The Effectiveness of Cognitive-Behavioral Training on Emotion Regulation and High-Risk Behaviors in High School Students

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Abstract: One of the structures associated with high-risk behaviors in high school students is the ability to regulate emotion. Accordingly, the aim of this study was to examine the effectiveness of cognitive-behavioral training on emotion regulation and high-risk behaviors in high school male students. The present study was a quasi-experimental pretest-posttest with a control group. The statistical population included all high school male students in the second district of Tehran, Iran in 2021. From this population, 30 people were selected by accessible sampling method and randomly assigned to experimental and control groups (15 people in each group). To collect data, Zadehmohammadi et al. (2011) High-risk Behaviors Questionnaire and Gross and John Emotion Regulation Questionnaire (2003) were used. The experimental group received eight sessions of cognitive-behavioral training extracted from the cognitive-behavioral treatment of Kamphuis and Jacquin (1995). The control group did not receive any intervention during this period. Multivariate analysis of covariance was used to test the research hypotheses. The results exhibited that cognitive-behavioral education improved emotion regulation and reduced high-risk behaviors in high school students. Findings generally support the role of interventions focused on students' cognitive beliefs in increasing the ability to regulate emotion and reduce risky behaviors.

Keywords: Cognitive-Behavioral Training, Emotion Regulation, High Risk Behaviors, High School Students

Introduction

One of the serious health threats that have been considered by health organizations, law associations and social policy makers as one of the most important problems in society in recent years due to rapid social changes is the prevalence of risky behaviors among teenagers (Khakpour, Mohamadzadeh Edmelaie, Sadeghi, & Nazoktabar, 2021). Risky behaviors are behaviors that endanger the health and well-being of adolescents and young people (Farzaneh, Sotodeh Asl, Kohsari, & Jahan, 2021). High-risk behaviors are a set of behaviors such as smoking, alcohol consumption, drug use, having sex, suicide, violence, etc., which generally occur during adolescence (Griffith, 2021). The prevalence of risky behaviors among young people is one of the most important and widespread concerns of human societies. Some of these behaviors are the cause of some deaths in teenagers and young people and have negative effects on societies. An increase in the death rate during adolescence, contracting AIDS and infectious diseases caused by sexual intercourse, diseases caused by smoking and drug use,

premarital pregnancies, a decrease in the quality of life, etc. are among the consequences of the spread of high-risk behaviors among teenagers (Huh & Reif, 2021).

One of the variables that can influence teenagers' tendency to risky behaviors is emotion regulation. Emotions are dominant determining factors of behavior, thought and experience, and they may be regulated in different ways. Emotion regulation refers to the capacity to monitor, evaluate, understand, and modify emotional reactions in a way that is useful for adaptive functioning (Etkin, Büchel, & Gross, 2015). Emotion regulation is fundamentally related to behavior in that it organizes behavior and allows children and adolescents to control their behavior. Therefore, as negative emotions are related to high-risk behaviors (Farnam & Mahmoodzehi, 2019), emotion regulation strategies can reduce the probability of high-risk behaviors (Jangezahi Shastan, Kord Tamini, & Karbalaei Hrafteh, 2021; Tabatabaei, 2020).

Considering the problems of teenagers, one of the educational methods that play an important role in adjusting psychological characteristics is cognitive behavioral education method (Rohde, Stice, Shaw, & Gau, 2016). The basic evidence of the cognitive-behavioral approach is that cognition affects feelings and behavior, and more than the events themselves, people respond to their cognitive representation of events (Abedi Parija, Sadeghi, Shelani, & Sadeghi, 2017). The goal of cognitive behavioral training is to correct irrational beliefs, ineffective beliefs, misinterpretations and cognitive errors, feel control over life, facilitate constructive self-talk and strengthen coping skills (Freeman et al., 2015). The cognitive behavioral training program is based on a type of behavioral therapy that arose in the heart of traditional psychotherapy situations and shows the growing interest of therapists in improving cognition as an effective factor on emotions and behaviors (Paddock, Hunter, & Leininger, 2014). This intervention helps people to overcome inhibitions and increase their coping skills. In addition, it is effective in creating and increasing capabilities such as decision-making, motivation, acceptance of responsibility, positive communication with others, happiness, building self-esteem, problem solving, self-discipline, self-sufficiency, and health (Greenberg, Mothi, & Wilhelm, 2016).

In previous studies, it has been shown that cognitive behavioral intervention has been effective on the cognitive regulation strategies of women's emotions (Ghasemzadeh Nasaji, Peyvastehgar, Hosseinian, Moutabi, & Banihashemi, 2010), on the cognitive regulation strategies of divorced women (Ghorbani-Amir, Moradi, Arefi, & Ahmadian, 2020), on the emotional regulation of teenagers with destructive mood dysregulation disorder (Sheybani, Mikaeili, & Narimani, 2020), on the reduction of risky behaviors in people with drug addiction (Imani, 2022), and on the psychopathological symptoms and risky behaviors in prisoners (Kiamini, Nikbakht, Amirabadi, Ramezani, & Nikyar, 2014).

Today, the emergence of high-risk behaviors in teenagers has become one of the most important concerns of the society, which is influenced by various factors. Also, the problem of social damage caused by high-risk behaviors among teenagers has become one of the main concerns of families, health system, education and society. Therefore, prevention and intervention in the field of high-risk behaviors is necessary. Also, the review of past studies shows that few and limited studies have been

conducted on the effectiveness of cognitive-behavioral training on emotional regulation and high-risk behaviors of students, and there is a research gap in this field. Therefore, the purpose of this study was to determine the effectiveness of cognitive-behavioral training on emotional regulation and high-risk behaviors in high school students.

Material and Methods

The present study was a quasi-experimental pretest-posttest with a control group. The statistical population included all high school male students in the second district of Tehran, Iran in 2021. From this population, 30 people were selected by accessible sampling method and randomly assigned to experimental and control groups (15 people in each group). Inclusion criteria were education in high school, being a boy, volunteering to participate in the research and not undergoing other psychotherapies. Exclusion criteria were lack of informed consent and absence of more than two sessions in treatment sessions.

Instruments

Risky Behavior Scale: This 38-question scale was developed and standardized by Zadeh Mohammadi, Ahmadabadi, and Heidari (2011). The questions are scored on a Likert scale from strongly disagree (1) to strongly agree (5) and indicate the tendency towards risky behavior in the seven domains of smoking (questions 15-19), alcohol consumption (questions 9-14), drug use (questions 1 to 8), committing violence (questions 20-24), risky sexual behavior (questions 25-28), relationship with the opposite sex (questions 29-32), dangerous driving (questions 33-38) and a general range of high risk behaviors. The range of scores is between 38 and 190, and high scores indicate greater risky behaviors. In the research of Zadeh Mohammadi et al. (2011), exploratory factor analysis showed that this questionnaire explains 64.84% of the variance of risky behaviors. Cronbach's alpha for the total scale was 0.94 and for its subscales in the range of 0.74 to 0.93. In the present study, the reliability of the questionnaire was 0.87.

Emotion Regulation Scale: This 10-item questionnaire was developed by Gross and John (2003) to measure emotion regulation. This questionnaire has two subscales of reappraisal (items 1, 3, 5, 7, 8, 10) and suppression (items 2, 4, 6, 9) on a 7-point Likert scale from strongly disagree (1) to strongly agree (7) is scored. Therefore, the range of scores is between 10 and 70; and low scores indicate low emotion regulation and high scores indicate high emotion regulation. According to Gross and John (2003), the content validity of this scale is favorable, Cronbach's alpha coefficient for reappraisal is 0.79 and for suppression is 0.73 and test-retest reliability after three months for the total scale is 0.69. In the research of Mashhadi, Ghasempour, Akbari, Ilbaygi, and Hassanzadeh (2017), the reliability of the scale by internal consistency method is between 0.60 and 0.81 and its validity has been reported at a favorable level. In the present study, the reliability of the questionnaire was 0.85.

After preparing the questionnaires and obtaining permission from the education officials, the research questionnaires were given to the students. Ethical considerations were observed in all stages of the research. After obtaining informed consent from the students, the researcher provided the research

questionnaires to them, and the researcher gave the necessary explanations about how to complete the questionnaire to the students. Then cognitive-behavioral training sessions were held during 8 sessions of 60 minutes and one session per week for the experimental group, but the control group did not receive any training. At the end, a post-test was taken from both groups. SPSS-22 software was used to analyze the data and multivariate covariance analysis was used to test the hypotheses. The cognitive-behavioral intervention is extracted from the structure of the cognitive-behavioral sessions of Kamphuis, and Jacquin (1995), and the description of the training sessions is presented in Table 1.

Table 1. Summary of cognitive behavioral training sessions

Session	Content
1	Familiarizing group members with each other, creating opportunities for group members to get to know each other better, explain the logic of cognitive behavioral therapy, determining treatment goals.
2	Reviewing the previous concepts, the importance of exploration in cognitions and how it is related to emotions, describing good and bad feelings at certain times by group members and the therapist's efforts to show the connection between people's emotions and thoughts, using self-soothing techniques, distributing the daily record form of dysfunctional thoughts and explaining how to use them, encouraging group members to experience enjoyable activities.
3	Sharing the experiences of the group members and their feedback from the pleasurable events of the past week and explaining to the members about the effects of using relaxation techniques, helping the group members to examine the correctness of their thoughts and how thoughts affect their feelings, discussing about types of cognitive distortions, group leader helping group members to challenge dysfunctional thoughts, explanation of Beck's cognitive triad
4	Sharing the daily record of dysfunctional thoughts of group members and helping the group to rebuild them, examining problems related to dependence and communication, teaching problem solving and practicing self-esteem.
5	Tasks related to cognitive restructuring are reviewed. Written letters are read. The therapist re-explains the cognitive-behavioral model and describes the role of schemas in life.
6	Group members help each other to challenge in dysfunctional thoughts. The therapist continues to teach schemas. It is explained to the group that one of the goals of the group is to begin eliminating unhealthy schemas, but that this process will take time to complete.
7	Challenging the dysfunctional thoughts of the group members in pairs, according to the homework done, how to modify the schemas is reviewed. Programs to undermine schemas are designed with the help of group members.
8	Helping the group to recall and review the main material discussed during the sessions. Explanations about the continuation of therapy are given to the group according to the stated goals. The group members' feelings about the end of the therapy sessions are examined.

Results

The mean and standard deviation of the pre-test and post-test scores of the research variables in the experimental and control groups are presented in Table 2. In order to investigate the effectiveness of cognitive-behavioral training on students' high-risk behaviors, multivariate covariance analysis was used. Shapiro-Wilk test was used to check the normality of the distribution of scores, which confirmed the assumption of normality of the distribution of scores due to the non-significance of the obtained values. The results of the homogeneity test of the regression slope of the pre-test and post-test scores in the experimental and control groups showed that the regression slope was the same in both groups (F=1.82, P>0.05). The results of Levin's test to check the homogeneity of the variance of the dependent variables in the groups showed that the variance of smoking consumption (F=0.16, P>0.05), alcohol consumption (F=0.43, P>0.05), consumption of psychoactive substances (F=2.84, P>0.05),

aggressive behaviors (F=2.58, P>0.05), suicidal thoughts and attempts (F=0.38, P>0.05), running away from home (F=0.17, P>0.05) and communication with the opposite sex (F=3.81, P>0.05) are equal in the groups. The results of the Box-M test to check the equality of the covariance matrix of the dependent variables between the experimental and control groups also showed that the covariance matrix of the dependent variables in the two groups is equal (F=1.40, P>0.05, Box-M =54.033). The results of Bartlett's Sphericity test or significance of the relationship between the variables showed that the relationship between these components is significant (x^2=31.61, DF = 27, p < 0.01). After examining the assumptions of multivariate covariance analysis, the test results showed that there is a significant difference between two groups in high-risk behaviors (F=39.976, p<0.01, Wilks Lambda=0.51). ANCOVA embedded in MANCOVA was conducted to check which of the components of high-risk behaviors between the experimental and control groups differ from each other. The results are presented in Table 3.

Table 2. Statistical description of pre-test-post-test scores of high-risk behaviors in experimental and control groups

Group	Variable	Pretest		Posttest	
		Mean	SD	Mean	SD
Control	Smoking	13.60	2.613	13.07	2.712
	Consumption of alcohol	11.53	2.850	12.73	2.764
	Consumption of psychoactive substances	9.80	1.859	10.27	1.534
	Aggressive behaviors	12.60	3.312	13.80	2.859
	Thoughts and acts of suicide	9.07	1.751	8.27	2.187
	Running away from home	6.93	1.624	7.20	1.656
	Relationship with the opposite sex	11.07	2.789	11.80	2.783
	Total score of risky behaviors	74.60	4.997	77.13	4.121
Experimental	Smoking	13.40	2.028	9.87	1.457
	Consumption of alcoholic	11.67	2.526	8	2.330
	Consumption of psychoactive substances	9.20	1.568	7.07	1.163
	Aggressive behaviors	11.60	2.530	7.67	2.059
	Thoughts and acts of suicide	9.87	1.885	5.93	1.534
	Running away from home	6.20	1.424	3.60	1.454
	Relationship with the opposite sex	13.13	2.475	9.33	2.690
	Total score of risky behaviors	75.07	9.953	51.47	6.334
Control	Reappraisal	21.07	4.877	20.20	5.171
	Suppression	18.07	3.150	18.87	4.486
Experimental	Reappraisal	20.47	3.502	25.33	3.697
	Suppression	17.60	2.165	14.40	2.694

Table 3. Results of ANCOVA embedded in MANCOVA on components of risky behaviors

Variable	Source	SS	DF	MS	F	p	Eta
Smoking	Between groups	62.029	1	62.029	20.060	0.001	0.489
	Error	64.936	21	3.092			
Consumption of alcohol	Between groups	134.519	1	134.519	41.847	0.001	0.666
	Error	67.505	21	3.215			
Consumption of psychoactive substances	Between groups	45.063	1	45.063	31.960	0.001	0.603
	Error	29.610	21	1.410			
Aggressive behaviors	Between groups	182.705	1	182.705	48.645	0.001	0.698
	Error	78.873	21	3.756			
Thoughts and acts of suicide	Between groups	38.468	1	38.468	9.167	0.006	0.304
	Error	88.125	21	4.196			
Running away from home	Between groups	73.413	1	73.413	36.762	0.001	0.636
	Error	41.937	21	1.997			
Relationship with the opposite sex	Between groups	86.375	1	86.375	16.093	0.001	0.434
	Error	112.712	21	5.367			

According to Table 3, there is a significant difference between the experimental and control groups in smoking (F = 20.06, P < 0.01), alcohol consumption (F = 41.84, P < 0.01), psychoactive substances (F = 31.96, P < 0.01), aggressive behaviors (F = 48.64, P < 0.01), suicidal thoughts and attempts (F = 9.16, P < 0.01), running away from home (F = 37.76, P < 0.01) and relationship with the opposite sex (F = 16.09, P < 0.01). These findings indicate that there is a significant difference between the control and experimental groups in high-risk behaviors. According to these findings, it can be concluded that cognitive-behavioral training has reduced the high-risk behaviors of students. Also, the effect size shows that the intervention accounted for 48.9% of changes in smoking, 66.6% of changes in alcohol consumption, 60.3% of changes in psychoactive drug use, 69.8% of changes in aggressive behaviors, 30.4% of changes in suicide thoughts and actions, 63.6% of the changes in running away from home and 43.3% of the changes in relationships with the opposite sex.

In order to investigate the effectiveness of cognitive-behavioral training on students' emotion regulation strategies, multivariate covariance analysis was used. Shapiro-Wilk test was used to check the normality of the distribution of scores, which confirmed the assumption of normality of the distribution of scores due to the non-significance of the obtained values. The results of the homogeneity test of the regression slope of the pre-test and post-test scores in the experimental and control groups showed that the regression slope was the same in both groups (F=0.62, P>0.05). The results of Levine's test to check the homogeneity of the variance of the dependent variables in the groups showed that the variance of reappraisal (F=0.24, P>0.05) and suppression (F=0.64, P>0.05) are equal in the group. The results of the Box-M test to check the equality of the covariance matrix of the dependent variables between the experimental and control groups also showed that the covariance matrix of the dependent variables in the two groups is equal (F=1.72, P>0.05, Box-M =5.60). The results of Bartlett's Sphericity test or the significance of the relationship between the variables showed that the relationship between these components is significant (x^2=16.86, DF=2, p<0.01). After examining the assumptions of multivariate covariance analysis, the test results showed that there is a significant difference between the two groups in emotion regulation strategies (F=25.28, P<0.01, Wilks Lambda=0.331). ANCOVA embedded in MANCOVA was conducted to check the control and experimental groups differed in which of the emotion regulation strategies. The results are presented in Table 4.

Table 4. Results of ANCOVA embedded in MANCOVA on emotion regulation strategies

Variable	Source	SS	DF	MS	F	p	Eta
Reappraisal	Between groups	242.787	1	242.787	38.603	0.001	0.598
	Error	163.522	26	6.289			
Suppression	Between groups	123.917	1	123.917	13.577	0.001	0.343
	Error	237.311	26	9.127			

According to Table 3, there is a significant difference between the experimental and control groups in reappraisal (F = 38.60, P < 0.01) and suppression (F = 13.57, P < 0.01). These findings indicate that there is a significant difference between the control and experimental groups in emotion regulation

strategies. Based on this, cognitive behavioral training has improved students' emotion regulation strategies. Also, the effect size shows that the intervention explains 59.8% of reappraisal changes and 34.3% of suppression changes.

Discussion

The purpose of this study was to determine the effectiveness of cognitive-behavioral training on emotional regulation and high-risk behaviors of students. The obtained results showed that cognitive-behavioral training improved emotion regulation in students. In other words, the difference between the experimental and control groups was significant in the emotion regulation. The findings about the effectiveness of cognitive-behavioral training on improving emotion regulation are in line with earlier studies. The study of Ghasemzadeh Nasaji et al. (2010) showed that the implementation of cognitive-behavioral intervention led to an increase in the use of cognitive strategies focused on planning, revising and re-evaluating positively in the regulation of emotions, as well as reducing the use of cognitive strategies of self-blame, rumination, and catastrophizing. Ghorbani-Amir et al. (2020) also indicated that cognitive behavioral training led to an increase in positive cognitive regulation, resilience, self-control and a decrease in negative cognitive regulation in divorced women. In another study, the results revealed that cognitive-behavioral therapy was effective in improving the emotional regulation of adolescents with destructive mood dysregulation disorder (Sheybani et al., 2020).

In explaining this finding, it can be said that with the help of cognitive behavioral training, people learned to correct their cognitions, feelings and reactions to the emotional state. It can also be said that cognitive behavioral training has changed the content of negative thoughts about oneself and society through the detection of cognitive errors, challenges with them and behavioral testing, and moderated negative emotions about oneself and society; Therefore, this training helps to reduce the need for approval from others, remove high expectations from oneself, reduce self-blame, and reduce emotional problems by discovering and correcting people's negative thoughts and irrational thoughts through the organization of ineffective thoughts and beliefs (Ghorbani-Amir et al., 2020). In another explanation, it can be said that they are active in cognitive behavioral therapy because the group members assume the role in which they have problems. Through the implementation of the role, its reinforcement and feedback, and the provision of suitable exercises, these people can be helped to correct their wrong goals and correct their false beliefs, and to develop more social interest in them. Therefore, this will improve their emotional regulation (Shooshtari, Rezaee, & Taheri, 2016).

The obtained results showed that cognitive-behavioral training has reduced high-risk behaviors in students. In other words, the difference between the experimental and control groups was significant in the high-risk behaviors. The findings about the effectiveness of cognitive-behavioral training on reducing risky behaviors are in line with previous studies. Imani (2022) showed that cognitive-behavioral training was effective in reducing risky behaviors in drug addicts. The results of another study showed that cognitive-behavioral training was effective on the psychopathological symptoms and high-risk behaviors of prisoners (Kiamini et al., 2014).

In explaining this finding, it can be said that cognitive behavioral therapy includes controlling and regulating emotions and feelings, controlling mental pressure, establishing effective communication and self-control. As a result, if people are guided in the right direction by cognitive-behavioral intervention, the factors that threaten their health will be reduced. In other words, cognitive behavioral training leads to the mastery of behaviors, understanding the causes of behavior and prioritizing them, the skill of recording thoughts, fighting negative thoughts, teaching problem solving skills, correcting false beliefs, and using substitute strategies. Therefore, cognitive behavioral training will play a critical role in improving health and reducing risky behaviors (Hemmati Nejhad & Zeinali, 2017). Also, in another explanation, it can be said that in cognitive behavioral training, the existence of illogical beliefs in a person is acknowledged and the need to replace illogical beliefs with logical beliefs in a person is emphasized. Therefore, the solutions that are presented to clients during therapy sessions help them to recognize inefficient thought patterns that lead to feelings of incompetence and replace them with rational and efficient thought patterns. Also, one of the important things in cognitive behavioral training is providing homework in therapy sessions and continuing to do homework at home. Doing homework is a kind of practice of confronting a person with problematic and challenging situations in real life, which leads to increasing the effect of treatment. In addition to this experience of group meetings, it is possible to receive feedback from other group members, to create a sense of empathy and to see how others deal with high-risk behaviors (Kuhn & Carter, 2006).

The present research was conducted on students, so caution should be observed in generalizing the results to other people in other cities and regions. Another limitation of this study was the lack of a follow-up period. It is suggested that in future researches, the effectiveness of cognitive behavioral therapy be compared with other new therapeutic approaches, including third wave therapies, in order to obtain a clearer picture of the effectiveness of this therapeutic method according to the cultural context of Iran. It is suggested to interested researchers to perform a follow-up test after completing the treatment period in order to evaluate the long-term effects of this treatment method and to stabilize the training of the final sessions.

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