Original Article

Comparing the Effectiveness of Neurofeedback Training and Acceptance and Commitment Therapy on Reducing Anxiety Symptoms in Kermanshah City Females

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Abstract

Introduction: The main purpose of the present research was to compare the effectiveness of neurofeedback training with acceptance and commitment therapy to reduce anxiety in Kermanshah women. **Method:** To achieve this purpose, a quasi-experimental design with a pre-test and post-test design with a control group was used. The statistical population of the present research included all people with anxiety disorder who referred to the Kermanshah Rehabilitation Counseling Center from spring to autumn 2019. Among the referring women with anxiety disorder diagnosis, 36 people were selected and randomly divided into the three groups of neurofeedback training, acceptance and commitment therapy, and the control group which did not receive any training, and responded the Beck's anxiety questionnaire before and after treatment, and two months later the experimental and control groups were followed up. **Findings:** The results obtained from data analysis showed that neurofeedback training and acceptance and commitment therapy are effective in reducing anxiety. **Conclusion:** The extent of the effect of neurofeedback method and acceptance and commitment therapy is different in reducing anxiety.

Keywords: Neurofeedback Therapy, Acceptance and Commitment Therapy, Anxiety.

Introduction

Anxiety disorders are one of the most common psychological health problems and issues in the United States. After collecting data from various mental health centers, the researchers estimated carefully the prevalence of each anxiety disorder during one year. The results show that the prevalence of anxiety disorders in adults in the age range of 18 to 54 years is 13.1%. These disorders can become chronic. The rate of recovery from social phobia, generalized anxiety disorder, agoraphobia, and panic disorder over three years ranges from 16 percent to 23 percent. Regarding the prevalence ratio, the disease becoming chronic, and the costs associated with anxiety disorders, it is not surprising that great effort has been made to compile effective and efficient treatments [1].

It should be mentioned that there are various treatments for anxiety disorders, among which biological and psychological treatments can be mentioned. One of the psychological treatments that can have beneficial effects on anxiety disorders is Acceptance and Commitment Therapy (ACT), and as an approach that is very much in line with therapeutic coping and proposes directly topics related to accompanying illnesses, fears and avoidance related to coping and issue of the quality of life is very promising. The main goal of this type of treatment is to increase the unavoidable connection with the present moment and a wide range of personal events that serve a meaningful and valuable life. Acceptance and commitment therapy, instead of considering reduced anxiety as the only consequence of desirable treatment, emphasizes that client changes his/her type of relationship with anxiety; for this purpose in contexts that avoidance or escaping the anxiety leads to undesirable outcomes in life can have more effective function. ACT is based on the assumption that the main problem most clients face is experiential avoidance, which refers to one's avoidance of thoughts, feelings, senses, and other private events [2].

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Hayes (2006) knows human psychological problems primarily as psychological inflexibility created by fusion and experiential avoidance [3]. In the context of a therapeutic relationship, ACT employs direct dependencies and indirect verbal processes so that it can experimentally, through acceptance, defusion, the creation of a transcendental sense of self, communication with the present moment, values and building very good patterns of commitment measures related to these values primarily create more psychological flexibility in a person [2]. Masedo and Esteve (2007) investigated the effectiveness of acceptance against subsidence and the desired coping instruction [4]. In this research, they asked subjects to dip their hands in ice water. The result was that people in the acceptance group reported more pain tolerance and less pain experience. On the other hand, in biological treatments, the goal is to correct neurological or chemical dysfunction in the patient's central nervous system. In neurofeedback therapy, by registering brainwaves (EEG) it prepares the brain's function as computer information, and provides this physiological information that is reflected through brainwaves for us. The output obtained by the computer is based on the theory of factor conditioning and positive and negative reinforcement. Electrical impulses are prepared by neurotherapy and are received in separate filtered frequency bands. As a result, this information is presented to the client visually and auditory, and by the computer it helps the patient adjust his/her brainwaves. At the neurofeedback training session, the client can learn to make their brainwave pattern conditional and increase the optimal level [5].

The application of neurofeedback in the treatment of a wide range of disorders such as hyperactivity/attention deficit, depression, bipolar disorder, anxiety disorders, sleep disorders, brain damage, tort, intellectual and practical obsession has been confirmed [6].

In the research of Mohammadi et al. (2016) conducted on a number of people with panic disorder, the results showed that neurofeedback therapy was effective in reducing symptoms and had proper effects and a significant difference was clinically observed in the two groups [7]. Molavi et al. (2014) in examining the effect of acceptance and commitment therapy on reducing the anxiety and depression of students with social phobia showed that acceptance and commitment therapy for students with social phobia can be applied and can be used as psychological intervention along with other interventions [8].

Baradaran et al. (2016) in a research to compare the effectiveness of acceptance and commitment therapy and motivational interview on reducing anxiety, depression, psychological stress and increasing hope of patients with major hypertension showed that acceptance and commitment therapy and motivational interview are effective interventions in patients with hypertension [9]. Ossman et al. (2006) in examining the effect of acceptance and commitment therapy on patients with social anxiety with an average age of 42 years concluded that avoidance and anxiety symptoms in the group under treatment were significantly reduced and this effect in the course of 3-month follow-up still continued [10]. Simkin et al. (2014) in a research entitled "EEG Quantity and Neurofeedback in Children and Adolescents with Anxiety Disorders and Depression Disorders" showed that the effects of neurofeedback on these disorders are considerable [11]. In a research, Nainian et al. (2009) examined the effect of neurofeedback training and pharmacotherapy on reducing anxiety symptoms and the quality of life of patients with generalized anxiety disorder [12]. The research findings indicated that the effect of neurofeedback training on reducing the symptoms of the generalized anxiety disorder in these groups was significantly higher than in the treatment group. Jahanian Najafabadi et al. (2013) in investigating the effect of neurofeedback training on reducing anxiety in 18 men with an average age of 34.44 who learned neurofeedback training, the results show that neurofeedback was able to reduce the anxiety of the participants in the research significantly [13]. Ghayour Kazemi et al. (2016) showed that neurofeedback was able to significantly reduce anxiety in girls with social anxiety [14]. Ashuri (2015), in the result of a study conducted on students, showed that neurofeedback training method significantly reduced anxiety and depression in students with attention deficit / hyperactivity disorder [15]. In recent years, the cost of psychiatric care in various countries has had awesome growth. The controlled care approach that has been formed in recent decades in the field of psychiatric services in developed countries shows treatment costs reduction [16]. Therefore, researchers are conducting comparative researches to select the most effective and at the same time the least expensive treatment among various treatments. Of course, sometimes this leads to the discovery that the integration of various treatment methods is more effective than any of the treatment methods alone. Among the current treatments for anxiety disorders, the acceptance and commitment therapeutic approach can be named which seems to have positive effects on anxiety disorders. Various studies, and also numerous researches conducted on the treatment of anxiety using neurofeedback, indicate the high efficiency of this method in the treatment of anxiety (for example, Simkin, 2016, Costa, 2017; Reiter, 2016; Moore, 2005) [11, 17-19]. Regarding the mentioned points and by reviewing the performed studies, it is essential to mention that it has been neglected to do researches that aim to comparatively investigate anxiety treatment methods, especially in the country, so we need more researches in this field. Therefore, the hypotheses made in this regard are as follows:

1. Acceptance and commitment therapy (ACT) has a significant effect on reducing the women's anxiety symptoms.
2. Neurofeedback therapy has a significant effect on reducing the women's anxiety symptoms.
3. The extent of the effect of neurofeedback therapy and the acceptance and commitment therapy is different in reducing the women's anxiety symptoms.

METHOD:

The present research is among quantitative studies in terms of the nature of the collected data, it is among fundamental studies in terms of purpose, and it is among semi-experimental projects with pre-test and post-test with the control group in terms of method. The statistical population of the present research includes all people with anxiety disorder referred to Kermanshah Rehabilitation Counseling Center from spring to autumn 2019. After doing a preliminary diagnosis by a psychiatrist and clinical psychologist, a DSM-5 based clinical interview, and performing Beck's anxiety test, subjects were randomly assigned to three groups. In the neurofeedback training group, the acceptance and commitment therapy group, and control group 12 subjects were assigned equally. Entry criteria included having at least diploma literacy and the fixation of the type and amount of medication received during the course of doing the research, and the criteria to exit the research included patients who have recently had acute problems in life and patients with anxiety and psychosis. Thus, three groups equal to each other were obtained, and the dependent variables were also measured for all three groups at one time and under the same conditions. At the beginning of the project, after holding a justification session, consent-letters were taken from all subjects of the experimental groups (neurofeedback training group and acceptance and commitment therapy group), so that by observing all ethical issues the subjects are entered to the project.

Tool:

Clinical Interview Based on SCID-5-CV: This clinical interview is a tool for diagnosing disorders based on the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (American Psychoanalytic Association) (First, Gibbon, Spitzer and Williams, 2016, translated by Shadlow et al., 2017) [20].

Beck's Anxiety Test: Beck's anxiety questionnaire was invented by Aaron Beck et al. (1990) who specifically measure the severity of clinical anxiety symptoms in individuals. The Beck's Anxiety Questionnaire is a self-report questionnaire prepared to measure the severity of anxiety in adolescents and adults. The questionnaire is a 21-item scale in which the subject selects one of four options that indicates the severity of anxiety. Four options of each question are scored in a four-part range from 0 to 3. Performed studies show that this questionnaire has a high credit and validity. Its internal homogeneity coefficient (alpha coefficient) is 0.92, and its validity with retesting method with one week interval is 0.75, and the correlation of its items varies from 0.30 to 0.76. Kaviani and Mousavi (1999) in examining the psychometric characteristics of this test in the Iranian population have reported the validity coefficient about 0.72, and the testing re-testing validity coefficient with the interval of one item as 0.83, and Cronbach's alpha as 0.92. Each test item describes one of the prevalent symptoms of anxiety (mental, physical, and phobia symptoms). The total score of this questionnaire is located in the range from zero to 63 and the score above 26 indicates the severity of anxiety [21].

Neurofeedback Device: Neurofeedback is a tool equipped with a computer system used to teach neurofeedback. By this device the brainwaves are recorded and then this data is meticulously compared with the basic data existing in the device. This assessment method allows us to significantly and scientifically compare the brainwaves pattern of the client with the normal brainwaves pattern and to determine the differences. This device is significantly able to assess conditions such as brain damages, attention deficit/ hyperactivity disorder, learning disabilities, depression, obsession, anxiety and other disorders [6].

The implementation method of Neurofeedback therapy is performed during 30 half-hour sessions and three sessions per week. Neurofeedback therapy is by using a device (e-WAVE hardware made by Science Beam Company or Parto Danesh Institute, and Eprove Software). This device has the capability to amplify and suppress brainwaves in various parts of the brain. The neurofeedback device is a tool equipped with a computer system that is used for neural feedback training. Subjects sit on a chair conveniently in a quiet room. The procedure was in this way that an active electrode is placed on the head, a reference electrode is placed on the right earlobe, and a ground electrode is placed on the left earlobe, and then using the computer equipment and based on the individual's brainwaves, a visual and auditory feedback, usually in the form of a computer game, video, image, or computer voice is provided to the person. The alpha-delta protocol was used for neurofeedback training. To implement this protocol, the active electrode is placed on the pz point (a 20-10 system is used to use these brain points), the other two electrodes, that are the references were attached to the right earlobe and the ground electrode to the left earlobe. At the beginning of each session, two minutes baseline was taken, and based on it the reinforcement thresholds were specified. Thresholds of 0.5 to 1 microvolt were placed higher or lower than the suppressed or amplified bands. In this study, alpha waves (frequency from 8 to 12 brainwaves) were amplified and the delta wave (frequency from 1 to 4 brainwaves) was suppressed at the same time. Thresholds were adjusted so that if at 80% of the times the client would maintain the reinforced band higher than the threshold (for 0.5 seconds) and 20% of the times would maintain the suppressed bands lower than the threshold, he/she would receive video or audio amplification. By this method, the person realizes that he/she can control and adjust these feedbacks by using his/her brainwaves and creating different mental states. Continuation of this process will cause the emergence of changes in the status of brainwaves and improve their abnormalities.

Acceptance and Commitment Therapy: Anxiety therapy protocol [22] was used to perform acceptance and commitment therapy, which was performed in 12 one-hour sessions. This protocol includes the following cases in brief:

First Session: Welcoming, familiarizing and introducing the members of the group to the researchers and to each other, expressing the feelings of the people before coming to the session and the expectation they have from the sessions. Expressing the rules that their observation in the group is required such as coming on time, doing assignments and so on, general presentation of educational points about commitment and acceptance and its results and pre-test implementation.

Second Session: Explaining about the nature of anxiety and expressing the principle of acceptance and recognizing emotions and thoughts about anxiety, informing about the point that we accept thoughts as thoughts and feelings as feelings and memories as memories, the assignment will regarding self-acceptance and the feelings resulted from anxiety.

Third Session: Investigating the assignments of the previous session, practice the desire, focus on the senses, preparing a list of the problems the person is facing with, making a list of the values of life, and encouraging the identification of difference between values and goals.

Fourth Session: Reviewing the assignments of the previous session; people are asked to identify their current conflicts and problems and to list the efforts they have made to solve them. Introduce creative frustration to group members and end the session with the metaphor of "man in the pit".

Fifth Session: Reviewing the assignments of the previous session, reviewing the metaphor of "man in the pit", introducing control as a problem, identifying strategies that are an attempt to control, the difference between problem solving in the outside world and problem solving in the inner and mental world.

Sixth Session: Examining the assignments of the previous session, beginning the practice of mindfulness, identifying the avoidances the person is unaware of, the metaphor of "rope pulling with the monster" and the metaphor of "swamp" for the inefficiency of control.

Seventh Session: Beginning the session by accepting and not judging and practicing the attendance at present time and a brief explanation about the defusion.

Eighth Session: Beginning the session with the theme of fusion and explaining that the thoughts in the mind gradually become reality, and sticking to the thought causes fusion. For this purpose, the metaphor of "fair[1]" can be used, mindfulness is also another way for defusion, and also objectifying thoughts and feelings can help defusion.

Ninth Session: Examining the practices of the previous session, the homework of "your mind is not your friend" (mindfulness practice). Using the metaphor of "the bus driver" to control and direct one's values.

Tenth session: Reviewing the homework of "the passengers on the bus", ask people to report one of the monsters of their lives, show the difference between descriptions and assessments, metaphor of "a bad cup", show the negative effects of assessment, teach people that they are not their thoughts.

Eleventh Session: Reviewing the assignment of "you are not the same as your thoughts" (complete a practice to run, ask anxious people to report a thought and explain how they reshaped it, and the difference they felt after reshaping it), identifying the reasons that stuck anxious people and looking at them as attempts to dig up (the metaphor of "the man in the pit").

Twelfth Session: Mindfulness practice, assignments completion, defusion practice, ask group members to report a sentence and also state how to write it, thank the group members, and perform a post-test and say goodbye.

FINDINGS:

In this section, at first the descriptive information of women's anxiety ratio has been presented in Table 1 in terms of pre-test, post-test and follow-up in experimental and control groups.

Table 1: Mean and Standard Deviation of Anxiety i Terms of Test Type and Group

		Test	Mean	Standard Deviation
Experimental Group	Neurofeedback Therapy	Pre-Test	38.33	4.26
		Post-Test	23.91	3.5
		Follow-Up	2.08	3.47
	Acceptance and Commitment Therapy	Pre-Test	38.8	4.7
		Post-Test	20.16	2.55
		Follow-Up	22	3.56
Control Group	Control Group	Pre-Test	35.83	5.18
		Post-Test	32.25	4.9
		Follow-Up	38.08	5.16

The Kolmogorov test was used to evaluate the normality of the data, and based on the obtained findings the significance level of this test for anxiety was calculated equal to 0.82, indicating that the normality of the data in this questionnaire was confirmed by the Kolmogorov-Smirnov test.

In order to compare the Hypothesis 1 "acceptance and commitment therapy (ACT) has a significant effect on

1 The author has used the word "شیر" that has three different meanings in Persian language, but in order to be understandable in English language the word "Fair" that has the same feature (having three different meanings) has been used in translation-Translator

reducing women's anxiety symptoms", to test this hypothesis, the statistical method of the analysis of covariance was used and the results of the analysis of covariance test have been presented in Table 2.

Table 2: Summary of the Analysis of Covariance for Intra-Group Factor (ACT Therapy) and Intergroup Factor (Experimental and Control)

Source of Changes	Sum of Squares	Degree of Freedom	Mean of Squares	F Ratio	Significance Level	Eta Square
Group	438.021	1	438.021	21.92	0.001	0333
Test	1111.688	1	1111.688	55.632	0.001	0.558
Test* Group	981.021	1	981.021	49.093	0.001	0.527
Error	879.25	44	19.9983			

The results of Table 2 show that the significance level of the test, group, and also the interactive effects of the test with the group is significant at the level of 0.05. Therefore, it can be concluded with 95% confidence that the anxiety changes in pre-test and post-test are not the same in both experimental and control groups, since the comparison of the changes in Table 2 shows the ratio of anxiety subjects have received in the acceptance and commitment therapy has significantly reduced compared to the control group. In more accurate words, it can be said that acceptance and commitment therapy significantly reduces women's anxiety ratio. Eta ratio (effect size) also indicates that approximately 527% of women's anxiety changes under the influence of (experimental and control) groups.

To investigate hypothesis 2, neurofeedback therapy has a significant effect on reducing the women's anxiety symptoms, the analysis of covariance test was used, the results of which have been presented in Table 3.

Table 3: Summary of the Analysis of Covariance for Intra-Group Factor (Neurofeedback Therapy) and Intergroup Factor (Experimental and Control)

Source of Changes	Sum of Squares	Degree of Freedom	Mean of Squares	F Ratio	Significance Level	Eta Square
Group	234.083	1	234.083	11.527	0.001	0.208
Test	675.00	1	675.00	33.24	0.001	0.430
Test* Group	574.083	1	574.083	28.27	0.001	0.391
Error	893.5	44	20.307			

Based on the figures obtained from Table 3, the significance level observed in the test, group and also the interactive effects of the test with the group is significant at the level of 0.05. Therefore, it can be concluded with 95% confidence that the anxiety changes in pre-test and post-test in the two experimental and control groups are not the same. As a comparison of the changes in Table 3 shows, the anxiety ratio of subjects who received neurofeedback therapy decreased significantly compared to the control group. In more accurate words, it can be said that neurofeedback therapy significantly reduces women's anxiety ratio. Eta ratio (effect size) also indicates that approximately 39.1% of women's anxiety changes under the influence of (experimental and control) groups.

Considering the significance of the effect of acceptance and commitment approach on women's anxiety, the analysis of covariance was used to investigate the persistence ratio of the treatment effect in the follow-up phase, the results of which can be observed in Table 4.

Table 4: Summary of the Analysis of Covariance for Intra-Group Factor (ACT Therapy) and Intergroup Factor (Experimental and Control Group)

Source of Changes	Sum of Squares	Degree of Freedom	Mean of Squares	F Ratio	Significance Level	Eta Square
Group	2914.083	1	2914.083	165.909	0.001	0.79
Test	65.333	1	65.333	3.72	0.06	0.078
Test* Group	3	1	3	0.171	0.681	0.436
Error	772.833	44	17.564			

According to the results inserted in Table 4, the significance level observed for the test as well as the interactive effects of the test with the experimental groups is not significant at the level of 0.05. A comparison of the changes in Table 1 also shows that the anxiety ratio of subjects who have received ACT therapy have not reduced compared to the control group. Therefore, it can be concluded with 95% confidence that the ratio of women's anxiety in the follow-up test has not changed, which means that acceptance and commitment therapy has persisted. Considering the significance of the effect of neurofeedback method on women's anxiety, the analysis of covariance was used to investigate the persistence ratio of the treatment effect in the follow-up phase, the results of which are observed in Table 5.

Table 5: Summary of Covariance Analysis for Intra-Group Factor (Neurofeedback Therapy) and Intergroup Factor (Experimental and Control Group)

Source of Changes	Sum of Squares	Degree of Freedom	Mean of Squares	F Ratio	Significance Level	Eta Square
Group	2080.333	1	2080.333	110.416	0.001	0.715
Test	12.000	1	12.000	0.637	0.429	0.014
Test* Group	40.333	1	40.333	2.141	0.151	0.046
Error	829.000	44	18.841			

Based on the figures obtained from Table 5 of the observed significance level regarding the test as well as the interactive effects of the test with the experimental groups, it is not significant at the level of 0.05. A comparison of the changes in Table 1 also shows that the anxiety ratio of subjects who received neurofeedback therapy has not reduced compared to the control group. Therefore, it can be concluded with 95% confidence that the women' anxiety ratio has not changed in the follow-up test, which means that neurofeedback therapy has persisted.

To test Hypothesis 3, the ratio of the effect of neurofeedback therapy method and acceptance and commitment therapy is different in reducing the women's anxiety symptoms, the analysis of covariance test was used.

Table 6: Summary of the Analysis of Covariance for Intra-Group Factor (Neurofeedback Therapy) and Intergroup Factor (Experimental and Control Group)

Source of Changes	Sum of Squares	Degree of Freedom	Mean of Squares	F Ratio	Significance Level
Group	37.556	1	37.556	2.701	0.105
Test	4249.694	1	4249.694	152.795	0.001
Test* Group	55.361	1	55.361	1.99	0.045
Error	917.833	44	13.907		

Based on the figures obtained from Table 6 of the observed significance level regarding the test as well as the interactive effects of the test with the group, it is significant at the level of 0.05. Therefore, it can be concluded with 95% confidence that the changes in anxiety in the two groups tested are not the same and there is a significant difference between them. As the comparison of the changes in Table 1 also shows the anxiety ratio of subjects who received acceptance and commitment therapy has reduced more than those who received neurofeedback therapy. In more accurate words, it can be said that acceptance and commitment therapy reduces women's anxiety ratio significantly more than neurofeedback therapy.

Conclusion and Discussion:

Investigating the results of the first hypothesis showed that the hypothesis zero is rejected and the research hypothesis is confirmed, meaning that acceptance and commitment therapy (ACT) has been effective in reducing the women's anxiety symptoms. In more accurate words, it can be said that acceptance and commitment therapy significantly reduces women's anxiety ratio. These findings are consistent with the researches of Eifert et al. (2003), Block (2002), Forman et al. (2007), Hayes et al. (2006), Worrel and Longmore (2007), Mojdehi et al. (2012), Rajabi et al. (2014), Molavi et al. (2014) [3, 8, 23-27]. The research results of Zamani et al. (2016) indicating the effectiveness of acceptance and commitment therapy (ATC) on the anxiety of women with MS, show that the effects of this therapeutic approach has persisted both in the post-test phase and also in the follow-up phase. The research results of Mojdehi et al. (2012) show that the effect of acceptance and values as therapeutic intermediaries on generalized anxiety disorder is significant [26]. According to the researches Friedel et al. (2015) have performed self-regulatory activities are related to the frontal lobe of the brain with the frontal cortex, which is the position of cognitive and meta-cognitive analyses in the form of the presence of the mind [28]; according to these researches it has been shown that the presence of the mind increases the individual's control in inhibiting anxiety symptoms by increasing cognitive and emotional self-regulatory skills through influencing the frontal cortex and parasympathetic branch of the nervous system. According to the investigations of Herbert and Forman (2007) acceptance and commitment therapy is a behavioral therapy that uses mindfulness, acceptance, and defusion skills to increase psychological flexibility that its impacts on anxiety are considerable. The research results of Molavi et al. (2014) show that acceptance and commitment therapy have reduced anxiety, depression, and social phobia in female students. Also, the research results of Hadian (2017) show that acceptance and commitment therapy has reduced separation anxiety disorder in children in the experimental group compared to the control group in the post-test phase and this result has been stable at the end of 6-month follow-up [29]. Ossman et al. (2006) in investigating the effect of acceptance and commitment therapy in the group with social anxiety with an average age of 42 years concluded that the avoidance and anxiety symptoms in the group under acceptance and commitment therapy decreased significantly and this effect still continued in the 3-month follow-up period. In explaining these findings, the view of Hayes (2004) can be mentioned that one of the primary goals of using acceptance and commitment therapy in people with anxiety disorders is to experience anxiety and concern in the new context of acceptance and satisfaction and the lack of cognitive defusion. In this way, the nature of the experience changes from an unwanted dangerous event to a thought or feeling that the person wants to accept. In fact, it is not the content of thought or feeling that is problematic, but it is the lack of acceptance or unwillingness to experience that thought that is problematic. One way to illustrate this idea (in the case of obsessive patients) is to describe how others experience these thoughts, which are distressing for the client. The therapist helps the client find out that when others want to accept these thoughts and do not engage in rituals to get rid of those thoughts, the thoughts are experienced only as thoughts and are not converted to obsessive thoughts. This point is true even if the experienced thoughts are distressing or disturbing [30]. Hayes (2005) also believes that the approach of acceptance and commitment, instead of focusing on removing and eliminating hurtful factors, should help clients accept their own controlled emotions and cognitions and make themselves get rid of the control of verbal rules that have caused the creation of their problems and allow them to stop arguing and quarrelling. Acceptance and commitment

therapy is essentially process-oriented, and clearly emphasizes the promotion of accepting psychological experiences and commitment by increasing meaningful, flexible, adaptive activities regardless of the content of psychological experiences; a trait that is not present in the cognitive-behavioral approach. Secondly, the goal of the therapeutic methods used in acceptance and commitment therapy is not to increase realistic, effective, and logical thinking by encouraging emotions, but the goals of these therapeutic methods are to reduce the avoidance of these psychological experiences and to increase awareness of them, especially focusing on the present moment without pursuing a method without quarrel and non-judgmental. In this process, the patient learns to keep him/herself away from pain and confusion states in order to reduce behavioral experiences. The goals of treatment are to improve function by increasing the level of psychological flexibility. Examination of the results related to the second hypothesis also showed that the hypothesis zero is rejected and the research hypothesis is confirmed, meaning that neurofeedback therapy has impacted on reducing the women's anxiety symptoms. These findings are consistent with the researches of Hammond (2010), Khoshsarvar (2017), Moro (2000), Garrett and Silver (1976), Ghayour Kazemi et al. (2016) [14, 19, 31-33]. The research results of Jahanian Najafabadi et al. (2013) show that neurofeedback was able to significantly reduce the anxiety of participants in the research, so that changes in the range of arousal of subjects in FP1-T3 points and also amplifying the SMR range at the CZ point caused significant changes in the level of anxiety of the subjects in the research. Oraki et al. (2016), in examining the effectiveness of neurofeedback on depression, anxiety, stress and abdominal pains in patients with chronic psychosomatics abdominal pains, showed that neurofeedback was able to reduce depression and anxiety in women with abdominal pains, but it had no effect on stress ratio [34]. Also, the results of the study of Yousefi et al. (2017) show that neurofeedback therapy can reduce cases such as own anxiety by conditioning people's brainwaves in various age groups and by repeating the sessions they can increase their relaxation time [35]. It can be observed in the protocols that are effective in reducing anxiety that people experience relaxation after about 5 minutes of practice. Anxious person can experience relaxation after getting familiarized with his/her physiological and neurological changes by practice and repetition. Anxious person can increase his/her relaxation after getting familiarized with his/her physiological and neurological changes by practice and repetition, no harm has been reported regarding this safe and completely painless method so far [36]. Moro (2005) reviewed the history related to the effect of neurofeedback method on the treatment of anxiety disorders. He cites a 33 to 78 percent increase for alpha wave after treatment for some studies.

Finally, the investigation of the results related to the third hypothesis of the research showed that the effectiveness of neurofeedback and acceptance and commitment therapy in reducing the symptoms of anxiety is different, and indicates the point that subjects who have received acceptance and commitment therapy showed a greater reduction in anxiety symptoms than the subjects who have received neurofeedback. In more accurate words, it can be said that acceptance and commitment therapy reduces women's anxiety ratio significantly more than neurofeedback therapy. As many researches in the past have shown, neurofeedback therapy and acceptance and commitment therapy have shown their effectiveness. However, a research that has compared neurofeedback with acceptance and commitment therapy has not been done so far. Among the limitations of this research this point can be mentioned that since the people composing this research are from the population referring to a counseling center, they cannot indicate the anxiety community of the country, that this point reduces the capability to generalize the results. Also, due to the application of technology in the neurofeedback method and its novelty, the effect of patient motivation and hope for new treatment could affect the results of treatment; the factor that was not controlled in the present research. It is suggested that future researches compare other treatments methods for treating anxiety disorders. Acceptance and commitment therapy method should be re-tested according to the subcultures in Iran. Future researches can investigate and select individuals from various age groups and among men. Future researches could also do more investigations regarding the change in anxiety scores of people undergoing neurofeedback trainings and acceptance and commitment therapy. Regarding the results of the present researches, it is suggested that psychological clinics use methods such as neurofeedback training and acceptance and commitment therapy more in the treatment of anxiety. Due to the novelty of neurofeedback training compared to other treatment methods, it is suggested that officials and those involved, especially clinical psychologists, by compiling informing programs, promote the information level of people in this field, especially those suffering from anxiety disorder.

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