

# The Effectiveness of Self-Regulation Training in Improving Engagement and Academic Resilience of Male Students

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## Abstract

**Background:** Academic resilience can increase the generalized flexibility of students to confront problems, stresses, and challenging demands and conditions during the school year, leading to success and improvement in academic performance. The present study aimed to investigate the effectiveness of self-regulation training in improving engagement and academic resilience in high school students.

**Methods:** This research was a quasi-experimental study. The statistical population included all tenth-grade male students in Ahvaz, Iran, in 2021. Forty tenth-grade students were selected through multistage cluster sampling and were randomly placed into intervention and control groups (n=20 students in each group) using a random number table. The intervention group received seven 90-minute self-regulation training sessions, while the control group received no psychological training. The Academic Resilience Scale (ARS) and the Utrecht Work Engagement Scale for Students were administered to both groups (intervention and control) before and after the training sessions. The collected data were analyzed by repeated measures ANOVA in SPSS version 23.

**Results:** Mean ( $\pm$ SD) of academic engagement for the intervention group in the pretest, posttest, and follow-up stages were  $46.60\pm 5.83$ ,  $54.65\pm 7.96$ , and  $54.55\pm 7.34$ , respectively; while in the control group, the means were  $46.85\pm 6.38$ ,  $47.15\pm 5.81$ , and  $47.35\pm 5.98$ , respectively. Moreover, the mean ( $\pm$ SD) of academic resilience for the intervention group in the pretest, posttest, and follow-up stages were  $17.60\pm 3.55$ ,  $25.65\pm 4.98$ , and  $25.35\pm 4.22$ , respectively; while in the control group, the means were  $19.80\pm 4.01$ ,  $19.35\pm 3.82$ , and  $18.85\pm 4.12$ , respectively. The results demonstrated a significant difference between the intervention and control groups in the mean scores of student engagement and academic resilience ( $P<0.001$ ). Accordingly, a significant rise was observed in the intervention group's posttest scores of student engagement and academic resilience ( $P<0.001$ ). Moreover, the follow-up showed the stability of the influence of self-regulation training.

**Conclusion:** The study findings indicated that self-regulation training effectively improved student engagement and academic resilience in senior high school male students. Therefore, self-regulation training sessions are recommended to improve the psychological skills of students.

**Keywords:** Emotional regulation, Resilience, Motivation, Students

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## 1. Introduction

Fostering individuals who can overcome their problems in everyday life and at school is a major goal of modern education systems. In this respect, a fundamental concern in learning is providing learning conditions that facilitate the best outcomes (1, 2). Children and adolescents spend the best years of their lives at school; thus, experiencing any success or failure during their school years can deeply influence their positive or negative attitudes toward themselves and their capabilities (3).

Research on educational progress initially revolved around intelligence. However,

researchers today claim that merely relying on general intelligence cannot explain success (4). Motivational strategies are among the crucial components influencing learning. By focusing on motivation, educators can provide interesting and lively learning environments for learners (5).

Student engagement, also known as educational or academic engagement, is a crucial factor for motivation. Students respond differently to assignments, educational goals, and plans. Some respond with engagement, while others respond with reluctance and avoidance (6). Student engagement refers to a learner's efforts to do schoolwork and defines the resulting effectiveness

and efficiency (7). Given that engagement predicts academic achievement, it is essential to determine influential factors that guide students toward engagement and involvement (8). Students with higher engagement can direct more attention to the target learning materials (9).

According to the literature, engagement is an intrapersonal state of mind that drives students to become involved and invested in their school activities. It is often used as a motivational construct, reflecting the learner's commitment to education. Engagement can positively predict academic achievement in students (8). Studies have indicated a positive correlation between student engagement with high scores, mastery of academic content, and overcoming of obstacles successfully (10). Moreover, student engagement can predict higher academic achievement, well-being, and job opportunities (11).

Students with low behavioral engagement in class activities and study-related roles and behaviors tend to exhibit lower levels of self-regulation and self-confidence, and higher levels of anxiety, stress, and exhaustion (12). Academic resilience can increase students' flexibility to confront problems, stresses, and challenging demands during the school year, leading to success and improvement in academic performance (13). Resilient students are highly motivated, show persistent effort during their study course, and achieve greater success, and have fewer dropout intentions (14). Academic resilience refers to a student's increased likelihood of academic success despite personal adversity caused by environmental conditions and personal experiences (15). It is conceptualized as a student's capacity to effectively confront obstacles, limitations, threats, and academic life challenges (16).

In a study on rural adolescent students in India, Annalakshmi (17) found self-regulation to be the single predictor of resilience. According to Fuente-Arias and colleagues (18), self-regulation had a significant positive relationship with learning and resilience approaches. In another study, Artuch-Garde and colleagues (19) found self-regulation to be a strong predictor of resilience and confrontation.

Based on the theoretical basis and reviewed literature, successful education depends on motivation (such as student engagement) and cognitive factors influencing learning (e.g.,

resilience). Identifying and studying factors contributing to student engagement and academic resilience can substantially help students' academic progress. The levels of these variables might shift based on different personal and social factors. Various educational interventions exist based on different approaches, each of which has a proven effect on certain topics. Self-regulation strategies training in the educational environment is an intervention utilized to improve learners' performance (20). Learning self-regulation can enhance individuals' capacities to adjust their behaviors according to the conditions and changes of the external and internal environments (21, 22).

Based on the above considerations, this research aimed to investigate the effects of self-regulation training in improving engagement and academic resilience in high school students.

## 2. Methods

### 2.1. Design and Participants

This quasi-experimental study utilized a pretest-posttest control design with a one-month follow-up period. The study population consisted of all male tenth-grade students in Ahvaz, Iran, during the 2020-2021 academic year. The sample included forty tenth-grade students selected through multistage cluster sampling and were randomly assigned to either the intervention or control group using a random number table ( $n=20$ ). The sample size was determined using G\*Power software with an effect size of 0.95, a test power of 0.90, and  $\alpha=0.05$  (23). Inclusion criteria consisted of studying in tenth grade and not receiving simultaneous psychological treatment or training. Exclusion criteria included dropping out of school and being unable to complete the training course.

### 2.2. Procedure

After receiving the necessary permissions for conducting the research, a sample was selected from one district, randomly chosen from four districts of Ahvaz education. Two boys' high schools were then randomly selected from this district, and two classes (intervention and control group) were randomly selected from these schools. Prior to conducting the research, written informed consent was obtained from the participants. The Utrecht Work Engagement Scale for Students (UWES-S)

and the Academic Resilience Scale (ARS) were administered to both groups (intervention and control) before conducting the training sessions. The intervention group received seven 90-minute self-regulation training (24), while the control group was placed on the waiting list. The therapy sessions were implemented by the first author, who had completed specialized workshops and courses in the school counseling office. Follow-up assessments were conducted using the research instruments in both the intervention and control groups one month after the posttest (Figure 1). Table 1 provides a summary of the self-regulation training sessions.

### 2.3. Instruments

#### The Utrecht Work Engagement Scale for

**Students (UWES-S):** The UWES-S, developed by Schaufeli and colleagues (25), was used to assess student engagement. This 17-item scale comprises three subscales: “Vigor” (items 1-6), “Dedication” (items 7-11), and “Absorption” (items 12-17). The items are scored from never (1) to always (5), with a range of scores between 17 and 85. Higher scores indicated greater academic engagement. The Content Validity Index (CVI=0.90) and Content Validity Ratio (CVR=0.88) confirmed the content validity of the UWES-S (26). The reliability of this questionnaire was established by Ghadampour and colleagues (26) using Cronbach’s alpha ( $\alpha=0.88$ ). In the present study, the Cronbach’s alpha of the instrument was 0.89.

**The Academic Resilience Scale (ARS):** The ARS, developed by Martin and Marsh (27),

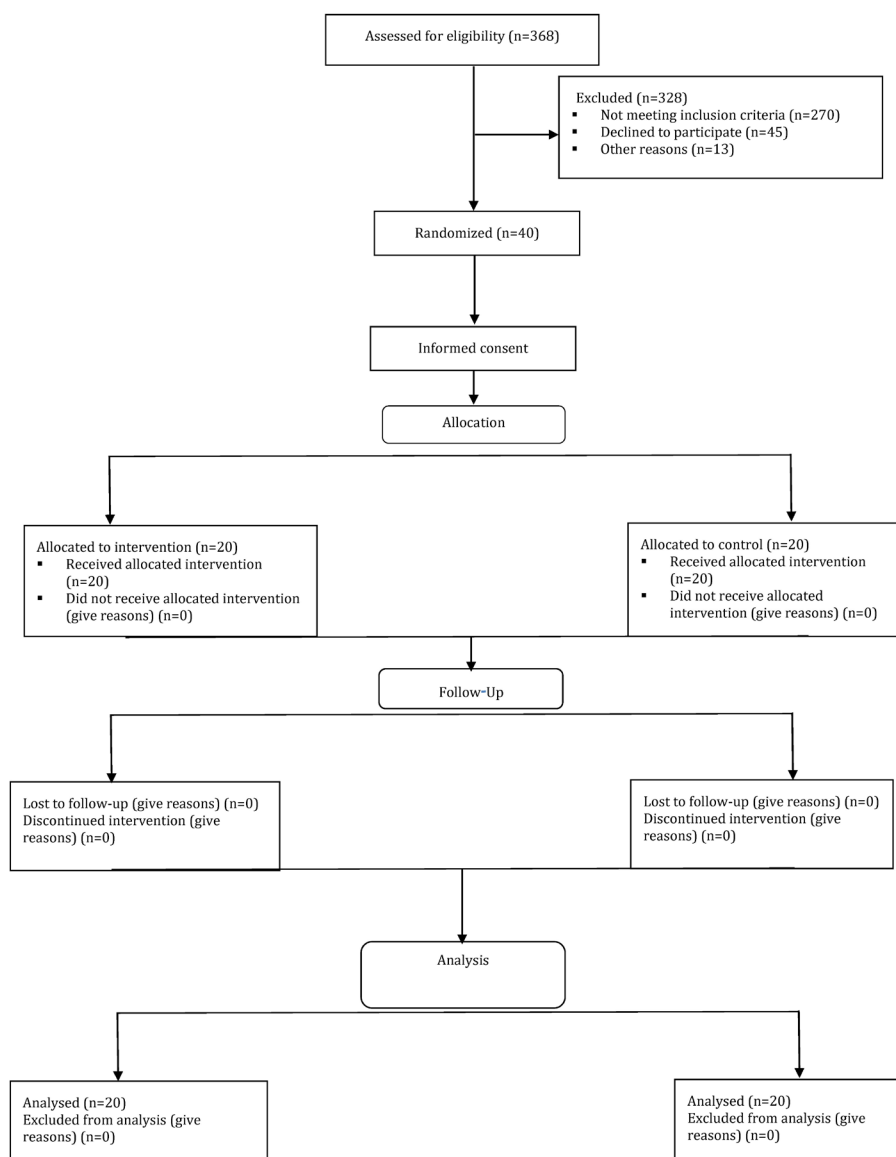


Figure 1: The figure shows the CONSORT flow diagram.

**Table 1:** A summary of the content of self-regulation training sessions

Session	Objectives	Content
1	Acquaintance and description of goals	Self-regulation training was generally introduced to the participants. Learners were asked to share their views and experiences in this regard. The central aspects of goal setting were discussed (a goal must be real, tangible, challenging, and short-term).
2	Time management	Time management was explained as a crucial factor in achieving goals.
3	Planning	The learners were asked to plan to achieve their goals in the previous session.
4	Self-motivation	The learners were asked to talk about the ways they avoid wasting time. Behavioral motivation and its differences from cognitive motivation were explained.
5	Behavioral self-motivation	First, the learners were asked to reflect on their motivation to study. Later, sustaining motivation and the difference between internal and external motivation were discussed.
6	Cognitive self-motivation	Learners were trained to use self-taught skills such as stopping negative thoughts and starting positive self-talk. They were trained to identify their negative thoughts and effectively address them.
7	Focus management	The learners were trained to focus on management strategies (such as relaxation). Muscle relaxation was taught as a method to boost concentration and reduce anxiety.

was used to measure learners' resilience when encountering obstacles, academic pressure, and stress. This 6-item scale focuses on one dimension, and items are scored on a 5-point Likert scale from 1 to 5, with a range of scores between 6 and 30. Higher scores indicated greater academic resilience. The CVI=0.97 and CVR=0.96 confirmed the content validity of the ARS (28). Ramezani and colleagues (28) reported a Cronbach's alpha coefficient of 0.93 for the scale. In this study, the Cronbach's alpha of the ARS was 0.87.

#### 2.4. Data Analysis

Repeated measures analysis of variance (ANOVA) was used to examine the effectiveness of self-regulation training in improving engagement in male tenth-grade students. Before analysis, the data were examined to ensure that they met the basic assumptions of repeated measures ANOVA. The normal distribution of scores and homogeneity of variance and covariance matrices (homoscedasticity) were examined, confirming the assumption of a normal distribution of student engagement and academic resilience scores in both study groups. Mauchly's sphericity test was also used to check if the assumption of homoscedasticity was met. Levene's and Box's M tests were used to validate the assumption of equivalence of covariances and student engagement and academic resilience variances. The results confirmed the homogeneity of variances. Mauchly's test also verified the assumption of sphericity. Ultimately, the Box's M test indicated the equivalence of covariances in the intervention and control groups. Therefore, the assumptions for conducting repeated measures ANOVA were met.

### 3. Results

The mean age of students was  $15.23 \pm 1.51$  in both the intervention and control groups. In the self-regulation training group, 7 (35.0%) and 13 (65.0%) students' mothers had a bachelor's degree and a high school diploma, respectively. In the control group, 8 (40.0%) and 12 (60.0%) students' mothers had a bachelor's degree and a high school diploma, respectively. The mothers of 14 (70.0%) students in the self-regulation training group and 16 (80.0%) students in the control group were housewives (Table 2).

Table 3 shows the descriptive statistics of the main variables, including student engagement and academic resilience, separated by groups in three stages: pretest, posttest, and follow-up. In the pretest stage, the mean and standard deviation (SD) of student engagement scores were  $46.60 \pm 5.83$  and  $46.85 \pm 6.38$  in the self-regulation training and control groups, respectively. However, in the posttest stage, the scores were  $54.65 \pm 7.96$  for the intervention group and  $47.15 \pm 5.81$  for the control group. In the follow-up stage, the mean (SD) of student engagement scores was  $54.55 \pm 7.34$  for the self-regulation training group and  $47.5 \pm 5.98$  for the control group. In the pretest stage, the mean and SD of resilience scores were  $17.60 \pm 3.55$  and  $19.80 \pm 4.01$  in the self-regulation training and control groups, respectively. However, in the posttest stage, the scores were  $25.65 \pm 4.98$  for the intervention group and  $19.35 \pm 3.82$  for the control group. Finally, in the follow-up stage, the mean ( $\pm$ SD) of student resilience scores was  $25.35 \pm 4.22$  for the self-regulation training group and  $18.85 \pm 4.12$  for the control group.



**Table 2:** Demographic variables of students

Variables		Intervention group	Control group	P
Mean±SD age (years)		14.87±1.69	15.59±1.34	0.143
Education of students' mothers	High school	13 (65.0%)	12 (60.5%)	0.747
	Academic	7 (35.5%)	8 (40.0%)	
Employment of students' mothers	Employed	6 (30.0%)	4 (20.0%)	0.470
	Housewife	14 (70.0%)	16 (80.0%)	

**Table 3:** Mean and standard deviation (SD) of the engagement and academic resilience in intervention and control groups

Variables	Phase	Intervention group	Control group	P (between group)
		Mean±SD	Mean±SD	
Academic engagement	Pretest	46.60±5.83	46.85±6.38	0.899
	Posttest	54.65±7.96	47.15±5.81	0.001
	Follow-up	54.55±7.34	47.35±5.98	0.001
P (pretest - posttest)		0.001	0.880	-
P (pretest - follow-up)		0.001	0.800	-
P (posttest - follow-up)		0.999	0.915	-
Academic resilience	Pretest	17.60±3.55	19.80±4.01	0.104
	Posttest	25.65±4.98	19.35±3.82	0.001
	Follow-up	25.35±4.22	18.85±4.12	0.001
P (pretest - posttest)		0.001	0.819	-
P (pretest - follow-up)		0.001	0.465	-
P (posttest - follow-up)		0.421	0.695	-

The results indicated a substantial increase in the study variables (student engagement and academic resilience) in the intervention group that received self-regulation training. The increased student engagement and academic resilience remained stable in the one-month follow-up. This significant change was not observed in the control group.

The results indicated the effectiveness of self-regulation training in increasing the engagement and academic resilience of the participants. Considering the significant factors at the intragroup level, the significant difference in three measurement stages (pretest, posttest, follow-up) was confirmed for student engagement and resilience. Furthermore, the significant group source illustrated a significant difference in student engagement and academic resilience between the self-regulation training and control groups.

#### 4. Discussion

This study aimed to investigate the role of self-regulation training in improving engagement and academic resilience in students. The study revealed a significant impact of self-regulation training on improving student engagement and academic resilience. The findings were consistent with the results of Amirian and colleagues (29), who found

that self-regulation strategies training had a positive effect on promoting positive academic emotions and reducing negative academic emotions in high school students. The results were also generally consistent with Xu and Qiu (30), who concluded that self-regulation strategies could increase student engagement, attitudes towards creativity, and academic integration in students. Banisi (31) found that self-regulation strategies can increase resilience and social adjustment in students.

According to the findings, it can be argued that students who utilize self-regulation strategies more than others try to learn their lessons in the classroom and/or when studying by making the information meaningful, logically linking it with previous information, controlling this process, and creating a suitable learning environment (32). Such students show more resilience when confronted with academic problems and challenging conditions. Students who have high self-regulation become successful learners. They are highly motivated to progress, particularly in their studies. By practicing self-regulation strategies, they regulate their goals and actions for academic achievement and can sustain their motivation despite difficult assignments (17).

Self-regulation can lead to invaluable

outcomes in education and the learning process since it encompasses active participation in the surrounding environment. Effective self-regulation continuously guides students' strategies to achieve their goals (19). Self-regulation training focuses on directing students' attention to mastering skills for the activities at hand, controlling them, and achieving meritorious results in those activities and their inherent value (20). Consequently, students who improve their self-regulation strategies can control and manage their feelings, beliefs, behaviors, and cognition. Therefore, this type of training can lead to better results in control and value assessments regarding academic activities. Moreover, self-regulating students can evaluate and supervise their behaviors through self-observation, self-judgment, self-control, and self-reaction, signifying the reciprocal effect of emotions and cognitive understanding of control, leading to the management of emotional motivation and behaviors during the learning process; a skill that can be learned through self-regulation training.

In addition to teaching emotion management, self-regulation emphasizes skills related to resilience, social adjustment, preventing the occurrence of unwanted emotions, and modifying situations. A part of the program is also dedicated to expanding attention, cognitive assessment, modifying responses, and application to reduce psychological problems (30).

Furthermore, self-regulation strategies are connected with an individual's capability to deal with negative emotions instead of avoidance at times of distress, highlighting compassion-induced perception to move toward important goals. In this respect, self-regulation strategies training can help students gain a more comprehensive knowledge of their behaviors, emotions, and problems (24). This can boost their capacity to predict and observe emotional reactions and behaviors and, thus, guide them to plan, organize, and manage their behaviors.

Since self-regulation strategies emphasize logical thinking and proper expression of psychological and emotional reactions, understanding emotions and feelings, emotion perception skills, and learning situation selection taught in this program would significantly affect resilience and social adjustment.

#### 4.1. Limitations

One uncontrolled limitation in this study was incorrect and inaccurate responses to the items from some participants, which could partially affect the results. The study was limited to tenth-grade male students in Ahvaz, Iran. Additionally, the use of self-reporting tools was another limitation of the study. Finally, another limitation of the study was that it only covered a specific period of time, and the researchers had no control over the recent or ongoing events in the students' lives.

#### 5. Conclusion

Self-regulation training can effectively improve student engagement and academic resilience, which are crucial variables in academic achievement. According to the results of this study, self-regulation strategy training should be recommended as an educational intervention to increase student engagement and academic resilience, and enhance their emotional and academic outcomes. By training students on self-regulation strategies, teachers can design more interesting, exciting, and cognitively involving activities in the classroom. They can involve students in learning through their teaching methods and classroom activities to amplify their engagement and resilience.

#### Ethical Approval

The study was approved by the Ethical Committee of Islamic Azad University-Ahvaz Branch with the code of IR.IAU.AHVAZ.REC.1400.012. Also, written informed consent was obtained from the participants.

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