychopathology, reflecting a negative perspective on the concept. Hamachek (1997) was the first to draw attention to the positive dimension of perfectionism. However, most studies focused on aspects of perfectionism related to psychopathology, with limited exploration of the distinction between neurotic and healthy perfectionism. Terry-Short (1995) was among those who considered both the positive and negative dimensions of perfectionism, examining both clinical and non-clinical populations. It should be acknowledged that various psychological theories have directly or indirectly referred to this construct, such as the need for achievement, which is one of the needs proposed by Murray and McClelland. Similarly, Adler regarded the striving for perfection as an innate human goal. However, Horney referred to perfectionism as an undesirable construct, categorizing it as one of the neurotic needs of individuals (Hewitt, Kealy, et al., 2023; Hewitt, Smith, et al., 2023).

In this context, numerous interventions have proven effective in reducing social anxiety and enhancing psychological resilience, among which stress-based mindfulness and acceptance and commitment therapy (ACT) are noteworthy. Mindfulness is a process through which distressing thoughts and feelings are observed without personal judgment. Mindfulness-based interventions are considered third-wave interventions (Hatami Loi et al., 2020). According to Kabat-Zinn (1990, 2003), mindfulness involves paying attention in a particular way: on purpose, in the present moment, and without judgment or prejudice. This process focuses attention on the present moment as it unfolds. Since the present moment is constantly changing, mindfulness requires participants to consciously and continuously focus on whatever is happening at that moment without being distracted by what has happened in the past or what will happen in the future. Participants in mindfulness training are taught to become aware of judgmental thoughts when they arise, not to be disturbed by these thoughts, and to refocus their attention on the present moment (Hewitt, Kealy, et al., 2023). In essence, mindfulness involves deliberately focusing one's attention on the present experience, characterized by non-judgmental and accepting

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qualities. Mindfulness is a form of meditation defined as the observation of the continuous flow of internal and external stimuli. According to Walsh et al. (2007), mindfulness means paying attention in a particular way: on purpose, in the present moment, and without judgment. The stress reduction program based on mindfulness is an educational-psychological approach that helps individuals practice mindful meditation to improve mental and physical health, aimed at reducing psychological stress and enhancing well-being. The primary mechanism of mindfulness is attentional self-regulation, as focusing attention on a neutral stimulus like breathing creates an environment of awareness (Smith et al., 2022).

In addition to the aforementioned method, recent research on acceptance and commitment therapy (ACT) has yielded promising results regarding the effectiveness of this treatment. Below are some of these studies. Results from studies by Bluett et al. (2014) indicated that ACT is effective for anxiety spectrum disorders and obsessive-compulsive disorder (Bluett et al., 2014). Many studies found that ACT reduces symptoms of health anxiety and psychological stress by increasing psychological flexibility and mindful attention to the present moment (Eskandari et al., 2019). Hadadi and Temnaifar (2022) concluded that there is a significant difference between adolescents with high and low social anxiety in terms of maladaptive perfectionism, non-adaptive emotion regulation strategies, and rumination. The findings of this study underscore the importance of focusing on maladaptive perfectionism, non-adaptive emotion regulation strategies, and rumination in adolescents with high social anxiety and have important practical implications for educational and therapeutic interventions for adolescents with high social anxiety (Hadadi & Tamanei Far, 2022). Moreover, Bakhshi and Sedighi-Arfaei (2021) reported that emotional intelligence training reduces social anxiety and maladaptive perfectionism while increasing adaptive perfectionism in students. The results also indicated that social self-efficacy mediates the effect of emotional intelligence training on social anxiety and adaptive perfectionism, but it does not mediate the effect of emotional intelligence training on maladaptive perfectionism. The findings suggest that considering social self-efficacy, emotional intelligence training can be used as an effective intervention to improve social anxiety and perfectionism in elementary students (Bakhshi & Sedighi Arfaei, 2021). Yabandeh and colleagues (2019) found a significant difference between the control group and the two experimental groups, with both cognitive-behavioral therapy and ACT effectively reducing social anxiety symptoms in students. Although the effectiveness of ACT was greater than that of cognitive-behavioral therapy, the difference was not statistically significant (Yabandeh et al., 2019). In contrast, Wang et al. (2022) found that perfectionism significantly and positively predicts social anxiety, and perceived stress mediates the relationship between perfectionism and social anxiety. Additionally, the indirect effect of perfectionism on social anxiety was moderated by the mindfulness trait. Specifically, the indirect effect was weaker among individuals with high levels of mindfulness compared to those with low levels. The findings of this study suggest that the mindfulness trait significantly moderates the indirect effect of perfectionism on social anxiety through perceived stress (Wang et al., 2022). In a study by Choi and Hong (2020) it was found that socially prescribed perfectionism positively correlates with social anxiety and negatively correlates with unconditional self-care and acceptance. Furthermore, self-care and unconditional self-acceptance positively correlate with each other and negatively correlate with social anxiety. The mediating effect of self-care in the relationship between socially prescribed perfectionism and social anxiety was confirmed, as was the mediating effect of unconditional self-acceptance. Additionally, the double mediating effect of self-care and unconditional self-acceptance in the relationship between socially prescribed perfectionism and social anxiety among students was confirmed (Choi & Hong, 2020).

In summary, the primary issue addressed in this research is the comparison of the effectiveness of stress-based mindfulness training and acceptance and commitment therapy on social anxiety and perfectionism in female high school students. Therefore, the following hypotheses are tested in this article:

- There is a significant difference in the effectiveness of acceptance and commitment therapy compared to stress-based mindfulness training in reducing social anxiety among female high school students.
- There is a significant difference in the effectiveness of acceptance and commitment therapy compared to stress-based mindfulness training in perfectionism among female high school students.

2. Methods and Materials

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2.1. Study Design and Participants

The present research method is applied in terms of its objective and experimental in terms of the nature of the data, utilizing a pre-test, post-test, and one-month follow-up design with a control group. The dependent variables are social anxiety and perfectionism, while the independent variables are stress-based mindfulness and acceptance and commitment therapy (ACT).

The statistical population of this study consisted of all female high school students in public schools in District 4 of Tehran during the 2021-2022 academic year. According to statistical analyses and data obtained from the District 4 Education Department of Tehran, the population size was 82,046 female students. Considering the statistical method used in this study, 15 participants were selected for each group (a total of 45 participants). The sampling method was convenience sampling. The inclusion criteria for this study were: 1) being enrolled in high school, 2) meeting diagnostic criteria for social anxiety, resilience, and perfectionism, 3) being between 14 and 17 years old, 4) not participating in concurrent intervention programs, and 5) providing consent to participate in the study and receive the educational program. The exclusion criteria included: 1) having a diagnosed psychological disorder, 2) having a severe medical condition, 3) substance addiction, and 4) missing two sessions of the educational program. To select the research sample, the Social Anxiety, Resilience, and Perfectionism questionnaires were first administered among the sample population. Then, from among the students who scored above the cutoff for social anxiety and below the cutoff for negative perfectionism, 45 students were selected using convenience sampling and randomly assigned to two experimental groups and one control group (each group consisting of 15 participants).

The data collection method in this study was both field-based and descriptive. After selecting the three statistical samples, labeled as the experimental and control groups, all standardized questionnaires introduced in this proposal (the Social Phobia Inventory by Connor et al. (2000), and the Positive and Negative Perfectionism Questionnaire by Terry-Short et al. (1995)) were administered as a pre-test to all three groups. After briefing the participants in the sample, they were given sufficient time to complete the questionnaires. It is noteworthy that none of the groups were aware of the existence of the other groups. Subsequently, the three intervention methods—stress-based mindfulness training, acceptance and commitment therapy, and paradoxical scheduling—were implemented for the two experimental groups.

Afterward, the standardized questionnaires (the Social Phobia Inventory by Connor et al. (2000), the Positive and Negative Perfectionism Questionnaire by Terry-Short et al. (1995), the Connor-Davidson Resilience Scale (2003), and the Self-Efficacy Scale by Sherer et al. (1982)) were administered again as a post-test to all three groups, and they were given sufficient time to complete the questionnaires. Finally, the results obtained from the completed questionnaires were analyzed after necessary validations using SPSS software version 21, and the research hypotheses were tested. In this phase of the study, various tools such as diverse statistical tables and charts were initially used to provide a descriptive account of central tendency indicators and measures of dispersion to depict demographic characteristics and describe the research variables. In the second phase, covariance analysis was employed to test the research hypotheses.

2.2. Measures

2.2.1. Social Anxiety

This study utilized the Social Phobia Inventory (SPI) by Connor et al. (2000) and the Positive and Negative Perfectionism Questionnaire by Terry-Short et al. (1995). The Social Phobia Inventory (SPI) is a self-report scale comprising 17 items with three subscales: Fear (6 items), Avoidance (7 items), and Physiological Discomfort (4 items). Scoring is based on a five-point Likert scale (ranging from "Not at all" = 0 to "Extremely" = 4). According to the obtained results, a cutoff score of 40 with 80% diagnostic accuracy and a cutoff score of 50 with 89% accuracy distinguish individuals with social phobia from those without it (Fathi Ashtiani, 2009). The questionnaire has high reliability and validity. Its reliability, measured by test-retest in groups diagnosed with social phobia, ranges from 0.78 to 0.89, and its internal consistency (Cronbach's alpha) in a normative group is reported to be 0.94. Subscale reliabilities are reported as 0.89 for Fear, 0.91 for Avoidance, and 0.80 for Physiological Discomfort. Construct validity was assessed by comparing results from this test between groups diagnosed with social phobia and normative individuals without psychiatric diagnoses, revealing significant differences that indicate high validity (Bakhshi & Sedighi Arfaei, 2021).

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2.2.2. *Perfectionism*

The Positive and Negative Perfectionism Questionnaire by Terry-Short et al. (1995) consists of 40 items scored on a five-point Likert scale from "Strongly disagree" (1) to "Strongly agree" (5). The scale includes two subscales, Positive Perfectionism and Negative Perfectionism, with 20 items (e.g., items 2, 3, 9, 6, 14, 16, 18, 19, 21, 23, 24, 25, 28, 29, 30, 32, 34, 35, 37, 40) assessing Positive Perfectionism and 20 items (e.g., items 1, 4, 5, 7, 8, 10, 11, 12, 13, 15, 17, 20, 22, 26, 27, 31, 33, 36, 38, 39) assessing Negative Perfectionism. The maximum score for each individual is 100, indicating high negative perfectionism, while the minimum score is 20, indicating low negative perfectionism. Scores between 20 and 67 indicate low levels of positive and negative perfectionism, scores between 67 and 134 indicate moderate levels, and scores above 134 indicate high levels of perfectionism. The validity of this tool was assessed by calculating correlation coefficients with the subscales of general health and self-esteem using principal component analysis. The correlation coefficients between the Negative Perfectionism subscale and somatic symptoms, anxiety and insomnia, depression, the total score of the General Health Questionnaire, and social dysfunction were calculated as 0.32, 0.39, 0.63, -0.46, and -0.54, respectively. The correlation coefficient with the Self-Esteem Scale was -0.52. The reliability of this tool, measured by Cronbach's alpha for the Negative Perfectionism subscale in a sample of 212 participants, was 0.91 (Bakhshi & Sedighi Arfaei, 2021; Hadadi & Tamanei Far, 2022).

2.3. *Intervention*

2.3.1. *Stress-Based Mindfulness Training*

The Stress-Based Mindfulness Training program aims to equip participants with mindfulness techniques to manage stress effectively. The program spans eight sessions, progressively building participants' awareness and mindfulness skills through various practices such as mindful eating, yoga, and meditation. Each session introduces new mindfulness techniques, reinforces previously learned skills, and focuses on integrating mindfulness into daily life to better handle stress and improve overall well-being (Hatami Loi et al., 2020; Khorrami et al., 2019).

Session 1 (Three hours):

Participants are introduced to the concept of mindfulness, beginning with mindful eating exercises (e.g., the raisin exercise). The session includes standing yoga postures to familiarize participants with mindful body movements, followed by mindfulness breathing practices, which involve moment-to-moment awareness of the act of eating. Various lying down positions (such as the corpse pose, astronaut pose, or sitting on a chair) are introduced, leading into a body scan meditation to cultivate awareness of thoughts, emotions, and physical sensations in the present moment.

Session 2 (Two hours and thirty minutes):

The session continues with seated meditation practices and standing yoga, emphasizing awareness of daily movements (such as getting in and out of a car, preparing food, bathing children, and walking). Participants discuss their experiences with the body scan meditation, focusing on its success and challenges. The session encourages participants to reflect on their experiences and practice refocusing attention.

Session 3 (Two hours and thirty minutes):

Participants engage in seated meditation with a focus on breath awareness and mindful walking. The session also includes yoga and meditation exercises to deepen awareness of bodily and mental experiences in the present moment. There is a discussion on the importance of mindfulness in daily activities, such as sitting, body scanning, and yoga, especially in lying down positions.

Session 4 (Two hours and thirty minutes):

This session integrates three mindfulness practices: yoga, seated meditation, and body scan. The focus is on enhancing concentration, visualization, and systematically expanding awareness. Participants learn new ways to relate to stressful internal or external events, recognizing mindfulness as a tool for identifying and reducing automatic negative responses. The session includes standing yoga and seated meditation, emphasizing breath awareness, bodily sensations, and working with physical pain, introducing strategies for dealing with discomfort.

Session 5 (Two hours and thirty minutes):

The session emphasizes participants' capacity to adapt more quickly and effectively to daily stressors. It continues mindfulness practices with a focus on responding to stress rather than reacting. The session explores how people typically cope with stress (e.g., denial, passive-aggression, emotional suppression, suicidal thoughts) and highlights the defensive and limiting nature of these strategies. Participants practice responding rather than reacting to stressors and examine the impact of emotional reactivity on health. The session concludes with seated meditation.

Session 6 (Two hours and thirty minutes):

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This session focuses on increasing self-regulation and coping more effectively with stress. Discussions center on enhancing coping strategies through mindfulness, attitude, and behaviors that foster psychological resilience and stability in stressful situations. The session encourages participants to expand their internal resources for better health and improved life competence. Standing yoga is practiced with less instruction and more silence, focusing on breath, body, sounds, thoughts, and emotions. Communication exercises, such as speaking and listening in pairs, are also included.

Session 7 (Two hours and thirty minutes):

The session continues the discussion on communication from the previous session and includes a variety of practices (e.g., 20 minutes of seated meditation, 15 minutes of yoga, 10 minutes of body scanning). Participants are encouraged to explore familiar and unfamiliar changes in their mindfulness practices.

Session 8 (Three to three and a half hours):

The final session revisits mindfulness practices from previous sessions and discusses the application of mindfulness in daily life, especially in stressful situations. Participants are encouraged to continue using mindfulness practices in their everyday lives.

2.3.2. Acceptance and Commitment Therapy (ACT)

The Acceptance and Commitment Therapy (ACT) program is designed to help participants develop psychological flexibility by accepting difficult thoughts and emotions while committing to actions aligned with their values. The 12-session program integrates experiential exercises, mindfulness practices, and value-driven behavior changes to help participants reduce anxiety and improve overall well-being. The program focuses on enhancing awareness, acceptance, and cognitive defusion while promoting committed actions that lead to a more meaningful life (Seyed Jafari et al., 2017; Yabandeh et al., 2019).

Session 1:

This session focuses on psychoeducation, experiential exercises, and discussions about acceptance and value-driven actions. Participants are introduced to the basic principles of ACT, including the concepts of acceptance and the importance of engaging in meaningful activities aligned with their values.

Sessions 2 and 3:

These sessions explore creative hopelessness, where participants reflect on whether their previous attempts to control anxiety have been effective and how these efforts may have reduced value-driven living. The focus is on fostering acceptance of anxiety and recognizing the limitations of control strategies.

Sessions 4 and 5:

These sessions emphasize mindfulness, acceptance, and cognitive defusion. Participants learn to observe their thoughts and emotions without becoming entangled in them, allowing them to respond to experiences with greater awareness and less reactivity.

Sessions 6 to 11:

The focus is on refining acceptance, mindfulness, and cognitive defusion skills while exploring additional values and clarifying goals. Participants work on increasing their willingness to engage in value-driven activities despite anxiety. Behavioral exposure, both internal (imaginal) and external (in vivo), is used to create a space for acceptance, observation, and mindfulness of anxiety, while simultaneously engaging in value-driven activities.

Session 12:

The final session reviews the progress made throughout the program and discusses how participants can continue applying ACT principles in their lives. The session emphasizes maintaining the gains achieved and continuing to live a value-driven life.

2.4. Data analysis

Descriptive and inferential statistics were used for data analysis. In descriptive statistics, central indices such as mean and mode, and dispersion indices such as variance and range of change were used. In inferential statistics, correlation coefficients and regression tests were employed to answer the research hypotheses. Structural equation modeling (SEM) was used to assess the fit of the data with the conceptual model. Data were analyzed using SPSS26 and SMART PLS software.

3. Findings and Results

From the total sample of 45 female high school students in the second secondary education stage, 17 were between 18 years and 6 months to 19 years old, 9 were between 18 to 18 years and 6 months, 14 were between 17 years and 6 months to 18 years, and finally, 5 were between 17 to 17 years and 6 months old.

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Table 1

Descriptive Statistics of Research Variables (Pre-Test and Post-Test)

Variable	Group	Phase	Mean	Standard Deviation	Skewness	Kurtosis
Social Anxiety	Experimental Group 1	Pre-Test	30.2000	4.50000	1.70	1.10
		Post-Test	23.9333	4.09646	1.85	0.99
	Experimental Group 2	Pre-Test	31.4000	4.80000	1.60	1.20
		Post-Test	25.1333	4.56488	1.45	1.08
	Control Group	Pre-Test	32.0000	10.00000	1.50	1.05
		Post-Test	33.9667	10.89601	1.54	1.02
Perfectionism	Experimental Group 1	Pre-Test	62.0000	4.20000	1.30	1.85
		Post-Test	66.5333	4.06846	1.25	1.79
	Experimental Group 2	Pre-Test	64.5000	3.50000	1.50	1.60
		Post-Test	69.2667	3.17280	1.47	1.54
	Control Group	Pre-Test	14.0000	30.00000	1.00	1.10
		Post-Test	15.9125	33.18103	1.02	1.08

Since the skewness and kurtosis values for the research variables are between -2 and +2 for both the experimental and control groups, as well as for the entire sample, it can be concluded that the distribution of the variables in this study is normal. Therefore, the first assumption for using covariance analysis for testing each of the research hypotheses is met.

Table 2

Main Output of Covariance Analysis

Variable	Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Social Anxiety	Adjusted Model	11.477	2	5.739	0.295	0.747
	Interaction of Variables	80.979	1	80.979	4.157	0.051
	Pre-test	0.677	1	0.677	0.035	0.853
	Group	11.174	1	11.174	95.365	0.000
	Error	525.989	27	19.481		
	Total	18594.000	30			
	Adjusted Total	537.467	29			
Perfectionism	Adjusted Model	79.154	3	26.385	1.963	0.144
	Interaction of Variables	1327.178	1	1327.178	98.719	0.000
	Group	0.092	1	0.092	0.007	0.935
	Pre-test	22.395	1	22.395	1.666	0.208
	Pre-test*Group	0.249	1	0.249	0.019	0.893
	Error	349.546	26	13.444		
	Total	138741.000	30			
	Adjusted Total	428.700	29			

Regarding the variable of social anxiety, the F-value for the pre-test variable is shown. This F-value (0.035) is not significant because its significance level is 0.853, which is greater than the 0.05 significance level. Therefore, it can be stated that the fourth assumption in using covariance analysis, which is the correlation between the covariate and the independent variable, was not met. It is important to note that if the F-value for the covariate is not significant, the covariance analysis is correct; however, it can be concluded that the selected covariate (pre-test) does not affect the proposed model. The fourth row of Table 9 represents the main output of the covariance analysis. The F-value for the effect of the independent variables (stress-based mindfulness training and acceptance and commitment therapy) on reducing social anxiety (95.365) is significant, as the significance level for this row is 0.000, which is less than the 0.05 significance level. Therefore, after excluding the effect of the pre-test, the hypothesis that there is a significant difference between the effectiveness of acceptance and commitment therapy and stress-based mindfulness training in reducing social anxiety among female high school students is confirmed.

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4. Discussion and Conclusion

Based on the covariance analysis, it was concluded that there is a significant difference between the effectiveness of acceptance and commitment therapy and stress-based mindfulness training in reducing social anxiety among female high school students. It should be noted that this finding aligns with the results obtained from previous studies (Hatami Loi et al., 2020; Khorrami et al., 2019; Seyed Jafari et al., 2017; Yabandeh et al., 2019). This consistency suggests a high external validity for this research finding. In explaining this result, it can be stated that acceptance and commitment therapy and stress-based mindfulness training, as supportive treatments that involve a strong connection between the therapist and the client, can help develop skills such as distress tolerance, mindfulness, emotional regulation, and effective interpersonal skills in participants. Additionally, in explaining these results, it can be said that in acceptance and commitment therapy, thoughts are seen as products of a natural mind, and beliefs are the result of cognitive fusion processes. What turns thoughts into beliefs is the individual's fusion with the content of their thoughts. When a person with social anxiety acts according to a fear-related thought, such as the fear of negative evaluation, they are fused with that content, and this fusion leads to beliefs related to social anxiety disorder. Acceptance and commitment therapy techniques strongly emphasize reducing cognitive fusion. In fact, when cognitive fusion is reduced, the individual is defused from the content of their thoughts. When acceptance and commitment therapy is applied to social anxiety symptoms, in addition to the processes mentioned for social anxiety, the therapy aims to change the contexts and response functions that maintain the disorder, rather than trying to alter the form and content of distressing psychological events. It seems that the more a person suffers from symptoms related to fear and social judgment, and the more they emphasize avoiding or escaping unpleasant internal experiences, the more they facilitate experiential avoidance, thereby exacerbating their problem. Regarding the fear of negative evaluation, emotional control strategies (such as avoidance and relaxation) that individuals use actually increase anxiety. The therapist encourages the client to experience acceptance instead of avoidance.

Furthermore, based on the covariance analysis in this study, it was concluded that there is a significant difference between the effectiveness of acceptance and commitment therapy and stress-based mindfulness training in increasing perfectionism among female high school students. It should be noted that this finding aligns with the results obtained from prior studies (Choi & Hong, 2020; Eskandari et al., 2019; Foroughi Pardanjani & Sharifi, 2020; Hadadi & Tamanei Far, 2022; Hatami Loi et al., 2020; Khorrami et al., 2019; Narimani et al., 2021; Seyed Jafari et al., 2017; Wang et al., 2022; Yabandeh et al., 2019). This consistency suggests a high external validity for this research finding. In explaining this result, it can be stated that mindfulness helps individuals view negative thoughts and emotions not as part of their self but as events passing through their minds. Mindfulness can be conceptualized as focusing, openness, non-judgment, attention, and awareness. Accordingly, mindfulness is a skill that allows students to perceive current events as less distressing than they would otherwise. This process enables them to separate from their perfectionistic thoughts and see them merely as thoughts generated by their cognitive system, rather than as reality. Moreover, when individuals become aware of the present moment, they no longer focus on the past or future, which reduces their negative perfectionism.

5. Limitations & Suggestions

It should be noted that the present study was limited to an Iranian student sample with specific demographic characteristics, a small number of participants, and a specific geographic location, with no male participants included, which itself posed a limitation in conducting the research. The implementation of single-subject designs and the small number of participants limited the generalizability of the data to other populations and situations. The lack of sufficient time to conduct follow-up tests to assess the durability of the intervention's effects was also among the limitations of this study. Finally, it is recommended that the General Directorate of Educational Planning at the Ministry of Science, Research, and Technology include the goal of teaching acceptance and commitment therapy and stress-based mindfulness training in the curriculum of psychology, counseling, and educational sciences programs at various academic levels.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed in this article.

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