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The Effectiveness of Mindfulness-based Stress Reduction Intervention on Cognitive Avoidance of Students with Test Anxiety

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Abstract

This study aimed to determine the effectiveness of mindfulness-based stress reduction intervention on cognitive avoidance of students with test anxiety. The research method was quasi-experimental with a pretest-post-test design and a control group. The statistical population included all Meshkinshahr students who were referred to school counseling centers. Among them, 30 people with test anxiety were selected by purposive sampling. Data collection tools were test anxiety questionnaires (Abolghasemi et al., 1996) and cognitive avoidance (Sexton and Dogas, 2008). The experimental group received a mindfulness-based stress reduction program (John Kabat-Zayn) for 8 weeks (one week of a 2-hour session). The collected data were analyzed using multivariate analysis of covariance. The results showed that mindfulness-based stress reduction intervention significantly reduced cognitive avoidance in students with test anxiety ($P<0.001$). According to the present study, the use of mindfulness-based stress reduction intervention in the pre-exam period can be effective for reducing the cognitive avoidance of students with test anxiety.

Keywords: Cognitive Avoidance, Mindfulness-Based Stress Reduction, Test Anxiety

Introduction

Anxiety refers to a state in which a person is overly worried and upset about the occurrence of a terrible event in the future. Harmful consequences of anxiety include a lack of confidence in one's ability to control anxious feelings and reactions, as well as managing one's homework properly (Halloween, Tulin, and Defenbach, 2020). Attendance in educational settings such as school has always been associated with many levels of anxiety experiences for many students, and one of the most important types of anxiety in educational settings is test anxiety (Burton and Baxter, 2019). The exam is one of the most important stressors in schools that have different psychological and physiological consequences and can lead to a decrease in student performance during the exam (Evan, Bassi, and Atok, 2020). Exam anxiety is a psychological reaction to an assessment situation that casts doubt on the students being assessed and reduces their ability to cope with situations (Connol, Valentiner, &Holzman, 2019). Exam anxiety is a major cause of a variety of negative outcomes, including psychological distress, failure to complete education, and insecurity. Exam anxiety is also considered a part of general anxiety that involves cognitive attention processes and affects school performance or assessment situations (Clark, Crandall, & Robinson, 2018).

One of the strategies that anxious people use to process information in anxious environments and through this, try to change their thoughts and mental perceptions to be able to free themselves from environmental concerns, is cognitive avoidance (Basaknejad, Moeini and Mehrabizadehonarmand,2010). Cognitive avoidance refers to the types of cognitive strategies that people use to get rid of the anxiety and anxiety caused by being in social situations, including suppression of thought, thought substitution, distraction, avoidance of threatening stimuli, and turning thought into thought. Brad (Sexton and Dogas, 2009). The study of Hosseinzadeh, Basaknejad, and Davoodi (2017) show that people with cognitive avoidance experience more test anxiety and feel fear humiliation, irrational and negative thoughts, and more stress. Also, the results of Dixon, Kisla, and Riley's (2012) study indicate that the increase in daily anxiety is predicted by rumination, worry, cognitive avoidance, and behavioral avoidance. The results of the study by Schaefer et al. (2017) showed that students with high test anxiety, had long periods of study and suffered more from social concerns, as well as mental disorders and psychosis in this group is more pronounced. The results of Brown et al.'s (2019) study also show that people with test anxiety have a social fear of being negatively evaluated by others and instead of focusing on the test, they may focus on the negative evaluation of others, which reduces their performance. And the use of cognitive avoidance leads to.

One of the methods that seems to be effective in reducing cognitive avoidance in students with alliance anxiety is mindfulness-based methods. Kabat Zayn defines mindfulness as paying attention to a specific, deliberate, present-day, non-judgmental approach in which the goal is to help the individual to become alert and focused and to cope with worrying thoughts that may harm mood and energy. (Kabat-Zayn, 1994; Carl and Fisher, 2020). In other words, mindfulness means being purposeful, not having judgment (Lu, Huang, and Rios, 2017), and having meditation and awareness in the

present (Ludwig & Kabat-Zinn, 2008). In the last two decades, a large number of mindfulness-based interventions and therapies have emerged (Bauer, 2006), including the mindfulness-based stress reduction method (Kabat-Zayn, 1990). A mindfulness-based stress reduction program is recognized as a process of creating flexible cognitive, mental, and emotional states that can help reduce self-distorting beliefs (Thorston et al., 2017). Mindfulness-based stress reduction instructs individuals to observe emotional and cognitive patterns and encourages acceptance and achievement of a judgment without judgment (Dahl, Lutz, & Davidson, 2015). Mindfulness training techniques are basically attention-enhancing techniques that are useful in treating patients with anxiety and depression (Atia and Salam, 2020).

Ahmadi, Mirzaeian, and TaghiMadah (2016) in their research concluded that mindfulness-based cognitive therapy has been effective on cognitive avoidance of anxious students. The results of Saadipour, Soltanizadeh, and Ghavam's (2019) study showed that mindfulness training has been effective in reducing academic procrastination in students with high test anxiety. Also, the results of the study of Khorami, Seif, Kiamanesh, and Dartaj (2018) indicate that mindfulness techniques are effective in reducing students' test anxiety. Patterniti (2018) in a study entitled Comparison of the effectiveness of the mindfulness-based program with study skills in the treatment of students' test anxiety, concluded that both methods are effective in reducing test anxiety, but cognitive therapy based on mindfulness is more effective than Teaching study skills in reducing test anxiety. Also, Bushmain, Hutchins, and Patterson (2019) in a study entitled The effect of mindfulness on reducing test anxiety, increasing social skills and academic performance, which on 34 people with test anxiety and inability to learn for five weeks based on cognitive therapy It was concluded that this treatment, in addition to improving academic performance and increasing social skills, led to a reduction in test anxiety and state-trait anxiety. The results of Hoffman et al.'s (2018) study showed that mindfulness-based therapy is a promising intervention for the treatment of anxiety and mood problems in the clinical population. In their study, Louise et al. (2020) concluded that mindfulness-based stress reduction was effective in improving assertiveness and test anxiety. Hosseini, Mottaghi, and Saeedmanesh (2016) in another study entitled Comparison of the effectiveness of mindfulness therapy based on stress reduction and direct electrical stimulation of the cerebral cortex in improving anxiety symptoms and cognitive functions of students with anxiety test, the results showed the effectiveness of mindfulness-based on Stronger stress reduction and no significant difference was observed between the two methods in improving cognitive functions, except in the component of reducing reaction time. According to the results, mindfulness-based techniques and direct stimulation of the cerebral cortex can reduce students' test anxiety symptoms and improve cognitive function. The results of another study also showed that providing mindfulness-based education to students is effective on their test anxiety (Carsley, D., & Heath, 2020). Finally, research has shown that a mindfulness training program enhances both mental and behavioral performance and that participants in a mindfulness-based stress reduction program can be expected to have a more positive attitude toward their abilities. Coping with anxiety and worry successfully (Veer, Brouwers, Evers, Tomic 2019).

Exam anxiety has many adverse academic and psychological consequences for students and has tangible effects on the academic, individual, and social life of students, and can expose their future lives to many risks. Accordingly, it is necessary to take appropriate measures to treat this type of anxiety and improve the psychological components associated with it. On the other hand, considering what has been said, it seems that mindfulness-based stress reduction intervention can be effective in improving cognitive avoidance, which is an important component in test anxiety. Therefore, this study aimed to investigate the effectiveness of mindfulness-based stress reduction intervention on cognitive avoidance of male students with test anxiety.

Methods

The present study is based on an applied purpose and is a quasi-experimental research with a pre-test-post-test design with a control group. The statistical population of the present study included all male students of Meshginshahr who were studying in the academic year 2019-2020. The sampling method of the present study is simply random, so that the researcher, considering that he was also a teacher, first ran the test anxiety questionnaire among all male students and then after analyzing them, students whose scores in the mentioned scale It was higher (a standard deviation higher than the average of the groups) and they had the conditions to enter the study, and considering that in experimental studies, the minimum sample size for each group of 15 people is recommended (Delavar, 2017). He randomly selected 30 people as a sample and placed them in two groups of control (15 people) and experimental (15 people).

Inclusion criteria in this study are: being a boy, having a cut score higher than 75 (from 75 to 125) based on the Exam Anxiety Questionnaire (Abolghasemi et al., 1996), agreeing to participate in the study, and obtaining written consent from parents and school principals, Failure to receive any psychological treatment by the subject in the past to treat emotional and academic problems; The subject should not be treated with psychiatric medications to reduce anxiety, stress, and depression. Exclusion criteria were: having a severe mental disorder that led to hospitalization in the psychiatric ward, having a history of substance abuse, attending regular yoga or meditation classes while researching, and attending other psychological training sessions. The following two questionnaires were used to collect data.

Test Anxiety Questionnaire (TAQ): **(**Abolghasemi, AsadiMoghadam, Najarian, and Shokrkan, 1996): This questionnaire consists of 25 items, and the subject answers are based on a four-choice scale (never, rarely, sometimes, and often). The minimum score in this test is zero and the maximum is 75. A higher score indicates more test anxiety. Cronbach's alpha was used to measure internal consistency and a coefficient of 0.94 was reported. Also, the reliability of the test-retest was 0.77. Abolghasemi et al., 1996). In Cheraghian et al. (2008), the retest reliability was 0.88, the internal consistency was 0.95 and the standard validity was 0.72.

Cognitive Avoidance Questionnaire (CAQ): Sexton and Dogas Cognitive Avoidance Questionnaire (CAQ): This questionnaire has 25 items and subjects answer questions based on a Likert scale from 1 (never) to 5 (always). It includes five subscales of reversing

worrying thoughts, replacing positive thoughts with worrying ones, using distraction to interrupt the worrying process, avoiding situations and activities that activate worrying thoughts, and changing mental images into verbal thoughts. Each subscale has five questions. The range of scores of this questionnaire is between 25 and 125 and higher scores indicate more cognitive avoidance. Goslin et al. (2002) obtained the reliability of this questionnaire using Cronbach's alpha method as 0.95 and the reliability of the retest as 0.81. The results of Hamidpour and Andouz (quoted by Alilou, Shahjoui, and Hashemi, 2010) to validate the Persian version of this questionnaire showed that this scale has good internal consistency (Cronbach's alpha coefficient 0.86) and its retest reliability during 2 months, 0.80 has been reported. Basakonejad, Moeini, and MehrabizadehHonarmand (2010) have achieved the reliability of this scale by Cronbach's alpha method equal to 91%. In the research of Mahmoudzadeh and Mohammadkhani (2016), Cronbach's alpha for the total score and subscales of this questionnaire was obtained between 0.80 and 0.90. The validity coefficient of this tool has been obtained through correlation with the suppression list of thought equal to 48% (Basakonejad et al., 2010). The reliability of this questionnaire in the present study was obtained using Cronbach's alpha coefficient for subscales of 0.80, 0.85, 0.79, 0.83, and 0.74, respectively, and for the overall score of this questionnaire was 0.81.

Procedure

After screening and selecting students with test anxiety and placing them in experimental and control groups, as well as after obtaining informed consent from parents and school principals, a mindfulness-based stress reduction treatment program according to the John Kabat-Zayn protocol (1994) In the fall of 2019 and before the corona spread around the world, the performance and content of its sessions are summarized in Table 1. The experimental group participated in the intervention sessions for 8 weeks (one week of a 2-hour session). Intervention sessions in the counseling office of Shahed Meshginshahr School were conducted by the researcher in collaboration with the school counselor in November and December. During this period, the control group was placed on a waiting list and after receiving post-test information, participated in a training session. Finally, the obtained data were analyzed using multivariate analysis of covariance in SPSS-22 software.

Table 1: Content of mindfulness-based stress reduction program sessions

session	Content of the meeting
First	Introducing the Automatic Guidance System/ How to Apply Current Awareness of Physical Feelings, Thoughts, and Emotions to Reduce Stress/ Exercise Eating Raisins and Giving Feedback Meditation
Second	Rehearsal of the body check / giving feedback and discussing the body check exercise/meditation practice mindfulness of breathing awareness/ stretching yoga exercise/distribution of the second session booklet and meditation CDs
Third	Performing a conscious session with awareness of breathing (sitting meditation)/ Performing yoga exercises (in the hospital prayer hall)/

	Practicing a three-minute breathing space / Distributing the booklets of the third session and the tape related to yoga movements
Fourth	Re-practice the body examination / Perform the exercises related to conscious yoga (in the hospital prayer hall) / Five-minute practice of "seeing or hearing"/ Re-practice the conscious session with awareness of breathing and body/ Distribute the booklets of the participants in the fourth session and 30 minutes of meditation
Fifth	Breathing exercise/ Rehearsal of conscious sitting (awareness of breathing, body, sounds, thoughts)/ Explanations about stress and identification of participants' reactions to stress/ Examination of awareness of pleasant and unpleasant events on feelings, thoughts, and physical sensations / Exercise Three-minute breathing space exercise/booklet distribution
Sixth	Doing mindful yoga/sitting meditation (presence of mind from sounds and thoughts) / distributing the booklets of the sixth session and the number four tape among the participants
Seventh	Doing mountain meditation/ Sleep hygiene / Repeating the exercises of the previous sessions/ Preparing a list of enjoyable activities / Distributing the booklets of the seventh session
Eighth	Exercise / Examining the whole program / Examining and discussing programs / Doing stone, bead, and marble meditation

Results

Findings showed that the mean and standard age deviation of the control group is (80/16±21/2) and the mean and standard age deviation of the experimental group is (93/16±56/1). Also in terms of educational level, 9 people (equivalent to 30%) are studying in the tenth grade, 15 people (equivalent to 50%) are studying in the eleventh grade and 6 people (equivalent to 20%) are studying in the twelfth grade. In addition to demographic variables, Table 2 shows the mean and standard deviation of the cognitive avoidance components in the pre-test and post-test stages.

Table 2: Mean and standard deviation of cognitive avoidance components in pre-test and post-test

Cognitive avoidance dimensions	Group	step	Mean	Standard deviation	skewness	kurtosis
Thought suppression	**control group**	**pre-test**	7.73	3.55	-0.90	-0.60
		Post-test	7.93	3.39	1.12	0.89
	examination Group	**pre-test**	7.86	1.92	0.38	0.53
		Post-test	6.33	2.12	0.64	0.73
Substitution of thought	**control group**	**pre-test**	10.73	3.75	0.26	0.46
		Post-test	10.80	3.46	1.07	1.19
	examination Group	**pre-test**	10.06	3.32	0.78	0.61
		Post-test	8.53	3.22	-0.691	0.039
Distractions		**pre-test**	9.6	3.63	0.72	-0.06

	control group	**Post-test**	9	3.56	0.11	-0.73
	examination Group	**pre-test**	9.26	2.98	-0.56	-0.18
		Post-test	7.80	3.07	-0.76	-0.19
Avoid threatening stimuli	**control group**	**pre-test**	9.06	4.13	0.09	-0.47
		Post-test	9.13	3.90	-0.66	-0.51
	examination Group	**pre-test**	8.93	3.86	-1.01	0.56
		Post-test	7.6	3.19	-0.44	-0.61
Turn ideas into thoughts	**control group**	**pre-test**	9.73	3.34	0.20	-0.51
		Post-test	9.53	3.56	-0.10	-0.46
	examination Group	**pre-test**	9.26	5.54	-0.23	-0.49
		Post-test	7.13	2.19	-0.22	-0.58

The results of Table 2 showed that the scores of the cognitive avoidance variable and its components in the post-test stage of the experimental group were lower than the pre-test scores, but no difference was observed between the pre-test and post-test scores of the control group. The amount of skewness and kurtosis observed for the research variables are in the range (2, -2); That is, in terms of skewness and kurtosis, the research variables have a symmetrical distribution and normal kurtosis.

Multivariate analysis of covariance was used to evaluate the effectiveness of mindfulness-based stress reduction intervention on cognitive avoidance and its components. Before using the multivariate analysis of covariance test, its assumptions were examined and the results of the assumptions are presented below. To check the default of data normality, skewness and kurtosis index were used and the results showed that skewness and kurtosis index of all research variables were in the range of 2 and -2, and this means that the data are normal. Levin test was used to evaluate the homogeneity of variance of error of research variables in the two groups (experimental and control). The results of the M-box test confirmed the homogeneity of the covariance matrix of dependent variables at all levels of the independent variable (groups) (P = 0.120, BoxM = 4.99). The results of the test of effects between subjects the regression slope homogeneity hypothesis is not significant (P <0.01) or in other words the regression line slope between the co-variable and the dependent variable at different levels of the independent variable (experimental and control groups) is the same. Therefore, it is permissible to use the analysis of covariance model for research data.

Table 3: Levin test results to examine the homogeneity of variance between cognitive avoidance components

Variables	F (1 , 28)	Significance level
Thought suppression	2.324	0.0139
Substitution of thought	4.174	0.051
Distraction	3.966	0.078
Avoid threatening stimuli	0.632	0.433
Turn ideas into thoughts	0.054	0.818

The results of Table 3 show that the level of significance obtained for the variables studied in the Levin test is more than (P = 0.05) and according to these results, the assumption of homogeneity of variances in the above variables in the two groups is confirmed It is unobstructed.

Multivariate analysis of covariance was used to evaluate the significance of the difference in scores. The results are given in Table 4.

Table 4: Results of multivariate analysis of covariance (MANCOVA) on the mean of post-test scores in cognitive avoidance components

	Title of test	Value	F (5 , 19)	Significance level	Eta coefficient	Op
Group	**Pillai's trace**	0.862	23.807	0.001	0.862	0.10
	wilk's Lambda criterion	0.138	23.807	0.001	0.862	0.10
	Hoteling's trace	6.265	23.807	0.001	0.862	0.10
	Roy's Largest Root	6.265	23.807	0.001	0.862	0.10

Based on the results of Table 4, the significance levels of the four tests indicate the ability to use the multivariate variance method. The results show that there is a significant difference between at least one of the dependent variables in the statistical sample groups. The value obtained for Eta squared indicates the difference of 86.2%. In fact, according to the results of the tests, 86.2% of the changes in the cognitive avoidance components in the experimental group are due to the effect of the independent variable (stress reduction intervention based on mindfulness).

Table 5: Multivariate analysis of covariance test results to compare the mean scores of cognitive avoidance components in control and experimental groups

Source	Variables	Tota squares	Degree of freedom	Mean squarse	F	Significance level	Eta squares	Op
Group	**Thought suppression**	21.428	1	21.428	16.173	0.001	0.413	0.980
	Substitution of thought	19.227	1	19.227	22.499	0.001	0.494	0.985
	Distraction	14.840	1	14.840	13.165	0.001	0.364	0.962
	Avoid threatening stimuli	31.110	1	31.110	39.579	0.001	0.632	0.997
	Turn ideas into thoughts	28.083	1	28.083	44.021	0.001	0.657	0.998

The results of Table 5 show that between the mean suppression scores; Thought substitution; Distractions; Avoiding threatening stimuli and turning perceptions into thoughts There is a significant difference between statistical samples in pre-test and post-test. In other words, the mean scores of suppression, thought substitution, distraction, avoidance of threatening stimuli, and conversion of perceptions into thoughts in the experimental group in the post-test stage are significantly lower than the control group. In other words, mindfulness-based stress reduction intervention has reduced cognitive avoidance in anxious students. The effectiveness of this therapeutic intervention for suppression of thought is 0.413, the substitution of thought is 0.494, distraction is 0.364, avoidance of threatening stimulus is 0.632, and conversion of thoughts into thoughts is 0.657, which means that 41.3% of the differences in Thought suppression postgraduate scores, 49.4% differences in thought substitution postgraduate scores, 36.4% differences in distraction postgraduate scores, 63.2% differences in threatening stimulus avoidance test scores, and 65.7% of differences in scores Thoughts are related to the effect of mindfulness-based stress reduction intervention.

Discussion

This study aimed to determine the effectiveness of mindfulness-based stress reduction intervention on cognitive avoidance of students with test anxiety. The results showed that reducing mindfulness-based stress significantly reduced all components of cognitive avoidance (thought suppression, thought substitution, distraction, avoiding threatening stimuli, and turning perceptions into thoughts) in students with test anxiety. The findings of this study were directly consistent with the findings of Ahmadi et al. (2016) and since the results of this study indicate the effectiveness of this treatment on anxiety students can be considered similar to previous studies, each of which emphasized the effectiveness of this treatment in students' anxiety disorders. They were. For example, Saadipour et al. (2019), Khorami et al. (2018), Hoffman et al. (2017), Patternity (2018), and Bushmain et al. (2019) are consistent.

Explaining this result shows that mindfulness-based stress reduction intervention helps the patient facilitate the timely identification of patterns of thoughts, feelings, and body senses to neutralize them at an appropriate stage before development and expansion (Patternity, 2018). In the process of healing, they learn that: 1) by thinking only of an event, that event does not happen; 2) Worrying and sinful thinking does not mean doing that; 3) Annoying thoughts can be stopped voluntarily before the anxious consequences begin. Also, mindfulness-based cognitive therapy refers to cognitive reconstruction, identifying and correcting negative assessments of disturbing thoughts, correcting attitudes of over-estimating risk, and over-understanding thoughts. During treatment, people are taught to deal with disturbing thoughts by using appropriate treatment methods (McManus et al., 2016). Mindfulness requires specific behavioral, cognitive, and metacognitive strategies to focus the attention process, which in turn prevents the tendency to respond to anxious responses and the growth of new perspectives and the

emergence of pleasant thoughts and emotions (Hoffman et al., 2017); Therefore, since avoidance increases the power of thoughts and emotions that have been avoided; Thus, there is a paradoxical effect on cognitive avoidance; Thus, a part of mindfulness-based stress therapy that emphasizes acceptance and commitment therapy, first through direct education, provides a space for a positive attitude toward anxiety-related thoughts and feelings, and then through mindfulness-based exercises. Provides the ground for creative helplessness towards one's control strategies concerning one's negative thoughts and feelings; thus, acceptance and commitment create a situation in which adolescents with anxiety disorder feel helpless about their control strategies of trying to eliminate thoughts and feelings. Ultimately, this situation provides the basis for introducing acceptance as an alternative solution, and this acceptance becomes an opportunity for adolescents to focus on the important and valuable things in their lives and others, instead of constantly focusing on negative thoughts and feelings and avoidant behaviors related to learning disabilities. Pay for the abilities they have. In other words, acceptance and commitment as one of the methods of stress treatment based on mindfulness in this study have caused adolescents to control anxious thoughts and feelings, and increasing their ability to regulate their stress, has led to a reduction in cognitive avoidance. (Bushmain et al., 2019).

Khorami et al. (2015) also pointed out in their research that mindfulness training is taught by breathing and thinking through a combination of relaxation and mindfulness meditation, mental representation of objects in life that are immediately out of human control. . In the presence of the mind, one learns to be aware of one's mental state at every moment and to focus one's attention in different mental ways. As a result, by accepting your situations without judgment, the amount of stress can be reduced. In the conscious mind of people with long sits and attention, they focus on the senses of the body, which are just observers without reacting to these senses and not judging them. This observation itself reduces sensations and arousals and thus reduces emotional responses to stress and anxiety.

Therefore, according to the results of this study, it can be said that conscious attention to the present and exposure to unpleasant feelings and thoughts and not avoiding emotions cause cognitive changes and thus reduce and improve anxiety symptoms, which may be one of the Characteristics of treatment after mindfulness training is a change in coping strategy to avoid accepting emotions and thoughts. Training to observe disturbing thoughts and emotions without judgment and receptivity, instead of avoiding or engaging in them mentally, leads to an increase in awareness of experience and a conscious and adaptive response and better control of unpleasant thoughts or emotions in students. Accordingly, the continuation of mindfulness exercises leads to behavioral changes for better self-care. In fact, it can be said that during the sessions, the main goal of the therapist is to find the main cognitive pattern of patients through revision based on increasing the patient's insight and awareness of the evolutionary path of his problems to reduce mental occupation, manage emotions, thoughts, and behaviors concerning himself and others. Which were associated with students' anxiety and problematic issues, which eventually led to a decrease in cognitive avoidance in these students.

Conclusion

Considering the results of the significant effect of mindfulness-based stress reduction intervention on reducing the cognitive avoidance of students with test anxiety, it can be said that this treatment has good practical capabilities for clinical interventions to reduce cognitive avoidance. One of the main limitations of this study was the lack of control over personality and emotional characteristics, level of education and social and cultural situations of the sample. Also, research was conducted only on male students, which limits the ability to generalize the results. In addition, the lack of follow-up tests to assess the long-term stability of treatment effects can be considered as one of the limitations of this study. Therefore, it is suggested that these characteristics be examined and controlled through interviews and questionnaires in future studies. Therefore, in the end, it is recommended that courses and workshops be held for counselors and school psychologists, and other health care providers to become more familiar with this treatment program to acquire skills.

Disclosure Statements

He authors of this study declared no conflicts of interest. All the research ethical principles were taken into account at this study

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