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Research Article

The Effectiveness Of Cognitive-Behavioral Therapy On Differentiation, Dependence And Modification Of Cognitive Errors In Teenage Girls With Anorexia Nervosa

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Abstract:

Introduction: The aim of this study was to evaluate the effectiveness of cognitive-behavioral therapy on differentiation, dependence and modulation of cognitive errors in female teenagers with anorexia nervosa.

Methods: This study was experimental applied research which has been done in the form of a three-group experimental design with pre-tests and post-tests. All subjects (applying independent variables) were simultaneously pre-tested before performing the test and then a group of subjects (first experimental group) as cognitive-behavioral group and a group of subjects (second experimental group) as psychotherapy group were treated in the manner of psychodrama. No intervention was performed in the control group. The statistical population includes 150 female teenagers who refer to nutrition clinics and psychology clinics and treatment centers in Isfahan. Among these teenagers, 60 were selected completely randomly and were distributed in three groups (two experimental groups and one control group). Alistair metacognitive questionnaires, Collins and Read Revised Adult Attachment Scale (RAAS) and high-risk behaviors questionnaire were used in order to collect information. Data analysis was performed based on research hypotheses, using descriptive and inferential statistics (linear regression). Hypotheses analysis was done by Pearson correlation coefficient and multivariate regression. SPSS 16 software was used to analyze data and hypotheses.

Results and Conclusion: The results show it can be concluded that psychological-behavioral therapy had a valid effect on reducing anorexia nervosa in teenagers and also cognitive-behavioral method had an efficient effect on differentiation, dependence and modulation of cognitive errors in teenagers with anorexia nervosa.

Keywords: Cognitive-Behavioral Effectiveness, Dependence, Cognitive Errors, Anorexia Nervosa

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Background:

Adolescence is known as a period of stress in the growth process. Students experience various types and a wide range of anxieties during adolescence, along with physical and cognitive, affective and emotional changes. Sometimes these anxieties make their daily and academic life so severe and difficult. (1). These anxieties can occur in a variety of ways, one of which is eating disorders, as eating behaviors can directly and indirectly affect a person's psychological state. Eating disorders have become more prevalent in recent decades, especially among adolescent girls (teenagers). The harmful economic and social consequences of anorexia nervosa and its associated disorders and issues are significant and cause many problems for the patient and her family. (2).

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Anorexia nervosa is a disorder that is a common disorder in girls and women and is 10 to 20 times more common in girls than boys. This disorder is accompanied by symptoms such as refusal to maintain a normal weight in proportion to height and developmental period, severe fear of overweight and obesity even when the weight is normal or much lower than normal. (3). This disorder is often associated with stressful life events. Research also suggests that disturbances in emotional processes, such as low tolerance for anxiety, are major problems associated with anorexia nervosa. The importance of tolerating anxiety as an important component in the onset and persistence of psychological trauma has been increasingly emphasized. (4).

Beck,[1] one of the main founders of cognitive behavior, believes that the basis of mental health is attitudes related to differentiation, dependence and correction of cognitive errors in teenagers. The concept of differentiation is a process that, if considered as a continuum, has autonomy at one end that demonstrates the ability to think clearly during a situation, and at the other end it is an amalgamation. (5). In addition to deeming differentiation essential for psychological well-being and mental health, Bowen hypothesizes that its inherent nature leads to the growth, change, or reduction of various types of psychological structures. Existing research has widely supported the effect of self-differentiation on the dimensions of mental health and its relationship with other important structures. (6)

Experts believe that the quality of an individual's emotional relationship with parent's shapes dependency styles. Dependence is a stable and reciprocal emotional bond between the child and his caregiver, and each of them plays a role in the quality of this relationship. This bond is of adaptive value for children, ensures that their psychological, social and physical needs are met, and facilitates the child's survival. (7). Differentiation and dependence are also associated with cognitive errors. People with higher levels of differentiation in certain stressful situations experience less stress and recover faster than less differentiated people. (8).

According to Aaron Beck, depression is a kind of thinking disorder, and the philosophy program for children and teenagers can improve the way of thinking and reasoning in the educational process; It can also play an important role in cognitive errors and its modification. (9).

On the other hand, it should be noted that cognitive-behavioral therapies and training of cognitive errors affect people's belief and interpretation of events, and also cognitive errors originate from the type of thinking and reasoning of individuals. Research shows that cognitive-behavioral therapy, which emphasizes the type of thinking, feeling, and behavior, can affect the happiness and mental health of female teenagers. (10).

Lam (1998) states that dysfunctional attitudes have been considered as a Vulnerability factor in the onset of periods of depression directly or as a vulnerability under environmental stressors. (11). Cross-sectional studies They showed that dysfunctional attitudes were associated with the prevalence of depression and anxiety. High levels of dysfunctional attitudes are correlated with longer periods of depressive attacks and with shorter periods between relapse periods. (12).

Belanter (2000) states that a psychological approach that uses mental imagery, relaxation, physical activity, and group dynamics is a combination of art, play, emotional sensitivity, and explicit thinking that facilitates the release of trapped emotions and helps people to acquire new and effective behaviors and open

[1] **Aaron Temkin Beck** (July 18, 1921 – November 1, 2021)

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undiscovered ways, resolve conflicts and also recognize their own form. (13).

Moreno (2000) believes that if the client knows that the outpouring of inner thoughts and unexpressed emotions in any form will be tolerated by the therapist, he will willingly display them and achieve peace. (14).

In this method of psychology, Fathi (2002) states the clients instead of talking about their conflicts, deals with their practical implementation; In other words, in this method, a person can release his/her inner emotions such as anger, sadness and happiness from within himself/herself by playing the role without a previous play and plot, and through emotional discharge. In order to achieve these goals, the psychodrama uses various tools and techniques such as: The Self-helper, director, stage, imitation, inversion, role, mirror, monologue, reality and other techniques. (13).

Another effective method used to treat depression is "cognitive-behavioral" therapy. This approach is a short-term, current-oriented approach that teaches the behavioral and cognitive competencies that the patient needs to function adaptively in the Intrapersonal and Interpersonal world. It is an effort between the therapist and the patient, which as a team addresses the patient's concerns. (8).

The subject is important and necessary because of researching and providing an appropriate model to study the cognitive-behavioral effectiveness on differentiation, dependence and modification of cognitive errors in female adolescents to anorexia nervosa. Given that so far this type of research in this field has not been seriously considered or due to poor use, it has developed slowly, then it is necessary to do it. Increasing encouragement system of suggestions and research in this field for its application at the national level and application in organizations and universities will lead to progress and promotion in the world.

Goodarzi, et al (2021), entitled Comparison of the effectiveness of cognitive-behavioral group therapy and mindfulness-based cognitive therapy on multidimensional pain symptoms in cancer patients Breasts showed that cognitive-behavioral therapy and mindfulness-based cognitive therapy were effective on pain experience. However, no significant differences were observed between the two groups of cognitive-behavioral therapy and mindfulness-based cognitive therapy in terms of effectiveness on pain experience. Based on the findings of this study, it can be concluded that cognitive-behavioral therapy and mindfulness-based cognitive therapy Management and pain intensity of patients with breast cancer were affected(15)

Asadi, et al (2016), stated that cognitive-behavioral therapy has been effective in increasing the resilience of women with low differentiation with 95% confidence. Thus, the analyzes showed that the mean resilience scores of women in the experimental group increased significantly compared to the control group in the post-test stage and this increase remained in the follow-up stage(15)

Darabi Emarati, et al (2015), showed that cognitive-behavioral education has improved students' mental health and also stated that cognitive-behavioral education leads to Improving students' mental health.

Yazdi, et al (2015), entitled "Comparison of dependence, differentiation and assertiveness in people with and without symptoms of anorexia nervosa" stated that the Mann-Whitney U Test, a significant difference between dependence, differentiation And the subscales of emotional responsiveness, emotional aversion, and integration with others, and between the subscales of my position, differentiation, and assertiveness showed no significant difference. According to the findings of this study, people with anorexia nervosa are more dependent and less differentiated than asymptomatic people. Therefore, it is suggested that education-

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based interventions with the aim of training differentiation to resolve the dependence-autonomy conflict in patients with anorexia nervosa(16)

A research entitled "The effectiveness of cognitive-behavioral combination therapy and reducing mindfulness-based stress in the treatment of a case of generalized anxiety disorder", by Khodabakhsh, et al (2013) stated a study of the effectiveness of cognitive combination therapy-behavioral and mind-based stress reduction in reducing anxiety, reducing spontaneous thoughts, and improving general health performed a specific case of generalized anxiety disorder and stated that cognitive-behavioral therapy and mindfulness-based stress reduction are effective in treating generalized anxiety disorder.

Johannsen, et al., (2017) in a research entitled "Clinical and psychological modifiers of the effect of mindfulness-based cognitive therapy on persistent pain in treated women" stated that cognitive-behavioral therapy is effective for patients' emotional problems and is a combination of cognitive approaches and behavior that helps the patients identify and change distorted patterns and dysfunctional behavior; in a way that can make the desired changes in their life(17)

Sandler et al. (2017) in a research entitled "Random Evaluation of Cognitive Behavioral Therapy and Therapeutic Practice" stated that among the treatments that can be effective in improving the psychological symptoms of people with cancer and less attention of researchers, especially Located in Iran, cognitive therapy is based on mindfulness, this type of psychotherapy is derived from cognitive-behavioral therapies and is an important component of the third wave of psychological therapy models(18)

The results of investigation by Sanaei, et al. (2017) showed that mindfulness-based stress reduction therapy significantly increased positive life orientation and decreased cognitive stress in the experimental group in the post-test phase. But there was no significant difference in patients' self-efficacy.

The problem of the main concept of differentiation: the balance or imbalance between intimacy and independence, also arises in mind. Also, despite the great importance of the main differentiation of the researches, the consequences have been focused and a smaller volume of researches have dealt with the precedents and effective factors in the formation of their differentiation and in this regard some researches have shown the influence of cultural factors. The main purpose of this study based on the mentioned theories and available evidence, was to investigate the effect of cognitive-behavioral therapy on differentiation, dependence and correction of cognitive errors in teenagers.

Many studies have examined the cognitive effectiveness of mindfulness and cognitive-behavioral therapy on psychological disorders. The present study seeks to achieve the following goals:

1- Evaluation of the effectiveness of cognitive-behavioral group therapy on anorexia nervosa in teenagers.
2- The effect of group therapy based on cognitive-behavioral approaches on differentiation of teenagers with anorexia nervosa
3- The effect of group therapy based on cognitive-behavioral approaches on the dependence of teenagers with anorexia nervosa
4- The effect of group therapy based on cognitive-behavioral approaches on modulating cognitive errors in teenagers with anorexia nervosa

Methods

The statistical population in the present study consists of 150 teenagers who referred to clinics and treatment centers for nutrition and psychology in Isfahan. In this study, the patients referred to the clinic in twelve one and a half hour sessions. Among these

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teenagers, 60 were selected completely randomly and were replaced in three groups (two experimental groups and one control group). The first group was exposed to cognitive-behavioral therapy, the second group was affected by anorexia nervosa and its relationship with any of the variables of differentiation, dependence and modulation of cognitive errors and the third group as a control group did not receive any intervention. In order to collect information, metacognition questionnaires, Collins and Read Revised Adult Attachment Scale (RAAS) and high-risk behaviors questionnaire were used.

In this study, the reliability coefficients of the metacognition questionnaire with retest methods (after one week), Cronbach's alpha and halving with Spearman-Brown method were 0.81 (n=98), 0.88 and 0.83, respectively. All these coefficients are significant at the level of P = 0.01. In addition, the correlation of the questionnaire questions with the total score was calculated that all questions had a significant correlation with the total score. The range of these coefficients varies between 0.35 to 0.62 with an average of 0.49. Also, the reliability coefficients of the above questionnaire for female students using retest methods (one week apart) were 0.87 (n=50), Cronbach's alpha was 0.86, and halving was 0.83; and for

female students are 0.70 (n=47), 0.87 and 0.83, respectively.

The reliability of attachment style scale and high-risk behaviors questionnaire was determined by internal consistency method and for this purpose, Cronbach's alpha coefficient formula was used. Based on the results, Cronbach's alpha coefficient was 0.87 for all questions, 0.88 for first factor questions, 0.81 for second factor questions and 0.52 for third factor questions. Therefore, the homogeneity coefficients of the whole test and the first two subscales are optimal and the homogeneity coefficient of the third factor is weak. This questionnaire has 40 items - which is designed to identify attitudes and beliefs that make a person prone to depression. This questionnaire has 5 subscales that include the following: vulnerability, need for approval, success of perfectionism, need to please others, need to influence others.

In order to summarize, adjust and interpret the data, descriptive statistical methods including frequency distribution tables, mean, standard deviation, frequency percentage and inferential statistical method of covariance analysis were performed using SPSS 16 software.

Results:

In this section, the researcher uses various methods of analysis to answer the developed question or to decide whether to reject or confirm the hypothesis or hypotheses that have been considered for the research. The data collected through the mentioned questionnaire were analyzed in SPSS software environment by applying appropriate statistical tests according to the research hypotheses. In this section, the results were collected and the data were analyzed based on statistical inference and It is presented with the help of appropriate statistical techniques to confirm or reject the research hypothesis.

Hypothesis 1: The effect of cognitive-behavioral group therapy on teenagers' anorexia nervosa

In order to answer this hypothesis, analysis of covariance has been used, the results of which are shown in the following tables:

According to the results of Table (1) to (5), after adjusting the pre-test scores, it was found that the psychological-behavioral

Table 1. Results of analysis of covariance the effect of treatment of teenagers' anorexia nervosa

covariate random variable	sum of squares	df	Mean of squares	F	Significant level	Partial η2
Subject performance in pre-test	228.06	1	228.06	4.35	0.04	0.08

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Table 2. Comparison effect between groups

Variable	sum of squares	df	Mean of squares	F	Significant level	Partial η2
Confrontation	1710.215	2	855.108	16.324	0.000	0.395
Errors	2619.165	50	52.383			

Table 3. Post hoc test results for comparison between groups

Group (I)	Group (J)	Difference between Means	Standard Error	Significance level
Differentiation	Cognitive	1.15	2.41	1.00
	Control	12.52	2.41	0.000
Dependency	Cognitive	1.15	2.41	1.00
	Control	11.36	2.41	0.000
Cognitive errors	Cognitive	12.52	2.41	0.000
	Control	11.36	2.41	0.000

Table 4. Analysis of covariance to estimate the effect of treatment methods on anorexia nervosa

	B	Standard Error	t	Significant level	Partial η2
Cognitive-behavioral	-12.52	2.42	-5.16	0.000	0.348
Anorexia nervosa	-11.36	2.42	-4.7	0.000	0.307

method had a greater effect on reducing anorexia nervosa in teenagers (P <0.0005, Partial η2 = 0.395), $F_{(2\ ,50)} = 16.32$).

Table 5. Modified Means

Groups	Means	Standard Error
Differentiation	12.67	1.71
Dependence	13.81	1.71
Modification of cognitive errors	25.18	21.75

Hypothesis 2: The effect of group therapy based on cognitive-behavioral approaches on differentiation in teenagers with anorexia nervosa

In order to answer this hypothesis, analysis of covariance has been used, the results of which are shown in the following tables:

According to the results of Table (6) to (10), after adjusting the pre-test scores, it was found that methodological-behavioral method had a greater effect than differentiation on teenagers with anorexia nervosa in teenagers (P <0.0005, Partial η2 = 0.335, $F_{(2\ ,50)} = 12.567$)

Hypothesis 3: The effect of group therapy based on cognitive-behavioral approaches on the dependence of teenagers with anorexia nervosa

In order to answer this hypothesis, analysis of covariance has been used, the results of which are shown in the following tables:

Table 6. Results of analysis of covariance the effect of cognitive-behavioral approaches on differentiation in teenagers with anorexia nervosa

covariate random variable	sum of squares	df	Mean of squares	F	Significant level	Partial η2
Subject performance in pre-test	7615.083	1	7615.083	17.378	0.000	0.258

Table 7. Comparison effect between groups

Variable	sum of squares	df	Mean of squares	F	Significant level	Partial η2
Confrontation	11013.923	2	5506.961	12.567	0.000	0.335
Errors	21909.972	50	438.199			

Table 8. Tukey post hoc test results for comparison between groups

Group (I)	Group (J)	Difference between Means	Standard Error	Significance level
Differentiation	Cognitive	2.849	6.99	1.00
	Control	31.66*	6.979	0.000
Dependency	Psychodrama	2.849	6.99	1.00
	Control	28.811*	7.00	0.000
Cognitive errors	Psychodrama	31.66*	6.979	0.000
	Control	28.811*	7.00	0.000

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Table 9. Analysis of covariance to estimate the effect of cognitive-behavioral approaches on differentiation in teenagers with anorexia nervosa

	B	Standard Error	t	Significant level	Partial η2
Cognitive-behavioral	-31.66	6.979	-4.536	0.000	0.292
Differentiation	-28.811	7.00	-4.116	0.000	0.253

Table 10. Modified Means

Groups	Means	Standard Error
Differentiation	148.997	4.935
Dependence	151.846	4.945
Cognitive errors	180.657	4.939

According to the results of Table (11) to (15), after adjusting the pre-test scores, it was found that methodological-behavioral method had a greater effect on dependence on anorexia nervosa in teenagers (P <0.0005, Partial η2 = 0.283), $F_{(2\ ,50)} = 9.863$)

Hypothesis 4: The effect of group therapy based on cognitive-behavioral approaches on the modulation of cognitive errors in teenagers with anorexia nervosa

In order to answer this hypothesis, analysis of covariance has been used, the results of which are shown in the following tables:

According to the results of Table (16) to (20), after adjusting the pre-test scores, it was found that methodological-behavioral method had a greater effect on the anorexia nervosa in teenagers than modulating cognitive errors (P <0.012, Partial η2= 0.161, $F_{(2\ ,50)} = 4.808$)

Discussion and conclusion

Eating disorders are a chronic mental illness that affects about 2% of teenagers with anorexia nervosa and about 3% of patients with anorexia nervosa. Anorexia nervosa is associated with an increased risk of psychopathology, medical problems. In the etiology of eating disorders, several factors such as psychological factors, dependence, personality disorders, socio-cultural, modulation of cognitive and biological errors have been proposed. In this study, three of these factors have been studied and the effect of cognitive therapy on They are expressed.

In cognitive-behavioral methodology, wrong behaviors can be displayed and they can be identified and replaced by appropriate behaviors. These behaviors are displayed not only in the group but also outside the group, and in the end, the behavior is corrected. In cognitive-behavioral method, people are trained in social communication and interpersonal skills, so the feeling of satisfaction in the group increases. Finally, it can be concluded that methodological-behavioral is not only associated with teaching how to perform, but also seeks life education.

When different roles are given to a person and he/she is asked to behave in a different way, it destroys the notion that *"I cannot change my behavior"* and also the person accept different roles that he/she has to take on in real life. Finally, it can be concluded that group therapy with a cognitive-behavioral approach increases teenagers' self-esteem and makes them see their creativity, fertility and result of their efforts.

Table 11. Results of analysis of covariance the effect of cognitive-behavioral approaches on the dependence of teenagers with anorexia

covariate random variable	sum of squares	df	Mean of squares	F	Significant level	Partial η2
Subject performance in pre-test	1845.952	1	1845.952	9.88	0.003	0.165

Table 12. Comparison effect between groups

Variable	sum of squares	df	Mean of squares	F	Significant level	Partial η2
Confrontation	3682.567	2	1841.284	9.863	0.000	0.283
Errors	9333.937	50	186.679			

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Table 13. Tukey post hoc test results for comparison between groups

Group (I)	Group (J)	Difference between Means	Standard Error	Significance level
Differentiation	Cognitive	0.531	4.563	1.00
	Control	-17.312	4.559	0.001
Dependency	Psychotherapy	-0.531	4.563	1.00
	Control	-17.844	4.579	0.001
Cognitive errors	Psychotherapy	17.312	4.559	0.001
	Control	17.844	4.579	0.001

Table 14. Analysis of covariance to estimate the effect of cognitive-behavioral approaches on dependence of teenagers with anorexia

	B	Standard Error	t	Significant level	Partial η2
Cognitive-behavioral	-17.312	4.559	3.798	0.000	0.224
Dependence	-17.844	4.579	3.897	0.000	0.233

Table 15. Modified Means

Groups	Means	Standard Error
Differentiation	47.59	3.22
Dependence	47.06	3.23
Modification of Cognitive errors	64.90	3.228

Table 16. Results of analysis of covariance the effect of cognitive-behavioral approaches A different effect on the modulation of cognitive errors in teenagers with anorexia nervosa

covariate random variable	sum of squares	df	Mean of squares	F	Significant level	Partial η2
Subject performance in pre-test	472.021	1	472.021	5.221	0.027	0.095

Table 17. Comparison effect between groups

Variable	sum of squares	df	Mean of squares	F	Significant level	Partial η2
Confrontation	869.457	2	434.728	4.808	0.012	0.161
Errors	4520.701	50	90.414			

Table 18. Tukey post hoc test results for comparison between groups

Group (I)	Group (J)	Difference between Means	Standard Error	Significance level
Differentiation	Cognitive	0.701	3.209	1.00
	Control	-8.907	3.22	0.024
Dependency	Psychotherapy	0.701	3.209	1.00
	Control	-8.206	3.17	0.038
Modification of Cognitive errors	Psychotherapy	8.907	3.22	0.024
	Control	8.206	3.17	0.038

Table 19. Analysis of covariance to estimate the effect of cognitive-behavioral approaches on modulating cognitive errors

	B	Standard Error	t	Significant level	Partial η2
Cognitive-behavioral	-8.907	3.22	-2.766	0.008	0.133
Modification of Cognitive errors	-8.206	3.17	-2.588	0.013	0.118

Table 20. Modified Means

Groups	Means	Standard Error
Differentiation	39.075	2.269
Cognitive	39.776	2.246
Modification of Cognitive errors	47.982	2.251

As a result, this treatment method can affect their anxiety and anorexia nervosa and cause calmness in teenagers' behavior and speech.Therefore, it can be concluded Psycho-behavioral therapy has an efficient effect on reducing anorexia nervosa in teenagers. Also, the results showed that there was an efficient influence on differentiation,

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dependence and modulation of cognitive errors in adolescents with anorexia nervosa.

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