

**The Comparison of Cognitive Therapy based on Mindfulness and Grammatical Mental Imaging with Cognitive Processing on Emotional Processing in Mothers with Children with Autism Spectrum Disorder**

Farideh Safikhani<sup>1</sup>, Zahra Eftekharsaadi<sup>2\*</sup>, Farah Naderi<sup>3</sup>, Fatemeh Sadat Marashian<sup>2</sup>

1. PhD Student in Psychology and Exceptional Children's Education, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran.
2. Assistant Professor, Department of Psychology, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran.
3. Associate Professor, Department of Psychology, Ahvaz Branch, Islamic Azad University, Ahvaz, Iran.

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**Abstract**

**Purpose:** The aim of the present study was to compare mindfulness-based cognitive therapy and grammatical mental imagery with cognitive processing on the emotional processing of mothers with children with autism spectrum disorder.

**Methodology:** The research was applied in terms of purpose and in terms of cross-sectional data collection method and quasi-experimental research method was pre-test-post-test with a control group. The statistical population of the present study is all mothers with children with autism spectrum disorder in two schools under education in the city. Ahvaz had 105 students in 2019. A total of 45 mothers with children with autism spectrum disorder were randomly selected and 15 people in the group of cognitive therapy based on mindfulness, 15 people in the group of grammatical mental imagery with cognitive processing and Fifteen people were in the control group. Assessment tools included Baker et al. (2010), mindfulness-based cognitive therapy protocol and grammatically processed grammatical mental imagery protocol. Data analysis using analysis of covariance And was done by SPSS software version 24.

**Findings:** Based on the research findings, the effect of statistical group type (control and experiments) on the recorded scores of emotion processing ( $p = 0.00$ ,  $F = 157/407$ ) and the separate effect of the test time variable ( $p = 0.00$ ,  $F / 107/15$  And the significance of the simultaneous effect of group type and test status (pre-test and post-test) on emotion processing scores ( $p = 0.00$ ,  $F = 26.757$ ). Comparing the two methods of cognitive therapy and imaging, a significant level equal to 0.00 and less than the error level of 0.05 has been obtained.

**Conclusion:** Based on the research findings, cognitive therapy based on mindfulness and grammatical mental imagery with cognitive processing is effective on emotional processing of mothers with children with autism spectrum disorder. Also, between the effectiveness of cognitive therapy based on mindfulness and grammatical mental imagery. There is a significant difference with cognitive processing in emotional processing of mothers with children with autism spectrum disorder.

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\* Corresponding author: Eftekharsaadi@yahoo.com

## 1. Introduction

Families of children with Autism Spectrum Disorder (ASD) use family routines to provide predictions and structures to support their family members' occupations. Mothers play a key role in coordinated activities in building family routines that can affect their health and well-being (McAuliffe & Thomas, 2019). Mothers with experience in raising a child with autism spectrum disorder show a complex and very challenging life. Autism Spectrum Disorder is a lifelong developmental disability that is associated with quality disorders in three areas: social interaction, communication, and repetitive, stereotypical behaviors (American Psychological Association, 2019). There is considerable evidence that the incidence of autism spectrum disorder is increasing worldwide as diagnostic and screening techniques improve. It is reported that about 52 million people worldwide are in this range (Baxter, et al, 2015). With the increasing prevalence of people with autism spectrum disorder, a new population of families has emerged that presents more challenges as our knowledge increases. Although the characteristics of autism spectrum disorder are observed in cultures, family care experiences of a child with autism spectrum disorder can be varied (Riany, et al. 2016; Kim 2012). The study of the experience of mothers of children with autism spectrum disorder, nationally and internationally, in order to be aware of the policy and legislative process, is important (Gobrial, 2018).

Parents of children with autism face the unique, everyday stressors associated with their child's disorder. Parents' personality traits can be affected in dealing with stressful life events and can seriously help them cope with some of the harmful effects of severe stress. One of the factors that may enhance coping strategy is how emotional processing works. The concept of emotional processing was first introduced by Rachman in 1980, who introduced it as a promising concept with a specific connection and application in anxiety disorders. In 2001, Rachman reinstated the concept and exacerbated it in post-traumatic stress disorder. Rachman (1980) used the term emotional processing to refer to the way a person uses stressful life events. He defined emotional processing as "the process by which emotional disorders are absorbed and reduced to such an extent those other experiences and behaviors can continue without disturbance" (Rebekah, 2020).

Emotion processing is a process by which emotional disturbances decline so that other behaviors and experiences in individuals can progress and increase (Himachi, Hashiro, Miyake, 2018) and by using emotion processing strategies can increase emotional skills for Be effective in reducing anxiety and emotional and psychological problems (Mohammadi Siah Kamri, Amiri, 2017). According to Rachman (1980), the four categories of factors that may lead to problems in emotional processing are: cognitive avoidance, lack of experience of short-term habituation, depression, and overestimated beliefs. Students who use weaker cognitive styles of emotional processing, such as rumination, catastrophe, and blame, are more vulnerable to emotional problems than others (Skerbetz, Kostewicz, 2015), while those who use desirable styles are more vulnerable. Others use it as a positive reassessment, less vulnerability (Wang et al., 2015).

Today, due to the presence of cognitive, emotional and behavioral symptoms in parents of children with autism spectrum disorder, specialists not only benefit from medical treatments but also benefit from psychological therapies that play a crucial role in controlling and reducing psychological symptoms. Psychological therapies in this field include mindfulness-based stress reduction (MBSR) and grammatical mental imagery with reprocessing (IRRT). The method of consciousness is a psychological process that deliberately draws a person's attention to the experiences that are happening in the present moment without judgment, which can be developed through the practice of meditation and other teachings. People who have contributed to the popularity of mindfulness in the modern Western context include clinical and psychiatric psychology since the 1970s (Singh, 2019). A number of mindfulness-based treatment applications To help people in a variety of mental and emotional states, mindfulness has been used to reduce the symptoms of depression, stress, anxiety, and in the treatment of drug addiction. Programs based on

Kabat Saddle models and similar models have been adopted in schools, prisons, hospitals, veterans' centers and other environments, and mindfulness programs for healthy aging, weight management, athletic performance, Helping children is used (Ridderinkhof, 2019).

Grammatical mental imagery with cognitive reprocessing is a therapy based on cognitive image therapy designed to reduce the symptoms of post-traumatic stress and correct trauma-related images, beliefs, and designs (Landkroon, 2019). Grammatical mental imagery with cognitive processing consists of three stages of imagery: 1. Imaginary imagination - visual recollection and re-experiencing traumatic images with related thoughts, effects and bodily emotions along with creating an accurate, descriptive, verbal narrative. 2. Masterful Imaginations - Imagine you as a worthy and capable adult (today) by rescuing the child from the trauma scene, successfully confronting and preventing the power of the offender (at that time). 3. Images of self-relaxation / self-feeding - Imagine yourself as an adult (today) calming, soothing and nurturing an injured child (at the time) (Morina, 2017). Given the above introduction, the research question arises as to whether there is a difference between the effectiveness of mindfulness-based cognitive therapy and grammatical mental imagery with cognitive processing on the emotional processing of mothers with children with autism spectrum disorder?

## 2. Methodology

According to its purpose, this study was an applied research and in terms of cross-sectional data collection method and quasi-experimental research method was a pre-test-post-test with a control group and the implementation of two therapeutic methods; Cognitive therapy was based on mindfulness and grammatical mental imagery with cognitive processing separately for the two experimental groups and neutral content for the control group. According to its purpose, this study was an applied research and in terms of cross-sectional data collection method and quasi-experimental research method was a pre-test-post-test with a control group and the implementation of cognitive therapy based on mindfulness in the experimental group and neutral content for the group was in control.

The statistical population of the present study was all mothers with children with autism spectrum disorder in two schools under the supervision of education in Ahvaz with 105 students in 2019. Considering that the minimum number of effective methods was 15 people per group, in the present study, a total of 45 mothers with children with autism spectrum disorder were randomly selected and randomly assigned to 15 people in the mind-based cognitive therapy group. Awareness and 15 people were assigned to the group of grammatical mental imagery with cognitive processing and also 15 people were assigned to the control group. Demographic characteristics of respondents by education are 17.8% of undergraduates and 44.4% of graduates. Also in terms of age, 26.6% of people under 25 years old and 22.2% between 25 and 35 years old, 26.6% of people between 35 and 45 years old and finally 24.6% of people were more than 45 years old. The measurement tools in this research are as follows.

Emotional Processing Scale Baker et al. (2010):

This scale, developed by Baker, Thomas, Thomas, Gower, Santonastaso & Whittlesea (2010), uses a device with 25 ounces of emotional measurement. Each item is graded on a 5-point Likert scale (1 = by no means up to infinite 5). This scale has 5 components of suppression, lack of emotion regulation, lack of emotional experience, signs of lack of emotional processing and avoidance. The psychometric properties of the abbreviated version are particularly promising in recognizing the differences between these groups. Cronbach's alpha and retest coefficients of this scale have been reported to be 0.92 and 0.79, respectively. In the study, Lotfi, Abolghasemi, Narimani (2013) confirmed the reliability of the scale based on the internal consistency method with Cronbach's alpha range of 0.85 and construct validity. And this scale has been reported optimally through the correlation of these subscales. Cronbach's alpha coefficient obtained in the present study in the pre-test condition  $F = 0.90$  and post-test  $F = 0.98$  which is more than 0.7 and shows the establishment of reliability. Mindfulness Based Cognitive Therapy (MBSR) Protocol: The

subject of mindfulness-based cognitive therapy training was prepared from a combination of general mindfulness-based cognitive therapy training Kabat - Zinn (2003). It is set in the morning and the content of each session is as follows:

**Table1.** Content of Kabat - Zinn (2003) Cognitive Therapy Protocol Sessions

| Meeting | Target  | Content   |
|---------|---|---|
| 1       | Awareness of the concept of mindfulness   | Familiarity of members with each other, explaining the nature of the treatment session, the concept of mindfulness and its role in reducing stress  |
| 2       | Oh, from this mind and its way  | Relaxation training by creating tension and releasing it in the muscles, becoming aware of the wandering mind and practicing body attention, paying attention to breathing and giving homework                    |
| 3       | The desire to calm the mind and lead to it  | Study homework, relaxation training by re-reading muscle groups, sitting meditation, and doing exercises that maintain attention in the present and control negative spontaneous thoughts.                        |
| 4       | Daily cravings and body aches   | Giving homework   |
| 5       | Generalization of relaxation and meditation   | Assessing homework, practicing breathing control training, gaining awareness of thoughts and feelings and watching thoughts without value judgment and controlling negative spontaneous thoughts, giving homework |
| 6       | Teach the connection between thinking and mood and negative emotions                          | Examining homework, generalizing relaxation and meditation in different situations, teaching attendance and having supervisory thoughts with positive thoughts, giving homework                                   |
| 7       | Teaching the art of enduring anxiety and controlling negative self-thoughts                   | Assessing homework, teaching the relationship between thought and mood and negative emotions, sitting meditation, focusing on emotional feelings, mood swings and thoughts based on the type of relationship.     |
| 8       | Implement stress reduction techniques to control negative thoughts in real-life environments. | Assessing homework, training in stress tolerance to control negative spontaneous thoughts and creating positive thoughts  |

Cognitive Processing Grammatical Imaging (IRRT) Protocol: This treatment program was developed by Smucker et al. (1995) in 5 to 7 90-minute sessions with three steps: command-mental imagery, dominance of mental imagery, and mental self-relaxation. Cognitive reprocessing is performed as the structure of treatment sessions is reported below.

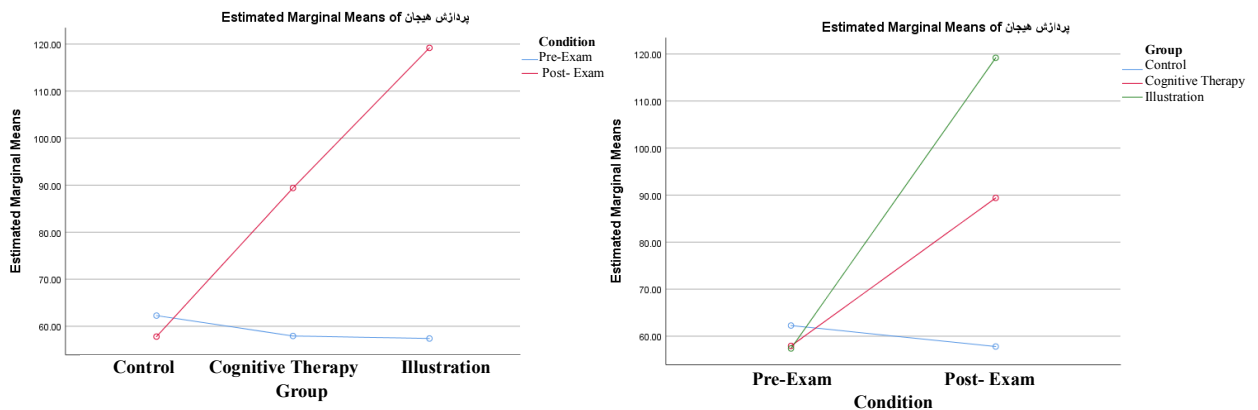
**Table2.** Content of Cognitive Imaging Protocol sessions with Cognitive Processing

| Meeting | Target  | Content   |
|---------|---|---|
| 1       | The concept of IRRT and its relation to thoughts                                  | Familiarity with each other, general presentation of IRRT and its role with psychological symptoms such as negative spontaneous thoughts, insomnia, unpleasant feelings   |
| 2       | Identify annoying thoughts and images and their relationship to mood and behavior | Help with identifying negative thoughts and visualizing disturbing images and how it overshadows mood, thinking, behavior, and insomnia by giving homework  |
| 3       | Practice muscle relaxation and visualize disturbing thoughts and images           | Examining homework, visualizing annoying thoughts and images in full detail and with closed eyes in conditions of muscle relaxation and its relationship with mood and insomnia, giving homework                                      |
| 4       | Guided and grammatical mental illustration training                               | Homework review, guided and instructed mental imagery training by the therapist to control negative thoughts and annoying images and create positive images, give homework  |
| 5       | Learn the technique of mental rotation and mental review                          | Examining homework, teaching cognitive review techniques and mind rotation techniques along with cognitive reprocessing, in order to eliminate negative spontaneous thoughts and create positive thoughts and moods.                  |
| 6       | Practice cognitive reconstruction of negative thoughts and liberating images      | Using cognitive review, the technique of mental rotation with reprocessing to control recurrent mental sparks and change the meanings of traumatic events, review of homework   |
| 7       | Apply trained techniques  | Examining homework, controlling recurrent mental sparks, flashbacks, continuous use of mental rotation technique with changes in the meanings of annoying thoughts and images in order to find positive thoughts, feelings and moods. |

Supplementary data collection of the tools, analysis of the results of the extracted raw data, pre-test and post-test collection tools of the two groups, was performed with 24SPSS software and according to the design method, the analysis method, as the inferential statistical assumptions the method of analysis of covariance was observed

### 3. Findings

As can be seen in the chart below, the mean scores of emotion processing in all three groups studied in the pre-test mode with the same amount of neglect are the same and equal. However, as a result of therapeutic training, the mean scores of emotion processing in the two groups of cognitive therapy and imaging in the post-test situation were significantly different from the pre-test scores, which means that therapeutic methods had an effect on emotion processing.



The separate effect of the type variable of statistical groups (control and experimental) on the recorded scores of emotion processing is significant. ( $p = 0.00$ ,  $F = 157/407$ ),  $p = 0.00$  and  $F = 78.048$ ), ie statistically, the mean scores of emotion processing were significantly different between the two groups of control, cognitive therapy and imaging and were not the same. Separate effect of time variable Experimentation in mindfulness ( $p = 0.00$ ,  $F = 15/107$ ) and imaging  $p = 0.00$  and  $f = 80.273$ ) is significant on the recorded scores of emotion processing. (Pre-test and post-test) have a significant difference and are not the same. Also, the table above shows the simultaneous effect of group type and test status (pre-test and post-test) on emotion processing scores (hence the simultaneous effect of control and Experiment with the state of the experiment had a significant effect on emotion processing: mindfulness method ( $p = 0.00$ ,  $F = 26.757$ ),  $p = 0.00$ ), 107.237

F =) Assumption of the difference between the effectiveness of mindfulness-based cognitive therapy and grammatical mental imagery with cognitive processing on emotion processing of mothers with children with autism spectrum disorder

**Table3.** Two-way comparison of therapeutic methods in the emotion processing variable

| 95% confidence interval for mean differences |           | Significance level | Mean difference (I-J) | (J) Group         | (I) Group         | Research variables |
|--|-----------|--------------------|-----------------------|-------------------|-------------------|--------------------|
| upper line                                   | Low limit |                    |                       |                   |                   |                    |
| -13.633                                      | .000      | -20.394            | -6.873                | Cognitive therapy | Control           | Emotion processing |
| -28.267                                      | .000      | -35.027            | -21.506               | Illustration      |                   |                    |
| 13.633                                       | .000      | 6.873              | 20.394                | Control           | Cognitive therapy |                    |
| -14.633                                      | .000      | -21.394            | -7.873                | Illustration      |                   |                    |
| 28.267                                       | .000      | 21.506             | 35.027                | Control           | Illustration      |                    |
| 14.633                                       | .000      | 7.873              | 21.394                | Cognitive therapy |                   |                    |

As can be seen in the table above, in comparing the two methods of cognitive therapy and imaging, a significant level equal to 0.00 and less than the error level of 0.05 has been obtained. Therefore, it is inferred that there is a significant difference between the effectiveness of mindfulness-based cognitive therapy and grammatical mental imagery with cognitive processing on emotion processing in mothers with children with autism spectrum disorder.

#### 4. Discussion

The mean scores of emotional processing in the two test times (pre-test and post-test) were significantly different and not the same. The simultaneous effect of control and experimental groups with the test condition had a significant effect on emotion processing. The mean scores of emotional processing increased after the implementation of two therapies and this increase was found to be statistically significant. Therefore, it is inferred that the hypothesis of effectiveness of two therapies in the emotional processing of mothers with children with autism spectrum disorder is confirmed with a 95% probability.

The results of this hypothesis with the researches of Hamidipour, Mousavi (2019) Mir Mehdi, Reza Ali (2018) Rocky, Naderi, (2018), Taheri (2018), Piyanee Klainin (2019), Howells (2014) and Britton et al. (2012) ) Is coherent and harmonious.

To explain this hypothesis, it can be said that mindfulness meditation methods are increasingly being incorporated into clinical therapies for a variety of mental health problems with positive results in reducing emotional distress and promoting psychological well-being. Mindfulness is rooted in Buddhism and is often defined as "consciousness that emerges in the present moment according to purpose and other than judging the manifestation of moment-by-moment experience" in secular therapy. Two broad mindfulness-based programs are mindfulness-based stress reduction and mindfulness-based cognitive therapy. Mindfulness-based stress reduction is intended for a wide range of clinical and non-clinical populations with promising cumulative evidence for its effects. Mindfulness-based cognitive therapy is based on mindfulness-based stress reduction and also integrates a cognitive approach and guidelines. It has been developed as a prevention of recurrence for people with recurrent depression and has been shown to reduce the risk of recurrent depression by almost half. It has also been shown to be effective for people with anxiety, stress, irritability and fatigue. (Frostadottir, Dorjee, 2019).

In analyzing the difference between the effectiveness of mindfulness-based cognitive therapy and grammatical mental imagery with cognitive processing on emotional processing in mothers with children with autism spectrum disorder, research findings show that the significance level of independent sample t-test is 0.00 and less than an error of 0.05 has been obtained. Therefore, it is inferred that the null hypothesis of t-test and the opposite hypothesis that the mean difference of emotional processing scores in post-test and pre-test are different in the two groups of cognitive therapy and mental imagery is confirmed with 95% probability. In other words, it can be interpreted that the difference in the imaging method (61.80) is more than the cognitive therapy method (30.73). Therefore, it can be concluded that the effectiveness of the imaging method is much higher than the cognitive therapy method and the difference in the effectiveness of these methods has been statistically confirmed. The results of this hypothesis are consistent with the research of Sadeghi et al. (2018).

In explaining this hypothesis, it can be said that grammatical mental imagery with cognitive reprocessing has been developed as a model of Beck cognitive therapy for anxiety disorders. It is conceptualized both in the context of post-traumatic stress disorder and as part of the patient's core programs. The main goals of grammatical mental imagery with cognitive reprocessing are to reduce the symptoms of post-traumatic stress disorder (Atlanta et al., 2003).

Mindfulness programs may support children with autism spectrum disorders for a variety of reasons. In the first stage, underlying neurological defects may improve. Central cohesion can be improved through mindfulness as children practice switching between expanding and focusing their attention. Instead of

paying too much attention to the details that automatically exist in autism spectrum disorder, participants are trained to view internal and external experiences as the passage of events into a broader field of consciousness. Executive performance can be improved by mindfulness training, as it is practical to control attention span, change the flexible direction of attention, reflect on experiences, and thus pay attention to one's automatic impulses that allow one to respond consciously rather than impulsively. Becomes For adolescents with Attention Deficit Hyperactivity Disorder, attention deficit reduction and executive performance improvement are found after a mindfulness-based program; Thus, mindfulness training may improve central cohesion and executive function (Ridderinkhof, 2019).

The limitations of this study are as follows: Limited research in terms of sample population and due to the implementation of the present study in the city of Ahvaz, the findings are difficult to generalize, given that the sample of the present study was selected from mothers, in It is prudent to generalize the results to the community of fathers. According to the findings of this study, compassion training can be suggested as an effective method to increase the awareness of mothers with children with autism: According to the results, it is suggested that experts in this field in action for therapeutic interventions, attention In addition to focusing on children with autism spectrum disorders, focus on the mental health status of parents, family environment, community resources and other factors related to the context of the child's life, according to the results, to increase awareness and improve imagery. Mental Mothers of Children with Autism Spectrum Disorder Cognitive group therapy can be used, identification and screening of at-risk mothers, and prioritization of these trainings for them. It is recommended to hold workshops based on a positive mindfulness program for mothers and their families.

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