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Comparing the Effectiveness of Self-regulation Training and Academic Help-seeking Training on Exam Anxiety

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ABSTRACT

Objective: The present study aimed to compare the effectiveness of self-regulation training and academic help-seeking training in reducing test anxiety.

Methods: This applied study employed a quasi-experimental design with a pre-test–post-test format and a control group. The statistical population consisted of all male lower secondary school students enrolled in the academic year 2023–2024 in schools in Bandar Abbas. The research sample was selected using convenience sampling, and participants were randomly assigned to two experimental groups and one control group (15 students per group). The standard test anxiety scale developed by Abolghasemi et al. (1996) was used to measure the dependent variable. According to the relevant protocols, the experimental groups received the respective training programs over one month (12 sessions), while the control group received no intervention. Data were analyzed using SPSS version 27.

Results: The results of the univariate analysis of covariance and Bonferroni post-hoc test showed that both self-regulation training and academic help-seeking training significantly ($p < 0.05$) reduced test anxiety. However, there was a significant difference ($p < 0.05$) between the effectiveness of the two training approaches, with self-regulation training producing a greater reduction in test anxiety scores.

Conclusions: Both self-regulation and academic help-seeking training can effectively reduce test anxiety among students. Nevertheless, self-regulation training appears to be more effective in lowering test anxiety levels.

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Introduction

In contemporary society, every community bases its core endeavors on cultivating the next generation in ways that align with its needs, culture, and fundamental values. The future of any society rests in the hands of its youth, and the advancement, success, and achievement of societal goals depend largely on how adolescents—the architects of tomorrow—are educated and nurtured (Bagheri Varkane et al., 2024). Accordingly, attention to adolescents' developmental needs across multiple dimensions should be a priority (Poorgholamy et al., 2022).

Adolescence, corresponding to the secondary school years (ages 13 to 18), is a crucial period for fostering social and emotional competencies. It is inherently a time of emotional and social challenges, during which nearly all students experience declines in self-confidence and social self-esteem (Bakhshi & Sedigh arfaei, 2021). National studies (Darvish et al., 2023; Habib Zadeh et al., 2024; Hosseini Sadr et al., 2022; Vahedi et al., 2025) indicate that test anxiety is one of the most pressing problems among lower secondary school students. This factor prevents students from demonstrating their full potential in educational settings, resulting in academic performance that deviates from their true capabilities (Abak, 2023). In other words, test anxiety not only poses a threat to adolescents' mental health but also introduces significant measurement error into academic assessment (Salimi et al., 2023). Recent estimates have reported the prevalence of test anxiety among Iranian secondary students to be 17.2% (Jafarzadeh dashbolagh et al., 2023).

Test anxiety is a major debilitating factor across all levels of academic performance—from elementary school through higher education—warranting ongoing research to identify its overt and latent dimensions (Karami et al., 2018). It is characterized as an unpleasant and vague emotional state in examination contexts, accompanied by symptoms such as distress, panic, fear, palpitations, sweating, headaches, restlessness, frequent urination, and nervousness (Salend, 2011; Stöber & Pekrun, 2004). Examinations are among the most significant stressors in schools and universities, producing various psychophysiological consequences that impair performance. Multiple studies have shown that anxiety, including test anxiety, activates the autonomic nervous system, leading to increased heart rate (Alsaady et al., 2020; Baytemir, 2023; Kurtuldu, 2023). Consequently, educational and psychological researchers are tasked with identifying targeted interventions to reduce test anxiety among secondary school students.

Recent evidence (Boshoff-Knoetze et al., 2023; Nunez et al., 2022; Sáiz-Manzanares et al., 2022; Sinring et al., 2022) demonstrates that self-regulated learning (SRL) training has had significant effects on both positive and negative constructs within educational psychology, contributing positively to the educational climate in secondary schools. SRL enhances individuals' capacity to regulate their behaviors in response to internal and external conditions (Chitra et al., 2022). Self-regulation of cognition and behavior is a critical aspect of learning and academic performance in classroom contexts. Self-regulation theories generally explain why and how students engage in learning, and what they need to know about themselves and their academic work to become independent learners. In other words, they address how students guide their learning processes and how selecting cognitive, metacognitive, and behavioral strategies can increase their effort (Veyskarami et al., 2021).

Self-regulated learning has been defined as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals." SRL can be organized into three phases: (1) forethought, (2) performance, and (3) self-reflection. In the forethought phase, students engage in task analysis (i.e., setting goals and planning to achieve them) and in motivational belief formation (e.g., self-efficacy, outcome expectations, intrinsic interest/value, and goal orientation) to activate learning. In the performance phase, learners execute tasks while employing self-control processes (e.g., self-instruction, imagery, attention focusing, and task strategies) and self-observation processes to monitor and sustain engagement (Reparaz et al., 2020).

In addition to SRL, educational help-seeking strategies may also positively influence adaptive psychological constructs while reducing maladaptive ones. According to Butler (2013), academic help-seeking involves the proactive use of available resources to achieve success. In this process, the learner must first recognize that the task is difficult and that they are unable to complete it independently, thus requiring assistance. Next, learners consider all possible information before deciding whether to seek help. Appropriate training in help-seeking strategies can therefore enhance positive psychological outcomes (Noohpour et al., 2020). When exposed to such training, students turn to teachers and knowledgeable peers for academic support, which not only helps them overcome academic difficulties but also actively engages them in classroom activities, thereby increasing motivation for learning (Newman, 2023).

Given the educational challenges faced by lower secondary school students, and in light of the researcher's aim to identify the most effective method for reducing test anxiety, the present study seeks to determine whether there is a significant difference between the effects of self-regulated learning training and academic help-seeking training on test anxiety among male lower secondary students in Bandar Abbas.

Material and Methods

The present study is applied in purpose and employs a quasi-experimental design with a pretest–posttest structure and a control group. The statistical population consisted of all male lower secondary school students enrolled in the 2023–2024 academic year in Bandar Abbas. The sampling method was convenience sampling. One boy's lower secondary school in Bandar Abbas was invited to participate, and students meeting the inclusion criteria were recruited. Based on previous studies, the sample size was set at 15 participants per group. With two experimental groups and one control group, the total sample size was 45 students.

Interventions

Self-Regulated Learning Training

To implement the self-regulated learning (SRL) intervention, twelve 90-minute sessions were conducted. The training content was adapted from the protocol developed by Pintrich and De Groot (1990).

Table 1. Outline of SRL training sessions

Session	Content
1	Introducing the self-regulated learning strategy as a type of learning that includes; goal setting, setting efforts to achieve goals, self-monitoring, time management, and setting the physical and social environment of learning
2	Explaining the concept of cognition as a mental process that processes information so that students pay attention to, recognize, encode, and store that information in memory.
3	Advising that this strategy is a method for memorizing information and that when students want to learn new material, they try to make connections between that new material and the information they already have.
4	Explaining that the organization strategy is the best way to learn complex and detailed material; that is, students categorize them using the similarities and differences between the materials.
5	Explaining the concept of metacognition and the planning strategy, which is to create coordination between the volume of learning resources and the time of learning and for students to determine for themselves when, in what order, and in what quality to do their work.
6	Explain the control and monitoring strategy in a practical way so that students become aware of the progress of their work and its monitoring, guidance, and evaluation.
7	Recommend that this strategy works in harmony with control and monitoring strategies. Explain the most important discipline strategies, including; adjusting the pace of study and modifying or changing the cognitive strategy.
8	Recommend that time management helps students adapt to the environment, change it to meet their goals and needs.

9	Explain that students should be able to choose an environment for their study that is suitable in terms of physicality, distraction control, facilities, and support people. Teaching effective resource management strategies on learning self-regulation, asking for help and adjusting efforts, teaching how to ask questions of others and how to use the right people for help and ask for help from others in a socially appropriate way.
10	Explain motivation and self-efficacy beliefs and how these beliefs affect the type of activities of students, especially academic activities.
11	Explain goal orientation, the role of goal orientation in self-regulated learning, good characteristics of a precise, correct and achievable goal.
12	Explain academic delay of gratification and its role in self-regulated learning and its importance for students.

Given that the original 15-session protocol was condensed into 12 sessions, the content validity of the adapted version was reassessed using the Lawshe method, and the obtained content validity ratio was confirmed.

Academic Help-Seeking Training

The academic help-seeking intervention also consisted of twelve 90-minute sessions, designed according to the protocol of D'zurilla and Goldfried (1971)

Table 2. Outline of help-seeking training sessions

Session	Content
1	Providing information about the strategy of asking for help and its role and importance in helping to learn better
2	Teaching when it is necessary to ask for help and how to express it
3	Teaching to recognize knowledgeable instructors and classmates and teaching when and how to approach knowledgeable people
4	Practice mental review regarding problem identification and investigation in the form of planning a short research trip in the role of group guide
5	Teaching academic and social goals, self-confidence and emotions that help students endure the problem as well as strengthening themselves to avoid negative perceptions
6	Teaching effective explanations along with activities to develop general communication skills
7	Teaching to use scientific explanations when solving problems collaboratively
8	Teaching to ask high-level questions and designing strategic questions, especially in planning how to solve the problem
9	Dividing students into pairs and explaining the material that needs to be explained. Teaching reading, summarizing by one student and identifying his/her mistakes by another student
10	Teaching problem solving and expressing one's own reasoning using metacognitive cues
11	Teaching working alone, receiving clues and asking for detailed guidance
12	Providing materials on the importance of helping, providing practice and practical implementation of meetings

Measurement Tool

Test anxiety, the dependent variable, was assessed using the standardized Test Anxiety Scale developed by Abolghasemi et al. The instrument comprises 25 items rated on a four-point Likert scale (from *never* to *often*), scored from 1 to 4. Example items include: *Despite trying hard, I*

cannot concentrate during exams and *the more difficult the exam questions, the more worried and anxious I become*. Scores range from 25 to 100, with the following classifications:

- 0–25: Low anxiety
- 26–50: Moderate anxiety
- 51–75: High anxiety
- Above 75: Very high anxiety

In Jafaei Deloie et al. (2015), the validity of the scale was confirmed by subject matter experts, and the reliability coefficient using Cronbach's alpha exceeded 0.70. In the present study, Cronbach's alpha was calculated at 0.73.

Procedure

Participants were randomly assigned to three groups of 15 students each (two experimental and one control group). Initially, a pretest of the dependent variable was administered to all groups. The two experimental groups then received their respective 12-session interventions over one month (three sessions per week on Saturdays, Mondays, and Wednesdays). The control group received no training. Following the interventions, a posttest was administered to all participants. Data were analyzed using one-way analysis of covariance (ANCOVA) and Bonferroni post hoc tests for inferential analysis. All statistical procedures were conducted with SPSS software (version 27).

Ethical Considerations

Informed consent was obtained from all participants prior to data collection. The purpose, procedures, potential risks, benefits, and duration of the study were explained to the students, and they were assured of confidentiality. Consent forms were signed by participants, and upon study completion, the benefits of SRL and help-seeking strategies were explained to all students, including those in the control group.

Inclusion criteria

1. Informed consent from parents
2. Informed consent from students
3. No disruption to the regular academic curriculum
4. No diagnosed psychological disorders
5. No chronic physical illnesses

6. No prior participation in SRL, help-seeking, or problem-solving training programs

Exclusion criteria

1. Excessive fatigue in the student
2. Withdrawal of student consent
3. Withdrawal of parental consent
4. Academic decline during the study
5. Teacher or school administration dissatisfaction with student participation

This study was registered with the ethics code **IR-IAU.BA.REC.1403.081** and is available on the National Ethics Committee in Biomedical Research website.

Results

Table 3 presents the mean and standard deviation of test anxiety scores for the control group, the self-regulated learning (SRL) group, and the academic help-seeking group at both the pretest and posttest stages.

Table 3. Means and Standard Deviations of Test Anxiety Scores for Experimental and Control Groups

Group	Pretest		Posttest	
	Mean	SD	Mean	SD
Control	33.40	6.34	31	6.84
SRL training	37.60	6.02	24.26	6.39
Help-seeking training	35	7.05	30.60	7.36

The results in Table 3 indicate that, in the control group, the mean scores for the dependent variable showed little change from pretest to posttest. In contrast, both the SRL training group and the academic help-seeking training group exhibited noticeable reductions in mean test anxiety scores from pretest to posttest. Determining whether these changes were statistically significant required inferential statistical testing, as reported below.

Before testing the study hypotheses, the underlying assumptions of analysis of covariance (ANCOVA) were examined.

Normality of data distribution was assessed using the Kolmogorov–Smirnov test. The results indicated that the *p*-value for test anxiety was greater than 0.05, providing no rationale to reject the null hypothesis, which states that there is no significant difference between the empirical data

distribution and the normal curve. Therefore, the data for the study variables were considered normally distributed.

Homogeneity of variances was examined using Levene's test. The obtained *F*-value for test anxiety was 1.776, which was not significant ($p > 0.05$). Based on this result, the assumption of equal variances across groups was supported.

To examine the effects of the independent variables, a one-way ANCOVA was conducted on posttest scores while controlling for pretest scores. Table 4 summarizes the results.

Table 4. One-Way ANCOVA Results for Test Anxiety Scores

Source	SS	DF	MS	F	P	Effect size
Pretest	1871.49	1	1871.49	655.60	0.001	0.94
Group	967.57	2	786.48	476.16	0.001	0.89
Error	117.03	41	2.85			
Total	39282	45				

The results in Table 4 indicate a statistically significant difference between the experimental groups and the control group in the dependent variable. While the univariate ANCOVA identifies overall differences among groups, it does not specify which groups differ from each other. Therefore, Bonferroni post hoc tests were performed to determine the exact nature of these differences.

Table 5. Bonferroni Post Hoc Test Results

Variable	Comparison groups	Mean difference	P
Test anxiety	SRL-Control	11.05	0.001
	Help-seeking-Control	2.04	0.006
	SRL-Help seeking	-9.01	0.001

The Bonferroni post hoc results revealed that the effects of SRL training and academic help-seeking training on test anxiety were significantly different. Overall, the findings showed that:

1. Both training programs had a significant negative effect on test anxiety.
2. SRL training produced a more substantial reduction in test anxiety than academic help-seeking training.

Accordingly, the research hypothesis was supported:

There is a significant difference between the effects of self-regulated learning training and academic help-seeking training on test anxiety among male lower secondary school students.

Discussion

The findings of the present study are consistent with those reported by Chen et al. (2023), Fong et al. (2023), and Nunez et al. (2022). In explaining the study's main hypothesis, the perspective of Pintrich and Schragben (2012) is instructive: students with high levels of anxiety tend to use ineffective learning strategies, which leads them to engage passively in the learning process. Students who experience elevated test anxiety are preoccupied with concerns about their performance, which diverts their attention from the task at hand. As a result, intrusive thoughts, along with behavioral and physiological difficulties, interfere with their ability to perform effectively.

The results of the present study suggest that SRL training—by incorporating cognitive, metacognitive, and effective resource-management strategies—enhances students' learning, comprehension, and concentration, which in turn reduces their test anxiety. Self-regulated learners are active participants in the learning process. They pursue their learning goals using diverse strategies, continuously monitor their academic conditions, and modify their approaches when necessary. Accordingly, SRL training appears to enhance motivational constructs while simultaneously decreasing test anxiety levels.

Help-seeking is conceptualized as a social–interactive process, involving the presence of others with whom the student interacts and from whom assistance is obtained. This behavior reflects the influence of social factors on learning and cognitive development (Williams & Takaku, 2011). Newman and Schwager (2012) identify help-seeking as a learning strategy through which students can diagnose and address academic difficulties by asking questions and seeking assistance from others. Such interactions not only alleviate academic challenges but also equip students with knowledge and problem-solving skills. Consequently, as students reduce their academic difficulties and master the content to be assessed, their test anxiety levels decrease.

The results show that both SRL training and academic help-seeking training significantly reduced test anxiety. However, SRL training was more effective. One possible explanation lies in the initial conditions for help-seeking behaviors in lower secondary schools, which appear to be underdeveloped. Adolescents, who are in a period of rapid physical and psychological change, often experience diminished self-confidence (O'Donnell et al., 2024). This reduction in confidence may lead them toward social withdrawal and less frequent use of socially interactive strategies

such as help-seeking to achieve academic goals. By contrast, SRL is primarily an intrapersonal process; students who are internally organized and self-directed are better positioned to regulate negative academic variables. Since test anxiety is largely an internalized construct, SRL training may provide a more direct and effective means of mitigating it.

Several limitations of this study should be acknowledged. First, the use of convenience sampling from a single school in Bandar Abbas limits the generalizability of the findings to other contexts and populations. Second, the relatively small sample size (n = 45) may have reduced the statistical power to detect smaller effect sizes. Third, the study relied exclusively on self-report measures, which are subject to response biases such as social desirability. Fourth, the interventions were of relatively short duration, and no follow-up assessments were conducted to determine the long-term sustainability of the observed effects. Finally, the cultural and educational environment in which the study took place may influence the applicability of the findings in other regions or educational systems.

Future research should aim to replicate this study with larger and more diverse samples, including female students and students from different regions, to enhance generalizability. Longitudinal designs could assess whether the benefits of SRL and help-seeking training persist over time. Experimental comparisons could also investigate hybrid interventions combining SRL and help-seeking strategies to determine whether they produce synergistic effects. In practical terms, educational policymakers and school administrators should consider incorporating SRL training into the regular curriculum, given it demonstrated effectiveness in reducing test anxiety. For help-seeking strategies to be more impactful, school environments should foster trust, peer support, and teacher–student rapport, thereby lowering the social barriers that may inhibit students from seeking assistance.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of Islamic Azad University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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