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## Original Article

# Comparison of Effectiveness of Compassion-Focused Therapy (CFT) and Acceptance and Commitment Therapy (ACT) on Affect Control (Anger, depressed mood, anxiety, positive emotion) of Women with Multiple Sclerosis (MS)

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## Abstract

The present study aimed to compare the effectiveness of compassion-focused therapy and acceptance and commitment therapy on Affect Control (Anger, depressed mood, anxiety, positive emotion) of Women with Multiple Sclerosis (MS). The research method was quasi-experimental with a pre-test-post-test design and follow-up with a control group. The statistical population of the study included all female patients with MS who were members of the Golestan Province MS Association in 2019. The sample consisted of 60 eligible patients and volunteers who participated in the study and were randomly assigned to two experimental groups and one control group. The first experimental group received compassion-focused treatment and the second group received acceptance and commitment-based treatment. The Emotion Control Scale of Williams et al. (1997) was used to collect data. Data were analyzed using Bonferroni repeated measures analysis of variance in SPSS-24 software. The results showed that both treatments were effective in controlling the emotions of women with MS (P<0/01), comparison of means also shows that the mean scores of emotion control and its components in the CFT group are higher than in the ACT group, which indicates the greater effectiveness of treatment focused on compassion. According to the findings of this study, it can be concluded that compassion-based therapy is more effective than acceptance-based therapy due to direct intervention and addressing the content of emotions.

## Keywords

Emotion control
Compassion-focused therapy
Acceptance and commitment-based therapy
Multiple sclerosis

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## Introduction

Multiple sclerosis (MS) is a chronic autoimmune, inflammatory, and demyelinating disease of the central nervous system that is one of the most common neurological diseases affecting 2.9 million people worldwide (Goldenberg, 2012). Some of the medical features of MS include: the onset of the disease in adulthood, lack of definition of the etiology of the disease, unpredictability of the course of the disease, and extensive changes in symptoms and disability (such as visual, motor, and cognitive impairment) which can create problems in all areas of life (Renoux, & et al, 2013). The causes of this disease are unknown, but the interactions of genetic predisposition and non-genetic drivers such as virus, metabolism, or environmental factors appear to be effective in causing MS (Goldenberg, 2012). The prevalence of the disease varies in different populations. In the United States, it is estimated that the number of MS patients is between 400,000 and 570,000 (Campbell et al., 2014). Currently, about 50 out of every 100,000 people in Iran have MS. Like many autoimmune diseases, this disease is more common in women, while in people over 50, MS occurs in men and women in equal proportions (Sanadgol & Malek, 2018).

Patients with MS appear to have difficulty controlling their emotions due to the negative psychological effects of the disease (Palumbo & Palumbo, 2024). Emotions are an essential part of human life; in such a way that the picture of life is difficult to imagine without it. Characteristics and changes of emotions, how to communicate emotionally, and understanding and

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interpreting the emotions of others have an important role in the development and organization of personality, moral development, and social relations, the formation of identity and concept (Farid et al, 2016). All human beings experience emotions in the face of different situations and express different feelings and emotions. However, severe and negative emotional irritability is abnormal and not only unconstructive but also destructive and harmful (Bagyan kouleh marz et al., 2014).

Emotion control means recognizing, expressing, and controlling negative and positive emotions. Emotion control skills have a positive effect on various aspects of life, interpersonal interactions, and mental and physical health (Dunham, 2008). The ability to control emotions is essential for adapting to stressful life experiences (Szczygieł et al., 2012) and teaches one how to recognize, update, or control one's emotions in a variety of situations (Khodabakhshi koolaee et al, 2017). Two important reasons for controlling emotions are that at first a large number of people suffer from problems of inability to control their emotions; because they have not learned the skill of self-control and secondly, the inability to control emotions affects many aspects of life and physical and mental health, communication and quality of life (Ghaffari & Abolghasemi, 2016). In humans, emotion control is known through the four dimensions of negative emotion, anxiety, anger, and depressed mood, and in this way, individuals determine what emotion to experience, when, and how to express it (Roberton, Daffern & Bucks, 2012). Raimo et al. (2021) showed that the problem of emotion regulation and management is one of the important and basic problems of women with multiple sclerosis. Nazari et al. (2020) showed in research that women with multiple sclerosis suffer from many emotional disorders due to complications caused by the disease.

Today, in addition to drug therapies, other therapies such as complementary therapies are considered and used to treat MS. The purpose of these interventions is to help sick people deal with and treat their challenges and problems. Because conventional drug treatment in all patients with MS alone is not effective and sufficient, and on the other hand, drugs have many side effects, such as fatigue and mental imbalance, there is no completely effective treatment to eliminate these side effects (McCabe & et al, 2004). In recent years, non-pharmacological methods have attracted the attention of all patients, including patients with MS, and according to the mentioned cases, the use of psychological treatment methods to reduce the psychological symptoms of this disease is necessary. In line with psychological interventions for patients with MS, one of the treatment models is compassion-focused therapy, which has attracted the attention of modern therapists for specific diseases (Alighanavati et al, 2018). Compassion is considered a dimensional structure that includes two interrelated mindsets (Gilbert, 2014). The first mindset involves sensitivity to one's own and others' suffering, which is related to several characteristics, such as motivation to care and the ability to feel empathy and sympathy. The second mentality, the commitment to alleviate suffering, requires a special set of dependency skills in the space of attention, cognition, behavior, and emotion that contribute to the formation of a compassionate mind. Examples include the ability to replace self-critical thinking with compassionate self-correction and to create feelings of compassion for oneself and others (Gilbert, 2014). Basic principles in compassion-focused therapy point out that soothing external thoughts, factors, images, and behaviors must be internalized, and in this case, the human mind, as it responds to external factors, in the face of this the inner self also calms down (Gilbert, 2014). Marsh et al. (2018) found in a meta-analysis that a lack of compassion may play a significant role in creating or maintaining emotional problems in adolescents. Schellekens et al. (2017) in their study aimed at the relationship between mindfulness and compassion with psychological distress in couples with lung cancer concluded in 88 couples with lung cancer that mindfulness and compassion may be beyond the individual. And positively affect the performance of the couple. Hudson et al. (2020) found in research that compassion-based therapy is one of the treatments that reduce psychological distress in people. Daneshvar et al (2022) showed that compassion-focused therapy (CFT) has positive effect on suicidal ideation and cognitive distortions in female survivors of intimate partner violence with PTSD.

Another psychological treatment that seems to be beneficial in improving the psychological health of patients with MS is acceptance and commitment therapy. The basis of this treatment is the theory of communication systems. Unlike many therapies that emphasize reducing or controlling symptoms, acceptance and commitment therapy encourages acceptance of negative reactions (thoughts, emotions, sensations, etc.) while promoting engagement in meaningful activities that cannot be directly changed (Baruch et al., 2012). Acceptance and commitment therapy is part of the third wave of behavioral therapies, followed by the second wave of these therapies, such as cognitive-behavioral therapy. According to acceptance and commitment therapy, psychological and behavioral problems may occur as a result of experiential avoidance or unwillingness to experience unwanted internal events such as thoughts, feelings, and bodily sensations (Imani et al, 2023). The subject's acceptance and commitment therapy seeks to provide the skills needed to create pain without unnecessary defense (Bond et al, 2013). The term Psychological Flexibility has been used to describe key and proposed treatment processes in the acceptance and commitment-based treatment model (Hayes & Bond, 2003). In this regard, Nasiri et al. (2015) found in a study that acceptance and commitment-based therapy can be used as a method of psychotherapy of choice and complementary to medical treatment to improve the quality of life of patients with gastrointestinal dysfunction. Ostadian khani et al. (2016) found in a study that acceptance and commitment therapy improved body image flexibility and emotion control in women with

binge eating disorder and the results were maintained in the follow-up phase. Sadeghi-Bahmani et al. (2022) showed in a study that acceptance and commitment therapy led to a reduction in negative symptoms and an increase in emotional competencies in women with multiple sclerosis.

Due to the fact that patients with MS suffer from many physical and psychological problems, and this disease has devastating and adverse effects on the personal life, social relationships, marital, family, and occupational issues of patients if no psychological help is provided, patients may struggle to cope with their problems and continue living. It is necessary to design and implement useful treatment packages to reduce psychological problems and increase the mental health of these patients by using the latest and most effective methods of psychological treatment. According to the mentioned cases, the aim of the present study was to compare the effectiveness of compassion-focused therapy and acceptance and commitment-based therapy in controlling the emotions of women with multiple sclerosis.

## Method

### *Participants*

The research method was quasi-experimental with a pre-test-post-test-follow-up design with a control group. The statistical population of the study consisted of all female patients with MS who were members of the Golestan Province MS Association in 2019 and who had an active file in the association. The sample consisted of 60 female patients with multiple sclerosis who were admitted to the study in an accessible manner, after a preliminary interview based on the inclusion and exclusion criteria, and were randomly assigned to two experimental groups and a control group (each group with 20 people) were located.

## Instrument

### *Emotion Control Scale:*

Developed by Williams et al. (1997), it is a tool for measuring how much people control their emotions and includes 42 terms with four subscales entitled Anger (8 terms), Depressed Mood (8 terms), and Anxiety (13 phrases) and positive emotion (13 phrases). The responses of the expressions are adjusted on a 7-point scale from strongly disagreeing with score 1 to strongly agreeing with score 7 (Ayadi et al., 2016). Internal validity and retest of the test for the whole scale of 0.94 and 0.78, respectively; For the anger subscale, 0.72 and 0.73; Depressed mood subscale, 0.91 and 0.76; Anxiety subscale was 0.89 and 0.77 and for positive emotion subscale was 0.84 and 0.60. Differential validity and convergence have also been obtained for a sample of undergraduate students. Also, the reliability coefficient of retesting of this scale after two weeks in the whole scale is 0.78, and in the subscales in the range from 0.66 to 0.77 (Williams et al., 1997). In a study conducted by Tahmasbian et al. (2014) to evaluate the validity, reliability, and preliminary standardization of the emotion control test in 5 groups of the population of Kermanshah, the internal consistency of the questionnaire by calculating Cronbach's alpha coefficient for students 0.782, students 0.818, teachers 0.889, nurses 0.909, and professors 0.935.

### *Acceptance and Commitment Therapy:*

Acceptance and commitment training was taught in groups in eight one-and-a-half-hour sessions (Table 1) based on the Hayes and Bond protocol (2003). This treatment, which is based on a cognitive-behavioral approach, is based on the assumption that psychological damage occurs due to controlling and avoiding negative thoughts and emotions experienced in life. In essence, this treatment is based on reducing the impact of ineffective control strategies and supporting value-based behavioral change (Hayes & Bond, 2003).

Table 2 provides a summary of the content and structure of the compassion-focused treatment sessions.

**Table 1.** A summary of the content of acceptance and commitment therapy sessions

| Meetings | Objectives | Content of sessions | Homework |
|---|---|---|---|
| First | Familiarity with the rules and generalities of the ACT method | Pre-test performance, introduction of members to each other and the therapist, description of group rules, group goals and structure, treatment commitments, and an introduction to ACT | - |
| Second | Familiarity with some of the concepts of ACT therapy, including the experience of avoidance, integration, and psychological acceptance. | Assessing clients' problems from an ACT perspective, extracting avoidance experiences, integration, and individual values. Create a list of advantages, disadvantages, and troubleshooting methods | Identify avoidant situations and allow negative thoughts to flow without fighting them. |
| Third | Perform ACT therapy techniques such as cognitive isolation, psychological awareness, self-visualization | Assessing homework, specifying inefficiency, controlling negative events using metaphors, cognitive separation training, psychological and self-visual awareness | Awareness of the here and now and an interest in escaping from what is happening now. |
| Fourth | Teaching healing techniques, emotional awareness, awareness-wisdom (metaphor of the victim) | Examine homework, separate assessments from personal experiences, and take a stand on non-judgmental thoughts that lead to psychological flexibility and positive emotions. | Focus on all mental states, thoughts and behaviors in the moment without any judgment |

| | | | |
|---|---|---|---|
| Fifth | Teach therapy techniques within a broader context and practice mindfulness and distress tolerance training | Examining homework, relating to the present and considering oneself as a background and teaching mindfulness and stress tolerance techniques in order to accept negative emotions. | Trying to gain a sense of excellence using trained techniques |
| The sixth | Teaching personal value therapy techniques and clarifying values and teaching emotion regulation (bad cup metaphor) | Assessing homework, identifying the values of the clients' lives and measuring the values based on their importance. Making a list of obstacles in the realization of values and creating positive emotions | Identify core personal values and plan goals based on values. |
| Seventh | Teaching the techniques of personal values and committed action and increasing interpersonal efficiency (chess board metaphor) | Examining homework, providing practical solutions to overcome obstacles while using metaphors and planning for a commitment to pursue values and create a sense of meaning in life | Committed effort to achieve goals designed based on trained techniques. |
| Eighth | Practice trained therapy techniques with an emphasis on regulating emotions and a sense of meaning in real-life | Review of homework, a report of the steps of pursuing values, asking clients to explain the results of the sessions and applying the techniques taught in the real world to create a sense of meaning and positive emotions, conducting a post-test, coordination to hold a follow-up session in one next month. | - |

**Table 2.** A summary of the content of compassion-focused treatment sessions

| Meetings | Objectives | Content of sessions | homework |
|---|---|---|---|
| First | Familiarity with the general principles of treatment | Performing a pre-test, introducing the therapist and group members to each other, discussing the purpose of the sessions and their overall structure, grouping, reviewing the structure of the sessions, familiarity with the general principles of compassion-focused therapy; Examining the level of shame, self-criticism, and self-efficacy of members, conceptualizing self-efficacy education. | Record cases of shame and self-criticism in daily challenges |
| Second | Understanding the components of self-critical compassion | Identifying and introducing the components of compassion, examining each component of compassion in the members and identifying its characteristics, understanding the traits of compassionate individuals and reviewing members' self-compassion. | Record the components of self-sufficiency in daily activities |
| Third | Self-education of members | Overview of the tasks of the previous session, cultivating a feeling of warmth and kindness towards oneself, cultivating and understanding that others also have flaws and problems (cultivating a sense of human commonalities) in the face of self-destructive feelings and shame, teaching self-compassion, developing a broader range of emotions related to personal issues to enhance self-care and well-being. | Record the components of self-sufficiency in daily activities |
| Fourth | Self-knowledge and identification of self-critical factors | Reviewing the exercises of the previous session, encouraging the subjects to self-knowledge and examining their personality as a "compassionate" or "non-compassionate" person, identifying and applying the exercises of "cultivating a compassionate mind" (the value of self-compassion, empathy, and compassion for oneself and others, Physiotherapist metaphor training), accepting mistakes and forgiving oneself for mistakes to accelerate change. | Record daily mistakes and identify the causes |
| Fifth | Correction and expansion of compassion | Review of the previous session, familiarity, and application of "compassionate mind training exercises" (forgiveness, non-judgmental acceptance, flu metaphor training, and tolerance training), problem acceptance training; Accepting the changes ahead and enduring challenging conditions due to the changing nature of life and people facing different challenges. | Record daily mistakes and identify the causes |
| The sixth | Teach styles and methods of expressing compassion | Review of the previous session, practical practice of creating compassionate images, teaching styles, and methods of expressing compassion (verbal compassion, practical compassion, cross-sectional compassion, and continuous compassion) Applying these methods in daily life and for family and friends, teaching emotion development Valuable and transcendent. | Apply compassion in daily activities |
| Seventh | Techniques for expressing compassion | Review the practice of the previous session, learn to write compassionate letters for yourself and others, and learn the method of "recording and daily diary of real situations based on compassion and the performance of the person in that situation." | Write compassionate letters to yourself and those around you |
| Eighth | Evaluation and application | Training and practice skills; Review and practice the skills presented in the previous sessions to help the subjects cope with different life situations in different ways. Strategies for maintaining and applying this treatment method in daily life, summarizing and concluding and answering members' questions and evaluating all sessions, thanking and appreciating members for participating in sessions, conducting post-tests, coordinating to hold follow-up sessions in the next month. | Keep notes of what you learned from the process |

### *Procedure*

The method of conducting the research was that first, a letter of introduction was obtained from the university to submit to the management of the Golestan Province MS Association. The researcher then attended the MS Association to explain the need for the study, the implementation process, and the benefits of the interventions offered to patients. After obtaining consent from the MS Association officials and making the necessary arrangements, patients were informed about the treatment sessions through the Association. Then the treatment sessions were held by the researcher at the MS Association. During the delivery of treatment packages for patients in the experimental groups, patients in the control group did not receive treatment. At the end of the treatment sessions, all three groups again answered the research questionnaires (post-test stage). One month after the last treatment session and taking a post-test from all three groups, to assess the therapeutic effects of the interventions, the subjects were present in a follow-up stage and were re-evaluated by study tools. Also, treatment sessions were held for the participants of the control group to observe ethical issues in the research and to thank and appreciate them for their cooperation in the research process, after the end of the research. In this study, to obtain the satisfaction of the study subjects, the Helsinki Declaration, which is a fundamental supporter of the rules of research ethics, was used. Among the provisions outlined in the Helsinki Declaration can be explained the objectives of the research and the informed consent of the units under study, the option to participate in the research, the right to withdraw from the study, to respond to the results without harming the intervention, Pointed to desire (World Medical Association, 2013). Criteria for inclusion in the study include: 1- Female gender, 2- Definitive laboratory diagnosis and confirmation of the disease by a neurologist according to the patient's record, 3- Age range 20 to 50 years, 4- Having at least primary education, 5- Failure to reach the acute stage of the disease (patients with recurrent-recurrent type), 6- At least one year of history of the disease, 7- Completing the informed consent form based on voluntary participation in the study and 8- Not receiving services Psychology was out of therapy sessions. Exclusion criteria: 1) Reluctance to continue cooperation, 2) Having diagnostic criteria of obvious psychiatric disorders based on a clinical interview, 3) Acute or chronic physical disorders (such as heart, respiratory, liver, musculoskeletal, kidney debilitating diseases), 4) Absence of more than two sessions in the treatment process 5) A history of participation in other therapeutic intervention programs was considered.

To analyze the data at the level of descriptive statistics, mean and standard deviation indices, the Kruskal–Wallis test was used to examine the age difference between the groups; the Kolmogorov-Smirnov test was used at the inferential level to check the normality. Levene's test was used to check the homogeneity variance of the groups and Mauchly's Sphericity Test was used to check the sphericity default. Also, to interpret the results, the Huynh–Feldt correction was used, which adjusts the degrees of freedom. Then, analysis of variance tests with repeated measures and Bonferroni's post hoc were used in SPSS-24 software and the significance level of all tests was considered 0.05.

## Results

According to demographic information, the highest frequency of age for the experimental group (CFT) is related to the age group of 31-35 years with 35%, for the experimental group (ACT) is related to the age group 31-35 years and 40% and for the control group is related to the age group. 36 to 40 years was 25 percent. Also, according to the marital status of the experimental group (CFT), 40% were single and 60% married, the experimental group (ACT) was 35% single and 65% married, and the control group was 40% single and 60% married. Finally, based on the employment status in the experimental group (CFT), 75% were housewives and 25% were employed, in the experimental group (ACT) 65% were housewives and 35% were employed, and in the control group, 70% were housewives and 30% employed.

**Table 3.** Mean and standard deviation of research variables in pre-test, post-test and follow-up stages

| Variable | Group | Compassion-Focused Therapy (CFT) | | Acceptance and Commitment Therapy (ACT) | | Control group | |
|---|---|---|---|---|---|---|---|
| | | Mean | Standard Deviation | Mean | Standard Deviation | Mean | Standard Deviation |
| Anger | Pre-Test | 20.20 | 2.76 | 18.65 | 3.32 | 20.35 | 3.18 |
| | Post-Test | 30.95 | 3.22 | 26.45 | 2.89 | 20.90 | 2.24 |
| | Follow Up | 31.20 | 2.76 | 26.35 | 2.96 | 21.05 | 2.39 |
| Depressed mood | Pre-Test | 16.35 | 2.13 | 16.30 | 3.18 | 16.15 | 2.23 |
| | Post-Test | 25.35 | 2.13 | 21.50 | 3 | 17.05 | 2.28 |
| | Follow Up | 25.20 | 1.98 | 21.40 | 2.99 | 16.90 | 2.19 |
| Anxiety | Pre-Test | 32.05 | 3.10 | 33.35 | 2.79 | 33.05 | 3.25 |
| | Post-Test | 43.05 | 3.28 | 39.30 | 2.59 | 34.50 | 3.12 |
| | Follow Up | 44.05 | 3.10 | 38.75 | 2.19 | 34.25 | 3.27 |
| Positive emotion | Pre-Test | 35.39 | 3.05 | 36.40 | 3.64 | 35.90 | 4.41 |
| | Post-Test | 47.95 | 3.12 | 42.15 | 2.56 | 36.15 | 3.43 |
| | Follow Up | 47.50 | 3.22 | 42.30 | 2.51 | 36.45 | 4.12 |
| Affect Control | Pre-Test | 104.55 | 6.84 | 104/70 | 5.26 | 105/45 | 10.76 |
| | Post-Test | 147.30 | 3.52 | 129.40 | 5.32 | 108.60 | 8.12 |
| | Follow Up | 147.95 | 6.40 | 128.80 | 5.11 | 108.65 | 8.45 |

Table (3) shows the mean and standard deviation of research variables in the pre-test, post-test and follow-up stages of experimental and control groups. For data analysis, a repeated measures analysis of variance test was used, but before performing repeated measures analysis of variance test, the default result of Muchley sphericity for homogeneity of the covariance matrix of variable scores was presented. It is worth noting that this assumption is observed when the significance level for the Muchley W coefficient is greater than 0.05.

**Table 4.** Muchley sphericity test results

| Intra-subject effects | Muchley W coefficient | Chi-square coefficient | df | P | Epsilon | | |
|---|---|---|---|---|---|---|---|
| | | | | | greenhouse-geisser | Huynh–Feldt | Low Felt |
| Anger | 0.224 | 83.84 | 2 | 0.001 | 0.563 | 0.587 | 0.50 |
| Depressed mood | 0.092 | 133.48 | 2 | 0.001 | 0.524 | 0.544 | 0.50 |
| Anxiety | 0.595 | 29.05 | 2 | 0.001 | 0.712 | 0.751 | 0.50 |
| Positive emotion | 0.500 | 38.79 | 2 | 0.001 | 0.667 | 0.701 | 0.50 |
| Affect Control | 0.320 | 63.81 | 2 | 0.001 | 0.595 | 0.622 | 0.50 |

Based on the results of Table (4), according to the significance level of the Muchley W coefficient for the components, it is observed that the Sphericity default is not observed for any of the emotion control components, so the huynh-feldt coefficient has been used to interpret the results.

**Table 5.** Results of analysis of variance with repeated measures related to in-group and out-group effects

| Effects | Source | Variable | Type III Sum of Squares | df | Mean Square | F | P |
|---|---|---|---|---|---|---|---|
| Within-Subject Factor | Time | Anger | 1647.24 | 1.17 | 1403.90 | 279/88 | 0.001 |
| | | Depressed mood | 987.24 | 1.08 | 907.02 | 243/95 | 0.001 |
| | | Anxiety | 1521.24 | 1.50 | 1013.41 | 174.98 | 0.001 |
| | | Positive emotion | 1440 | 1.40 | 1027.56 | 143.25 | 0.001 |
| | | Affect Control | 22184.13 | 1.24 | 17832.84 | 506.16 | 0.001 |
| | Time and group interaction (interaction effect) | Anger | 736.62 | 2.34 | 313.90 | 62.58 | 0.001 |
| | | Depressed mood | 438.08 | 2.17 | 201.24 | 54.12 | 0.001 |
| | | Anxiety | 708.55 | 3.002 | 236.01 | 40.75 | 0.001 |
| | | Positive emotion | 866.36 | 2.80 | 309.11 | 43.09 | 0.001 |
| | | Affect Control | 10635.66 | 2.48 | 4247.77 | 121.33 | 0.001 |
| | Error | Anger | 335.46 | 66.88 | 5.01 | | |
| | | Depressed mood | 230.66 | 62.4 | 3.71 | | |
| | | Anxiety | 495.53 | 85.56 | 5.79 | | |
| | | Positive emotion | 572.96 | 79.87 | 7.17 | | |
| | | Affect Control | 2498.20 | 70.90 | 35.23 | | |
| Between-Subject Factor | Group | Anger | 1343.41 | 2 | 671.70 | 35.28 | 0.001 |
| | | Depressed mood | 942.47 | 2 | 471.48 | 32.11 | 0.001 |
| | | Anxiety | 1007.21 | 2 | 503.60 | 27.77 | 0.001 |
| | | Positive emotion | 1751.63 | 2 | 875.81 | 35.84 | 0.001 |
| | | Affect Control | 18826.80 | 2 | 9913.40 | 88.95 | 0.001 |
| | Error | Anger | 1085.23 | 57 | 19.03 | | |
| | | Depressed mood | 836.93 | 57 | 14.68 | | |
| | | Anxiety | 1033.51 | 57 | 18.13 | | |
| | | Positive emotion | 1392.78 | 57 | 24.43 | | |
| | | Affect Control | 6352.40 | 57 | 111.44 | | |

Table (5) presents the results of repeated measures analysis of variance test to examine the effects within the test and between subjects. As can be seen, due to time, considering that the emotion control variable and all its components have become significant (P<0.01), so there are differences between the experimental and control groups across the three stages: pre-test, post-test, and follow-up. Also, according to the results of the table that show that there is an interaction between the group and the time (p<0.01), it is clear that there is a difference between the pre-test, post-test and follow-up stages between the two groups of treatment and control in the dependent variable. Regarding the effect of the group, based on F values and significant levels, it is observed that there is a significant difference between the two experimental groups (CFT) and (ACT) and the control group in the emotion control variable and all its components (p<0.01). The two-by-two comparison of these groups for each stage of assessment (pre-test, post-test and follow-up) is presented below.

**Table 6.** Pair comparison of experimental and control groups in the measurement stages in the emotion control variable and its components

| Variable | Step | Group I | Group J | Mean difference (I-J) | Standard error | P |
|---|---|---|---|---|---|---|
| Anger | Pre-Test | CFT | ACT | 1.55 | 0.981 | 0.120 |
| | | CFT | Control | -0.15 | 0.981 | 0.879 |
| | | ACT | Control | -1.70 | 0.981 | 0.088 |
| | Post-Test | CFT | ACT | 4.50 | 0.890 | 0.001 |
| | | CFT | Control | 10.05 | 0.890 | 0.001 |
| | | ACT | Control | 5.55 | 0.890 | 0.001 |
| | Follow Up | CFT | ACT | 4.85 | 0.859 | 0.001 |
| | | CFT | Control | 10.15 | 0.859 | 0.001 |
| | | ACT | Control | 5.30 | 0.859 | 0.001 |
| Depressed mood | Pre-Test | CFT | ACT | 0/05 | 0.809 | 0.951 |
| | | CFT | Control | 0/20 | 0.809 | 0.801 |
| | | ACT | Control | 0.15 | 0.809 | 0.854 |
| | Post-Test | CFT | ACT | 3.85 | 0.791 | 0.001 |
| | | CFT | Control | 8.30 | 0.791 | 0.001 |
| | | ACT | Control | 4.45 | 0.791 | 0.001 |
| | Follow Up | CFT | ACT | 3.80 | 0.770 | 0.001 |
| | | CFT | Control | 8.30 | 0.770 | 0.001 |
| | | ACT | Control | 4.50 | 0.770 | 0.001 |
| Anxiety | Pre-Test | CFT | ACT | -1.30 | 0.967 | 0.184 |
| | | CFT | Control | -1 | 0.967 | 0.305 |
| | | ACT | Control | -0.30 | 0.967 | 0.757 |
| | Post-Test | CFT | ACT | 3.75 | 0.953 | 0.001 |
| | | CFT | Control | 8.55 | 0.953 | 0.001 |
| | | ACT | Control | 4.80 | 0.953 | 0.001 |
| | Follow Up | CFT | ACT | 5.30 | 0.916 | 0.001 |
| | | CFT | Control | 9.80 | 0.916 | 0.001 |
| | | ACT | Control | 4.50 | 0.916 | 0.001 |
| Positive emotion | Pre-Test | CFT | ACT | -0.45 | 1.18 | 0.705 |
| | | CFT | Control | 0.05 | 1.18 | 0.966 |
| | | ACT | Control | 0.50 | 1.18 | 0.674 |
| | Post-Test | CFT | ACT | 5.80 | 0.961 | 0.001 |
| | | CFT | Control | 11.80 | 0.961 | 0.001 |
| | | ACT | Control | 6 | 0.961 | 0.001 |
| | Follow Up | CFT | ACT | 5.20 | 1.06 | 0.001 |
| | | CFT | Control | 11.05 | 1.06 | 0.001 |
| | | ACT | Control | 5.85 | 1.06 | 0.001 |
| Affect Control | Pre-Test | CFT | ACT | -0.15 | 2.51 | 0.953 |
| | | CFT | Control | -0.90 | 2.51 | 0.722 |
| | | ACT | Control | -0.75 | 2.51 | 0.767 |
| | Post-Test | CFT | ACT | 17.90 | 2.13 | 0.001 |
| | | CFT | Control | 38.70 | 2.132 | 0.001 |
| | | ACT | Control | 20.80 | 2.13 | 0.001 |
| | Follow Up | CFT | ACT | 19.15 | 2.14 | 0.001 |
| | | CFT | Control | 39.30 | 2.14 | 0.001 |
| | | ACT | Control | 20.15 | 2.14 | 0.001 |

According to the results of Table (6), in the pre-test stage, there is no difference between the treated group (CFT) and the treated group (ACT) and the control group, and in the post-test and follow-up stages, there is a significant difference between the experimental and control groups (P<0.01) showed that the comparison of means shows that the mean scores of emotion control and its components in group therapy (CFT) are higher than group therapy (ACT), which is a sign of greater effectiveness of treatment focused on compassion.

## Discussion

The aim of this study was to compare the effectiveness of compassion-focused therapy and acceptance and commitment therapy in controlling the emotions of women with MS. The results of repeated measures analysis of variance and Bonferroni test showed that both therapeutic approaches were effective in increasing emotion control and its components. Compassion-focused therapy was also more effective when comparing the two approaches.

These findings are consistent with the results of research by Hudson et al. (2020), Chong et al. (2019) and Herbert et al. (2019). Ostadian Khani et al. (2020) found in a study that acceptance and commitment therapy improved body image flexibility and emotion control in women with binge eating disorder and the results were maintained in the follow-up phase. Hudson et al. (2020)

showed in research that compassion-focused therapy caused significant improvement in stress, anxiety, depression, self-compassion and quality of life in women. Chong et al. (2019) found in a research that acceptance and commitment therapy reduced psychological inflexibility, anxiety and stress and reduced children's referrals (related to asthma) to medical centers. In Herbert et al.'s (2019) study, 126 war veterans with chronic pain participated in an acceptance and commitment therapy intervention for chronic pain. According to the report of participants with post-traumatic stress disorder, pain interference, pain intensity, depressive symptoms and pain-related anxiety were higher in the baseline phase. Post-traumatic stress disorder status did not moderate post-treatment effects. Instead, significant improvements were observed in all between-group measurements in the study. PTSD status moderated change in depressive symptoms at six-month follow-up. Specifically, participants with chronic pain alone (without PTSD) showed improvements in depressive symptoms compared to pretreatment levels.

In explaining the greater effectiveness of compassion-focused therapy compared to acceptance-commitment therapy in increasing control of emotions and their components in patients, it can be said that compassion-focused therapy primarily targets and targets emotions, whereas, in acceptance and commitment therapy, emotions are considered secondary and are expected to change over time through acceptance, and the basic prescription for improving emotions is their current acceptance. For some clients, especially those suffering from the disease, this acceptance may lead to more anxiety or depression in some cases. However compassion-based therapy is fundamentally interested in changing emotions and actively seeks to change them. By increasing the capabilities of the conscious brain (position of self-awareness and mindfulness, metacognitive analysis), against the old brain (position of memories) and the new brain (rational and reasoning brain based on reality) and by voluntarily changing the critical planning of the mind, leading to emotional change (Gilbert, 2009). Acceptance and commitment therapy does not target specific emotions. For this therapy, almost everyone follows the same procedure, but in compassion therapy, emotions such as anger, depressed mood, and anxiety are exactly the same emotions caused by criticism, blame, and unkindness. They are mindful, and by increasing compassion they can lead to positive emotions such as empathy, compassion, compassion, and kindness, in which case anger transforms into regret, depression becomes temporary, and anxiety turns into a constructive and manageable concern (Gilbert, 2014).

This research, like other research, has faced some limitations. Since this study was performed on female patients with MS in Gorgan, so in generalizing the results to other cities, caution should be exercised. Self-reporting of the tools used and the available sampling method is one of the limitations of this research that needs to be considered. Another limitation is the lack of control over underlying and individual factors. To investigate the long-term effect of the intervention, follow-up tests at regular intervals are necessary, but in this study, a follow-up test was performed due to time constraints. According to the results of this study, it is recommended to conduct research in therapeutic groups by random sampling and appointment to be more confident in the therapeutic findings. Since both treatments in the present study were conducted by a single therapist, it is recommended that future studies involve multiple therapists to enhance confidence in the results and reduce research bias. Based on the findings of the study, it is suggested that psychologists and counselors use the therapeutic components of approaches based on acceptance and commitment and focus on compassion to reduce psychological problems and promote the mental health of chronic patients.

## Conclusion

Therefore, compassion-based therapy is more effective due to direct intervention and addressing the content of emotions compared to acceptance and commitment therapy, which considers the most appropriate method to be indifferent to emotions and accepting them.

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No potential conflict of interest was reported by the authors.

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