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Comparing the Effectiveness of Stress Inoculation Training and Emotion Regulation Training on Self-control and Academic Stress in Students

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Abstract

Background: One of the key factors in student success is self-control, which results in adaptation. Adaptation to the environment and society leads people to independence and responsibility. Self-control is one of the factors that help us adapt to our environment in everyday life.

Objectives: The present study aimed to compare the effects of emotion regulation training and stress inoculation training on self-control and academic stress of female students.

Methods: The present quasi-experimental research was conducted based on a pre-test-post-test control group design with a follow-up. The statistical population consisted of all female high school students in Ramhormoz in the 2019-2020 academic year. Using a multi-stage random sampling technique, three schools were selected from this statistical population. The Self-Control Questionnaire and the Academic Stress Questionnaire were among the tools utilized in this investigation. The data were analyzed in SPSS software using univariate analysis of covariance and Bonferroni pairwise comparison test.

Results: The findings indicated a significant difference in self-control and academic stress between the experimental and control groups. In addition, it was revealed that training in emotion regulation had a more marked impact on reducing academic stress and enhancing self-control ($P<0.01$).

Conclusion: As evidenced by the obtained results, it can be concluded that training in emotion regulation is more effective in reducing academic stress and enhancing self-control. The findings of this study can be applied to reduce academic stress and enhance self-control among students.

Keywords: Academic stress, Emotional regulation, Immunization, Self-control, Students

1. Background

One of the success factors of students is self-control, which results in adaptation (1). Adaptation to the environment and society leads people to independence and responsibility (1). Self-control is one of the factors that help us adapt to our environment in everyday life (2). Self-control behavior methods can be employed to reduce the occurrence of disruptive behaviors and improve school performance (3). A student with self-control spends time thinking about possible outcomes and then makes the best choice (4). Low self-control is closely linked to behavioral problems (5), school escape, rejection, and acute educational problems of adolescents (6). Students with high self-control believe in themselves and their abilities to deal with events. They believe that it is their actions that cause events, not random events or powerful individuals; therefore, they intent to have positive behaviors to achieve their academic goals (7).

Expectations of parents, teachers, and students themselves due to competition and academic excellence can be a source of pressure and stress for most students (8) and can affect their mental health and wellbeing, if intensified (9). Academic stress is defined as an increasing need for knowledge and, simultaneously, a person's perception that they do not have enough time to achieve (7). Academic stress is a subset of psychological stress brought on by recurring difficulties or setbacks in the classroom or even just the knowledge that one may struggle in the classroom. Academic pressures can arise in any part of the student's environment during the school year, be it the home, school, neighborhood, or friendships. The major sources of stress for high school students are school-related circumstances, including exams, grades, studying, and self-imposed demands for success (10). Academic stress threatens students' mental health and causes adverse effects on the efficiency and flourishing of talents, their personality formation, and the impossibility of achieving academic achievement goals (11).

Considering that the variables of the research that were introduced have more cognitive and behavioral loads, cognitive and behavioral approaches can be used for intervention. One of these approaches is Stress Inoculation Training (SIT), which is a therapy based on the cognitive-behavioral approach (12). The fundamental principle of this approach is that therapists, as a prerequisite for changing behavior, should pay attention to how clients think, feel, behave, and influence others (13). This semi-structured educational approach consists of three

basic stages: problem conceptualization, acquisition and skill training, application, and continuous follow-up. This approach provides clients with the necessary training to reduce and treat stress and stress-related problems using Socratic questioning techniques, cognitive restructuring, mental imagery practice, problem-solving, and self-reinforcement training. It aims at prevention and treatment and varies depending on the length of training and the target population. The content of the conceptualization stage of the problem, the training of specific skills, and the application of skills are adapted to the problems of clients (14). This approach is a form of a cognitive restructuring designed to develop effective coping skills for both current and future personal problems (15).

In their study, Rasouli et al. (16) underlined that stress inoculation training effectively mitigated students' anxiety and stress. Along the same lines, Mardpour et al. (17) concluded that all three educational methods of psychological immunization, regular desensitization, and combination methods were effective in reducing test anxiety and increasing students' academic performance and self-efficacy. Jamshidifar et al. (18) concluded that immunization against stress can be effective in the reduction of perceived stress. The results of a study by Horani et al. (19) pinpointed that psychological immunization training reduces perceived stress and the risk of posttraumatic stress.

In this study, the effect of emotion regulation training on research variables was evaluated. In the pathology of a wide range of disorders, emotion regulation training is one of the aspects that has been considered more than ever in modern times (20). The reduction and suppression of unpleasant emotions while learning to use them constructively is known as emotion regulation training (21). Emotion regulation is a process responsible for initiating, maintaining, modifying, and redirecting emotional states (22). Theoretical suggestions define emotion regulation as a process aimed at maximizing positive emotions and minimizing negative ones (23).

Emotion regulation encompasses all conscious and unconscious methods used to raise, sustain, and lower the affective, behavioral, and cognitive aspects of an emotional response, according to the Gross model (24). The six main strategies for the management of emotion entail rumination (thought employment), acceptance, avoidance, problem-solving, appraisal, and repression. Acceptance, which is frequently regarded as a type of mindfulness, is the straightforward, uncomplicated, and judgment-free awareness of every thought. Emotions and ideas are embraced for what they are in this way. The term "avoidance" describes the deliberate and intentional avoiding of events and circumstances. Making a deliberate attempt to alter a stressful situation or stop its effects is part of problem-solving. Reassessment is the process of interpreting stressful situations in a positive or neutral way to lessen their negative effects.

Rumination on the mind (applying the mind) refers to the process of concentrating on ideas, feelings, and experiences together with the reasons and outcomes behind them. Repression is the attempt to lessen or stop emotional expression or emotional experiences in the mind (25). Nironamnd et al. (26) demonstrated that emotion regulation training programs significantly reduced perceived stress in students. Ranjbar Noshari et al. (27) reported that emotion regulation training led to an increase in the mean scores of self-control in the experimental group compared to the control group.

Adolescence is the best age to improve cognitive and behavioral variables; therefore, identifying and improving these disabilities can prevent injuries in individuals, especially adolescents. Teaching immunization against stress and emotion regulation to students helps them improve their cognitive and behavioral abilities and achieve success in education, as well as in social, professional, and daily life situations. Considering the effects of self-control and academic stress on different aspects of students' education, psychological interventions play a critical role in the improvement of these variables. Since stress inoculation training and emotion regulation training can affect the improvement of research variables, the aim of comparing these two treatment methods in this study is to reveal the effectiveness of these two methods. Considering that the effectiveness of these two types of treatments on psychological variables has been confirmed in different studies, the current problem is the application of these two methods and determining their effectiveness on the research variables.

2. Objectives

The present study aimed to compare the effects of emotion regulation training and stress inoculation training on self-control and academic stress of female students.

3. Methods

The present quasi-experimental research was conducted based on a pre-test and post-test control group design with a follow-up. The statistical population consisted of all female high school students in Ramhormoz in the 2019-2020 academic year. Using a multi-stage random sampling technique, three schools were selected from this statistical population. Firstly, three schools were selected as the sample from high schools in Ramhormoz. One school was regarded as the control group, while the two others were assigned to experimental groups 1 and 2. Two classes, one in the 10th grade and the other in

the 11th, were randomly selected from each school. The number of subjects in each group was 25. After starting the training course, two subjects from the stress immunization experimental group were excluded due to their absence in more than two sessions and the unwillingness of one of the parents. Moreover, three cases were ruled out from the emotion regulation training experimental group due to absence from more than two sessions.

In this way, the first experimental group consisted of 23 cases, the second experimental group encompassed 22 subjects, and the control group consisted of 25 participants. Based on comparable research, the number of samples was determined, with each group of 22 individuals having an effect size of 0.40, a confidence level of 0.95, a test power of 0.80, and a loss of 10%. (28). The inclusion criteria entailed an age range of 15-17 years, enrollment in the second year of high school, and ability to attend treatment sessions. On the other hand, neurological and mental conditions, involvement in previous psychotherapy sessions, reluctance to engage in the study or to proceed with it, and absence from more than two intervention sessions were among the exclusion criteria.

Firstly, after receiving the introduction from the Islamic Azad University of Ahvaz, the researcher referred to the General Directorate of Education and the Khuzestan Education Department. After expressing the purpose, importance, and necessity of the research to the authorities, they granted permission to conduct the research and cooperate with the researcher. Therefore, the statistics of girls' secondary schools and the number of students were received from Ramhormoz Education Department, and after referring to schools and expressing the goal for school staff and students, students and their parents' satisfaction was obtained for the research. Subsequently, while expressing the confidentiality of personal information and data analysis in general, students and one of their parents were satisfied with participation in the study. To perform the work, all groups were first asked to respond to the research questionnaire. Following that, the two experimental groups were exposed to intervention sessions; nonetheless, no training was provided to the control group. After the intervention sessions, the participants in both experimental groups and one control group completed the research questionnaires as post-tests. After two months, the subjects of all three groups responded to the research questionnaire as a follow-up. After data collection, the data were analyzed.

Self-control questionnaire (SCS): The Grasik, Thistle, Borsic, and Amallo Self-Control Questionnaire (1993) is essentially a 24-point questionnaire used to measure a person's self-control (29). Based on this questionnaire, a 12-point tool whose items directly measure self-control status was constructed. The participants respond to its items on a 7-point Likert scale from fully agreeable (1) to completely opposite (7). Low scores indicate high self-control, and high scores are suggestive of low self-control. The range of scores falls between 12 and 84 (29). Spencer (30) obtained its internal consistency coefficient as 0.92 using Cronbach's alpha method. In Iran, Allahverdipour et al. (31) obtained an alpha coefficient of 0.80 in their research on high school students in Rasht. In this study, the reliability of this questionnaire was 0.79.

Academic Stress Questionnaire (ASQ): Zajakova, Lynch, and Spanshada (2005) developed a new version of this questionnaire using Milston's academic scale. In this questionnaire, the concept of academic stress is measured through 27 university-related tasks. In this questionnaire, subjects are asked to score the level of stress on each of the 27 tasks on an 11-point Likert scale from no stressful (0) to quite stressful (10) (32). In a study by Shokri et al. (33), Cronbach's alpha coefficients of perceived academic stress and the subscales of difficulty in academic performance in the classroom, difficulty in academic performance outside the classroom, difficulty in interacting at university, and difficulty in managing work, family, and university were calculated at 0.95, 0.85, 0.83, 0.82 and 0.74, respectively. In this study, the reliability of the subscales of this questionnaire was between 0.77 and 0.86. The data were analyzed in SPSS software (version 24) using statistical procedures of Cronbach's alpha, correlation coefficient, analysis of covariance, and Bonferroni pair comparison test (at a significant level of $P<0.05$).

4. Results

The descriptive findings of this study include statistical indicators, such as mean, standard deviation, and the number of sample subjects, as well as frequency and percentage table, which are presented for all variables studied in this study in Table 1.

The findings demonstrated a substantial difference in risk behavior, social adequacy, and emotion regulation across the three groups receiving stress inoculation training, emotion regulation, and the control group. It is noteworthy that there was a significant difference ($P<0.001$) in social adequacy and risk behavior between the three groups of stress inoculation training, emotion regulation, and the control group, as indicated by the Wilks'lambda test with a value of 0.02 and the $F=61.00$ test.

As displayed in Table 2, social adequacy (239.49) and risk behavior (230.10) at the level of 0.0001 are significant. Bonferroni post-test was employed to compare the groups.

Table 3 compares the two groups receiving stress immunization and the experimental group receiving emotion regulation training in adjusted means of social competence post-test and risky behaviors. Based on this table, there was a significant difference between the two experimental groups at a significant level of 0.001, according to the results of Bonferroni's follow-up intervention. It can be concluded that

Table 1. Mean and standard deviation of research variables scores in experimental and control groups

Variable	Group	Pre-test		Post-test		Follow-up	
		M	SD	M	SD	M	SD
Self-control	Stress inoculation training	26.36	7.39	46.49	10.66	43.62	10.20
	Emotion regulation	25.40	7.94	53.11	12.84	51.53	11.74
	Control	27.16	7.49	28.55	7.08	29.52	8.10
Academic Stress	Stress inoculation training	116.33	7.55	105.46	7.65	106.13	7.77
	Emotion regulation	115.26	5.24	99	7.47	99.46	7.59
	Control	119.46	4.88	119.13	4.77	119.26	4.80

Table 2. Multivariate analysis of covariance for the comparison of pre-test and post-test in experimental and control groups

Variable		SS	Df	MS	F	P	Eta
Group	Self-control	197.63	2	98.81	239.49	0.001	0.92
	Academic Stress	460.21	2	230.10	38.16	0.001	0.66

Table 3. Results of Bonferroni Post-test for comparing research variables

Variable	Group (I)	Group (J)	Mean Diff.	P
Self-control	Stress inoculation training	Emotion regulation	-64.52	0.001
		Control	40.68	0.001
	Emotion regulation	Control	105.20	0.001
Academic Stress	Stress inoculation training	Emotion regulation	6.46	0.001
		Control	-13.67	0.001
	Emotion regulation	Control	-20.13	0.001

stress inoculation training has not been as effective as emotion control training as an educational intervention in enhancing social competence and mitigating risky behaviors.

5. Discussion

The present study aimed to compare the effects of emotion regulation training and stress inoculation training on the self-control and academic stress of female students. The results indicated that in the post-test and follow-up stages, there was a difference between the effect of emotion regulation training and stress inoculation training on self-control in female students. Training in emotion regulation, therefore, leaves a more marked impact on the development of self-control. The findings of this study were in line with those reported by Hourani et al. (14), Hedayati Shalkouhi et al. (15), Rasouli et al. (16), Jamshidifar et al. (17), Hourani et al. (18), Favrod et al. (19), Nironamnd et al. (25), Ranjbar Noushari et al. (26), Meichenbaum (34), and Borjali et al. (35).

The study by Ranjbar Noushari et al. (27) concluded that emotion regulation training led to an increase in the mean scores of self-control in the experimental group compared to the control group. Furthermore, the results of a study by Goldin (36) pinpointed that positive emotions and thinking about them, examining and controlling positive and negative moods, as well as reassessment of positive and negative emotions, can help people reduce negative mood and anxiety symptoms. Stress inoculation training benefits from multiple techniques, one of which is coping skills training that enables people to think and use adaptive coping rather than helplessness, rumination, negative automatic thoughts, and cognitive distortions concerning the uncontrollability of the environment to increase the replacement of logical thoughts and belief in their ability (12).

Numerous pieces of evidence imply that emotional control is linked to success or failure in various aspects of life. The ability to control one's emotions is crucial for both social and environmental adaptation. Any conscious or unconscious technique used to raise, sustain, or lower the behavioral, cognitive, and affective aspects of an emotional reaction is referred to as emotion regulation (37). Students with high emotional regulation and greater emotional regulation skills better understand peer pressures and make better use of emotions to contain these pressures since self-control is the same as the intrapersonal conflict between logic and desire, cognition, motivation, and planning to overcome the desire.

Furthermore, in this age period when students are preparing for the entrance exam, emotion regulation skills help them to wait for more valuable but delayed outcomes by enhancing their self-control skills. On the other hand, girls of this age have more comprehensive interpersonal relationships, and by training in emotional regulation, they are helped to respond appropriately to others and not act impulsively. In other words, they take advantage of the problem-solving process, giving them a golden opportunity to solve problems better and establish a constructive and positive relationship.

In addition, the obtained results indicated no

difference between the effect of stress inoculation training and emotion regulation training on self-control in post-test and follow-up stages among female students. A study by Rasouli et al. (16) underlined that stress inoculation training has been effective in the mitigation of students' anxiety and stress. The results of a study by Norman et al. (38) also indicated that verbal self-learning was effective in the reduction of stress among students. In explaining this finding, it can be stated that in high school, students need to take content-heavy courses, which results in academic stress.

In addition to school-related materials, students must also prepare themselves for the university entrance exam, which determines their future. On the other hand, the high expectations aroused by parents and teachers cause students great stress and affect their academic performance. Training on immunization against stress can reduce students' academic stress (16). In this approach, the adoption of stress reduction strategies reduces anxiety and stress caused by academic expectations. The identification of negative automatic thoughts and cognitive distortions and replacing them with positive thoughts play a major role in the reduction of stress. Students learn to properly assess their academic abilities and talents and stay away from academic stress. On the other hand, emotional regulation helps students to reduce negative emotional responses and accept them. Moreover, it helps students to identify and manage their automatic thoughts, which, in turn, reduces stress.

Emotional awareness and endowment to conflicts increase stress management skills (38). In fact, an enhanced ability to regulate emotions through emotion regulation training helps students understand other people's emotions, change their perception of the environment, manage their dysfunctional thoughts, and avoid misplaced expectations of themselves and others. The conduction of research on high school students limits the ability of generalization or, in other words, the external validity of this research. The statistical population of this study was secondary school students in Ramhormoz. Therefore, great caution should be exercised when attempting to generalize the results to students in other parts of the country.

It is suggested that this research be performed to investigate the evolution of research variables at different ages. It is suggested that the statistical sample of this study be selected from different regions of the country to increase generalizability. Considering that behavioral changes are due to changes in people's thoughts and feelings, it is recommended to prevent stress inoculation training and emotion regulation training in elementary school. Considering the Islamic government in Iran, it is suggested that stress-based immunization interventions be developed based on the Islamic approach with Islamic concepts for the education of individuals.

6. Conclusion

As evidenced by the results of this study, it can be concluded that emotion regulation training can be employed to help students with their academic stress and self-control since it has a more marked effect on these areas.

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Conflicts of interest

The authors declare no conflict of interest.

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