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Rational Emotive Behavior Therapy (REBT) Intervention on Self-esteem and Self-Criticism of females with binge eating behavior: a quasi-experimental study

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Abstract

Aim: The present paper aimed to investigate rational-emotive behavior therapy on self-esteem and self-criticism of females with binge-eating behavior. Method: A quasi-experimental design was utilized in this study, which involved a control group, a pre-test, and a post-test of samples taken from two clinics in Tehran (Armaghane Salamat and Zehne Aram, district 3), of which 24 females were selected through a purposive sampling method throughout October to December 2019. Twenty-four participants in the experimental and control groups were randomly assigned to the experimental group (n=12), which was treated with rational-emotive behavior therapy for eight weekly 90-120 minute sessions, while the control group (n=12) did not receive any treatment. All participants were tested using the Rosenberg self-esteem scale (SES)and The Levels of Self-criticism (LOSC) Scale methods. In addition to descriptive statistics, Multivariate analysis of covariance (MANCOVA), and Normality tests were employed to interpret the results and the SPSS-25 program was used for all the analyses. **Result:** Considering the results, there was a significant difference between the pretest and post-test results for the scores of self-esteem (P<0.01, F=87.507) and self-criticism (P<0.01, F=151.221). Taking these findings into consideration, it is possible to conclude that rational-emotive behavior therapy is effective at improving self-esteem and decreasing self-criticism.**Conclusion:** The findings showed that rational-emotive behavior therapy could help females with binge-eating behavior. Therefore, this intervention program is recommended for improving self-esteem and mitigating self-criticism among females with binge-eating behavior.

Keywords: Rational- Emotive Behavior Therapy (REBT), Self-esteem, Self-Criticism, Female, Binge eating

Introduction

According to the DSM-V (American Psychiatric Association,2013), eating disorders (ED) can be characterized as psychopathological conditions that involve serious disturbances in eating behavior and affect mostly teenagers and young women. These disorders present chronic and disabling problems and can cause biological, psychological, and social damage, which causes increased morbidity and mortality. They have a wide age range–usually between 13 and 21 years–and may have a fatal outcome if not treated, depending on the seriousness of the disease or the consequences of health issues. They are prevalent in women of all social levels, being the third most common mental disorder among women (Leonidas, & dos Santos, 2017). One study observed that the percentage of students exhibiting abnormal eating behaviors, such as restraining and binge-eating, is consistently on the rise, from 11.3% in 2009 to 21.5%. Women who exhibit binge-eating behavior compare themselves to other women and idealize thin bodies, which is associated with their irrational belief that their value is determined by their weight or appearance. If these women fail to achieve that idealized image, they become dissatisfied with their bodies, which ultimately results in low self-esteem (Yang & Han, 2020).

A tendency to develop inflexible negative self-evaluative cognitions and emotions related to body image, and an excessive focus and concern about overeating, may also account for the severity of binge-eating symptoms in the general population and patients diagnosed with BED. Patients with BED may engage in overeating episodes as a reaction to the aversive experience of extreme negative shame-based self-evaluation (Duarte, Pinto Gouveia, & Stubbs, 2017). Their self-esteem is also unstable, and they believe that a well-designed body will solve their insecurity issues. They exercise strenuously and consume an excessive amount of food to achieve the idealized body. Consequently, losing weight is likely to be linked to personal disorganization, in which regulation and control of overeating can be seen as an attempt to recover from a chaotic mental state. (Leonidas et al., 2017). Among adolescents, low self-esteem is an important predictor of binge-eating onset, according to an analysis of binge-eating risk factors. Additionally, cognitive-behavioral frameworks and the escape theory have pointed out that low self-esteem can precipitate binge-eating. Studies have further confirmed that self-esteem is a vulnerability factor for the development of eating disorders (Cella, Cipriano, Aprea, & Cotrufo, 2021). A further concern is the high level of self-criticism associated with eating disorders (Serpell, Amey, & Kamboj, 2020). Self-criticism is negative self-evaluation and self-scrutiny, which is accompanied by negative emotions such as anger and self-contempt. Early cognitive-based theories conceptualized self-criticism as a single process variable in severity (Wakelin, Perman, & Simonds, 2022). However, subsequent research by Gilbert and others proposes that there are two different self-criticisms, referred to as the ‘hated self’ and the ‘inadequate self’, which each serve a unique function and have a variable impact on psychological distress (Halamová, Kanovský, Varšová, & Kupeli, 2021). The findings suggested something related to the negative effects of guilt, self-criticism, and social comparison. Embarrassment, self-criticism, and feelings of inferiority can all play an important role in the self-regulation of eating behavior (Duarte et al., 2017).

Many therapeutic approaches have already been designed and conducted for binge-eating behavior (Yang & Han, 2020; Halamová et al., 2021; Wakelin et al.,2022). Ellis's rational-motive-behavior therapy is a type of cognitive-behavioral therapy invented by Ellis (Ellis, 2004). Ellis (2004) believed that events and occurrences around people do not cause tension, anxiety, and depression, rather the people's views and beliefs about the events and occurrences lead to tension and anxiety in them and make their life encounter trouble. Although the relationship between beliefs (rational and irrational) and various types of therapeutic outcomes seems obvious to many therapists, unfortunately, empirical clinical data in this area is limited. Conducted research in various regions of the world shows the effectiveness of rational-emotive-behavior psychotherapy on a variety of psychological components, problems, and disorders, such as irrational beliefs, anxiety, and depression (Farnoodi et al., 2020). The Theory of Rational Emotive Behavior Therapy (REBT) posits that changing irrational beliefs to rational beliefs is the essence of therapy.

It is an unreal belief in which a person believes their environment must completely conform to their desires. Besides being irrational, this statement is completely unfounded and useless. According to existing research, irrational beliefs are associated with unhealthy negative emotions, a wide range of pathological conditions, and a host of unhealthy behaviors that undermine mental health. REBT proposes a process for reducing irrational beliefs and promoting rational beliefs (Turner, 2016; Sadr Nafisi; Eftekhar Saadi, Hafezi, & Heidari, 2020; Yang & Han, 2020; Halamová et al., 2021; Wakelin et al.,2022). As a result of the above-mentioned factors, the purpose of the present paper is to assess the effectiveness of rational emotive behavior therapy (REBT) intervention among females who engage in binge-eating behaviors.

Methods

A quasi-experimental design was utilized in this study, which involved a control group, a pre-test, and post-test samples taken from two clinics in Tehran (Armaghane Salamat and Zehne Aram, district 3), of which 24 females were selected through a purposive sampling method from October to December 2019. There were 12 participants in each of the experimental and control groups. Those who provided informed consent to participate in the study were enrolled. The participant group allocation was determined by flipping a coin (heads: experimental group; tails: control group). Participants were included if they met the following inclusion criteria: the tendency to engage in binge-eating behavior, as demonstrated by an eating attitude score of 27 or more are considered as “severe binge eaters on the Binge Eating Scale (BES); no physical or mental illnesses that could hinder effective communication; and no involvement in any regular binge-eating programs or other related educational experiences. The exclusion criteria were as follows: the display of improper reward behavior (e.g., self-induced vomiting, diuretics, abuse of prescription drugs or other medications, fasting, or excessive exercise); intellectual disability; substance abuse and/or dependence; diagnosis of any organic mental syndrome; and disabilities that affect education (e.g., hearing and vision impairments). The pretest was administered to both groups before the intervention. Experimental and control groups

completed self-esteem and self-criticism questionnaires. In addition, participants in the study groups received rational-emotional behavior therapy (Ellis, 2004). The experimental group received the REBT program. They attended eight 90-120 minute classes twice a week. Initially, a graduate student assistant and a researcher administered the program with the treatment group. Three one-hour training sessions were conducted between the researchers and the research assistant regarding the required information, attitudes, and precautionary measures. A binge eating-related intervention program was provided to the experimental group during the intervention period, and a similar program for three sessions was provided to the control group following the termination of the study. Both groups received post-test questionnaires immediately after the eighth session. SPSS 25.0 software was used to analyze the data. The Shapiro-Wilk test was used to assess the normality of the general characteristics and dependent variables. The normality of all variables at baseline in the experimental group and the control group was tested with skewness and kurtosis. The absolute skewness was smaller than 3, while the absolute kurtosis was smaller than 10, thereby satisfying the assumption of normality. Multivariate analysis of covariance (MANCOVA) was performed to control the pre-score difference between groups of variables that differed between groups in the pre-homogeneity test.

***Binge Eating Scale (BES)*:** The BES was developed to identify binge eaters among the obese population (Gormally, Black, Daston, & Rardin, 1982). It consists of 16 items; each including three or four statements. Subjects are asked to select the statement which describes them best. The total score of BES can vary from o to 46. According to BES scores, patients are classified into three categories: 1) patients who score 17 and less are defined as "non-binge eaters"; 2) those who score 18 to 26 are "moderate binge eaters ;3) those who score 27 or more are considered as "severe binge eaters" (Gormally et al., 1982). The Persian version of the BES showed a sensitivity of 84.6% and specificity of 80.8% in the identification of binge eating disorder. The test-retest reliability and internal consistency of BES were 0.71 and 0.85 respectively. The BES effectively discriminated against obese persons from normal-weight subjects (Mootabi, Moloodi, Dezhkam, & Omidvar, 2009).

The Rosenberg self-esteem scale (SES) is a 10-item questionnaire that assesses global self-worth by measuring both negative and positive feelings about the self (Rosenberg, 2015). Factor analysis indicated a single common factor. Participants rate their agreement based on a four-point scale, from "strongly agree" to "strongly disagree." The scoring of this scale is done directly and reverses. The Rosenberg SES has shown good psychometric properties (Moshki& Ashtarian, 2010). This study computed the reliability of the scale of 0.72 using Cronbach's alpha.

The Levels of Self-criticism (LOSC) Scale: The scale was developed by Lewis (2008). Self-criticism at two levels is calculated by this scale: internalized self-criticism and relative self-criticism. As a negative view of oneself against others, comparative self-criticism is characterized. Self-critical people also appear to base their self-esteem on expectations of how others feel about them and may perceive other people as superior, critical, and/or aggressive. The comparison of interpersonal animosity is also one of the traits of self-criticism (Thompson, & Zuroff, 2004). Internalized self-criticism toward one's internal norms is defined as a negative view of oneself. There are 22 elements in the

LOSC Scale which are scored on a 7-point scale ranging from 0 to 6. Items 6, 8, 11, 12, 16, 20, and 21 have reverse ratings. The items on the internalized subscale for self-criticism are 1, 3, 5, 7, 9, 11, 13, 15, 17, and 19, and the items on the subscale for comparative self-criticism are 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 21, and 22. On a 7-point scale ranging from 1 (strongly disagree) to 7, items on the LOSC scale are measured (strongly agree). On this scale, higher scores mean a higher degree of self-criticism encountered by a person. A rating between 22 and 44 shows low levels of self-criticism and a rating between 45 and 66 shows moderate levels of self-criticism in the individual. Finally, a ranking above 66 suggests elevated levels of self-criticism. In Iran, Saadati Shamir et al. reported good internal consistency for this scale (alpha = 0.69 from Cronbach) (Sadati, Mazboohi, & Marzi, 2019). Cronbach's alpha was used in this study to calculate the reliability of the scale with an inner accuracy of 0.82.

Table 1: Content of the rational emotive behavior therapy-based binge eating behavior management program

Component	Session	Topic	Description of the content sessions (Ellis, 2004).	Method
cognitive Reconstruction	1st	Understanding binge eating	-Introduction to the program's purpose and methods -Creating an alias -Understanding binge eating -Participants share their binging behavior -Discussion and evaluation -Assignment: Dietary diary	Lectures, presentation, discussion, practice, presenting the assignment
	2nd	Identifying belief systems	-Understanding types of beliefs -Distinguishing between rational and irrational beliefs -Self-talking practice -Assignment: Dietary diary -Discussion and evaluation	Lectures, discussion, presentation, practice, discussion
	3rd	Changing beliefs	-Understanding the ABCDE theory -Dispute practice -Applying the ABCDE theory -Discussion and evaluation -Assignment: Applying ABCDE theory to real life	Lectures, practice, role play, discussion, presenting the assignment
	4th	Forming correct eating habits	-Sharing diet experiences -Understanding the advantages and disadvantages of one's diet -Identifying incorrect eating habits -Understanding and planning correct diet habits	Lectures, discussions, presentations, practice

			-Writing to your future self (10 years later) -Discussion and evaluation	
Emotional Control	5th	Emotional confirmation and emotional relaxation	-Identification of positive and negative emotions -Understanding and applying rational emotional imagery -Muscle relaxation training -Discussion and evaluation -Assignment: Applying rational emotional imagery to real life	Lectures, discussion, practice, demonstration, training, presenting the assignment
	6th	Emotional expression	-Understanding and practicing "I-Message" for emotional expression -Discussion and evaluation -Assignment: Applying "I-Message" to real life	Lectures, discussion, practice, role-playing, presenting the assignment
Behavior Modification	7th	Problem-solving training	-Identifying own problems -Finding ways to troubleshoot -Accepting less than perfect results -Discussion and evaluation -Assignment: Creating a problem-solving paper	Lectures, discussion, practice, role play
	8th	Self-management	-Finding ways to cope with a binging situation -Program evaluation and wrapping up -Share a rolling paper	Discussion, presentation, compensation (presenting gifts)

Results

Most participants in the experimental group (n = 12) as well as the control group (n = 12) were aged between 14 and 19 years (Mage = 15.87, SD = 2.32). About 60% fell into the lower- to upper-middle socioeconomic class, with no differences between socioeconomic groups ($\chi 2 = 3.123$; $p = 0.076$).

Table 2: Description of baseline variables in the pre-test, post-test

variable	groups	Statistical index	Mean ±SD	kurtosis	skewness
Self-esteem	**Pre-test**	Control	22.53±4. 23	0.191	-0.886
		Rational-emotional behavior therapy (RET)	23.76±5.65	0.688	0.872
	Post-test	Control	21.34±3. 83	-0.376	-1.210
		Rational-emotional behavior therapy (RET)	26.93±3.94	0.653	-0.130
Self-criticism	**Pre-test**	Control	61.34±6.71	-0.827	1.327
		Rational-emotional behavior therapy (RET)	61.67±7.09	0.876	1.54
	Post-test	Control	62.34±6.48	0.354	1.435
		Rational-emotional behavior therapy (RET)	52.40±5.54	0.298	0.765

As illustrated in Table 2, the pretest and post-test results for self-esteem (26.93±3.94) and self-criticism (52.40±5.54) indicated that the experimental group's post-test scores were

higher relative to their pre-test scores, while the control group's scores decreased self-esteem from the pre-test (22.53±4. 23) to the post-test (21.34±3. 83) and increased self-criticism from the pre-test (61.34±6.71) to the post-test (62.34±6.48).

A multivariate covariance analysis was used to investigate the effectiveness of rational-emotive behavior therapy on self-esteem and self-criticism variables. In light of the normal distribution of scores, Shapiro-Wilk was applied, and the results were confirmed. The results of the slope of regression test in the pre-test and post-test in the experimental and control group showed that the slope of regression in both groups was equal (P>0.05). The results of the Levene test on the self-esteem (F=0.301; P=0.765) and self-criticism (F=0.437; P=0.687) of the research showed that the variance of the experimental group and the control group are not different in the research variables and the assumption of homogeneity of variances is confirmed. In this study, the Box's M test for evaluating the equality of covariance matrix variables in the experimental and control groups also showed that the covariance matrix dependent variables in the groups were equal (Box's M=5.342; F=0.645; P= 0.786). After evaluating multivariate covariance analysis, the test results showed a significant difference between self-esteem and self-criticism groups and control groups (Wilks Lambda=0.043, F=46.342, P <0.01).

Table 3: The results of Multivariate Analysis of Covariance to investigate the differences between experimental and control groups

Model	Variable	Sum of square	DF	Mean square	F	P	Eta
Group interaction and pre-test	Self-esteem	8.431	2	18.265	87.507	0.001	0.534
	Self-criticism	8.657	2	18.453	151.221	0.001	0.489

According to Table 3, the scores of self-esteem (P<0.01, F=87.507) and self-criticism (P<0.01, F=151.221) are significant in the intervention group. Taking these findings into consideration, it is possible to conclude that rational-emotive behavior therapy is effective at improving self-esteem and decreasing self-criticism. Moreover, the largest effect size is determined by the self-esteem variable (0.534), which indicates that 53% of the variance between the experimental and control groups in the levels of self-esteem variability is the result of the independent variable (rational-emotive behavior therapy). So, the lowest effect is reported to be related to females' self-criticism (0.489), indicating that 49% of the total variance is attributed to an independent variable ((rational-emotive behavior therapy) in the self-criticism variable of females with binge-eating behavior.

Discussion

The purpose of the study was to consider the impact of the effectiveness of rational emotive behavior therapy (REBT) intervention on self-esteem and self-criticism among females with binge-eating behavior. After completing the REBT-based binge-eating behavior management program, the experimental group had a significantly higher self-esteem score than the control group, thereby providing evidence for the effectiveness of this program. Ede, Okeke, & Chukwu (2021) examined the efficacy of rational emotive behavior intervention (REBT) in reducing the negative self-belief/personal of upper basic school children living with blindness. Given the significant impact of the rational emotive behavior intervention, rational-emotive experts practicing in special schools can use REBT techniques to alter the maladaptive value systems in individuals living with blindness.

Previous findings of Sælid, & Nordahl (2017)., who applied a short three-session program using the ABC model of REBT, support our findings. However, our results are in contrast with the result of a previous study, where a cognitive-behavioral program did not effectively increase self-esteem in female undergraduates, although that program's effectiveness may have been impacted by its inclusion of a cognitive restructuring intervention in only one out of the eight sessions (specific methods were not included in the report of the earlier study). On the other hand, our program significantly increased self-esteem by converting irrational beliefs to rational ones by specifically using a technique known as refutation based on the ABCDE model. Further, checking the restructured cognition through role-play and presenting a task in each session to help participants to practice it in their daily lives seemed to have contributed to their increased self-esteem (Yang & Han, 2020).

The previous study compared the effectiveness of MBCT and CBT over BED and psychological symptoms. Based on the obtained data, CBT and MBCT have almost the same effect on the BED index, perceptional stress, depression, and self-esteem indices. CBT led to the rectification of psychological problems and BED reduction via flexibility in eating regimes, creation of healthier regimes, as well as cutting the relationship between self-esteem and body imaging, and improvement in awareness leading to thoughts connection, emotions, and eating behaviors (Azari, Fata, & Poursharifi, 2013). There is an abundance of research supporting the notion that developing positive self-esteem and self-image directly leads to high levels of self-efficacy, thus improving treatment outcomes for patients with bulimia nervosa (Haslam et al., 2011). Building self-esteem among adolescent females can be a difficult process because they have experienced chronic self-defeating thoughts. Their perpetual cycle of negative self-talk is hard to break. Ellis (2004) stated that regardless of the circumstances, individuals can feel enlightened, fulfilled, and content amidst the chaos. However, counselors must find ways to facilitate emotional expression to help adolescents gain insight. Once they can understand the vicious cycle of negative self-talk, they will be able to explore their feelings of shame, loneliness, and worthlessness that impair their self-esteem (Wattam, Moore, & Ordway, 2014).

There are not many RBT-based programs for reducing self-criticism that addresses binge-eating behavior management. But numerous studies support our findings, for example, Turner (2016); Sælid, & Nordahl, (2017); Sadr Nafisi, et al. (2020); Yang, & Han. (2020);

Wakelin, Perman, & Simonds. (2022). Sadr Nafisi, et al. (2020) showed that rational-emotive behavior therapy intervention could help with overweightness. Therefore, this intervention program is recommended for decreasing self-criticism among women on an overweight diet. This is understandable, considering that high levels of self-criticism may be associated with inconsistent or unresponsive attention from early caregivers and the development of attachment anxiety or attachment avoidance (Naismith, Zarate Guerrero, & Feigenbaum, 2019). At a neurobiological level, research has found that when individuals engage in self-criticism, attachment processes modulate mental imagery and threat responses (Kim et al., 2020; Wakelin, Perman, & Simonds, 2022). As explained in these findings, the goal of rational-emotional behavior therapy is to cultivate a self-reassuring attitude toward one's physical imperfections and weaknesses (e.g. physical appearance) to combat the omnipresent negative effects of guilt, negative comparisons, and disappointment with one's body image. During weight management attempts, self-critical versus self-reassuring reactions to difficult circumstances may be necessary to align emotion control to support self-regulation (Duarte et al., 2021).

However, there are a few limitations to take into account. The study was conducted with females attending psychological clinics; therefore, the results cannot be generalized. A long-term follow-up is needed to verify the effectiveness of the intervention, as the current study did not examine its long-term effects or follow-up. The weight of participants was not taken into account, but in the future, the body mass index should be considered as a selection criterion. As the study was carried out in a quasi-experimental design, its generalizability was limited. It is significant that despite these limitations, this study is the first to use REBT in the treatment of binge-eating behavior in female adolescents in psychological clinics. Studying the risk factors for binge-eating helps identify the direction that future studies may follow when developing binge-eating behavior interventions.

Conclusion

The findings provide evidence that the integrative cognitive, emotional, and behavioral techniques of REBT are appropriate and useful for treating the binge-eating disorder and bringing about positive changes in the factors involved.

Disclosure Statements

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