



## The effectiveness of eating-based mindfulness training on alexithymia and self-differentiation of overweight women

Sahar. Shariati<sup>1</sup>, Ghodrattollah. Abbasi\*<sup>2</sup> & Bahram. Mirzaian<sup>3</sup>

1. Ph. D student, Department of Psychology, Sari Branch, Islamic Azad University, Sari, Iran
2. \*Corresponding Author: Assistant Professor, Department of Psychology, Sari Branch, Islamic Azad University, Sari, Iran
3. Assistant Professor, Department of Psychology, Sari Branch, Islamic Azad University, Sari, Iran

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### ABSTRACT

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Corresponding Author's Info

Email:

Sahar.shry.2016@gmail.com

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**Background and Aim:** The prevalence of obesity and overweight is increasing at an alarming rate in Iran, which can bring various psychological consequences for obese people. The purpose of this research was to determine the effectiveness of mindfulness training based on eating on alexithymia and self-differentiation of overweight women. **Methods:** The current research design was a semi-experimental type of pre-test, post-test and follow-up with a control group. The statistical population in this research included all overweight women of Gonbadkavus city who referred to overweight and obesity treatment clinics in the first half of 2021. From the statistical population of the research, a sample group consisting of 30 overweight women who were selected in a purposeful way and then randomly assigned to two experimental groups (mind-awareness training based on eating) (15 people) and control (15 people) became. Then overweight women in the experimental group underwent 8 sessions of 90 minutes each week, one session of mindfulness training based on eating, but the control group did not receive any intervention. The tools of the research were Toronto et al.'s (2007) alexithymia questionnaires and Skowron and Friedlander's (1988) self-differentiation questionnaire. Analysis of variance with repeated measurements and spss software were used to analyze the data. **Results:** The results showed that there was a significant difference in terms of improving the difficulty of identifying emotions ( $F=8.16, P<0.001$ ), the difficulty in describing emotions ( $F=10.83, P<0.001$ ), and thinking outward oriented ( $F=10.89, P<0.001$ ), emotional reaction ( $F=78.35, P<0.001$ ), self-position ( $F=60.34, P<0.001$ ), cut emotional ( $F=34.89, P<0.001$ ) and mixing with others ( $F=79.61, P<0.001$ ) between subjects in the experimental group compared to the control group. **Conclusion:** It can be concluded that mindfulness training based on eating was effective on alexithymia and self-differentiation of overweight women and this effect continued until the follow-up period.



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## Introduction

The World Health Organization (2015) defines obesity and overweight as excessive or abnormal accumulation of fat that may harm health. The prevalence of obesity and overweight is increasing alarmingly in Iran. National surveys in different provinces have shown that 43% of women and 9% of men, as well as 28% of city residents and 23% of rural residents, have abdominal obesity (Masoumi, 2020). It is worth mentioning that during the last decade, the problem of overweight has been very common among women aged 14 to 49 (Hasin, 2018). Underestimating the problem of overweight makes people not make efforts to reduce their weight, and the ground for mental distress and low level of life satisfaction is provided in them (Cowley et al., 2020). Until recently, the causes and factors of obesity and its consequences were discussed only from the physical and medical point of view, but in the last decade, the study of obesity and overweight from a psychological perspective also expanded significantly (Yon et al., 2021). Among its psychological consequences, we can mention the increase in isolation (Mokan, 2009), the decrease in the quality of life (Agah Harris et al., 2012) and, most importantly, the decrease in self-esteem levels (Coker, 2011).

In several studies, ataxia has been investigated in overweight people and it is one of the psychological factors that has been considered in the field of overweight (Baldaro et al., 2003). Alexithymia is defined as "difficulty in identifying emotions", "difficulty in describing emotions" and "difficulty in differentiating emotions and bodily stimulations caused by emotional arousal and extroverted thinking style". Regarding alexia and overweight, Khodabakhsh and Kiani (2014) showed that alexia can predict disordered eating behaviors to a high degree. In the study of Bonatio (1993), it was shown that women who avoid expressing negative emotions (anxiety, anger, sadness) are twice as prone to gain weight as other women. Some results indicate high dyslexia scores in overweight people compared to normal people (Noli et al., 2010).

One of the therapeutic interventions for weight loss are cognitive approaches (Kashner and Basisen, 2014). The process of cognitive restructuring related to overweight includes identifying negative thoughts, labeling them and

finally replacing them with positive thoughts. These techniques have been used for years as part of weight control behavioral treatments, however, no systematic study has been done on the effectiveness of its components (Puhl & Suh, 2015; Watankhah et al., 2021). There is evidence to suggest that mindfulness may lead to healthier eating and thus make weight management easier (Godsey, 2013). Based on the results of Lotfi et al.'s (2019) study, cognitive therapy based on mindfulness through changing people's lifestyles and cognitions can lead to weight loss and increased activity in overweight people. Jordan, Wang, Donatoni, and Mayer (2014) showed that higher levels of mindfulness were associated with a higher tendency to choose fruit over sweets. One of the determining factors in improving overweight may be awareness that helps a person to regulate his food intake better (Kabat-Zinn, 2003). Numerous studies indicate the importance of mindfulness for improving body mass index (Kechoui et al., 2017), reducing overeating (Pizzo et al., 2020), reducing nervous eating and increasing physical activity (Rofart, 2017). In this regard, the aim of this study was to determine the effectiveness of mindfulness training based on eating on alexithymia and self-differentiation in overweight women.

## Method

The design of the current research was a quasi-experimental type of pre-test, post-test and follow-up with a control group. The statistical population in this research included all overweight women of Gonbadkavus city who referred to overweight and obesity treatment clinics of this city in the first half of 2021. From the statistical population of the research, a sample group consisting of 30 overweight women who were selected in a targeted way. Then they were randomly assigned to two experimental groups (mindfulness training based on eating) (15 people) and control (15 people) (considering that the sample size in experimental research should be at least 15 people in each group). The method of group homogenization was done based on gender (being female), average age between 24 and 45 years, education level and average body mass index in overweight women.

The criteria for entering the research is being female; having the age of 25 to 45 years (being

in the period of youth and age before menopause); Having a diploma or higher education level; Having a body mass index between 25 and 29.9; having relative mental health based on the SCL-25 questionnaire; not taking medicine to lose weight; lack of menopause or pregnancy; Not suffering from anorexia nervosa (based on clinical interview); No drug or alcohol abuse; Not suffering from any disease related to hormones involved in the body's metabolism, such as diabetes, hyperthyroidism or hypothyroidism; Satisfaction of the individual to participate in the research. The criteria for leaving the research include non-participation in meetings continuously (two more meetings); history of mental illnesses; physical illness during treatment sessions; body mass index below 25 and above 30; It was the individual's unwillingness to continue the treatment sessions.

### Materials

**1. Toronto Alexithymia Scale (TAS-20):** To measure alexithymia, the Persian version of the Toronto Ataxia Scale of Besharat (2007) was used, which is derived from the Toronto Ataxia Scale of Bagby, Parker and Taylor (1994). The purpose of this questionnaire is to evaluate a person's ability to express emotions. This self-assessment scale has 20 statements and three dimensions: difficulty in identifying emotions (7 statements), difficulty in describing feelings (5 statements) and external thinking (8 statements). The method of grading is on a 5-point Likert scale between 1 = completely disagree and 5 = completely agree. The sum of the scores of these three subscales is considered as the overall score of alexithymia. Scores of 60 are considered as high alexia and scores below 52 are considered as low alexia (without alexia). **Difficulty in Identifying Emotions Scale (DIF):** This subscale evaluates the subject's ability to identify his emotions and distinguish between emotions and bodily sensations, which includes questions 1, 3, 6, 7, 9, 13 and 14. **Difficulty in describing feelings scale (DDF):** This subscale measures a person's ability to express feelings and whether he is able to express his feelings in words or not, which includes statements 2, 4, 11, 12 and 17. **Externally Oriented Thinking Scale (EOT):** This subscale examines the level of introspection and deepening of the person's inner feelings and others, which includes statements 5, 8, 10, 15, 16, 18, 19 and 20. Items

4, 5, 10, 18, and 19 have reverse scoring: the answer "completely disagree" is given a score of 5, and the answer "completely agree" is given a score of 1. The more people score in these subscales, the more problems they have in expressing and recognizing emotions. Cronbach's alpha coefficient in the Persian version for general alexithymia and subscales of difficulty in identifying emotions, difficulty in describing emotions and objective thinking were 0.85, 0.82, 0.75 and 0.72, respectively. Issazadegan and Fathabadi (2012) reported the validity of the test using Cronbach's alpha method for a total score equal to 0.74. They reported alpha for the subscales of difficulty in describing feelings of 0.70, difficulty in identifying feelings of 0.64, and extraverted thinking of 0.52. The test-retest validity of the scale was calculated as 0.80 and 0.87 in a sample of 67 people in two occasions four weeks apart (Besharat, 2007; Narimani et al., 2013). In the present study, the RMSEA index for the above 3 dimensions was obtained as 0.04, 0.04 and 0.06 respectively. The reliability of the tool was measured using Cronbach's alpha 0.87 and for the above 3 dimensions 0.79, 0.81 and 0.85 respectively.

**2. Self-Differentiation Inventory (DSI):** This tool was developed by Skowron and Friedlander (1988) based on Bowen's theory. It consists of 46 phrases and 4 dimensions of emotional reaction, my place, emotional detachment and blending with others, which is used to measure the differentiation of people. The scoring of the questionnaire is in the form of a 6-point Likert scale (not at all true for me = 1 to completely true for me = 6). Each question is given a score between 1 and 6. In this way, option 1 is given a score of 1 and option 6 is given a score of 6. The maximum score of the questionnaire is 276. A lower score in this questionnaire indicates lower levels of differentiation. The alpha coefficient reported by Skowron and Friedlander for their differentiation questionnaire is 0.88. Jahanbakhshi and Kalantarkosheh (2012) compared the reliability of the whole test using Cronbach's alpha method of 0.69. They calculated the reliability for subscales of emotional response, self-place, emotional detachment and integration with others as 0.73, 0.64, 0.61 and 0.75 respectively. In the current study, the CFI index for the above 4 dimensions was reported as 0.88, 0.92, 0.93, 0.84 respectively. The reliability of the tool was

measured using Cronbach's alpha as 0.86 and for 5 dimensions as 0.87, 0.81, 0.92 and 0.90 respectively.

**3. Mindfulness training based on eating:** This treatment method was created by integrating mindfulness-based stress reduction therapy and cognitive behavioral therapy and guided eating meditation. It is used for problems related to

body shape, weight, and processes related to eating such as appetite and the like, and is designed in such a way that it can be effective in creating and maintaining internal change. (Kristler et al., 2014). Hampa (2016) translated and standardized this intervention for the first time in Iran. This intervention is designed in the form of 8 90-minute sessions as follows:

**Table 1. Summary of eating-based mindfulness therapy sessions**

Session	Objectives	Content	Assignments
1	Introduction and relationship building	Determining the tasks and rules of the group, introducing mindfulness and mentioning the differences between mindfulness and meditation, these are the general principles of mindfulness-based eating awareness education.	Implementation of technique, implementation of raisin eating technique, breathing awareness technique.
2	Discussing automatic behaviors during daily activities, especially when eating	Investigating the obstacles in the present experience, introducing different types of mindfulness exercises: formal, informal and guided. Inner knowledge: mindful eating of challenging food (sweets). External knowledge (education about the amount of calories in foods and how to record daily calories.	Introducing informal mindfulness exercises with an emphasis on informal mindful eating practice
3	Discussing mind-consciousness	Teaching and implementing the body scanning technique, examining habitual eating, emotional and inhibited eating or craving, discussing how mindfulness helps to reduce this type of eating, describing the types of hunger.	Introducing the practice of discovering the difference between the experience of physical hunger and emotional hunger, introducing the practice of visualizing thought clouds to reduce cravings, introducing the practice of being aware of cravings
4	Definition of physical satiety and sensory satiety	Practice experiencing physical satiety and feeling full or drinking water.	Consciously Eating a Challenging Food (Chocolate), Outer Wisdom: The 500-Cal Challenge
5	Encourage more activity	Description and implementation of self-healing exercise, introduction of chain reactions, external knowledge: encouraging more activity by using pedometer and change in daily activities program.	Encouraging more activity by using a pedometer and changing the daily activities schedule.
6	Implementation of formal mindfulness practice	Discussion about the conscious selection of fruits and vegetables, introduction and implementation of self-acceptance meditation, introduction and implementation of the formal exercise of walking mindfulness, external knowledge: discussion about fiber and its role in healthy eating.	Implementation of the formal practice of mindfulness of walking at home
7	Practice values	Practicing values, introducing and	Performing boga on a chair at

		performing Boga on a chair, introducing the concept of wisdom and inner wisdom.	home
8	Summary of past content	Summarizing the past contents, conclusion and implementation of the post-exam.	-

### Implementation

Ethical considerations in this research were such that participation in this research was completely optional. Before starting the project, the participants were familiarized with the specifications of the project and its regulations. People's attitudes and opinions were respected. The members of the experimental and control groups were allowed to withdraw from the research at any stage. In addition, if interested, the members of the control group could receive the intervention performed for the experimental group in similar treatment sessions after the completion of the project. All documents, questionnaires and confidential records were only available to the executives. Written

informed consent was obtained from all volunteers. In the descriptive

analysis of the data, the statistical indices related to each of the research variables were calculated. In the inferential statistics section, analysis of variance with repeated measurements and SPSS-22 software were used.

### Results

The mean (standard deviation) age of the participants in the experimental group was 38.5 (8.7) and the control group was 36.9 (7.7). The minimum and maximum ages in the experimental group were 26 and 43 years, and in the control group, 27 and 42 years.

Table 2. Descriptive statistics of research variables by test type and groups

Variable	Deminisions	Stage	Exp.		Control	
			Mean	SD	Mean	SD
Alexithymia	difficulty in indentifying feelings	pre-test	17/53	3/22	17/86	3/87
		pre-test	13/60	3/54	17/80	3/05
		follow-up	12/40	2/61	16/60	3/01
	difficulty in explaining feelings	pre-test	13/46	2/23	14/26	2/63
		pre-test	11/06	2/40	13/93	2/43
		follow-up	10/11	2/26	13/86	2/69
	outward thinking	pre-test	23/20	2/56	24/13	3/73
		pre-test	19/20	3/04	25/40	3/45
		follow-up	17/53	3/13	25/53	2/61
self-differentiation	emotional reaction	pre-test	36/42	3/12	35/76	3/27
		pre-test	27/63	3/79	37/14	2/65
		follow-up	23/06	2/86	37/71	2/74
	self-position	pre-test	37/73	4/51	37/66	4/43
		pre-test	29/26	4/19	38/21	3/09
		follow-up	23/82	3/85	37/83	4/39
	emotional cut	pre-test	35/91	3/10	34/14	3/23
		pre-test	30/87	2/33	35/65	3/12
		follow-up	27/26	2/08	34/23	2/64
	mixing with others	pre-test	38/54	3/12	37/97	3/08
		pre-test	33/06	2/77	36/43	2/56
		follow-up	26/15	2/34	37/15	2/99

According to the results of Table 2, the average dimensions of all the variables that are different in the pre-test, post-test and follow-up stages and in the post-test and follow-up stages of the

experimental group were associated with the average change, but this change was not observed in the evidence group.



Variable	Group	K-S			Levene's test			Mauchly		
		df	statistics	sig	df	statistics	sig	statistics	W	sig
<b>Difficulty in indentifying feelings</b>	Exp.	15	0/545	0/922	28	2/391	0/133	3/16	0/84	0/47
	Control	15	0/620	0/845						
<b>Difficulty in explaining feelings</b>	Exp.	15	0/616	0/776	28	1/754	0/196	2/55	0/77	0/35
	Control	15	0/846	0/424						
<b>outward thinking</b>	Exp.	15	0/764	0/653	28	0/842	0/367	2/67	0/93	0/30
	Control	15	1/216	0/143						
<b>emotional reaction</b>	Exp.	15	1/011	0/235	28	1/246	0/274	2/99	0/95	0/46
	Control	15	0/627	0/735						
<b>self-position</b>	Exp.	15	0/912	0/326	28	0/157	0/695	3/18	0/80	0/33
	Control	15	0/731	0/629						
<b>emotional cut</b>	Exp.	15	0/620	0/845	28	1/070	0/221	2/18	0/89	0/36
	Control	15	0/973	0/304						
<b>mixing with others</b>	Exp.	15	0/437	0/947	28	2/702	0/112	2/44	0/85	0/24
	Control	15	0/545	0/922						

The results of the analysis of variance of repeated measurement of several variables among the studied groups in the variables of alexithymia and self-differentiation showed that the effect between subjects (group) is significant. This effect means that at least one of the groups differs from each other in at least one

of the variables of alexithymia and differentiation. The within-subject effect (time) was also significant for the research variables, which means that there was a change in at least one of the average variables during the time from pre-test to follow-up.

variable	source	SS	df	MS	F	sig	Eta <sup>2</sup>
<b>difficulty in indentifying feelings</b>	Time*Group	156/800	2	78/400	15/116	0/001	0/351
	Group	56/067	1	56/067	8/162	0/008	0/226
<b>difficulty in explaining feelings</b>	Time*Group	59/267	2	29/633	12/761	0/001	0/313
	Group	35/267	1	35/267	10/891	0/003	0/280
<b>outward thinking</b>	Time*Group	70/067	2	35/033	4/262	0/001	0/132
	Group	187/267	1	187/267	10/830	0/001	0/402
<b>emotional reaction</b>	Time*Group	861/800	2	430/900	88/570	0/001	0/760
	Group	552/150	1	522/150	78/350	0/001	0/737
<b>self-position</b>	Time*Group	1086/467	2	543/233	63/964	0/001	0/696
	Group	464/817	1	464/817	60/347	0/001	0/683

<b>emotional cut</b>	Time*Group	717/800	2	358/900	41/204	0/001	0/595
	Group	440/356	1	440/356	34/899	0/001	0/555
<b>mixing with others</b>	Time*Group	1086/467	2	287/233	29/704	0/001	0/515
	Group	928/267	1	928/267	79/614	0/001	0/740

The results from Table 4 showed that the F ratio obtained in the groups factor is significant in the dimensions of alexithymia ( $p < 0.01$ ) and self-differentiation ( $p < 0.01$ ). This finding indicates that mindfulness training based on eating improved dyslexia in overweight women. In this

regard, an analysis of variance with repeated measurements was performed for the experimental group in three stages of therapeutic intervention, where the observed F ratio was in the improvement of alexithymia ( $p < 0.01$ ) and self-differentiation ( $p < 0.01$ ).

**Table 5. Bonferroni post hoc test results within the group of mindfulness training in the dimensions of alexithymia and self-differentiation in the experimental group.**

Variable	Time		Mean Diff.	S.E	Sig
difficulty in indentifying feelings	Pre-test	Post-test	5/54	2/51	0/003
	Pre-test	follow-up	1/61	1/10	0/01
	Post-test	follow-up	2/86	1/23	0/01
difficulty in explaining feelings	Pre-test	Post-test	2/281	2/39	0/002
	Pre-test	follow-up	-1/78	1/13	0/04
	Post-test	follow-up	-2/33	1/29	0/033
outward thinking	Pre-test	Post-test	2/59	2/72	0/002
	Pre-test	follow-up	-1/44	1/38	0/011
	Post-test	follow-up	-2/12	1/35	0/024
emotional reaction	Pre-test	Post-test	2/30	1/15	0/05
	Pre-test	follow-up	0/57	1/21	0/03
	Post-test	follow-up	-1/57	1/22	0/021
self-position	Pre-test	Post-test	-0/83	0/34	0/002
	Pre-test	follow-up	-0/48	0/34	0/017
	Post-test	follow-up	-1/61	0/33	0/001
emotional cut	Pre-test	Post-test	0/83	0/34	0/002
	Pre-test	follow-up	0/35	0/36	0/034
	Post-test	follow-up	-0/77	0/35	0/013
mixing with others	Pre-test	Post-test	0/48	0/34	0/007
	Pre-test	follow-up	-0/35	0/36	0/034
	Post-test	follow-up	-1/13	0/37	0/004

The changes of the experimental group over time in Table 5 showed that the dimensions of alexithymia in the mindfulness training group were significant in the post-test compared to the pre-test ( $P < 0.001$ ). A significant difference was observed in the follow-up phase compared to the pre-test ( $P < 0.001$ ). However, no significant difference was observed in the follow-up compared to the post-test ( $p < 0.01$ ). The changes of the experimental group over time showed that the dimensions of self-differentiation in the

mind-awareness training group were significant in the post-test compared to the pre-test ( $P < 0.001$ ). In the follow-up phase, a significant difference was observed compared to the pre-test and post-test ( $P < 0.001$ ).

### Conclusion

The purpose of this research was to determine the effectiveness of mindfulness training based on eating on alexithymia and self-differentiation in overweight women. The results of this study showed a significant difference in terms of

improving the difficulty in identifying emotions, difficulty in describing emotions, and outward-oriented thinking between subjects in the experimental group compared to the control group. These differences show the improvement of these dimensions after the implementation of therapy sessions, and the emotional reaction, my place, emotional detachment and blending with others were among the subjects of the experimental group compared to the control group. These differences show the improvement of these dimensions after the implementation of treatment sessions. This result was consistent with the studies of Vatankehah et al. (2021), Lani et al. (2019), Breen (2017).

In explaining these findings, it can be said that mindfulness training is focused on paying attention to the present moment and awareness and acceptance of feelings and emotions. Emphasis on performing individual exercises that are related to emotions, thoughts and feelings and makes a person learn exercises with acceptance and compassion instead of suppressing, controlling or avoiding them (Sharonov 2013). Emotion regulation requires an optimal interaction of cognition and emotion to deal with negative situations because a person interprets everything he encounters cognitively, which determines people's reactions. People who have high mental awareness have good knowledge and insight about their cognitive processes and capabilities. Due to the deep relationship of mindfulness with emotions and effective strategies for dealing with tasks, mindfulness increases a person's awareness of himself and others in the emotions and current situation. It can be concluded that through the training of mindfulness skills, the ability to regulate emotions can be improved, and this itself can have a reciprocal effect on increasing the level of mindfulness.

In explaining this finding, it can be said that overweight people have wrong thoughts and beliefs about their condition, or that they are very sensitive because of such beliefs. In the meantime, cognitive therapy based on mindfulness shows how to control and manage such situations. In fact, mindfulness has a positive effect on ineffective thoughts. The presence of the mind helps the patient by facilitating the timely identification of patterns of thoughts, feelings and bodily sensations, and

neutralizing them at the appropriate stage before they develop. Cultivating awareness in this way enables people to more clearly observe the arousal of ruminating and negative reactions and to be able to decentralize such thought patterns and see them as mental events that do not represent reality. (Brien, 2017).

Mindfulness helps a person to understand how to rediscover peace and contentment from the depths of his being and mix it with his daily life and turn it into his lifestyle; In addition, it helps him to gradually save himself from worry, anxiety, fatigue, depression and dissatisfaction surrounding the injury. This approach believes that everyone has periods of suffering and pain; With the awareness of the mind, this pain and suffering becomes an empathic suffering that leads to a feeling of compassion towards oneself and others, which results in avoiding and improving psychological states (Lani et al., 2019). Forman et al. (2009) showed in their study that cognitive behavioral therapy based on mindfulness is effective on physical and mental health aspects of obese people. The more mindful people are, the less negative emotional experiences and feelings of boredom they experience. This cognitive and mindfulness-based intervention gives people the awareness and training that people will face intrusive and ineffective thoughts whether they like it or not. They learn that instead of running away and suppressing these thoughts, it is better to reduce their impact through observation and meditation.

In explaining the findings of the present research, it can be said that mindfulness training can help a person's psychological and physiological performance by neutralizing some of the effects of stressors and stress responses. Techniques that are used to modify and change the way a person looks at stressful events, improve strategies to deal with stress, and reduce physical responses to stress help to maintain a person's health. The mindfulness program can be effective on the psycho-neuro-cognitive immune process through increasing the sense of control-self-sufficiency, self-esteem, adaptive coping and social support. It seems that these changes reduce negative moods and social isolation and improve the quality of a person's life (Brien, 2017).

The limitations of the research include the fatigue of the subjects during the tests and the



lack of a suitable place for the treatment group, which are mentioned as intervening variables in the research. Considering the small number of researches in the field of alexithymia, it is suggested that this research should be done on the social relationships of overweight people to prevent the occurrence of problems for these people. Based on the results of the research, it is suggested that health centers pay attention to lifestyle education and healthy management of emotions for overweight people. Considering the importance and role of emotional factors in overweight women, it is suggested that future studies investigate the effectiveness of mindfulness therapy on other variables such as emotional regulation, emotional schemas, and emotional styles.

### Conflict of Interest

According to the authors, this article has no financial sponsor or conflict of interest.

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