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Original Article

Effect of Emotion Regulation Training on Aggression, Rumination, and Self-control in Female Junior High School Students with Low Academic Performance

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Abstract

Background: Theoretical and empirical evidence indicates that emotions primarily influence students' behavior during adolescence. This study aimed to determine the effect of emotion regulation training on aggression, rumination, and self-control in female students with low academic performance.
Methods: This study was quasi-experimental with a pre-test-post-test design and a control group. The statistical population included all female students with low academic performance in a junior high school in Tabriz, Iran during the first semester of the 2021-2022 academic year. Among them, 50 students were selected as the research sample by randomized cluster method and randomly assigned to experimental and control groups through the random coin toss method. The data were collected by Tangney 's self-control scale (SCS), Boss & Perry's aggression questionnaire (AGQ), and Nolen-Hoeksema & Marrow's mental rumination scale (RRS). An emotion regulation training package was performed for the experimental group. The control group received no intervention. The data were analyzed by paired t-test and one-way analysis of variance (ANOVA) using SPSS version 27.
Results: After applying the intervention, the mean scores of variables were 45.40±8.10, 40.52±10.79, and 74.52±9.87 in the experimental group and 40.48±6.11, 48.56±11.58, and 88.2±10.74 in the control group, respectively. Hence, emotion regulation training was effective in reducing aggression (P=0.001) and mental rumination (P=0.014) and increasing self-control (P=0.019).
Conclusions: This study proved that emotion regulation training could effectively decrease aggression and mental rumination and increase self-control in students with low academic performance.

Keywords: Aggression, Rumination, Self-control, Emotion regulation training

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1. Introduction

Academic performance is the ability to perform in a situation for which one has planned (1). Research showed that academic performance affects basic aspects of life, such as improving academic grades, better career advancement, and appropriate social status (2). While educational performance is a critical developmental outcome in children and adolescents, it is likely to be related to an individual's externalizing behavior as a protective or risk factor (3). A previous study pointed to a relationship between low academic performance and aggression as an internalizing behavior (4).

In adolescence, aggression is a crucial and prominent factor that involves hurting others (5). Aggression in childhood and adolescence is considered a risk factor for many negative outcomes in adolescence and adulthood, especially if this aggression reaches adolescence and the severity is high (6). The exact mechanism of the relationship between low academic performance and aggression has not been identified yet. Common genetic and environmental factors among family members account for a fair proportion of individual differences in aggression, low academic performance, and cognitive ability (7).

Previous research investigated the relationship between self-control and academic performance (8). Self-control limits or inhibits the dominant response (i.e., thoughts, feelings, or behavior) that allows the person to act differently (9). The researchers stated that childhood self-control is manifested by constructive/prosocial behavior (active coping with the problem, positive thinking, and paying

attention to others by being helpful to them and showing empathy) and is associated with school success, lower dropout rates, career orientation, and occupational and income status (6).

Job and colleagues (10) found that self-control has long-term effects on academic performance. In explaining this issue, researchers indicated that self-control increases fatigue resistance; therefore, students focus on their long-term studies and show better academic performance (11). Also, a motivational explanation for the relationship between self-control and academic performance is proposed in educational psychology literature. Research showed that the variety of motivations to avoid effort plays a fundamental role in academic achievement (12).

Mental rumination is the other primary variable examined among adolescent students. Mental rumination relates to aggression because it inhibits adjustment and negative thinking. According to Nolen-Hoeksema (13), mental rumination is defined as behaviors and thoughts that focus the person's attention on depression symptoms and the implications of these symptoms and is conceptualized as a form of negative repeating thoughts (14).

According to Job and colleauges (10), performing interventions focused on self-control and other cognitive, behavioral, and emotional variables in students improves learners' academic performance. In this regard, researchers showed that emotion regulation skills are essential for adolescents, especially those who may be emotionally sensitive and reactive, and it is not easy for them to relax while emotionally stimulated (15). Emotion regulation is a fundamental process for all aspects of human performance and plays an essential role in people's coping styles with stressful experiences. Emotion regulation helps adolescents respond inflexibly to the change in present situations and needs that lead to new emotions. This inflexibility has a high correlation with mental health (16).

Several studies indicated the effects of emotion regulation. Sedighi and Naziry (17) demonstrated that emotion regulation training affects children's aggression and coping behaviors. Faani and colleagues (18) also confirmed this method's effect on improving students' emotions, including aggression and academic performance. Also, Karami and co-workers (19) confirmed the effectiveness of emotion regulation intervention on mental rumination and social anxiety in female high school students. Zuzama and colleagues (20) demonstrated the efficacy of this intervention in developing disorders and psychological traits like mental rumination, anxiety, and depression. Also, Geravand and Manshaee (21) found that training in emotion regulation and social skills affects adolescents' relational, evident, and social aggression. Based on the literature review and the research gap in dealing with students with low academic performance, this study aimed to determine the effectiveness of emotion regulation training in aggression, rumination, and self-control in female students with low academic performance.

2. Methods

The current study was quasi-experimental with a pre-test-post-test design with a control group. The statistical population included all female students with low academic performance studying in junior high schools in Tabriz, Iran in the first semester of the 2021-2022 academic year. Sampling was done among those with low academic performance in the previous semester through the randomized cluster method. According to the data on the average scores of the students with low academic performance in the five educational districts in Tabriz, district one had the weakest situation with 8,395 students studying in female junior high school (including 3 years from the seventh to the ninth grade). This district had 54 schools (20 public and 34 non-public schools), (6,070 in public schools and 2,325 in non-public schools). Among the schools, 19 schools had the lowest academic performance. Three schools in this district were selected with the lowest academic performance (total average scores of 15.5, 15, and 15.06). Then, based on the mean and standard deviation of the experimental and control groups in previous research (62.93±14.07 and 71.13±9.66, respectively) (22) and through the G*power statistical software with a test power of 0.80, an effect size of 0.679, and α of 0.10, 50 students with the lowest averages were randomly selected by the coin toss method and assigned to the emotion regulation training and control groups (n=25 in each group).

The study was implemented after getting the university permission to intervene with the

students. Then, we referred to the general education department to obtain the list of schools with low academic performance in the five districts of Tabriz, Iran. After selecting the research participants and randomly allocating them into experimental and control groups, the pretest was applied to both groups. Next, emotion regulation training was performed on the experimental group online, while the control group received no intervention. Following the pre-test, both groups completed the post-test, and statistical analysis was conducted on the data collected throughout each stage.

2.1. Instruments

Tangney 's Self-control Questionnaire: This questionnaire, made by Tangney in 2004 (23), is composed of 13 items in two subscales: Initial self-control and preventing self-control, to measure people's control of themselves. This scale is scored by the Likert method from 1 - 5. In the study of self-control among normal adolescents and adolescents in rehabilitation and correction centers (23), the divergent and convergent validity of the questionnaire was confirmed through its relation to adaptive strategies (24). The reliability of this questionnaire has been proven in different studies, with Cronbach's alpha of 0.89 (25). The scores of all items are summed up to get the total score of the questionnaire. The least score for Tangney 's self-control questionnaire is 13, and the maximum score is 65. The higher score indicates the person's higher self-control and vice versa.

Boss & Perry's Aggression Questionnaire: This questionnaire, made in 1992 by Buss and Perry, is composed of 29 items: 14 on anger, eight on physical aggression (invasion), and eight on hostility (26). This questionnaire is a pencil and paper instrument to examine people's aggression for clinical and research purposes. In this questionnaire, the subjects select among never, seldom, sometimes, often, or usually options. The total score of this questionnaire is 29 to 145 and is obtained by summing up the items' scores. A score lower than the average shows low aggression. The construct validity of the questionnaire was confirmed in Samani's research (27), and its divergent validity was established through its relation to the general mental damage scale (28). The retest coefficient was 0.79, and the Cronbach alpha coefficient (internal consistency) was 0.874 (29).

Mental Rumination Questionnaire: Nolen-Hoeksema created this questionnaire. The range of scores on this scale is between 0 and 66 (30). The predictive validity of the questionnaire has been confirmed by Bagherinezhad and co-workers in previous research (22). The correlation between the scores of this questionnaire and the scores of depression and anxiety in a sample of Iranian students was 0.63. Based on the empirical evidence, this scale has high reliability. The Cronbach's alpha coefficient ranges from 0.88 to 0.92. Research showed that the pretest coefficient of the mental rumination questionnaire is 0.67 (22). The Cronbach's alpha reliability coefficient for this scale was reported in the study by Houshi and colleauges as 0.88 (31).

2.2. Intervention Program

The intervention program is briefly presented in Table 1.

2.3. Statistical Analysis

Data analysis at the descriptive level was done using central and dispersion indices (mean and standard deviation). The paired t-test and one-way analysis of variance (ANOVA) were applied at the inferential level. Data analysis was done using SPSS version 27.

3. Results

Fifty students with low academic performance were equally assigned to the experimental (n=25) and control groups (n=25). Their age was between 13 and 15. The mean age was 13.72±0.61 and 13.80±0.64 in the experimental and control groups, respectively. Their age did not differ significantly between the two groups (P=0.655). Table 2 shows the descriptive indices of the research variables in the experimental and control groups in the pre-test and post-test.

As shown in Table 2, the experimental and control groups were comparable in the pretest scores of the three variables. However, the average self-control scores in the experimental group increased in the post-test, and the scores of rumination and aggression decreased. Minimal changes were observed in the control group from the pretest to the posttest.

Table 1: Emotion regulation training protocol

Sessions	Subjects
1	Getting familiar and communicating with the group members, explaining the objectives
2	Selecting the situation and presenting emotional instruction
3	Selecting the situation, evaluating the level of emotional skills and vulnerability
4	Reforming the situation and changing the state of emotional arousal
5	Spreading attention and instructing the skills of attention change
6	Cognitive appraisal and changing cognitive appraisal
7	Response modification and changing behavioral and physiological outcomes of emotion
8	Evaluation and applying

Table 2: Descriptive indices of research variables by groups in the pretest and posttest[a]

Variables and Stage	Experimental group	Control Group	P value
Self-control			
Pretest	40.96±9.19	40.04±6.83	0.690
Posttest	45.40±8.10	40.48±6.11	0.019
P value	0.037	0.731	-
Mental rumination			
Pretest	49.64±14.40	48.44±15.18	0.776
Posttest	40.52±10.79	48.56±11.58	0.014
P value	0.006	0.978	-
Aggression			
Pretest	90.96±10.65	89.08±9.82	0.520
Posttest	74.52±9.87	88.24±10.74	< 0.001
P value	<0.001	0.733	-

[a]Values are expressed as mean±SD.

Paired t-test and one-way ANOVA were used to examine the effect of emotion regulation training on aggression, rumination, and self-control of female students with low academic performance. The test prerequisites were confirmed, including data normality by the Shapiro-Wilk test, homogeneity of regression line slope by interaction effects test, and error variances equality using Leven's test (P>0.05). First, paired t-test indicated a significant difference between the pre-test and post-test scores of self-control (P=0.037), mental rumination (P=0.006), and aggression (P=0.001) in the experimental group. However, the differences were insignificant between the control group's pre-test and post-test scores (P>0.05). One-way ANOVA also showed a significant difference between the emotion regulation training group and the control group in the mean scores of aggression (P=0.001), mental rumination (P=0.014), and self-control (P=0.019). The self-control mean score was higher in the experimental group than that in the control group (I-J=4.92), while the mental rumination (I-J=-8.04) and aggression (I-J=13.72) mean scores were lower in the experimental group than in the control group. Hence, it could be said that emotion regulation training effectively decreased aggression and rumination and increased self-control.

4. Discussion

This study examined the effectiveness of emotion regulation training in aggression, rumination, and self-control of female students with low academic performance. The results showed that emotion regulation training was effective in decreasing aggression. This finding was consistent with Faani and colleauges (18), Sedighi and Naziry (17), Dewi and colleagues (24), Enríquez and co-workers (25), and Kelsey and co-workers (32).

In explaining this finding, as Favieri and co-workers (33) proposed, adolescents with emotional irregularity cannot think well, so their actions may harm others. In this regard, emotion regulation training helps adolescents understand their aggressive behavior outcomes, which could decrease aggression.

Hence, allowing these people to improve their emotion regulation skills by increasing emotional

control can decrease aggression (28).

Also, the researchers showed that this method of emotion regulation training attempts to use adaptable alternatives that people express while experiencing emotions and responding to emotional states. In other words, the mechanism of emotion regulation influencing on aggression could be conceptualized in this way that the ability of emotion regulation as an inseparable part of normal development could lead to effective interpersonal interaction and adaptable behaviors. Having the ability to emotion regulation has a strong effect on people's ability to self-regulate. Self-regulation refers to all mental processes that individuals should do to have an adaptable function. Emotion regulation influences aggression and anger through increasing self-regulation (29).

The findings also showed that emotion regulation training significantly decreased mental rumination, which was consistent with the study of Karami and colleagues (19) and Zuzama and co-workers (20). Mental rumination is an avoiding strategy to cope with negative emotions and thoughts. In this regard, emotion regulation could help decrease it by changing people's cognitive structure and mental rumination defects. Previous research showed that suppression of emotions while confronting stressful events leads to emerging mental rumination. In fact, using suppression strategies for emotions leads to the frequency of thoughts and the person's frustration in controlling their thoughts (19).

This study also showed the effectiveness of emotion regulation training in increasing self-control in female students, which was consistent with previous research (34). Self-control is of the essential and efficient capabilities of human beings. It is the capacity to change and adjust oneself so that optimal consistency between oneself and the world emerges. Optimal consistency between a person and their environment results in maximum happiness and satisfaction. This consistency is done through changing and coordinating oneself. It is vital to overcome internal responses or change them, inhibit unwanted behavior tendencies, and avoid action based on self-control (34).

According to the research, since the amount of self-centeredness and sensation seeking is high in teenagers, those who gain positive emotional regulation due to education will have more ability to predict the situations and desires of others. They understand others' unwanted stresses well and restrain their own emotions and affections better; as a result, they show more resistance against behaviors based on externalizing and destructive disorders (35).

4.1. Limitations

As this was a quasi-experimental study among female students, complete randomization of the sample was not possible. Hence, we should be cautious in generalizing the research results to other statistical populations. Also, considering the current research design, it is probable that the effect of record or history (studying in Tabriz district 1), pre-test (experience obtained in pre-test), and statistical reversion of the internal validity influence the research.

5. Conclusions

Emotion regulation training positively affects the rate of aggression, rumination, and self-control of female students with low academic performance. Therefore, this method can decrease aggression and rumination and increase self-control in high school female students. In particular, during the COVID-19 pandemic, when students confronted severe emotional and academic problems, performing such training even online could be helpful. Meanwhile, it is recommended that school counselors and psychologists provide educational brochures on emotion regulation training to students with low academic performance.

5.3. Ethical Approval

This research was approved by the Islamic Azad University of Tabriz Ethics Committee with the code of IR.IAU.TABRIZ.REC.1400.210. Also, written informed consent was obtained from the participants.

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Conflict of Interest: None declared.

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