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Cognitive-behavioral therapy (CBT) in the form of Rational Emotional-Behavior Therapy (REBT) Intervention on irrational Beliefs and Anxiety of adolescent girls with social anxiety

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Abstract

The current study used cognitive-behavioral therapy (CBT) in the form of rational emotive behavior therapy (REBT) intervention on irrational beliefs and anxiety of adolescent girls with social anxiety. 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 clinics in Tehran, of which 28 adolescent girls with social anxiety were selected through a purposive sampling method from November to January 2020. There were 14 participants in each of the experimental and control groups. Afterward, they were randomly assigned to experimental and control groups. The Hamilton Anxiety Rating Scale (HARS) and The Attitudes and Belief Scale 2 (ABS-2) were applied in the pre-intervention phases. The experimental group (n=14) was treated with rational-emotive behavior therapy, for ten weekly 90 minutes sessions, while the control group (n=14) did not receive any treatment. As part of descriptive statistics, we used indices such as means and standard deviations that assessed central and dispersion. The test for inferential statistics was MANCOVA. Statistical analysis was performed using SPSS software (version 25). The significance level of the analysis was 0.05. Considering the results, there was a significant difference between the pretest and post-test results for irrational belief ($P<0.01$, $F=76.806$) and anxiety ($P<0.01$, $F=146.201$) are significant in the intervention group. Rational Emotional-Behavior Therapy is an efficient psychological treatment for adolescent girls who suffer from social anxiety disorders. In response to situations or environmental events that we perceive as being important or challenging,

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excitement can be considered a biological reaction. Since rational emotive behavior therapy interventions reduce social anxiety and improve mental health, overweight adolescents experience less stress and discomfort, and can better cope with stressful events.

Keywords: Cognitive-behavioral therapy (CBT), Rational Emotive Behavior Therapy (REBT), Irrational Belief, Anxiety, adolescent girls, social anxiety.

Introduction

A social anxiety disorder (SAD) is a condition in which an individual experiences intense or persistent anxiety about one or more social situations or performance situations in which they may be scrutinized by others (American Psychiatric Association, 2013). According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013). Social anxiety disorder is anxiety or fear associated with social situations in which one is evaluated by others. A person with this disorder is afraid of being negatively rated by others when interacting with others and is viewed by others as inadequate, foolish, and tedious (Soares & et al., 2019). An international survey of mental health reported the cross-national epidemiology of SAD. A total of 142,405 respondents participated in this study conducted by the World Mental Health Survey Initiative in 28 countries. According to all countries, the lifetime prevalence rate ranged from 1.3 to 4% (Stein et al., 2017). It is most prevalent among young women and adolescents in western societies, with nearly one in ten adolescents experiencing social anxiety. Based on the age of onset data, early adolescence has been identified as a timing period for SAD onset that is developmentally sensitive. There is an association between early adolescence and greater abstract thinking and viewpoint-taking, which can contribute to greater self-consciousness, fear of negative evaluation, and social avoidance. Also, prevalence data show that young females and young cohorts are most susceptible to social anxiety (Brookman, Bird, Harris, & Grant, 2022).
A recent study found that social anxiety plays a pivotal role in adolescents' health, as it is associated with poor sleep quality, depressive symptoms, and fatness (Lima et al., 2020). A high level of social anxiety in adolescents is associated with poor peer acceptance, peer victimization, impaired romantic relationships, and loneliness. Other psychological problems such as generalized anxiety, depression, and substance abuse are also more likely to occur in affected youths Brookman et al., 2022; Rodgers, Lau, & Zebrowski, 2022). Anxious children and adolescents are at risk for significant negative outcomes, both in the short and long term (Hickey, & Schwartz, 2020). The association of irrational beliefs with anxiety has also been highlighted in other studies (Vîslă, Flückiger, Grosse Holtforth, & David, 2016; Oltean, Hyland, Vallières, & David, 2017).
Research has been dedicated to exploring the correlates of irrational beliefs and those of the four core irrational beliefs. By combining this extensive literature base, we can see the expansive influence of irrational beliefs on a range of unhealthy emotional and behavioral outcomes. In REBT, rational and irrational beliefs are structured symmetrically and are relatively simple to understand. Besides their aesthetic appeal, rational and irrational beliefs are valuable constructs because they determine many cognitive, affective, and behavioral outcomes that are important to mental health. The literature concerning REBT has concentrated more on irrational beliefs than rational beliefs, possibly showing a problem-focused rather than benefit-focused bias (Turner, 2016). Cognitive-behavioral therapies, including rational-emotive and cognitive-behavioral therapy (RE-CBT), are the most effective form of treatment for anxiety disorders, phobias, and fears in children and adolescents (Hickey, & Schwartz, 2020). Irrational beliefs are a cognitive-behavioral construct that is integral to modern Rational-

Emotive Behavior Therapy. It has linked irrational beliefs to anxiety and depression, and there is evidence of their usefulness for these types of distress (Mezo, Callanan, Radu, & English, 2018). The result showed that the REBT program led to a significant reduction in post-traumatic depression among flood victims in Nigeria. The implication is that the post-traumatic thoughts and beliefs of flood victims that led to the depressive state were addressed, placing the victims in good mental health through the application of REBT evidence-based techniques (Ede et al., 2022). (
Compared to the control group, the cognitive restructuring intervention program of rational-emotive behavior therapy significantly reduced irrational thoughts/behaviors associated with adverse childhood stress experiences (Eseadi et al., 2016). The study by Moon et al. (2021) has shown that after REBT, depression, irrational beliefs, and salivary cortisol levels were significantly lower in the study group than in the control group. Furthermore, the effects of REBT were sustained after a 4-week follow-up in the study group. Besides the meta-analyses that included REBT under the category of CBT or psychotherapy in general, REBT research data has been analyzed by four meta-analyses, all showing that REBT is an effective form of psychotherapy (David, Court, Matu, Mogoase, & Stefan, 2018). The gap in this study is that the increasing prevalence of childhood and adolescent anxiety experiences has affected industrialized countries. It has also made many low and middle-income countries face the double burden of diseases. The growing trend of anxiety among children and young people is also a special concern for the health of society. Nowadays, highly different programs have been presented for the treatment of adolescent anxiety, and in most of them, the emphasis has been on the reduction of irrational beliefs in these groups of sensitive people. Accordingly, it was necessary to implement a suitable and effective treatment program in this research, which was based on the cognitive-behavioral approach and rational emotive behavior therapy. As a result of the above-mentioned factors, the purpose of the present paper is to assess the effectiveness of cognitive-behavioral therapy (CBT) in the form of rational emotive behavior therapy (REBT) intervention on irrational beliefs and anxiety of adolescent girls with social anxiety.

Methods

In this research, a quasi-experimental design included a control group, a pre-test, and a post-test of 28 adolescent girls selected in Tehran through a purposive sampling method(maximum variation sampling) from one clinic from November to January 2020. To administer this study, in the first phase, maximum variation sampling (sometimes referred to as maximum diversity sampling or maximum heterogeneity sampling), in which researchers attempt to collect data from the widest range of perspectives possible about a certain topic, was used to select participants. Moreover, the assignment of individuals to experimental and control groups was done randomly. Each participant received an envelope containing a number and a randomly selected identifier to determine

whether they were in the Experimental (SAD) or Control (non-SAD) group. Participants were included if they met the following inclusion criteria: Anxiety levels of 15 or higher on the Hamilton Anxiety Rating Scale (HARS), which is considered a cut-off point for moderate clinical anxiety, were required for inclusion in the study; and no involvement in any regular anxiety disorder therapy; the participants' age ranged from 10 to 13 years. The exclusion criteria were as follows: intellectual disability; educational disabilities (e.g., hearing and vision impairments), and not attending two training sessions. A participant signed an informed consent related to participation in the study. Diagram 1 displays all processes (Figure 1). In the second phase, the Hamilton Anxiety Rating Scale (HARS) and The Attitudes and Belief Scale 2 (ABS-2) were applied as pre-intervention phases. The third phase involved eight sessions of REBT for females presenting with SAD. A post-intervention phase was conducted using Hamilton Anxiety Rating Scale (HARS) and Attitudes and Belief Scale 2 (ABS-2) as a means of assessing therapeutic effectiveness. Ellis (2004) described a trans-diagnostic approach of REBT used in the therapeutic intervention. During this intervention, irrational beliefs and behavioral techniques were addressed through the A-B-C cognition conceptualization model. Participants in the intervention group were all female adolescents who went through ten sessions of 90 minutes for two and a half months of REBT and two sessions for the primary and final psychological assessments. This study was conducted by two licensed therapists who specialize in Cognitive-Behavior Therapy. As part of descriptive statistics, we used indices such as means and standard deviations that assessed central and dispersion. The test for inferential statistics was MANCOVA. An inferential test was carried out using Leven's test (to examine variance homogeneity), the Kolmogorov-Smirnov test (to assess the normal distribution of the data), and Box's M test. This statistical analysis was performed using SPSS software (version 25). The significance level of the analysis was 0.05.

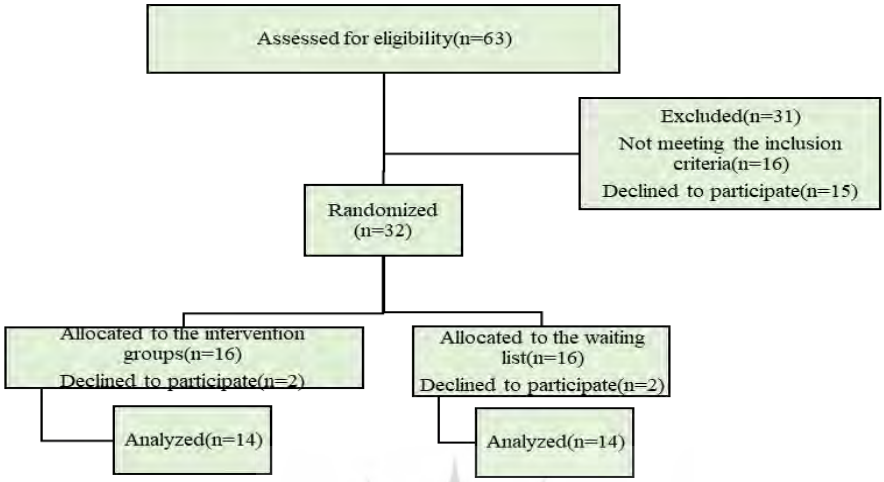

Figure 1: displays all processes

The Hamilton Anxiety Rating Scale (HARS): Hamilton anxiety rating scale (HARS) is a 14-item scale that covers 13 symptoms of anxiety developed by Hamilton (1959). Each item was rated on a 4-point scale (0 = not present to 4 = severe). The score range was 0 to 56. Those who scored 5 or less were considered as having no anxiety. Other categories were as follows: 6 to 14 = mild anxiety; 15 to 28 = moderate anxiety; 29 to 42 = severe anxiety, and 43 to 56 = very severe anxiety. In Iran, HARS was validated by Kavyani, Moussavi, and Mohit (2001), and was reported to have high reliability and validity. This questionnaire was estimated to have a Cronbach alpha coefficient of 0.75.

The Attitudes and Belief Scale 2-Abbreviated Version (ABS-2-AV): This scale is a 24-item self-report measure of rational and irrational beliefs consistent with contemporary REBT theory. This scale is designed to determine the four irrational beliefs (demandingness, catastrophizing, fuzzy logic, and self-doubting) as well as the four rational beliefs (preferences, REB, FT, and self-acceptance). The items are scored on a five-point Likert scale ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"), with higher scores indicating greater endorsement of the belief process (Hyland, Shevlin, Adamson, & Boduszek, 2014). It estimated this questionnaire to have a Cronbach alpha coefficient of 0.81.

Table 1: Content and Treatment Sessions (Ellis, 2004).
Session 1: Communication and trust, an overview of Ellis' approach to communication and trust
Session 2: The ABCD model and Alice's approach will be introduced in this session.
Session 3: Belief formation and understanding.

Session 4: Identifying logical and misconception errors.
Session 5: Recognizing and Coping with frustrating, pessimistic, inefficient, and debilitating thoughts.
Session 6: Using the ABCD model to eliminate misconceptions, replace beliefs, and correct cognition.
Session 7: Recognizing and changing unpleasant emotions.
Session 8: Find out dysfunctional behaviors and modify them according to the ABCD model.
Session 9: Teach problem-solving techniques.
Session 10: Develop strategies for sustaining results.

Results

Results from data showed that the participants' mean age was in the range of 10 – 13 years, and the mean and standard deviation of the age was (11.65± 0.54).

Table 2. The distribution of scores of variables in the pre-test vs post-test phase, regarding REBT intervention.

Variable	groups	Statistical index	Mean ±SD	kurtosis	skewness
Irrational Belief	**Pre-test**	Control	88.33±44. 33	0.181	-0.786
		Rational-emotional behavior therapy	89.44±34. 82	0.788	0.772
	Post-test	Control	88.30±44. 12	-0.476	-1.110
		Rational-emotional behavior therapy	68.41±34. 03	0.553	-0.120
Anxiety	**Pre-test**	Control	81.34±26.71	-0.717	1.127
		Rational-emotional behavior therapy	81.67±27.09	0.896	1.64
	Post-test	Control	82.34±26.48	0.364	1.565
		Rational-emotional behavior therapy	52.48±15.54	0.278	0.665

As illustrated in Table 2, the pretest and post-test results for irrational belief (89.44±34. 82) and anxiety (81.67±27.09) indicated that the experimental group's post-test scores were higher relative to their pre-test scores. Moreover, the experimental group's post-test scores of anxiety decreased from the pre-test (81.67±27.09) to the post-test (52.48±15.54).

Before presenting the results of the covariance test analysis, we examined the assumptions of parametric tests. Thus, the Kolmogorov-Smirnov test has confirmed that samples have a normal distribution (P-value< 0.05). Similarly, the Levene test was used to evaluate the homogeneity of variance assumption. There was no significance found for the results, which indicated homogeneity of variance (P-value <0.05).

A multivariate covariance analysis was used to investigate the effectiveness of rational-emotive behavior therapy on irrational belief and anxiety variables. 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=4.762; F=0.735; P= 0.697). After evaluating multivariate covariance analysis, the test results showed a significant difference between irrational belief and anxiety groups and control groups (Wilks Lambda=0.063, F=53.412, P <0.01).

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

Model	**Variable**	**Sum of square**	**DF**	**Mean square**	**F**	**P**
Group interaction and pre-test	Irrational Belief	8.431	2	17.562	76.806	0.001
	Anxiety	8.754	2	18.302	146.201	0.001

Table 3 shows that the scores for irrational belief (P*0.01, F=76.806) and anxiety (P*0.01, F=146.201) are significant among the intervention group. Therefore, rational-emotive behavior therapy can be seen as an effective way to decrease anxiety and irrational beliefs.

Discussion

The purpose of the study was to consider the impact of the effectiveness of cognitive-behavioral therapy (CBT) in the form of rational emotive behavior therapy (REBT) intervention on irrational beliefs and anxiety among adolescent girls with social anxiety. Our results showed that the REBT is a very effective psychological intervention for adolescent girls with social anxiety., thereby providing evidence for the effectiveness of this program. According to this study, the results were consistent with those of Wilhelm et al. (2019) and Al Khudairy et al. (2017), Habibi, Bazzazian, & Ahadi. (2021), and Schenk et al. (2020).

An important factor underlying the success of this method can be attributed to the fact that one of the main hypotheses in the cognitive-behavioral approach in the field of anxiety is the idea that anxiety arises from predicting the occurrence of a harmful event. Perceived threats are explained by how individuals anticipate a negative event and how they perceive its consequences (Habibi et al., 2021). According to the results of the present study, replacing irrational beliefs with rational beliefs using belief disputation reduced anxiety symptoms during the post-intervention evaluation phase. The findings of this study support the observations of previous studies regarding the protective role of rational beliefs (Oltean, & David, 2018; Balkıs, & Duru, 2019).

David et al. (2018) found that REBT significantly decreased anxiety and significantly improved quality of life in their meta-analysis. Moreover, another critical finding is that anxious symptoms are directly related to the intensity of irrational beliefs, particularly the secondary ones: low frustration tolerance and awfulizing (Schenk et al., 2020). The same result has been found by Buchmann in his study, which claims that low frustration tolerance can contribute to anxiety and depressive disorders without the involvement of automatic thinking (Buschmann et al., 2018). In Popa and Predatu's study on emotional stability, they demonstrate that the reduction in low frustration tolerance is largely responsible for the increase in emotional stability during CBT/REBT (Popa, & Predatu, 2019).

Researchers Asmand, Mami, and Valizade (2015) found that DBT changes all irrational beliefs, while REBT only changes a few beliefs. In addition, DBT is more effective than REBT for treating anxiety, but no significant difference exists between pre-and post-test scores. It was determined that it is a dialectical therapy that is therapeutically effective. In comparison with REBT, it is more effective in treating irrational beliefs in people with anxiety and antisocial personalities (Asmand et al., 2015). An important aspect of rational emotive behavior therapy is how it helps people adapt to life changes and stressful situations. Excitement can be viewed as a biological reaction to situations that we perceive as challenging or important; and, these biological reactions are accompanied by the response we give to those environmental events.

By reducing social anxiety through rational emotive behavior therapy, individuals will experience less discomfort and stress and will be able to cope better with anxiety-provoking events (Ogbuanya et al., 2018). It is accepted in CBT that these disrupted thoughts lead to the continuity of unassociated emotions, which in turn abet the continuity of dysfunctional behaviors. CBT is based on a structured and psycho-educational model. Homework assigned to the individual during and after the therapy sessions to enable them to take responsibility with an active role holds significant importance. Cognitive and behavioral strategies are used to ensure change. CBT is based on the assumption that behaviors can be regulated by restructuring the sentences used by the individual during internal speeches or thoughts consciously/unconsciously (Şahin, Türk, ۲۲21). It has been found that interventions in this therapy as adaptive coping strategies have a positive relationship with mental well-being and physical health, whereas they have a negative relationship with emotional disorders, such as social anxiety. Therefore, accepting the problem and considering ways to overcome the stressful event are associated with reducing anxiety that is caused by the stressful event in a stressful situation (Wood, Barker, & Turner, 2017). It is possible that, based on the self-report questionnaire, the responses of participants to irrational beliefs and anxiety do not reflect their actual behavior in social situations. In the future, it may be useful to examine anxiety using social situations that provide participants with additional social information such as their peers' temperaments, interests, and attitudes. Based on the sample size, the statistical analyses reported were suitable to identify significant effects. In any event, a larger

sample size may have allowed us to conduct subgroup analyses that compare SAD with other anxiety disorders and further explore whether irrational beliefs are associated with anxiety. Moreover, a purposive sample makes these findings hard to generalize. It may be appropriate to use a diverse sample of gender and socioeconomic groups in future research.

Conclusion

Rational Emotional-Behavior Therapy is an efficient psychological treatment for adolescent girls who suffer from social anxiety disorders. In response to situations or environmental events that we perceive as being important or challenging, excitement can be considered a biological reaction. Since rational emotive behavior therapy interventions reduce social anxiety and improve mental health, overweight adolescents experience less stress and discomfort, and can better cope with stressful events. Other groups, such as divorced women, female heads of households, and infertile women who suffer from mental or psychological disorders might also benefit from this therapy.

Disclosure Statements

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