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The Effect of Mindfulness-Based Cognitive Therapy and Emotion-Regulation Training on Rumination and Social Anxiety in Teenagers Prone to Addiction

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Abstract

Background: The issue of addiction among teenagers is critically important due to the sensitive nature of this life stage and its role in their future life. The present study aims to investigate the effectiveness of mindfulness-based cognitive therapy and emotion-regulation training on rumination and social anxiety in teenagers prone to addiction living in group foster care centers in 2018.

Materials and Methods: This is an experimental research with a pre-test, post-test, and follow-up design. The statistical population included all male teenagers aged 13 to 18 years living in group foster care centers of Tehran in 2018. Using the convenience sampling method, 45 teenagers were selected and randomly divided into two experimental groups and a control group (n= 15 per group). The research instrument included the Addiction Potential Scale (APS), the Social Phobia Inventory (SPIN), and the Ruminative Response Scale (RRS). SPSS version 22.0 was further used to analyze the data.

Results: The mean of the post-test scores of rumination and physiological symptoms in the cognitive therapy group (55.00±2.00 and 10.47±1.88, respectively) and the emotion-regulation group (61.80±5.28 and 11.40±1.24, respectively) were significantly lower than them in the control groups (69.07 ± 1.99 and 13.00 ± 1.55, respectively). The results indicated a significant effect of mindfulness-based cognitive therapy and emotion-regulation training on rumination and social anxiety in teenagers ($p<0.05$).

Conclusion: Mindfulness-based cognitive therapy and emotion-regulation training can be used to reduce the social anxiety and rumination of teenagers prone to addiction.

Keywords: Mindfulness, Cognitive Therapy, Emotion Regulation, Anxiety, Rumination, Adolescent.

Introduction

The teenage life stage constitutes a transition phase from childhood dependence to adulthood responsibilities. It is accompanied by a large number of mental and physiological changes [1]. Drug abuse has gone beyond the border of psychological disorders, becoming a serious societal challenge [2, 3]. This issue among teenagers is highly serious and important since this life stage is very sensitive, playing a key role in their future lives. Compared to their peers with high socioeconomic status, teenagers and young adults living under low socioeconomic conditions are more prone to drug abuse [4]. In addition to the socioeconomic status, other factors, including biological, interpersonal, and psychological-behavioral factors, also play a role in the tendency to addiction. Among these factors, psychological-

behavioral one encompasses a wide range of variables, including rumination and social anxiety [5].

Rumination is one of the factors affecting the addiction potential in teenagers. It is a cognitive process involving repeated and passive questioning of the symptoms, causes, and outcomes of emotional distress. While rumination was first identified as an important factor in the development, exacerbation, and relapse of depression, it was later acknowledged as an influential factor in the psychological pathology of anxiety, eating disorders, and drug abuse [6-8]. Wang et al. believe that rumination can play a role in addiction [9]. Other studies indicate that higher rumination levels are associated with drug abuse in a cross-sectional [10] and longitudinal [11] manner. Further, rumination has a role in developing social anxiety and anxiety-related disorders [12].

The main characteristic of social anxiety is a specific fear or anxiety about one or more social situations where an individual may be scrutinized by others, causing the individual to fear negative evaluation due to the type of behavior or the expression of anxiety symptoms. Being in social situations is always accompanied by stress and anxiety for individuals suffering from this disorder, and they try to avoid such situations or cope with them [13]. The widespread prevalence of social anxiety and its related problems and inabilities, as well as the emotional and economic costs it exerts on the individual and the society, indicate the necessity to examine models to explain and treat this disorder. According to the executive functions model, positive and negative metacognitive beliefs predict social anxiety [14]. Some studies have shown the concurrence of social anxiety and shyness with drug and alcohol abuse [15, 16].

There are various methods and treatments for reducing addiction potential and its underlying factors. In this regard, two treatment methods, i.e., mindfulness-based cognitive therapy and emotion-regulation method, can play a major role in mitigating the underlying factors. Mindfulness-based cognitive therapy is a combination of meditative exercises, yoga, and cognitive therapy; it was introduced by Segal et al. [17] and developed for mitigating and treating human suffering, especially cognitive ones. This treatment method is based on mindful meditation exercises [18]. Movassagh et al. have reported that mindfulness can reduce negative emotions in people [19]. Moreover, interventions based on mindfulness, including mindfulness-based cognitive therapy, can play a key role in treating the psychological problems of teenagers prone to addiction [20].

Emotion regulation refers to actions performed for changing or adjusting an emotional state. Its strategies help individuals adjust their emotions during or after threatening and stressful events [1]. Dysfunctions in emotions and their regulation can have pathological outcomes due to their importance in everyday life [21]. There is a significant relationship between emotion dysregulation and drug abuse, alcohol dependence, and smoking [22]. Individuals experiencing distress, unstable emotions, and low emotion regulation express more mood disorders and behavioral problems [23]. Therefore, emotion regulation is a basic and important motivation for drug abuse prevention. Addicts often attribute their drug abuse to its sedating effects [24, 25]. Michele [26] reported that teenagers with better emotion regulation were less likely to abuse drugs in their adulthood. Therefore, based on observations, psychological therapies for drug abuse often focus on emotion regulation. The improvement of the skills developed through therapies, such as cognitive and behavioral therapy, based on mindfulness is associated with improving this disorder [27, 28].

Previous studies on emotion-regulation training have confirmed its efficiency in treating anxiety-related [29], substance abuse, and mental health disorders [30]. Moreover, studies on mindfulness-based cognitive therapy have demonstrated its effectiveness in treating depressive disorder [31], neuroticism and mental distress [32], generalized anxiety disorder [33], and chronic mental fatigue syndrome [34].

Evaluation, comparison, and explanation of the effect of mindfulness-based cognitive therapy and emotion-regulation training on rumination and social anxiety components, including avoidance, fear, and physiological symptoms in teenagers prone to addiction, are among the most important novelties of this study. Accordingly, this study aims to compare the effectiveness of mindfulness-based cognitive therapy and emotion-regulation training on rumination and social anxiety in teenagers prone to addiction living in group foster care centers.

Materials and Methods

The research was experimental with a pre-test, post-test, and follow-up design and a control group. The statistical population included all male teenagers aged 13 to 18 years living in group foster care centers affiliated with the State Welfare

Organization of Tehran City in 2018. Demographic data of the participants were collected by a personal information form created by the first author. Using the convenience sampling method, 45 people were selected and randomly divided into two experimental groups (mindfulness-based cognitive therapy and emotion-regulation training) and a control group. Fifteen participants were included in each group using G*power statistical software with an effect size of 1.8, a test power of 0.90, and α=0.05. Randomization was carried out by the researchers, and participants were allocated by the selection of sealed opaque envelopes. The inclusion criteria were: getting a high score on the addiction potential scale, being at the age of 13-18 years, possessing secondary education.

The exclusion criteria were: participating simultaneously in another psychological and therapeutic program, suffering from a physical and mental disability, being absent more than two sessions from the treatment, having psychiatric disorders, and taking medication. After the training sessions, the post-test was done in the experimental and control groups. Also, the follow-up was performed in the three groups after two months. For ethical considerations, the researchers received written consent from the participants for participation in the research.

Addiction Potential Scale (APS): This scale was developed by Weed and Butcher [35]. The scale was reconstructed based on the Iranian culture. It includes 41 items, each of which is scored based on a spectrum from "completely disagree" (a score of 0) to "completely agree" (a score of 3); however, based on content, some of the items are scored in reversed (i.e., items 6, 12, 15, and 21). After scoring, the sum of the scores indicates the addiction potential of the individual.

Moreover, this scale has two lie detection factors, which include items 12, 13, 15, 21, and 32. To obtain the overall scale score, the score for individual items (except for the lie detection items) must be summed up; the overall score ranges from 0 to 108. Higher scores indicate that the respondent is more ready for addiction and vice versa [36]. Aghai and Jadiri Sohreforouzani [37] reported an alpha Cronbach coefficient of 0.91 for the whole scale. In the present study, Cronbach's alpha coefficient was 0.87 for the scale.

The Ruminative Response Scale (RRS): In 1991, Nolen-Hoeksema and Morrow developed a self-report questionnaire for evaluating four different types of responses to negative moods. The Response Styles Questionnaire (RSQ) consists of the two subscales of the Ruminative Response Scale (RRS) and the Distraction Response Scale (DRS). The Ruminative Response Scale (RRS) includes 22 items, and the subjects are asked to score each item from 1 (never) to 4 (often). In this questionnaire, scores can vary between 22 and 88, and higher scores indicate higher rumination [38]. In a study, Bagheri Nejad et al. [39] reported a Cronbach's Alpha coefficient of 0.88 for the reliability of this scale. In the current study, the Cronbach's Alpha coefficient for the entire scale was obtained as 0.79.

The Social Phobia Inventory (SPIN): This questionnaire was first developed by Connor et al. [40] to measure social anxiety. It is a self-report measure, which consists of 17 items organized into three subscales of avoidance (7 items), fear (6 items), and physiological symptoms (4 items). Each item is scored based on a five-option Likert spectrum, i.e., not at all = 0, a little bit = 1, somewhat = 2, very much = 3, and extremely =4. The overall score for this inventory ranges from 0 to 68, and higher scores indicate higher social anxiety. In this research, the Cronbach's alpha coefficient for all the participants in the subscales of social anxiety was 0.75 for avoidance, 0.74 for fear, and 0.75 for physiological symptoms, indicating satisfactory reliability [41]. Mirzaei et al. [42] reported an alpha Cronbach coefficient of 0.82 for the whole scale. In the present study, Cronbach's alpha coefficient was 0.89 for the scale.

The first intervention program, performed by Segal et al. [17], consisted of eight 120-minute sessions (once a week) of mindfulness-based cognitive therapy. Table 1 presents the summary of sessions.

The second intervention program, performed by Gross [43], consisted of eight 120-minute sessions (once a week) of emotion-regulation training. Table 2 summarizes the sessions.

Data were analyzed by descriptive and inferential statistics, such as mean, standard deviation (SD), and multivariate analysis of covariance (MANCOVA). The Kolmogorov-Smirnov test was used to examine the normality of distribution of pre-test and post-test, and Levene's test was utilized to investigate the equality of variances. Multivariate analysis of covariance was used to examine the research hypothesis. The Bonferroni post-hoc test was applied to investigate the difference between the means of rumination and social anxiety among the pre-test, post-test, and paired follow-up. Further, SPSS version 22.0 was used for data analysis. The significance level of the research was considered to be α=0.05.

Table 1. Summary of the mindfulness-based cognitive therapy program [17]

Session	Content
1	Administering the pre-test; introducing the members and the therapist; providing a brief introduction of the program; explaining the goals of the therapeutic program; discussing the content of the program; explaining session exercises; agreement with the members about participating in the sessions, as well as the time and place of the sessions; teaching the raisin eating exercise; giving homework
2	Performing the body scan exercise; checking and reviewing homework and how the members have done; explaining mindfulness and performing the exercise of motion mindfulness; performing specific exercises in the lying down or sitting positions and performing mindful actions; giving homework
3	Eliciting the opinions of some members about the homework; five minutes of practical seeing or hearing exercise; performing sitting meditation for 30-40 minutes; providing a brief explanation about the performed exercises, their purpose, and the necessity of performing them regularly outside the sessions; performing the 3-minute breathing exercise; giving homework
4	Eliciting the opinions of the participants about the homework from the last session; explaining the worksheet for recording adverse events; five-minute seeing or hearing exercise by the therapist and the members; 40 minutes of sitting meditation (being mindful of breathing, body, voices, and then thoughts); explaining anxiety and its various types, including social anxiety, symptoms, causes, and consequences, as well as social anxiety effects on an individual's life; giving homework
5	Reviewing the homework of the last session; asking the opinions of the members about the homework and exercises, besides their feelings and thoughts after doing the homework; performing sitting meditation similar to previous sessions; explaining the effects of this exercise and its importance for the members; explaining difficulties that may occur while doing the exercises, paying attention to their effects on the body, and reacting to them; giving homework
6	Reviewing exercises and homework; performing the sitting meditation exercise together with the members; explaining emotion and rumination, as well as their role as dysfunctional strategies for coping and dealing with trauma; eliciting the opinions of the members in this regard and asking them to discuss examples and their experiences; teaching the technique of mindfulness to the members; giving homework
7	Checking and reviewing homework; performing sitting mediation exercise with the participation of all members; discussing the relationship between action and mood and performing an exercise in this regard; giving homework
8	Eliciting the opinions of the members about the exercises of the last session; reporting the priority list worksheet and the planning schedule for realizing these priorities; performing the body scan exercise (explained in the second session) again with the members; emphasizing the importance of the exercises and the lessons learned in their everyday life; performing group meditation using a rock; administering the post-test

Table 2. Summary of the emotion-regulation training program [43]

Session	Content
1	Introducing to know each other and commencing the mutual relation between the group leader and the members; explaining the major and minor objectives of the group and talking about the personal and group goals of the members; explaining the logic and steps of the intervention and presenting the framework and rules of participating in the group
2	Understanding emotion and arousing situations through teaching the difference among the functions of various emotions; providing information about different aspects of emotions, as well as their short-term and long-term effects
3	Discussing the role and benefits of emotions in the adaptation process; discussing the role of emotions in establishing relations with others and affecting them, as well as organizing and motivating behaviors; providing examples of the members' real experiences
4	Discussing methods for preventing social isolation and avoidance; teaching the problem-solving strategies and interpersonal skills (conversation, expressing oneself, and conflict resolution)
5	Expanding focus, goal; changing focus; stopping rumination and mental concern; teaching focus
6	Changing cognitive evaluations; identifying false evaluations and their impacts on emotional states; teaching the reevaluation strategies
7	Changing the behavioral and physiological consequences of emotions; using the inhibition strategies and evaluating their emotional outcomes; exposure; teaching emotion expression; correcting behaviors by changing environmental reinforcements; teaching emotional discharge, relaxation, and reversed action
8	Reevaluating and removing implementation barriers; evaluating the realization extent of personal and group goals; using learned skills in real environments outside the session; checking the homework and eliminating the barriers for performing the homework

Results

Based on demographic data, the mean and standard deviation of the participants' age was 15.53 ± 2.11. With regards to the number of family members, 8 (17.40%) of the participants had families with one child, 10 (22.50%) had families with two children, 12 (26.20%) had families with three children, 10 (22.50%) had families with four children, and 5 (11.40%) had families with more than four children. Table 3 presents the mean and standard deviation of studied variables in the experimental and control groups in the pre-test, post-test, and follow-up. There was no significant difference among the three groups concerning the mean score of the pre-test. However, at the post-test stage, the mean scores of the experimental groups were reduced compared to the control group in terms of rumination and social anxiety components (avoidance, fear, physiological symptoms); this reduction was also observed at the follow-up stage (Table 3).

Data resulted from the insignificant Kolmogorov-Smirnov Z statistic showed that rumination and social anxiety follow a normal distribution. Levene's test for homogeneity of variance in dependent variable components revealed that the variance of components did not differ significantly in the groups.

Table 3. Mean and standard deviation of research variables in experimental and control groups in the pre-test, post-test, and follow-up

Variables		Phases	Cognitive therapy	Emotion regulation	Control	P-value
			M ± SD	M ± SD	M ± SD	
Rumination		Pre-test	79.33 ± 4.61	79.00 ± 4.44	77.87 ± 5.68	0.523
		Post-test	55.00 ± 2.00	61.80 ± 5.28	69.07 ± 1.99	0.001
		Follow-up	55.53 ± 1.73	63.20 ± 4.07	66.73 ± 2.06	0.001
Social anxiety	Avoidance	Pre-test	24.20 ± 1.42	25.73 ± 2.34	24.80 ± 1.74	0.812
		Post-test	19.67 ± 1.80	20.53 ± 2.07	23.40 ± 1.92	0.001
		Follow-up	19.53 ± 1.85	20.53 ± 2.07	24.87 ± 1.54	0.001
	Fear	Pre-test	21.00 ± 1.96	21.47 ± 2.29	20.73 ± 2.34	0.728
		Post-test	17.53 ± 1.25	18.53 ± 1.19	20.53 ± 2.20	0.001
		Follow-up	17.53 ± 1.25	18.53 ± 1.19	20.47 ± 2.24	0.001
	Physiological symptoms	Pre-test	13.87 ± 1.73	14.27 ± 1.58	12.87 ± 1.55	0.462
		Post-test	10.47 ± 1.88	11.40 ± 1.24	13.00 ± 1.55	0.001
		Follow-up	11.40 ± 1.88	12.60 ± 1.24	13.80 ± 1.46	0.001

Based on the results, the obtained F values were significant for all the dependent variables ($p<0.05$). Therefore, there was a significant difference between cognitive therapy and emotion-regulation training with the control group in terms of independent variables, i.e., rumination, social anxiety, and its components (avoidance, fear, and physiological symptoms). Table 4 presents the results of the Bonferroni post-hoc test for evaluating the differences between the means. According to Table 5, the extent of the difference obtained between the cognitive therapy group and emotion-regulation group was significant in terms of rumination, social anxiety, and the fear component ($p<0.05$).

Table 4. Bonferroni post-hoc test for paired comparison of dependent variables

Dependent variables	First group	Second group	Mean difference	SE	P-value
Rumination	Cognitive therapy	Emotion regulation	-6.248**	1.359	0.001
	Control	Cognitive therapy	14.229**	1.382	0.001
		Emotion regulation	7.981**	1.330	0.001
Avoidance	Cognitive therapy	Emotion regulation	-1.227	0.717	0.203
	Control	Cognitive therapy	3.652**	0.729	0.001
		Emotion regulation	0.425**	0.702	0.001
Fear	Cognitive therapy	Emotion regulation	-1.496*	0.493	0.014
	Control	Cognitive therapy	3.094**	0.502	0.001
		Emotion regulation	1.598**	0.483	0.003
Physiological symptoms	Cognitive therapy	Emotion regulation	-1.126	0.567	0.165
	Control	Cognitive therapy	3.204*	0.577	0.017
		Emotion regulation	2.078**	0.555	0.001
Total social anxiety	Cognitive therapy	Emotion regulation	-3.638**	1.337	0.003
	Control	Cognitive therapy	9.236**	1.359	0.001
		Emotion regulation	5.598**	1.308	0.001

**: $p<0.001$; *: $p<0.005$

Therefore, there was a significant difference between the level of effectiveness of mindfulness-based cognitive therapy and emotion-regulation training in mitigating rumination and social anxiety among teenagers prone to addiction. Moreover, based on the average scores of the groups, mindfulness-based cognitive therapy was more effective than emotion-regulation training in mitigating rumination and social anxiety in teenagers prone to addiction.

Table 5 presents the results of the Bonferroni post-hoc test for measuring the differences between the groups at the follow-up phase. According to Table 6, there was a significant difference between the experimental groups and the control group and between the experimental groups in terms of all the dependent variables, i.e., rumination, social anxiety, and its components (except for avoidance and physiological symptoms). The difference between the groups concerning these variables was also significant at the follow-up phase. In other words, the effects of mindfulness-based cognitive therapy were more long-lasting than those of emotion-regulation training on mitigating social anxiety and rumination.

Table 5. Bonferroni post-hoc test for paired comparison of dependent variables in the follow-up phase.

Dependent variables	First group	Second group	Mean difference	SE	P-value
Rumination	**Cognitive therapy**	Emotion regulation	-7.501**	1.131	0.001
	Control	Cognitive therapy	11.431**	1.150	0.001
		Emotion regulation	3.930**	1.106	0.003
Avoidance	**Cognitive therapy**	Emotion regulation	-1.236	0.734	0.304
	Control	Cognitive therapy	5.219**	0.747	0.001
		Emotion regulation	3.983**	0.719	0.001
Fear	**Cognitive therapy**	Emotion regulation	-1.228	0.567	0.111
	Control	Cognitive therapy	3.141**	0.576	0.001
		Emotion regulation	1.913**	0.555	0.004
Physiological symptoms	**Cognitive therapy**	Emotion regulation	-1.237	0.617	0.158
	Control	Cognitive therapy	2.577**	0.627	0.001
		Emotion regulation	1.339	0.603	0.099
Total social anxiety	**Cognitive therapy**	Emotion regulation	-3.907*	1.325	0.017
	Control	Cognitive therapy	10.672**	1.347	0.001
		Emotion regulation	6.764**	1.296	0.001

**: p<0.001; *: p<0.005

Discussion

The present study aimed to investigate the effectiveness of mindfulness-based cognitive therapy and emotion-regulation training on rumination and social anxiety in teenagers prone to addiction. The findings showed that mindfulness-based cognitive therapy was more effective than emotion-regulation training on mitigating rumination among teenagers prone to addiction, and this effect lasted through the follow-up phase. This finding was consistent with Brewer [20], Perestelo-Perez et al. [44], Barmal et al. [45], and Ahmadi Bejagh et al. [46].

One explanation for this result is that, based on the theory proposed by Kabat-Zinn, mindfulness involves the relationship between events with no judgment about, focusing on here and now. In the process of mindfulness-based cognitive therapy, using several techniques (e.g., body scan, as well as breathing and thoughts observation) that help the individual be present at the moment and now, favorable conditions are created for separating from the past and refraining from judgment about the painful thoughts and emotions [18]. Teasdale et al. [47] state that this therapeutic method paves the way for the decentralization of the individuals' thoughts since they are taught to observe their thoughts and emotions without judgment, look at them as simply mental events that come and go, and refrain from considering their thoughts and emotions as a part of themselves or a reflection of the reality. Therefore, such a way of encountering thoughts and emotions can prevent the intensification and exacerbation of negative thoughts and rumination. Accordingly, it can be deduced that mindfulness-based cognitive therapy can encourage teenagers who ruminate to regularly exercise and focus on neutral stimulants and purposeful awareness of body and mind as a means to relieve their minds from being obsessed with threatening thoughts and concerns about performance, thus help their minds not to work automatically. In other words, by increasing the awareness of the individual about the experiences of the current moment and refocusing on the cognitive system and more efficient information processing, these techniques can reduce negative

thoughts and ruminations in teenagers prone to addiction [48]. This therapy is based on the model developed for reducing stress, using Kabat-Zinn's mindfulness method, combined with the principles of cognitive therapy. It allows the individual to respond to events with thought and reflection instead of automatic reactions without any contemplation. Therefore, it seems that being mindful can make the individual more resilient to negative emotions and drug abuse [48].

Another explanation is that acquiring mindfulness skills through exercises enables individuals to see ruminating thoughts more clearly and actively switch dysfunctional thinking patterns out from their minds. Mindfulness increases the ability of the teenagers prone to addiction to reevaluate and escape ruminating thoughts [17]. Moreover, it encourages such individuals to observe their mental processes, see and accept self-criticizing and judgmental thoughts, and try not to focus on them. Furthermore, mindfulness-based cognitive therapy can limit the scope of dysfunctional thoughts that manifest in response to cognitive fluctuations [49]. Perestelo-Perez et al. [44] performed a study to measure the effects of mindfulness therapy on reducing rumination. Their results showed that mindfulness-based cognitive therapy significantly reduced rumination compared to conventional interventions. Additionally, Barmal et al. [45] showed that the scores of depressions, rumination, inefficient problem-solving, and incompatible cognitive emotion regulation were reduced in individuals who received mindfulness therapy, while their scores for efficient problem-solving and compatible cognitive emotion regulation increased compared to the control group. Therefore, mindfulness can help reduce depression and rumination, while it can improve problem-solving skills and cognitive emotion regulation. Ahmadi Bejagh et al. [46] indicated that eight sessions of mindfulness-based cognitive therapy reduced obsession, metacognitive beliefs, and rumination. Therefore, based on these results, mindfulness-based cognitive group therapy is effective in mitigating Obsessive-Compulsive Disorder (OCD), metacognitive beliefs, and rumination, while the effects are still observed at the two-month follow-up phase.

Mindfulness-based cognitive therapy was more effective than emotion-regulation training in reducing social anxiety and the fear component among teenagers prone to addiction, and this effect lasted during the follow-up phase. While there have been no studies to compare these two therapeutic methods in terms of social anxiety reduction, studies focusing on either one of these two methods indicate the effectiveness of both, especially mindfulness-based cognitive therapy, on reducing social anxiety [50-58].

The explanation for this finding is that, based on the theory of Linehan, social anxiety is always caused by the judgments and attitudes of individuals, lack of awareness about the consequences of actions and reactions among people, past events, and not predicting the future, while mindfulness-based cognitive therapy emphasizes avoiding judgment, purposeful awareness, and focusing on the present moment. In this therapeutic method, the individual gains awareness about his/her everyday activities through related exercises and techniques, thus getting away from the sources of social anxiety.

To explain the effects of this therapy on the fear component, it can be said that, according to McLean et al. [59], fear is one of the most important components of social anxiety. Social anxiety is a specific and chronic fear of one or more social situations. Furthermore, based on the cognitive model proposed by Leigh and Clark [60], when individuals suffering from social anxiety enter an anxiety-inducing social situation, they feel threatened and focus inward, concentrating on anxiety responses [57]. Additionally, they become convinced that others see them the same way, resulting in a negative evaluation accompanied by fear of themselves. Mindfulness-based cognitive therapy can help reduce the mental obsession of individuals with negative evaluations of themselves, which often results in increased fear.

Hoge et al. [50] indicate that mindfulness-based therapies are an effective intervention method for various types of anxiety disorders, including social anxiety. Moreover, Rasmussen and Pidgeon [53] indicate that mindfulness significantly predicts high levels of self-esteem and low levels of social anxiety. Goldin et al. [58] evaluate the effects of mindfulness on reducing social anxiety and conclude that a mindfulness-based stress reduction program mitigates social anxiety. Tabatabai Nejad et al. [55] conclude that positive-based mindfulness therapy is more effective than other therapeutic methods in reducing social anxiety in the students.

Researchers believe that only pathological attention is the basis of anxiety symptoms and concern in individuals suffering from anxiety disorders, and increased control of attention can be effective in reducing anxiety. Mindfulness techniques are basic for increasing attention, being effective in treating individuals suffering from anxiety [61]. According to Kabat-Zinn [62], teaching attention control in mindfulness targets and sees clarity, which acts in a non-habitual and transcendental manner. Moreover, Kabat-Zinn [62]

states that mindfulness techniques are effective in increasing muscular relaxation, as well as reducing worry, stress, and anxiety. Besides, according to Semple et al. [63], this effect is rooted in self-control since repeated attention on a neutral stimulant, such as breathing, creates a favorable attention environment, which subsequently results in distracting attention from negative thoughts and ruminations underlying anxiety-inducing thoughts.

One of the present research limitations was the lack of possibility of longer-term follow-ups, necessitating caution in the generalization of the findings. Accordingly, future researchers are recommended to evaluate the study results using longer-term follow-ups so that the results can be generalized with a higher level of confidence. According to the findings, organizing cognitive therapy and emotion-regulation workshops by the group foster care centers for residing teenagers can reduce their vulnerability to addiction.

Conclusion

The study shows that mindfulness-based cognitive therapy is more effective than emotion-regulation training to reduce social anxiety and rumination in teenagers prone to addiction. In this way, thoughts are decentralized, and by escaping ruminations, the individual experiences less social anxiety. Therefore, organizing mindfulness-based cognitive therapy workshops by the consultation offices of the group foster care centers where teenagers live can reduce their vulnerability to addiction.

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