



The Effectiveness of Emotional Schema Therapy on Self-Regulation and Frustration Tolerance in Female Students with Exam Anxiety

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Abstract

Background: Exam anxiety in female students, a significant emotional response and emotional issue that negatively impacts learning, is perceived as a threat by many students. The present study investigated the efficacy of emotional schema therapy (EST) on self-regulation and frustration tolerance in female students with exam anxiety during the academic year 2022-2023.

Methods: A quasi-experimental design with a pretest-posttest was employed. A total of 36 female students with exam anxiety were recruited from Ahvaz, Iran. Convenience sampling technique was employed to select the study participants who were randomly assigned to either the experimental group (n=18) or the control group (n=18) using a random number table. The experimental group received ten, 60-minute sessions of EST. Self-regulation and frustration tolerance were assessed using questionnaires before and after the intervention. Group differences were assessed using analysis of covariance (ANCOVA).

Results: At pretest, both groups showed similar levels of self-regulation (P=0.694). Following the intervention, the experimental group showed significantly higher self-regulation (Mean=49.72, SD=5.74) as compared with the control group (Mean=36.39, SD=4.17) (P=0.001). No significant difference in frustration tolerance was observed between groups at pretest (P=0.927). However, the experimental group (Mean=71.28, SD=5.88) demonstrated significantly greater frustration tolerance as compared with the control group (Mean=117.67, SD=18.10) after the intervention (P=0.001). The findings indicated that EST effectively improved self-regulation and frustration tolerance in female students with exam anxiety (P<0.001).

Conclusions: The results demonstrated a statistically significant improvement in self-regulation and frustration tolerance after administering EST sessions. These findings suggested that EST may be a promising intervention for addressing the psychological challenges associated with exam anxiety in female students.

Keywords: Anxiety, Emotions, Schema therapy, Frustration, Self-control

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1. Introduction

Presence in educational environments, like schools, is often accompanied by experiences of anxiety at various levels for many students. One of the most significant types of anxiety in educational settings is exam anxiety (1). Exam anxiety has a negative impact on students' attitudes towards learning and courses (2). Examinations are one of the most stressful factors in schools, with various psychological and physiological consequences that can lead to a decrease in students' performance during exams (3). Exam anxiety refers to negative feelings, concerns, psychological arousal, and anxiety-related behaviors regarding competence in exams. Studies have shown that exam anxiety is associated with a decrease in self-regulated learning in students (4). According to Bandura (5), self-regulated learning involves the application of self-directed abilities and self-control in the

educational environment. In his view, these abilities are influenced by individuals' beliefs about self-efficacy in activities and various behaviors. Self-regulated learning is conceptualized as a collection of psychological processes by which learners actively manage their cognitive, affective, and behavioral states to optimize academic achievement (6, 7). According to the cognitive-social perspective, self-regulation encompasses beliefs, emotions, and behaviors used to achieve goals. In another definition, self-regulation is one of the human capacities for exerting control over one's thoughts, emotions, and behaviors, through which individuals monitor their behavior and judge it based on personal criteria (8, 9).

On the one hand, exam anxiety in students can lead to the onset of failure (10). Emotional failure is an emotional state that arises as an obstacle to achieving a desired goal. This goal can be mental,

wherein the individual believes they are making progress towards their desired goal and can anticipate the pleasures associated with it, or it may manifest in observable behavior (11). Failure occurs when an individual is unable to reach the desired goal. Failure is a complex phenomenon of motivation (12). Failure and other forms of negative emotions such as sorrow, depression, and irritability serve as common grounds for inducing anxiety (13). Meanwhile, frustration tolerance, the ability to resist obstacles and stressful situations, is crucial. Low failure tolerance is often conceptualized as impaired executive functioning and self-regulation issues (14).

In the past two decades, significant advancements have been made in the field of cognitive sciences. One of the methods for improving educational outcomes is the emotional schema therapy (EST) (15). Schema therapy (ST) emerges as an integrative and novel psychotherapeutic approach that builds upon and extends the theoretical and methodological frameworks of cognitive-behavioral therapy (CBT) (16). The EST model seeks to identify an individual's specific theory about emotions, modify it, and encourage the individual to adopt more adaptive emotion regulation strategies (17). As a result, this model emphasizes on credibility, validation, normalization, expanding emotions, linking emotions to life meanings and values, expanding meanings, modifying beliefs about the duration and lack of emotional control, increasing acceptance of mixed or blended emotions (18). Research has pointed to the effectiveness of EST in improving academic expectation stress, enhancing cognitive avoidance and emotion regulation, and improving metacognitive skills and feelings of loneliness in high school students (18-20).

Accordingly, examinations can be considered as one of the most significant stressors in schools and universities, leading to various psychophysiological consequences that result in decreased performance during exams. Research has shown that anxiety, including exam anxiety, increases the activity of the autonomic nervous system, leading to an increase in heart rate (21). Therefore, the present study focused on investigating the effectiveness of EST on self-regulation and frustration tolerance in female students with exam anxiety.

2. Methods

This study adopted a quasi-experimental

design with pretest and posttest measurements to investigate the effects of EST in female high school students with exam anxiety. The target population included all second-grade female students in Ahvaz, Iran. Convenience sampling technique yielded a sample of 36 participants meeting the inclusion criteria. Participants were then randomly assigned to either the experimental group (n=18) or the control group (n=18). A power analysis was conducted using G*Power software to determine an appropriate sample size. The analysis targeted a medium effect size (1.02) with a significance level (α) of 0.05 and a statistical power of 0.90. This analysis indicated a required sample size of 36 participants (with 22 participants achieved in the final study). Following data collection, the experimental and control groups revealed mean self-regulation scores of 49.72 (SD=5.74) and 36.39 (SD=4.17), respectively (22). Participants were randomly assigned to the experimental and control groups using a random number table. The inclusion criteria were: female high school students, providing an informed consent form, obtaining a score above the established cut-off point on a standardized anxiety questionnaire, and not being enrolled in concurrent educational or therapeutic interventions. The exclusion criteria were: missing more than one therapy session, and unwillingness to continue the intervention.

2.1. Measurement Tools

2.1.1. The Self-Regulation Questionnaire: The Self-Regulation Questionnaire was developed by Bouffard and colleagues (23). This questionnaire consists of 14 items divided into three subscales: cognitive, metacognitive, and motivation. Each item has five options ranging from 1 (not at all like me) to 5 (completely like me) based on a Likert scale. The self-regulation questionnaire used in this study has a possible score range of 14 to 70. In this study, the total score is used. The Self-Regulation Questionnaire, as validated by Shooshtari and co-workers (9), demonstrated strong psychometric properties. Content validity was supported by a Content Validity Index (CVI) of 0.96 and a Content Validity Ratio (CVR) of 0.93. Additionally, Shooshtari and co-workers (9) reported a Cronbach's alpha of 0.86, indicating acceptable internal consistency. In the present study, Cronbach's alpha was calculated to be 0.85 for assessing the reliability of the questionnaire.

2.1.2. The Frustration Tolerance Scale: The Frustration Tolerance Scale was developed by Harrington (24). The purpose of this scale is to measure an individual's level of tolerance for failure in achieving goals. This questionnaire encompasses four factors: emotional intolerance, affective intolerance, achievement (such as intolerance of progress goals), and entitlement (such as intolerance of injustice and dissatisfaction). The items of this scale are scored on a 5-point Likert scale (5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree). Lower scores indicate high frustration tolerance in the respondent, while higher total scores indicate low frustration tolerance. Mahmoudpour and colleagues (25) reported psychometric data for the Frustration Tolerance Scale. The Frustration Tolerance Scale demonstrated acceptable internal consistency (Cronbach's $\alpha=0.87$) and content validity, as evidenced by high scores on the Content Validity Index (CVI=0.94) and Content Validity Ratio (CVR=0.87) reported in a previous study (25).

2.2. Intervention

2.2.1. Emotional Schema Therapy (EST):

EST was delivered in ten 60-minute sessions, two

sessions per week. The intervention sessions were conducted by the first author, who had completed specialized workshops and training courses in EST. A detailed description of the EST sessions is provided in Table 1.

2.3. Data Analysis

Data from the pre-test and post-test phases were analyzed using SPSS version 27. Descriptive statistics (mean and standard deviation) were computed for all study variables. To assess group differences on post-test scores while controlling for baseline levels, an analysis of covariance (ANCOVA) was conducted. Additionally, paired-sample t-tests were employed to examine within-group changes in scores from pretest to posttest. Chi-square tests were used to analyze categorical demographic variables. Prior to conducting parametric tests, the normality of data for self-regulation and frustration tolerance scores was assessed using the Kolmogorov-Smirnov test. Levene's test was conducted to ensure homogeneity of variances across groups.

3. Results

The participants in this study were 36 female

Table 1: A detailed description of the emotional schema therapy sessions

Sessions	Summary of the session
1	Introduction to the emotion schema model Psychoeducation about exam anxiety disorder and emotions Homework: Distinguishing between thoughts, feelings, and behaviors - The function of emotions (exam anxiety)
2	Identifying the client's problematic coping strategies and emotional schemas Homework: The client draws a model in an emotional state and identifies problematic strategies
3	Applying the technique of identifying and labeling emotions Homework: Recording emotions, observing, and describing emotions
4	Using the emotion normalization technique and stress reduction techniques Homework: Behavioral experiment on the probable emotions that others may have in such a situation, practicing stress and anxiety reduction
5	Challenging emotional misconceptions and the technique of emotion acceptance Homework: Studying basic facts about emotions, advantages and disadvantages of accepting emotions
6	Challenging the client to let go of problematic strategies, identifying helpful strategies, and introducing mindfulness to let go of worry and rumination and behavioral strategies Homework: Tolerating mixed emotions, mindfulness
7	Continuing to challenge problematic strategies, working on negative beliefs and interpretations of emotions (emotional schemas) Homework: Mindfulness, and tailored to the client's negative beliefs and interpretations of emotions (control, acceptance, agreement, duration, etc.)
8	Continuing to challenge the client's negative beliefs and interpretations of emotions Homework: Tailored to the client's negative beliefs and interpretations of emotions (simplistic view of emotions, guilt, shame, etc.)
9	Continuing to challenge negative beliefs and interpretations of emotions, using the ladder of inference technique Homework: Tailored to the client's negative beliefs and interpretations of emotions, connecting with higher values
10	Continuing to challenge negative beliefs and interpretations of emotions, connecting with higher values, the technique of creating space for emotions, discussing any remaining issues. Providing the client with a written version of the techniques and sessions.

high school students with exam anxiety, with a mean age of 17.27 years (SD=1.72). The comparison results of EST and control groups in terms of demographic variables were reported in Table 2. No significant between-group differences were observed on demographic variables following baseline comparisons.

Table 3 presents mean and SD scores for self-regulation and frustration tolerance in the pretest and posttest stages. According to the results, there was a statistically significant difference in self-regulation scores between the EST group and the control group at posttest ($P=0.001$). The EST group had a higher mean self-regulation score at posttest (49.72 ± 5.74) than the control group (36.39 ± 4.17). Also, there was a statistically significant difference in self-regulation scores within the EST group ($P=0.001$). This indicated that, in the EST group, self-regulation scores increased significantly from pretest (36.33 ± 4.94) to posttest (49.72 ± 5.74). There was no statistically significant difference in frustration tolerance scores between the EST group and the control group at posttest ($P=0.927$). There was a statistically significant difference in frustration tolerance scores within the EST group ($P=0.001$). This indicated that, in the EST group, frustration tolerance scores increased significantly from pretest (118.78 ± 18.77) to posttest (71.28 ± 5.88). In other words, the study found that the EST intervention was effective in improving self-regulation and frustration tolerance.

Prior to analyzing the data, it was essential to

verify the assumptions of covariance analysis in order to confirm that the data in this study met the required criteria. To do so, the normality of the data was assessed using the Kolmogorov-Smirnov Z test, which showed that the variables of self-regulation ($Z=0.17$, $P=0.203$) and frustration tolerance ($Z=0.15$, $P=0.200$) followed a normal distribution. In addition, Levene's test was used to examine the assumption of homogeneity of variances, which yielded $F=0.10$, $P=0.923$ for self-regulation and $F=1.04$, $P=0.119$ for frustration tolerance. Based on the results, it was appropriate to use the ANCOVA.

The results of ANCOVA showed that there was a significant difference between the EST and control groups in terms of frustration tolerance and self-regulation ($P<0.001$). This means that EST improved frustration tolerance and self-regulation in female high school students with exam anxiety.

4. Discussion

The findings of the study indicated the effectiveness of EST in improving self-regulation. This finding is consistent with the results of previous studies by Rahmani Moghadam and colleagues (26), and Esmailzadeh and co-workers (27). It can be argued that EST is an effective method to assist students with test anxiety in managing and controlling their emotions and feelings. This approach is typically implemented using various techniques such as breathing exercises, mindfulness practices, and psychotherapeutic exercises.

Table 2: Demographic variables of students in experimental and control groups

Groups	Mean age (years)	Grade		
		Tenth	Eleventh	Twelfth
EST group	16.84 (SD=2.08)	6 (33.33%)	5 (27.78%)	7 (38.89%)
Control group	17.70 (SD=1.36)	5 (27.78%)	5 (27.78%)	8 (44.44%)
P	0.166	0.924		

EST: Emotional Schema Therapy

Table 3: Mean (\pm SD) of self-regulation and frustration tolerance in the pretest and posttest stages

Variable	Phase	EST group		Control group		P (between-group)
		Mean	SD	Mean	SD	
Self-regulation	Pretest	36.33	4.94	35.78	3.19	0.694
	Posttest	49.72	5.74	36.39	4.17	0.001
	P (within-group)	0.001		0.625		-
Frustration tolerance	Pretest	118.78	18.77	119.33	16.85	0.927
	Posttest	71.28	5.88	117.67	18.10	0.001
	P (within-group)	0.001		0.778		-

SD: Standard Deviation, EST: Emotional Schema Therapy

Research has shown that EST can help improve self-regulation in students (28, 29). By reducing stress and anxiety, students will be better able to respond to their challenges and lessons, perform better academically, and increase their awareness of their emotions and how they impact performance. Students with test anxiety will be better equipped to face challenges, find appropriate solutions, and improve their problem-solving skills.

In general, EST is an effective method to help students with test anxiety. This approach assists students in experiencing improved self-regulation of their learning through recognizing and managing their emotions. Through using EST, students can identify the best ways to manage their stress and anxiety and use various strategies to control and reduce stress. This enables them to experience significant improvements in their academic performance (26). Furthermore, EST helps students achieve significant improvements in self-awareness and self-acceptance. Therefore, they recognize their weaknesses and enhance their strengths, leading to increased self-confidence and commitment to educational goals.

In contrast, the intervention significantly enhanced students' frustration tolerance. This aligns with the findings of Nezami and colleagues (30). The efficacy of EST in emotional regulation likely contributed to this improvement, as it equips individuals with tools to manage and control their emotional responses. This approach assists students with test anxiety in better coping with their failures and setbacks, learning from them. Through EST, students can improve their frustration tolerance by recognizing their emotions and feelings (30). They learn how to deal with their negative emotions such as dissatisfaction, discontent, anger, and stress and guide them towards problem-solving and finding appropriate solutions. Additionally, EST helps students with test anxiety to move towards becoming more active and accepting constructive criticism by changing their passive thought patterns (15).

EST can positively affect frustration tolerance in students with test anxiety. This therapeutic approach helps students become more familiar with their emotions and feelings and learn effective ways to manage them. This enables students to improve negative thinking patterns and increase their self-confidence, both of which are important factors in enhancing frustration tolerance. Through

the use of Emotion Schema Therapy, students learn how to deal with stress and added pressure during exams and find suitable strategies to control their emotions (30). This method assists them in making significant improvements in their performance and personal functions. Therefore, EST can be used as an effective solution to increase frustration tolerance in students with test anxiety.

4.1. Limitations

One limitation of this study was the gender homogeneity of the participants, which necessitates caution in generalizing the results. Additionally, the use of self-report questionnaires may introduce response bias. Furthermore, the present study faced limitations such as the non-random sampling of participants.

5. Conclusions

This study examined the efficacy of EST in enhancing self-regulation and frustration tolerance among female high school students experiencing exam anxiety. The results demonstrated that EST yielded significant improvements in both self-regulation and frustration tolerance. This aligns with the existing literature suggesting EST as a valuable intervention for individuals experiencing emotional difficulties, including anxiety. The improvement in self-regulation suggests that EST equips students with the skills to manage their emotions and thoughts more effectively, leading to better control and focus during challenging situations like exams. Additionally, the enhanced frustration tolerance allows students to cope with setbacks and failures constructively, fostering resilience and persistence in academic endeavors. These findings contribute to the growing body of evidence supporting the use of EST in addressing exam anxiety and related challenges in female students. Future research could explore the long-term effects of EST, its efficacy in diverse populations, and potential mechanisms underlying its positive outcomes.

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Authors' Contribution

Sara Mousavi: Substantial contributions to the

conception and design of the work; acquisition, analysis, and interpretation of data for the work, drafting the work and reviewing it critically for important intellectual content. Alireza Heidari and Sahar Safarzadeh: Substantial contributions to the conception and design of the work; acquisition, analysis, and interpretation of data for the work, drafting the work and reviewing it critically for important intellectual content. Parviz Asgari: Substantial contributions to the conception and design of the work; acquisition, analysis, and interpretation of data for the work, drafting the work and reviewing it critically for important intellectual content. Marzieh Talebzadeh Shoushtari: Substantial contributions to the conception and design of the work; acquisition, analysis, and interpretation of data for the work, drafting the work and reviewing it critically for important intellectual content. 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.

Ethical Approval

This research was approved by the Ethics Committee of Islamic Azad University- Ahvaz Branch with the code of IR.IAU.AHVAZ.REC.1402.068. Also, written informed consent was obtained from the participants.

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