The effectiveness of grammatical mental imagery with cognitive processing on self-efficacy, emotional processing and spirituality in mothers of students with autism spectrum disorder

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The aim of this study was to determine the effectiveness of grammatical mental imagery with cognitive processing on self-efficacy, emotional processing and spirituality in mothers of students with autism spectrum disorder in terms of practical purpose and cross-sectional data collection method and quasi-experimental pre-test-post-test research method with control group. The statistical population of all mothers of students with autism spectrum disorder in two schools under the supervision of education in Ahvaz was 105 students in 1398. A total of 30 mothers with children with autism spectrum disorder were randomly selected and 15 people were randomly assigned to the group of grammatical mental imagery with cognitive processing and 15 people were in the control group. The research instruments were the Long Form Nefar Self-Compassion Questionnaire (2003), Hall and Edwards (1986) Spirituality Scale, Scanning et al. (2010) and the grammatical mental imagery protocol with cognitive processing by Smoker (1995). The collected data were performed by descriptive and inferential statistical methods of analysis of covariance and by SPSS software version 24. The results showed that the simultaneous effect of group type and test status (pre-test and post-test) on self-efficacy scores p = 0.00, F = 62.208), emotion processing (p = 0.00, F = 107.237) and spirituality p = 0.00, 407/36 was F =). These findings indicate the effect of treatment on the desired variables. Therefore, we conclude that grammatical mental imagery with cognitive processing has a positive effect on self-efficacy, emotional processing and spirituality of mothers with children with autism spectrum disorder.

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Introduction

Autism spectrum disorder is a lifelong developmental disability that is associated with quality disorders in three areas: social interaction, communication, and stereotyped behaviors(APA,2019) According to Baxter (2015), there is considerable evidence that the incidence of autism spectrum disorder has increased worldwide as diagnostic and screening techniques have evolved to include approximately 52 million people worldwide (Baxter&etal, 2015). With the increasing prevalence of people with autism spectrum disorder, and to our knowledge, a new population of families has emerged that is experiencing many challenges. Although features of autism spectrum disorder are observed in cultures. Mothers play a key role in coordinated activities in building family routines that can affect their health and well-being (McAuliffe,2019). Mothers with experience in raising a child with Autism Spectrum Disorder show a complex and very challenging life, and family care experiences for a child with Autism Spectrum Disorder can be varied (Rainy& et al,2016),(Kim,2012),(Divan&etal,2012). It is important to study the experience of mothers of children with autism spectrum disorder, nationally and internationally, in order to be aware of the policy and legislative process (Gabriel,2018).

Grammatical mental imagery with cognitive reprocessing is a therapy based on cognitive imagery therapy designed to reduce the symptoms of post-traumatic stress and to correct images, beliefs, and designs related to trauma (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 yourself 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).

Self-compassion or self-compassion means that one accepts one's failures, shortcomings, and faults (sabra,2012). Also, this structure does not mean ignoring the flaws and shortcomings, in which the person acts kindly towards himself instead of criticizing himself, and it is a relatively new structure in psychology that arose as a result of contradictions in relation to variables such as self-esteem(Basharpour&etal,2012).Self-improvement can increase a person's ability to cope with failure. Self-sufficiency means feeling self-care and kindness, understanding, non-judgmental attitude and judgment about one's shortcomings and failures, and recognizing this (Abbasi&etal,2015). Self-efficacy is a variable that is considered as a unique example of positive emotions as a result of interest in psychological issues and by a combination of three components including: self-kindness versus self-judgment, mindfulness versus over-cognition and shared humanity. Vs. Isolation (Yarnell&etal,2012). Self-kindness means having a hopeful and understanding attitude towards oneself, instead of a negative attitude (Kreiger&etal,2013). 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 reintroduced the concept and exacerbated it in post-traumatic stress disorder. Rachman used the term emotional processing to refer to the way a person uses stressful life events(Rachman, 1980). He defined emotional processing as "the process by which emotional disorders are absorbed and reduced to such an extent that other experiences and behaviors can continue without disturbance" (Rebekah ,2020).

Religion and religiosity originate from the most important dimensions of human existence. Today, the vast majority of human beings have religious behavior. All religions, whether divine or human, have more or less offered spiritual programs. However, some have also proposed spirituality without religion. Wolf (1997) The root of spirituality lies in the particular consciousness that is acquired for the individual. Spirituality is not necessarily a religious phenomenon, but is in the special power of man that he can be aware of by connecting with the world in a special way. This kind of awareness of another does not arise in a particular order. This awareness gives the recipient a sense of revelation (Narvi Nosrati,2005). These tensions seem to be greater in families with economically, socially and psychologically disabled people because parents are obliged to be constantly and sometimes full-time in the service of their disabled child, and in this regard it is logical to People seem to be psychologically debilitated and physically and mentally exhausted.

Although early intervention studies for parents of children with autism spectrum disorders show promising results (Ekas, etal,2016), attention to the whole family system of these children has received less attention and a clear path to family guidance. There is no way for autistic children to successfully overcome the crisis of their children entering higher stages of development (O'brien, 2016). Given the above introduction, the research question arises as to whether grammatical mental imagery treatment with cognitive processing has an effect on self-efficacy, emotional processing and spirituality in mothers with children with autism spectrum disorder?

Method

The statistical population of the present study is all mothers with children with autism spectrum disorder in two schools under the supervision of education in Ahvaz with 105 students in 2019. 45 mothers were selected by purposive sampling and divided into three groups of 15: cognitive therapy

based on mindfulness, grammatical mental imagery with cognitive processing and control. This research is an applied research according to its purpose and in terms of cross-sectional data collection method and quasi-experimental research method is a pre-test-post-test with a control group with a one-month follow-up stage. After collecting the supplementary data of the instruments, the analysis of the results of the extracted raw data, the pre-test and post-test collection tools of the two groups was performed with SPSS24 software.

Self-Compassion Questionnaire: This questionnaire was developed by Neff in 2003 with 26 items. It has 6 two-sided factors which are: kindness to oneself; Judge for yourself; Sense of human commonalities; Isolation; Mindfulness; and increased replication. This questionnaire is graded on a Likert scale from 1 to 5. The reliability coefficient of the self-compassion scale is 0.93 (Abolghasemi,2012). In the study of Neff et al, , Cronbach's alpha coefficient of this scale was reported in Thailand and Taiwan 0.86 and in the United States 0.95 (Neff et al,2018). Overall reliability was 0.92. Also, through Cronbach's alpha method, each of the subscales had good internal consistency (from 0.75 to 0.81). In addition, the reliability of the retest over a two-week interval of the 0.93 scale has been reported. This has a relatively high degree of convergent and differential validity. Cronbach's alpha in the Iranian version of "Khosravi, Sadeghi, and Yabandeh" reported kindness with 0.81, self-judgment 0.79, human commonalities 0.84, isolation 0.85, Behshiari 0.80, extreme imitation 0.83, and the whole scale 0.76. In the research of Momeni et al. (2013), confirmatory factor analysis confirmed the correctness of the extracted factors. The convergent and divergent validity of the self-compassion scale was calculated by performing the self-compassion scale and Beck Depression and Anxiety Inventory, and the results were significant. Also, the internal consistency of the self-compassion scale was calculated according to Cronbach's alpha coefficient; And was confirmed

with a correlation coefficient of 0.70 and a significant correlation coefficient (0.89) between the scores of two test rounds with an interval of 10 days, indicates the reliability of high-scale retest (Momeni, 2013). Cronbach's alpha coefficient obtained in the present study in the pre-test condition F = 0.95 and post-test F = 0.98 which is obtained more than 0.7 and indicates the establishment of reliability.

The Hall and Edwards 1986 Spirituality Assessment Questionnaire was designed to assess two dimensions of spiritual growth: awareness of the existence of God and the quality of our relationship with God. The initial version of the test had five scales: awareness, actual acceptance, frustration, magnification, and instability. So the current version has 6 subscales, awareness, real acceptance, frustration, magnification, instability, impression management. The subject must indicate on a 5-point Likert scale whether he or she agrees or disagrees with each of the statements. Disappointment subscale: 0.90, actual acceptance subscale: 0.83, magnification subscale: 0.73, instability subscale: 0.84, impression management subscale: 0.77, these coefficients indicate the desired reliability of this In Fatemi et al.'s (2014) study, the results showed the optimal construct validity of this scale and the reliability of Cronbach's alpha method. Magnification: 0.72, instability subscale: 0.82, harvest management subscale: 0.75, were obtained. Cronbach's alpha coefficient obtained in the present study in the pre-test condition F = 0.94 and post-test F = 0.99 which is obtained more than 0.7 and indicates the establishment of reliability.

Emotional Processing Scale-Short Baker et al: This measure, by Baker, Thomas, Gower, Santvnastasvv Vaytlysa (2010) is made,A device with 25 levels of emotional stimulus is used. 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 as 0.92 and 0.79, respectively. In Lotfi (2010) research, the reliability of the scale based on the internal consistency method with Cronbach's alpha amplitude of 0.95 and the validity of the structure was confirmed. The correlation of these subscales is reported to be favorable. (Baker,2010.) Cronbach's alpha coefficient obtained in the present study in the pre-test mode F = 0.90 and post-test F = 0.98 which is more than 0.7 and indicates the establishment of reliability

Cognitive Processing Grammatical Imaging Protocol (IRRT)

This treatment plan was developed by (Smucker 1995) in 5 to 7, 90-minute sessions with three stages: command-mental imagery, dominance of mental imagery, mental self-relaxation with cognitive reprocessing, and the structure of the therapy sessions is reported below.

Table 1: Content of sessions of grammatical mental imagery protocol with cognitive processing

Session	Objective	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	Homework helps to identify negative thoughts and visualize disturbing images and how it overshadows mood, thinking, behavior and insomnia
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

Ethical considerations of the research are:

- Before starting work, informed consent will be received from individuals and emphasis is placed on maintaining security.

- Before starting work, people will be informed about the subject and method of the study. The private and personal information of the candidates will be protected (the principle of confidentiality will be done).

- Results will be interpreted for individuals if desired.

In case of any disorder, the necessary instructions will be provided to follow up.

- Participating in research will not cause any financial burden for individuals.

- This research does not contradict the religious and cultural norms of individuals and society.

-Code of Ethics: IR.lAU.AHVAZ.REC.1398.017.

Results

The results of the research hypotheses derived from the univariate analysis of covariance are as follows: The first hypothesis of the study on the effect of grammatical mental imagery with cognitive processing on self-compassion of mothers with children with autism spectrum disorder According to the findings of the table above, the separate effect of statistical group variables (control and experimental) on recorded self-compassionate scores is. (p = 0.00 and F = 28.308). That is, statistically, the mean scores of self-compassion were significantly different between the two groups of control and cognitive therapy and were not the same. Therefore, it is inferred that the mean scores of self-compassion in the two test times (pre-test and post-test) are significantly different and not the same.

The above table also shows the significant effect of group type and test status (pre-test and post-test) on self-efficacy scores (p = 0.00 and F = 36.407). Therefore, it is inferred that the simultaneous effect of control and experimental groups with the experimental status had a significant effect on self-compassion.

In the study of the effect of grammatical mental imagery with cognitive processing on emotional processing of mothers with children with autism spectrum disorder, the findings showed that the separate effect of the type of statistical groups (control and experimental) on the recorded scores of emotional processing is significant. (p = 0.00 and F = 78.048). That is, statistically, the mean scores of emotional processing were significantly different between the two groups of control and cognitive therapy and were not the same. The separate effect of the test time variable (p = 0.00 F = 80.273) on the recorded scores of emotional processing is significant. Therefore, it is inferred that the mean scores of emotional processing in the two test times (pre-test and post-test) are significantly different and not the same.

The table also shows the significant effect of group type and test status (pre-test and post-test) on emotional processing scores (p = 0.00 and F = 56.985). Therefore, it is inferred that the simultaneous effect of statistical control and experimental groups with the experimental status had a significant effect on emotional processing.

The third hypothesis of the study on the effect of grammatical mental imagery with cognitive processing on the spirituality of mothers with children with autism spectrum disorder According to the findings of the table above, the separate effect of statistical groups (control and testing) on recorded spirituality scores is significant. (p = 0.00 and F = 44.507). That is, statistically, the mean scores of spirituality are significantly different between the two groups of control and cognitive therapy and are not the same. The separate effect of the test time variable (p = 0.00 F = 62.208) on the recorded scores of spirituality is significant. Therefore, it is inferred that the mean scores of spirituality in the two test times (pre-test and post-test) are significantly different and not the same.

Table 2: The effect of grammatical mental imagery with cognitive processing on self-compassion, emotional processing and spirituality of the subjects

Source of changes	sum of squares	Degrees of freedom	average of squares	F	Significance level
Corrected model Constant d=3، p=0.00	SI=97631.533 SE=407790.000 SS=26881.600	SI=32543.844 SE=135930.000 SS=8960.533	SI=54.566 SE=88.519 SS=29.687	SI=0.745 SI=0.826 SS=0.614	1.000
Constant d=1، p=0.00	SI=1112481.667 SE=330041.667 SS=342921.600	SI= 1112481.667 SE=330041.667 SS=342921.600	SI=1865.306 SE=2149.275 SS=1136.120	SI=0.971 SEI=0.975 SS=0.953	1.000
Statistical group (control and testing) d=1، p=0.00	SI=33986.400 SE=11985.067 SS=8544.267	SI=33986.400 SE=11985.067 SS=8544.267	SI=56.985 SE=78.048 SS=28.308	SI=0.504 SEI=0.582 SS=0.336	1.000
Status (pre-test and post-test) d=1، p=0.00	SI=26544.067 SE=26544.067 SS=7348.267	SI=26544.067 SE=12326.667 SS=7348.267	SI=44.507 SE=80.273 SS=24.345	SI=0.442 SE=0.589 SS=0.303	1.000
effect of status and statistical group d=1، p=0.00	SI=37101.067 SE=16467.267 SS=10989.067	SI=37101.067 SE=16467.267 SS=10989.067	SI=62.208 SE=107.237 SS=36.407	SI=0.526 SEI=0.657 SS=0.394	1.000
Error d=56	SI=33398.800 SE=8599.333 SS=16902.800	SI=596.407 SE=153.560 SS=301.836			
Total d=60	SI=1243512.0 SE=379420.00 SS=386706.00				
Corrected Total d=59	SI=131030.33 SE=49378.333 SS=43784.400				

SI: Grammatical mental imagery with cognitive processing on spirituality
SE: Grammatical mental imagery with cognitive processing over emotional processing
SS: Grammatical mental imagery with cognitive processing on self-compassion

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statistically, the mean scores of self-compassion were significantly different between the two groups of control and cognitive therapy and were not the same. Therefore, it is inferred that the mean scores of self-compassion in the two test times (pre-test and post-test) are significantly different and not the same.

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In the study of the effect of grammatical mental imagery with cognitive processing on emotional processing of mothers with children with autism spectrum disorder, the findings showed that the separate effect of the type of statistical groups (control and experimental) on the recorded scores of emotional processing is significant. (p = 0.00 and F = 78.048). That is, statistically, the mean scores of emotional processing were significantly different between the two groups of control and cognitive therapy and were not the same. The separate effect of the test time variable (p = 0.00 F = 80.273) on the recorded scores of emotional processing is significant. Therefore, it is inferred that the mean scores of emotional processing in the two test times (pre-test and post-test) are significantly different and not the same.

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The third hypothesis of the study on the effect of grammatical mental imagery with cognitive processing on the spirituality of mothers with children with autism spectrum disorder According to the findings of the table above, the separate effect of statistical groups (control and testing) on recorded spirituality scores is significant. . (p = 0.00 and F = 44.507). That is, statistically, the mean scores of spirituality are significantly different between the two groups of control and cognitive therapy and are not the same. The separate effect of the test time variable (p = 0.00 F = 62.208) on the recorded scores of spirituality is significant. Therefore, it is inferred that the mean scores of spirituality in the two test times (pre-test and post-test) are significantly different and not the same.

Discussion

As can be seen in Table 3, the separate effect of independent variables and the simultaneous effect of statistical groups and the time of scoring had a significant effect on self-compassion (p <0.05). The mean scores of self-compassion increased after cognitive imaging with cognitive processing. This increase was also found to be statistically significant. Therefore, it is inferred that the research hypothesis on the effect of grammatical mental imagery with cognitive processing on the self-compassion of mothers with autism spectrum disorder is confirmed with 95% probability. The results of this hypothesis are researched by Murphy et al. (Brad K&etal,2007) In explaining this hypothesis, according to Landcron 2019, it can be said that grammatical mental imagery with cognitive reprocessing is a therapy based on cognitive images, which is used to reduce the symptoms of post-traumatic stress and correct images. Trauma beliefs and designs are designed (Landkroon.2019). This method helps people get rid of stress by expressing negative thoughts and disturbing images and then reprocessing cognitively, although this method was first developed by Smoker (1995). It was invented for rape victims or people with PTSD, but according to Sadeghi et al. In 2018, this treatment method was developed by many researchers in various fields such as controlling negative thoughts, suicide and nightmares of depressed people, negative thoughts and uncontrollable obsessive-compulsive patients. , Stressful memories and negative thoughts, a Individuals with social phobia have been employed and have high empirical support (Sadeghi,etal,2018). Research shows that high levels of self-esteem may have a positive effect on recovery from post-traumatic stress, because painful thoughts and memories that They are often obtained after a traumatic experience and may be less threatening and easier to deal with when self-sufficiency is sufficient; But studies have shown that self-care is often a preventative factor in causing burnout, because people who have as much

self-care as they can generally be in touch with their needs and maintain physical and mental well-being. Self-care is also provided to help parents and other caregivers cope with the challenges of caring for a child with a disability. Research shows that parents of children with autism generally report a more positive sense of well-being when they are self-centered and have fewer negative effects from the various stressors they may experience as a result of their child's condition (Catrinel,2019). To experience Also, the separate effect of independent variables and the simultaneous effect of statistical groups and the time of scoring had a significant effect on emotion processing (p <0.05). The mean scores of emotional processing increased after the implementation of grammatical mental imagery with cognitive processing. It was also found to be statistically significant. Therefore, it is inferred that the fifth hypothesis of the research on the effect of grammatical mental imagery with cognitive processing on 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 Sadeghi, et al. Namjoo Abu Saeedi and Sadat Razavi (2018) Birami, Hashemi, Bakhshipour, Mahmoud Alilou and Eghbali (2014) Murphy et al. (2015) Ellis et al. (2015) Vishtski and Dan (2015) Zinati Afkham (2012) are harmonious.To explain this hypothesis, Rachman (1980) described emotional processing as "the process by which emotional disturbances are absorbed and reduced to the point where other experiences and behaviors can continue without disruption." . While most people successfully treat emotional disorders, Rachman (1980) stated that poor processing can lead to disturbing symptoms of emotional activity such as crying, nightmares, restlessness, panic, unpleasant disturbing thoughts, and irritability. He stated in the next article that this could be a symptom of post-traumatic stress disorder; Therefore, to facilitate emotional processing and hence can reduce disturbing emotional activity, successful treatment must be exposed to evoked stimuli (Zinati Afkham,2012).

As can be seen in Table 3, the separate effect of independent variables and the simultaneous effect of statistical groups and the time of execution of score registration had a significant effect on the spirituality of individuals (p <0.05). Increased and this increase was found to be statistically significant. Therefore, it is inferred that the sixth hypothesis of the research on the effect of grammatical mental imagery with cognitive processing on the spirituality of mothers with children with autism spectrum disorder is confirmed with a 95% probability.

The results of this hypothesis are consistent with the research of Murphy et al. (2015) Ellis et al. 2015).

In explaining this hypothesis, it can be said that raising a child with autism can be an important stressor and it is very important to understand the coping strategies that parents use to provide effective support. Given the prevalence of religion in the United States, it seems that religious confrontation can be considered as a possible predictor of well-being among parents of children with autism. Studies have shown that stress significantly predicted the well-being of parents with autistic children, but religious confrontation, social support, and spirituality showed no significant major interaction (Davis,2018).

Training in positive thinking skills based on spiritual resources and religious beliefs can improve the psychological well-being of mothers with autistic children and increase their resilience. Create a lot of positive in the lives of people with autistic children (Rashidzadeh,2018).

Finally, the method of mental imagery with grammatical processing in this study is an effective method in reducing the stress of having a child with a disability and this is consistent with the study of zinati (2012), britton (2012), rahnama (2013).

Practical suggestions

1- According to the findings of this study, self-compassion training can be suggested as an effective method to increase the awareness of mothers with children with autism.

2- According to the results, it is suggested that experts in this field, in acting for therapeutic interventions, pay attention to the mental health conditions of parents, family environment, resources in the community and other factors, in addition to solutions focused on children with autism spectrum disorders. Also focus on the context of the child's life.

According to the results, group cognitive therapy can be used to increase mindfulness and improve mental imagery of mothers with children with autism spectrum disorder.

4- Identifying and screening mothers at risk and prioritizing 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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