

The Effectiveness of Cognitive Behavioral Therapy on Anxiety Sensitivity and Health-Oriented Lifestyle and Academic Self-Regulation of High School Students in Borujerd City

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ABSTRACT:

Mental disorders, including social anxiety, using of cognitive-behavioral therapy interventions to reduce anxiety and cognitive damage has attracted the attention of many researchers. The purpose of this research is to investigate the effectiveness of cognitive-behavioral therapy on anxiety sensitivity and health-oriented lifestyle and academic self-regulation among second secondary students in Borujerd city. This research is a semi-experimental type of pre-test, post-test design. The statistical population of this research consists of all the students of the second secondary level in Borujerd city. The research sample is 60 female students who were randomly divided into two experimental groups (30 people) and control (30 people). The experimental group received the cognitive behavioral therapy protocol of Himberg and Becker (2002) during twelve one-hour sessions. Academic self-regulation, anxiety sensitivity and health promoting lifestyle questionnaires were used in the pre-test and post-test. In the statistical analysis, covariance analysis (MANCOVA) was used. The results of the study showed the effectiveness of cognitive behavioral therapy on anxiety sensitivity and academic self-regulation. However, no significant difference was seen in the health-oriented lifestyle index between the two control and experimental groups. The subscales of all three variables showed the effectiveness of cognitive-behavioral therapy. According to the results of the study, benefiting from cognitive-behavioral therapy is useful for adolescent age groups and can guarantee a better academic future for students.

Keywords: *Cognitive Behavioral Therapies, anxiety disorders, Health-Related Quality of Life, Self Regulation*

INTRODUCTION:

Anxiety disorder is a mental state or intense arousal, whose main features include fear, doubt and excessive worry, and there are various types such as panic disorder, separation anxiety disorder, panic disorder, social anxiety and generalized anxiety disorder, etc. (Ganji, 2014). An individual's tendency to show anxiety, fear and anxiety related to feelings and physical symptoms (such as rapid heart rate, sweating, and hand tremors) along with the belief that these symptoms cause illness, embarrassment, or loss of control are defined as They describe anxiety sensitivity (Taylor et al., 1996). Anxiety sensitivity may create the ground for a person to suffer from mental disorders, including social anxiety (Hagberg et al., 2020). Middle school students undergo many changes due to the transition from childhood to adolescence and the resulting changes (Farsinejad et al., 2017). These changes can cause anxiety factors that affect the academic progress and success of students now and in the future (Khoshe Mehri et al., 2018). The stresses of this stage of life can be accompanied by destructive consequences such as a

decrease in the quality of life, disturbance in mental health and the emergence of complications such as anxiety and depression (Redker et al., 2017). In fact, it seems that the reason for academic decline in many students is not the inability to learn or weak intelligence, but the high level of anxiety such as exam anxiety is the cause (Shakerami et al., 2018). Anxiety sensitivity is considered as a risk factor for the development of anxiety disorders, and this construct is related to several other anxiety disorders (Akenby, 2013). The review of past studies shows that most of the research is focused on exam anxiety and despite the importance of anxiety sensitivity, less has been discussed about this issue. Because the incorrect choice of lifestyle by children and teenagers can lead to all kinds of health problems in their lives. Therefore, investigating the healthy behaviors of young people in this era, teaching correct health-oriented behaviors to maintain their health and support them, especially in less privileged areas, is of great importance (Bertrams et al., 2010). The term lifestyle refers to a set of behaviors that a person performs in a period of time that may include actions that promote

health or harm health (Ping et al., 2008). A health-oriented lifestyle is vital not only for physical health indicators in a limited sense, but also for economic, social and other indicators (Journault et al., 2021). In studies related to lifestyle, more on therapeutic interventions related to healthy lifestyle in improving diseases such as rheumatism (Borkovic et al., 2003), depression in diabetic patients (Kermi et al., 2019), severe depression (Zofiano et al., 2012), obesity in adolescents (World Health Organization, 2021) has been mentioned, and less focus has been placed on students and factors affecting the academic success and personal life of adolescents. Learning disabilities may also cause problems in the social, emotional and educational fields for students, the full understanding of which requires attention to the social, emotional and behavioral areas of a person's life (Wong et al., 2012). While achieving academic success can have a positive effect on these areas (McCobb, 1999). Therefore, academic self-regulation can be introduced as another factor affecting students' learning and success. Self-regulated learning refers to planning learning, monitoring and controlling it to make learning more effective (Selbi et al., 2017). People who are able to self-regulate and manage their emotions and control their behavior are better able to act in accordance with their values, manage stress, deal with existing conflicts, and achieve their goals (Jarouz, 2018; Matz and Albert, 2017). Also, students who are familiar and aware of self-regulation strategies can use them and as a result, they will enjoy academic motivation or motivational beliefs such as self-efficacy, higher internal value, and experience less exam anxiety. Finally, achieve significant academic success (Freilich and Shechman, 2010). Today, it is well known that mental health promotion and prevention interventions aimed at strengthening a person's capacity to regulate emotions, strengthen alternative methods for risky behaviors, and create flexibility to manage difficult situations are very helpful. In this context, the use of cognitive-behavioral therapy interventions that focus more on the constituent components of anxiety has attracted the attention of many researchers (Elizabeth and Arnold, 2006; Venman, 2006). In general, in this way, a person is helped to objectively evaluate and correct his dysfunctional thoughts and ideas about unpleasant events and gain a new and more compatible knowledge about himself, the world and the future (Hampson and colleagues, 2016). The results of a meta-analysis study in this field showed that the provision of cognitive behavioral therapy has reduced anxiety symptoms in teenagers and young people aged 12 to 25 (Hoffman et al., 2014). Also, the research history shows that different types of effective interventions have been carried out with therapeutic approaches based on different aspects of self-regulation or the effect of other interventions on self-regulation. Among these cases include the study of the effectiveness of emotion regulation training on reducing rumination and social anxiety (Dal, 2013),

reality therapy in increasing self-efficacy beliefs in learning self-regulation, personality traits, intelligence and self-confidence (Tehrani et al., 2014), intervention. The effectiveness of group therapeutic compassion on the level of aggression, emotional self-regulation and academic motivation (Sun et al., 2019), treatment based on acceptance and commitment on social adaptation and self-regulation of students' learning (World Health Organization, 2021). It seems that so far no study has investigated the effect of cognitive-behavioral therapy on academic self-regulation, which can guarantee the success of students. Therefore, it seems necessary to identify effective treatment aspects that can leave a positive impact on students' lives in the short term. In view of the mentioned contents regarding the importance of treating anxiety disorders, especially anxiety sensitivity and changing unhealthy lifestyles and improving academic self-regulation ability to create positive changes in the lives of students, especially in secondary school, and considering the existence of a research gap in this field. The present study examines the effectiveness of cognitive-behavioral therapy on anxiety sensitivity and health-oriented lifestyle and academic self-regulation among second-secondary students in Borujerd city.

Research Method

This research is a semi-experimental type of pre-test, post-test design with two experimental and control groups. The statistical population of this research consists of all the students of the second secondary level in Borujerd city. At first, by referring to the city's education department and administrators, the necessary permits were obtained to carry out the research. Then, one high school was randomly selected from among the girls' high schools of Borujerd city in the secondary education level. In the following, according to the number of classes available in each grade of high school and the number of students, some classrooms were randomly selected. and diagnostic tests were performed. Then 60 students who received the highest score according to the cut-off point in the sensitivity anxiety test were selected and randomly divided into two experimental and control groups. The criteria for entering the study included willingness and informed consent to participate in the research, obtaining a consent form from the parents, not receiving psychological or drug treatments at the same time, not having acute or chronic mental disorders through a clinical interview and a test by a medical consultant. In the continuation of the process of implementing the research plan, non-cooperation and non-fulfillment of the tasks presented in the meetings, absence of more than two meetings, were considered as criteria for leaving the treatment.

Cognitive-behavioral therapy protocol

The treatment protocol used in this study included Heimberg and Becker (2002) cognitive behavioral therapy. According to this treatment protocol, during twelve one-hour sessions, psychological trainings, cognitive reconstruction, evidence review, practicing

dealing with anxiety-causing situations and other treatment cases are taught. In the first two sessions, the therapist prepares the necessary preparations for the continuation of the other sessions and basic training in cognitive reconstruction is provided. Some of the cases include examining the subjects' goals and expectations from treatment, studying the self-help book on fear and education, and examining the cognitive model of thought and behavior. Sessions 3 to 11 are actually the heart of cognitive behavioral therapy. In these sessions, students are taught to face scary situations personally by using the cognitive reconstruction skills that they learned in the initial sessions. Reviewing and examining strategies to combat cognitive distortions, teaching the unit of mental discomfort, among these cases. Finally, the first part of the session is devoted to the activities related to cognitive reconstruction. It may be problematic in the future, and rational responses are useful in these situations, as well as goal-setting for continued treatment after the end of the formal treatment period (Heimberg and Becker, 2002).

In this study, academic self-regulation, anxiety sensitivity and health promoting lifestyle questionnaires were used in the pre-test and post-test. In previous studies, the validity and reliability of these questionnaires have been confirmed in Iran.

Academic Self-Regulation Questionnaire (ASRL-s): Academic Self-Regulation Learning Scale (ASRL-s) was created by Carl Magno (2010) to measure academic self-regulation. This scale has 55 questions and 7 subtests of memory strategy (14 questions), goal setting (5 questions), self-evaluation (12 questions), help seeking (8 questions), environmental structure (5 questions), learning responsibility (5 questions) and Planning and organization (6 questions). Each question has 4 options (strongly agree, agree, disagree, strongly disagree) and the respondent should choose the option that is closest to his opinion. This questionnaire has an acceptable internal consistency and the Cronbach's alpha coefficient of the whole test is 0.939 and in its sub-tests it is between 0.718 and 0.874 (Shabani et al., 2019).

Anxiety Susceptibility Questionnaire (ASI) This questionnaire was compiled in 1985 by Reiss and

Patterson and it measures a person's fear of anxiety symptoms and their consequences. It has 16 items and three factors measure fear of physical symptoms, fear of cognitive control distortion and fear of others observing their anxiety reactions. The psychometric properties of this questionnaire have been investigated in the Iranian sample and it has been shown that the internal validity of the overall scale is equal to 0.95 and its reliability is equal to 0.93 and 0.97 by the test-retest and two-half method, respectively. (Shabahang et al., 1400).

Health Promoting Lifestyle Questionnaire (HPLP): The modified version of this questionnaire consists of 52 questions, which have 6 sub-branches under the headings of nutrition, physical activity, taking responsibility for health, stress management, interpersonal relationships and spiritual growth. The respondent should indicate on a 4-point Likert response scale (never, sometimes, often, and usually) how much he performs specific health-promoting behaviors. Cronbach's alpha coefficient for the whole tool was 0.82 and for sub-categories from 0.64 to 0.091 (Bahari, 2019).

In the data analysis, at the level of descriptive statistics, indicators such as frequency distribution, mean and standard deviation, and at the level of inferential statistics, multivariate and univariate analysis of covariance (MANCOVA) were used to investigate the effect of cognitive behavioral therapy. Test analysis It was done using spss software version 20.

FINDINGS

In this research, 60 students of the second secondary level were divided into two groups with an equal number of 30 people in each group. The mean and standard deviation of the age of the experimental and experimental groups were 15.48 ± 1.41 and 15.53 ± 1.27 , respectively. Descriptive findings including the mean and standard deviation of pre-test and post-test scores of anxiety sensitivity, emotional self-regulation and health-oriented lifestyle in two experimental groups and the control group are given in Table 1.

Table 1. of descriptive indices of pre-test and post-test variables*

Statistical index	Condition	Group	Average	standard deviation
standard deviation	pre-exam	the experiment	33/92	11/56
		Control	33/3	10/50
	After the test	the experiment	28/39	8/24
		Control	32/14	8/61

Academic self-regulation	pre-exam	the experiment	122/67	24/37	
		Control	131/78	21/64	
	After the test	the experiment	150/64	24/91	
		Control	137/57	27/83	
Health-oriented lifestyle	pre-exam	the experiment	135/06	24/84	
		Control	135/46	21/81	
	After the test	the experiment	138/34	27/91	
		Control	137/39	24/89	

According to Table 1, the difference in the mean and standard deviation of the pre-test and post-test variables in the two control and experimental groups is clear. Analysis of covariance was used to determine the effectiveness of cognitive-behavioral therapy on the variables of anxiety sensitivity, academic self-regulation and health-oriented lifestyle. At first, to ensure that the data of this research estimate the assumptions of covariance analysis, its assumptions were examined. To check the normality of the data, the Kolmogorov-Smirnov test was used. The results of this test showed that the level of significance in the variables of anxiety sensitivity ($z=1.15$, $p=0.28$), academic self-regulation ($z=1.98$, $p=0.16$), health-oriented lifestyle ($z=0.00$, $p=0.81$), is more than the criterion value of 0.05, as a result, it can be said that the distribution of the studied variables in the statistical sample has a normal distribution. Also, the results of the box test to check the assumption of homogeneity of variance and covariance matrices showed that the assumption of homogeneity of variance and covariance matrices is

valid ($P < 0.05$). Examining the assumption of homogeneity of error variances in the variables of anxiety sensitivity ($F=1.55$, $p=0.28$), academic self-regulation ($F=1.35$, $p=0.24$) and health-oriented lifestyle ($F=0.11$, $p=0.73$) was also confirmed using Levine's test. F test was also used to check the homogeneity of the regression slope and based on the research data analysis, the interaction of independent variables and covariance is not significant at the 0.05 level. According to the establishment of assumptions of multivariate covariance analysis, the use of this test will be allowed. Next, in order to find out the difference between the groups, multivariate covariance analysis was performed (Table 2).

Table 2. Results of multivariate covariance analysis on average post-test scores

title of exam	the amount of	F	The significance level	Effect size	Statistical power
Pillai effect test	0/601	26/07	0/001	0/601	1
Wilks's lambda test	0/399	26/07	0/001	0/601	1
Hotelling effect test	1/504	26/07	0/001	0/601	1
The big test	1/504	26/07	0/001	0/601	1
The largest root test	1/504	26/07	0/001	0/601	1

The results of Table 2 show that the independent variable has an effect on the dependent variable. In other words, the experimental and control groups have

a significant difference in at least one of the variables of anxiety sensitivity, academic self-regulation and health-oriented lifestyle. The calculated effect size

shows that 60% of the total variances of the experimental and control groups are due to the effect of the inde

pendent variable. In order to determine in which areas there is a significant difference, the one-variable analysis of covariance test was used in Mankova's text, the results of which are reported in Table 3.

Table 3. The results of single-variable covariance analysis on the average post-test scores of general variables and subscales.

Effect size	meaningful	F	mean square	Degrees of freedom	The total amount of work	group	Variable
0/10	0/001	6/704	129/907	1	129/907	Fear of physical symptoms	Anxiety sensitivity
0/20	0/001	14/86	135/994	1	135/994	Cognitive bias	
0/14	0/001	9/36	175/93	1	175/93	Fear of seeing anxiety reactions	
0/38	0/001	34/24	502/150	1	502/150	Total	
0/19	0/001	14/07	238/021		238/021	Memory strategy	Academic self-regulation
0/21	0/001	15/52	150/75	1	150/75	targeting	
0/16	0/001	11/36	371/37	1	371/37	self assessment	
0/62	0/001	93/79	1842/25	1	1842/25	ask for help	
0/01	0/40	0/699	7/46	1	7/46	responsibility	
0/33	0/001	28/31	559/18	1	559/18	organization	
0/36	0/001	33/35	46531/86	1	46531/86	Total	
0/14	0/001	9/47	128/57	1	128/57	Nutrition	
0/03	0/15	2/08	53/00	1	53/00	physical activity	Health-oriented lifestyle
0/09	0/001	6/05	275/33	1	275/33	Responsibility for health	
0/34	0/001	30/46	62/29	1	62/29	stress management	
0/13	0/001	9/05	155/79	1	155/79	Interpersonal relationships	
0/25	0/001	19/90	398/34	1	398/34	Spiritual growth	
0/003	0/67	0/176	7/85	1	7/85	Total	

The results of Table 3 show the difference in the mean post-test scores of the dependent variables of anxiety sensitivity, academic self-regulation and health-oriented lifestyle and the subscales related to each variable in the two experimental and control groups. The F statistic shows that the mean difference in the two general variables of anxiety sensitivity and academic self-regulation is significant (F=34.24 and F=33.35, respectively, $\alpha < 0.05$). But the results of the general health-oriented lifestyle variable did not show significance (F=0.176). Therefore, in this index, the effectiveness of cognitive-behavioral therapy was not observed between the control and experimental groups. Also, the effect size calculated in each variable can also be seen in this table. The effect size of the variables of anxiety sensitivity and academic self-regulation shows that 38 and 36% of the variances of the two groups were caused by the influence of the independent variable, as a result, the cognitive-behavioral intervention significantly improved anxiety sensitivity and self-regulation. has been educated Despite the non-significance of the health-oriented lifestyle variable, a number of subscales of this index, such as stress management and spiritual growth, were significant with acceptable effect sizes.

Conclusion

The results of analysis of variance confirmed the reduction of anxiety sensitivity in students with high

anxiety using cognitive behavioral therapy. It was also observed that the effect size of cognitive behavioral therapy on anxiety sensitivity is 38%. which is an acceptable value according to the values of Cohen's effect size. The results of the investigation of anxiety sensitivity subscales also showed that cognitive behavioral therapy is effective on all three subscales of fear of physical symptoms, fear of cognitive control distortions, and fear of observing anxiety reactions. The highest effect size is related to the index of fear of cognitive control bias (20%). Limited studies have directly examined the anxiety sensitivity factor. The results of the study by Behari et al. (2019), Shabahang et al. (2014), Mohammad et al. (2014) are in line with the results of the present study. Dekan and Abramowitz (2006) also stated in their studies that people with anxiety disorders report higher anxiety sensitivity than normal people and people with panic and social anxiety show the highest anxiety sensitivity (Dekan and Abramowitz, 2006). Also, Afshari and Hashemi (2018) state that anxiety sensitivity is one of the important variables in students' test anxiety. As far as possible, test anxiety can be predicted based on the level of anxiety sensitivity. Therefore, by recognizing and giving importance to characteristics such as the level of anxiety sensitivity of people and creating an environment and providing therapeutic solutions along with creating suitable academic conditions for students, it is possible to create a positive impact on

their academic performance. Another result of this study was the significance of the effect of cognitive behavioral therapy on academic self-regulation among secondary school students in Borujerd city. The effectiveness of cognitive behavioral therapy on academic self-regulation was determined to be 36%. Also, the results of the effect of treatment on academic self-regulation subscales showed that this method of treatment has improved memory strategy, goal setting, self-evaluation, help-seeking and organization indicators. Only, the results of the comparison of the responsibility subscale in the two experimental and control groups did not show any difference. According to the effect size values, cognitive behavioral therapy has shown the greatest effect on the help-seeking (62%) and organization (33%) subscales. The results of the studies of Mohammad Khanlou et al. (2022), Habibi (2017), Hashemizadeh Nehi et al. (2019) are consistent with the results of this study. Therefore, previous studies confirm the effectiveness of cognitive-behavioral therapy on academic self-regulation. In other studies conducted in this field, other educational methods such as educational satisfaction package (Qazvineh et al., 2001), project-based learning (Siyahi Atabaki et al., 2002) were used on academic self-regulation. These methods, like cognitive behavioral therapy, were effective on students' academic self-regulation. The cognitive-behavioral approach challenges unreasonable cognitions and negative hypotheses that are formed in an unpleasant emotional state (Hays and Iwamasa, 2006). Also, this method helps to reduce performance orientations and avoid student failure. Teaching and improving self-regulation ability effectively improves participation and academic resilience in high school students. Therefore, self-regulated training sessions are recommended to improve students' psychological skills (Darabi et al., 2023).

Another investigation of the hypothesis of this study showed that cognitive behavioral therapy does not have a significant positive effect on the health-oriented lifestyle among secondary school students in Borujerd city. However, the comparison of the average subscales of health-oriented lifestyle, including nutrition, responsibility for health, stress management, interpersonal relationships, and spiritual growth in the two experimental and experimental groups showed a significant difference. However, the effect of cognitive behavioral therapy on physical activity was not observed. The largest effect of the treatment method was observed on the stress management subscale (34%). Considering the emphasis of the cognitive therapy method used in the present study on training to control the negative cognitive and social aspects of people such as internal anxiety, the improvement of stress management was predictable. However, this method of treatment did not show a significant effect on the index of healthy lifestyle in general. Few studies have directly shown the effect of cognitive behavioral therapy on health-oriented lifestyle in students. Among the few studies

conducted in this regard, Khoshe Mehri et al. (2018) studied the effectiveness of cognitive behavioral group therapy with emphasis on healthy lifestyle on depression, loneliness and body image of female high school students. The findings showed that in the post-test phase of all three variables, there is a significant difference between the experimental and control groups, which is not consistent with the results of the present study. In explaining this issue, we can point to the different subscales of healthy lifestyle in the upcoming study. Also, taking into account the existing definitions of a health-oriented lifestyle, there is no doubt that different factors play a role in the formation of an ideal and healthy lifestyle (Parasamehr and Rasoulinejad, 2018). The reason for the formation of the result of this study may be related to the healthy lifestyle. Considering that stress reduction is also a part of the healthy lifestyle, it seems that the improvement of this factor has the greatest effect by using treatment. Cognitive behavior has no effect on improving the health-oriented lifestyle in general. Achieving proper planning can increase the chances of adequate sleep, balanced diet and physical exercise. Also, the possibility of eating breakfast and having sleep Adequately, following a balanced diet increases stress (Wong et al., 2020). Individual's cognitive and anxiety, nutritional indicators, responsibility regarding health, interpersonal relationships and spiritual growth showed improvement Also, improving some subscales of healthy lifestyle in female students of the second secondary level, giving importance to this issue and the need to plan for the use of educational treatment methods in order to improve these abilities and the students' academic future. It is necessary.

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