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Comparing the Effectiveness of Motivational Self-Regulation Strategies and Self-Compassion Training on Academic Stress in High School Male Students with Low Academic Performance: Quasi-Experimental Study

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Original Article

Abstract

Introduction: Evidence suggests that academic stress is a significant contributor to student failure. This study aimed to compare the effectiveness of teaching self-regulation strategies, motivation, and self-compassion on academic stress among male high school students with low academic achievement.

Materials and Methods: The research method was a semi-experimental pre-test and post-test design with a control group. Ninety 11th-grade boys from low-performing high schools in Tabriz, Iran, were selected by cluster random sampling and randomly assigned to the experimental and control groups. The first group received a training course on self-regulating motivational strategies in 10 sessions, the second group underwent 10 sessions of self-compassion training, and the third group (control) continued with their regular classroom programs. The instrument used was Kohn and Frazer's Academic Stress Scale. Data were analyzed using the analysis of covariance (ANCOVA) test at a significance level of 0.05.

Results: Data analysis using univariate ANCOVA showed that self-regulation strategies of motivation and self-compassion had different effects on academic stress ($P < 0.05$ and $F = 31.50$) and self-compassion training was more effective in reducing stress.

Conclusion: The effectiveness of self-compassion in reducing stress compared to the method of self-regulation strategies of motivation in controlling the sources of academic stress is obvious; therefore, by practicing self-compassion, one can practically reduce the negative effects of stressful factors.

Keywords: Motivation; Compassion; Academic; Stress

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Introduction

During growth, teenagers experience a wide range of stress and anxiety, sometimes so intense that it endangers their daily life and education. One of the types of stress related to educational environments is academic stress. Academic stress is an important educational problem affecting millions of students worldwide yearly (1). Academic stress refers to the feeling of increasing need for knowledge and, at the same time, the person's perception of not having enough time to achieve it; on the one hand, it comes from the quality of the person's attitudes towards academic responsibilities and diverse interpersonal and intra-school relationships (2). Based on the above definition, academic stress is a common phenomenon in educational fields, and several learners experience it daily, and there is no escaping it. However, according to Selye, long-term stress may lead to exhaustion and disintegrate the organism (3). Evidence has shown that academic problems are considered one of the most common sources of stress in students (4). Stress related to educational activities

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is associated with various negative results, such as low well-being and poor academic performance (5).

Several studies show a relationship between academic stress and poor academic performance. Based on this, Felsten and Wilcox showed that there was a negative and significant relationship between students' stress levels and their academic performance (6). In another study, Struthers et al. reported that high academic stress levels were associated with low academic grades (7). The above findings highlight the negative impact of academic stress on performance.

Research results show that an essential part of students' academic stress comes from the lack of self-compassion. In addition to protecting a person from negative mental states, self-compassion also plays a role in strengthening positive emotional states. Although self-compassion is associated with positive emotions, this trait is not simply a positive way of thinking but rather the ability to hold negative emotions in non-judgmental awareness without suppressing or denying the negative aspects of the experience. For example, it is not that people with self-compassion use fewer words that express negative emotions when describing their weaknesses; they just experience less anxiety when considering their weaknesses (8).

So far, several studies have confirmed the effectiveness of this type of training on different variables. In their research on patients with social anxiety, Boersma et al. confirmed the effectiveness of compassion training in reducing self-criticism, shame, and social anxiety (9). Noorbala et al. (10) and Gilbert and Procter (11) also found that compassion-based therapy reduced symptoms of depression and anxiety.

Examining the theoretical background indicates the existence of different self-regulation models, such that Pintrich's self-regulation model is based on the self-regulation approach related to motivation and learning (12). On the other hand, according to Zimmerman, independent learners need less attention from teachers. They know how to use learning strategies, perceive their abilities in certain areas, and consider themselves committed to achieving their academic goals. These students have will and can be called self-regulated learners (13). Based on what was mentioned, today, the need to focus on the roots and etiology of students' academic stress is apparent to most educational psychology theorists and researchers. In this regard, social cognitive theorists, Bandura (14), Pintrich (15), and Schunk (16) have emphasized the shortcomings and problems of students' self-regulation. They believe students' inability to self-regulate their behaviors, motivation, and cognitions causes academic stress and aggravation.

Therefore, in the last two decades, the scope of experimental research in these fields has expanded to clarify the role of self-regulation strategies and teaching some skills in reducing academic stress. According to this research evidence and the increase of academic stress among students with low academic performance, the purpose of this research is to compare the effectiveness of teaching self-regulation strategies, motivation, and self-compassion on the academic stress of students with low academic performance in Tabriz City, Iran.

Materials and Methods

The current research follows a quasi-experimental design with pre-test and post-test measures and a control group, following the objectives and hypotheses. In this study, the studied population was the students of the 11th grade of high school in the five educational districts of Tabriz in the academic year 2022-2023, and 90 students were selected as a sample. The cluster random sampling method was used to choose the studied samples, and the random technique was used to replace them in the groups. First, among the five districts, one district was randomly selected, and then the annual average of the schools of that district was obtained. Three schools with the lowest average were selected. After choosing these three schools, the scores of the students in each school were sorted from the lowest to the highest, and 30 students from each school with the lowest academic achievement average were selected as a group. Therefore, three research groups were formed in 3 selected schools, consisting of students with the most inferior academic performance in their classes, and then, randomly, two groups selected for the experimental groups and one chosen for the control group were replaced in the triple groups. The criterion for choosing this number of students as the sample size was referring to Kerlinger's recommendations that for the experimental design, random selection of 30 samples could guarantee the external validity of the research findings (17).

The Academic Stress Scale created in 1986 by Kohn and Frazer (18) and containing 32 questions that measure the perceived school stress of students during the academic period was used to collect information. Based on the questions of this questionnaire, the respondents rate the perceived stress in 32 different stressful situations (such as exams and doing homework) on a five-point Likert

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scale (1- never, 2- sometimes stressful, 3- sometimes stressful, 4- it is stressful most of the time, 5- it is always stressful). To determine the level of perceived stress, the scores for all questions are added together.

This scale is known to high school students, and the concepts used in its questions are appropriate to the educational characteristics of this course. Based on the study of Kohn and Frazer (1986), the internal stability of the questions of this questionnaire using the binomial method and Cronbach's alpha coefficient fluctuated between 0.86 and 0.92. To determine the construct validity of this questionnaire, a study was conducted by Davidson, the results of which show that all the questions of this questionnaire have a significant factor load in measuring academic stress (19). On the other hand, in a study conducted by Berkman in Australia, the reliability coefficient of this questionnaire was obtained using the test-retest method as 0.91 (20).

To check the reliability of the questionnaire in Iran, a study was conducted on 100 secondary school students, and Cronbach's alpha method was used to determine the internal consistency of the questions. The results showed that the questions of this questionnaire had good internal stability (coefficient: 0.86) (21).

Training package of self-regulation strategies of motivation: In this research, self-regulation strategies of motivation were implemented based on the package designed by Pourhossein Molayusefi et al. (12).

Preliminary meeting: The meeting aimed to make initial contact and get to know the students who would be assessed and trained. The goal was to create motivation and a favorable attitude in students toward self-regulation strategies of motivation. In this session, the necessary pre-tests were implemented, and brief explanations were provided about the teaching method and the importance of self-regulation motivation strategies during learning. Then, the intervention process was introduced.

Session 1: Setting and determining academic goals, and academic planning

Session 2: Self-management

Session 3: Self-monitoring

Session 4: Self-evaluation

Session 5: Self-improvement

Session 6: Self-strengthening

Session 7: Positive self-talk

Session 8: Decision-making skills

Session 9: Time and stress management

Session 10: Self-organization of the classroom space (12).

Self-compassion training package: The self-compassion training program was prepared by Abooei et al. (22).

Session 1: An overview of the structure of the sessions, starting with the practice of working on the external environment (focusing the mind on the external environment using drawing), then practice of working on the inner environment (focusing on the inner feeling of the body using painting)

Session 2: Exploring self-compassion using stories and examples, then explaining the dimensions of self-compassion using hand gestures and games

Session 3: Showing compassion to our everyday selves, then, strategies to start being kind to yourself

Session 4: Teaching simple meditation, imagining a relatively difficult moment, and examining students' feelings; students are then asked to find suitable positive statements for themselves.

Session 5: Practicing listening to sounds, then doing foot exercises

Session 6: Introducing students to meditation and doing a short meditation using the exercises of the previous session along with music

Session 7: Doing the practice of suppressing, calming down, and accepting

Session 8: Practicing cultivating a kind voice (discovering and accepting the inner critic and discovering and accepting the kind voice within, then learning to say loving words to yourself)

Session 9: Practicing what I am grateful for (for example, family, friends, etc.), and finally, practicing self-appreciation

Session 10: Practicing a person just like me (a person we do not have feelings for, a person we love, and someone who annoys us) (22).

Analysis of covariance (ANCOVA) was used to test the research questions. The Shapiro-Wilk test was used to check the normality of the distribution of the academic stress variable. Levene's test was also used to check the assumption of equality of variable variance in groups.

Results

Average grade points in three groups of self-compassion, self-regulation, and control were 15.13 ± 1.89, 15.65 ± 1.40, and 15.15 ± 1.97, respectively. One-way analysis of variance (ANOVA) test results showed no significant difference between the three groups regarding demographic characteristics
($P = 0.439$).

Descriptive findings of academic stress in the studied groups are shown in table 1.

According to the obtained significance levels ($P < 0.05$), it was concluded that academic stress in the studied group had a normal distribution.

Table 1. Central and dispersion indicators of academic stress

Dependent variable	Independent variable	Number	Pre-test (mean ± SD)	Post-test (mean ± SD)	Adjusted mean
Academic stress	Control	30	75.30 ± 13.98	73.23 ± 13.98	
	Self-compassion	30	79.70 ± 13.19	54.16 ± 18.05	54.16
	Motivational self-regulation strategies	30	74.01 ± 11.01	66.50 ± 10.41	65.71

SD: Standard deviation

The assumption of normality of the distribution of the dependent variable has been checked and confirmed in table 2.

The premise of homogeneity of the slope of the regressions is contained in table 2. The significance level of the pre-test * group effect was 0.99. Considering that this value is more significant than 0.05, it was concluded that the assumption of homogeneity of the regression slope was confirmed.

Table 2. The results of the homogeneity test of regression slopes for academic stress in the group of self-compassion and self-regulation strategies

Source of variable	SS	df	MS	F	P value
Effect of group × pre-test	0.001	1	0.001	0.000	0.991
Error	602.038	56	10.571		

SS: Sum of squares; df: Degree of freedom; MS: Mean squares

The significance level of Levene's test was 0.93. Considering that the significance level is more significant than 0.05, it was concluded that the variance of academic stress was homogeneous in the two groups.

The results of the ANCOVA are presented in table 3. The findings indicate that the group effect was significant at the 95% probability level ($P < 0.05$ and $F = 31.50$). After adjusting the pre-test scores, there was a significant difference in the post-test scores of academic stress in the self-compassion group and the motivational self-regulation strategies group. On the other hand, the results indicate that in the post-test, the average academic stress in the motivational self-regulation strategies group ($m = 66.50$) was significantly higher than in the self-compassion group ($m = 54.16$).

Discussion

The purpose of the present study was to compare the effectiveness of teaching self-regulation strategies, motivation, and self-compassion on academic stress of male high school students with low academic performance. The results showed that both of the mentioned trainings in the post-test stage significantly reduced academic stress compared to the control group, and self-compassion training was more effective in reducing academic stress.

The present study's findings show that teaching self-regulation strategies, motivation, and self-compassion reduces students' academic stress. This finding is in line with the research of Pourhossein Molayusefi et al. (12), Bahadorikhosroshahi et al. (23), and Thampson (24). In explaining this finding, we can refer to Pintrich's point of view (15), which defined self-regulated learning as an active process and structural processing by which the learner adjusts and controls the goals of learning activities, cognition, motivation, and behavior. He believes that one of the critical aspects of self-regulated learning is using various cognitive and metacognitive strategies by students to control and regulate their learning process.

On the other hand, the research of Mohammadi Darvish Baqal et al. (25) showed that teaching self-regulation strategies increased internal motivation and self-efficacy. This research also showed a significant decrease in students' test anxiety due to teaching strategies. The study of Hayes et al. (26) found that stress related to academic activities was associated with various negative results, such as low well-being and poor academic performance, failure to achieve educational goals, and memory loss. In this regard, Thampson's research (24) showed that people with good self-control performed well in most tasks, showed reasonable effort, and had less stress.

Table 3. Analysis of covariance (ANCOVA) to compare the effectiveness of academic stress in the groups of self-compassion and motivational self-regulation strategies

Source of variable	SS	df	MS	F	P value	Eta squared
Pretest	6828.34	1	6828.34	646.478	0.001*	0.919
Effect of group	323.03	1	323.01	31.506	0.001*	0.356
Error	602.30	57	10.59			

*P < 0.05

SS: Sum of squares; df: Degree of freedom; MS: Mean squares

Self-regulated learning strategies include self-learning skills, self-questioning, self-review, and self-enhancement, which help learners facilitate their learning using cognitive processes (26). Students need to develop self-regulation skills because these skills tremendously impact school readiness and peer relationships. Some of the positive consequences of self-regulation for children and adolescents include high academic achievement and, as a result, stress reduction (27).

In addition, the results showed that self-compassion training significantly reduced the academic stress of students with low academic performance compared to self-regulation strategies training. So far, various researches have been conducted on the effectiveness of self-compassion training. It can be said that the results of the study of Esmaeili et al. (28), Mantelou and Karakasidou (29), Perez-Blasco et al. (30), and Yarnell et al. (31) In explaining this result, it should be said that self-compassion techniques teach people to judge themselves less harshly, have compassion for themselves, and accept painful events in life more efficiently (32) and look at them as natural events of life (33). These techniques teach people how to share the pain and sadness of their lives with others to reduce the burden of despair (34).

Self-compassion can lead to positive emotional, cognitive, and behavioral responses, leading to health (35). Teaching self-compassion allows people to be non-judgmental toward themselves, which helps them identify their desired goals in life and increases their confidence in developing possible paths to achieving those goals. Additionally, people with higher levels of self-compassion tend to cope with their failure more adaptively instead of ruminating in negative evaluation and excitement. Therefore, they are more likely to work towards their goals, develop more persistence, and maintain higher motivation even in challenging situations. Higher hopeful thinking and goal-based motivation may lead to greater life satisfaction (36). Self-compassion facilitates resilience by modulating one's reaction to adverse events (31). Teaching self-compassion expands awareness of emotional and physical aspects, such as feeling the pain of failure and trying to comfort yourself. Thus, self-compassion may be a conscious alternative to rumination (37).

Limitations

Among the limitations of the current research was the use of a questionnaire. Considering that the questionnaire is a tool for self-expression, there is a possibility that actual data are not obtained. Besides, the current research community was the schools of Tabriz City, and by conducting the research in three schools, the spatial comparison may not have been done.

Recommendations

The self-regulation strategies of motivation and self-compassion are among the skills that are affected by several characteristics such as the parenting style of parents, the social status of the family, the patterns available to people, the culture of the social environment, and the like. Therefore, future research should pay more attention to and study such variables. Moreover, to investigate the long-term effects of self-regulation strategies of motivation and self-compassion, follow-up studies should be conducted at different levels of education and other essential variables in academic progress should be considered.

Conclusion

From the present research results, it can be said that self-compassion is formed to reduce stress and control the sources of stress. The effectiveness of this method compared to the technique of self-regulation strategies of motivation in handling the sources of academic stress is evident because by performing self-compassion procedures, a person can practically reduce the adverse effects of stressful factors and make a double effort to use cognitive and behavioral abilities to achieve particular life goals and improve the quality of life.

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Authors' Contribution

Study design and ideation: Hessam Pourshalchi, Masoumeh Azmoudeh, Seyyed Davoud Hosseini-Nesab

Providing financial resources to conduct the study: Hessam Pourshalchi

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Providing equipment and study samples: Hessam Pourshalchi
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Conflict of Interest

The authors did not have a conflict of interest. The present research was conducted by Hessam Pourshalchi under supervision of Dr. Masoumeh Azmoudeh, Assistant Professor of the Department of Psychology, Islamic Azad University, Tabriz Branch, and with the advice of Professor of Department of Psychology, Islamic Azad University, Tabriz Branch, Dr. Seyyed Davoud Hosseini-Nesab.

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