

Prediction of generalized anxiety and social anxiety based on cognitive flexibility in mothers of autistic children with the role of emotion regulation mediator

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Abstract

Introduction: Taking care of autistic children makes the family, especially the mothers, face stress, anxiety and various problems, therefore, considering the necessity of research in this regard, the purpose of this research is to predict generalized anxiety and social anxiety based on cognitive flexibility in mothers of autistic children. It was with the mediator role of regulating excitement.

Research method: The research design is a descriptive correlation of the path analysis type. The research population was all the mothers of autistic children who referred to autism centers in Tehran in the second 6 months of 2022, and among them, 122 people with male children between 7 and 11 years of age were selected as a sample. The tools of this research included the Short Generalized Anxiety Disorder Scale by Spitzer et al. (2006), Social Anxiety Scale by Conner et al. (2000), Cognitive Flexibility Questionnaire by Dennis and Vander Wal (2010) and Emotion Regulation Questionnaire by Gross and John (2003).

Findings: The results showed that cognitive flexibility has a negative and significant relationship with generalized anxiety ($r=-0.44$, $p<0.01$) and social anxiety ($r=-0.37$, $p<0.01$) and between cognitive flexibility and adjustment. There is also a positive and significant relationship with emotion regulation ($r=0.56$, $p<0.01$). Also, a significant negative relationship was found between emotion regulation and generalized anxiety ($r=-0.42$, $p<0.01$) and social anxiety ($r=-0.38$, $p<0.01$). The results of path analysis to examine the proposed model showed that emotion regulation plays a mediating role in the relationship between cognitive flexibility and generalized anxiety and social anxiety.

Conclusion: According to the results, it can be said that emotion regulation as a component affecting generalized anxiety and social anxiety is affected by cognitive flexibility.

Keywords: cognitive flexibility, emotion regulation, generalized anxiety, mothers of autistic children, social anxiety

Received: 1/ June/ 2023

Accepted: 19/ July/ 2023

Citation: PirMohammadi fard L, Esmaili R, Beidaghi M, Zargar Moradi M.A. Prediction of generalized anxiety and social anxiety based on cognitive flexibility in mothers of autistic children with the role of emotion regulation mediator, Family and health, 2024; 13(4): 109-122

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Introduction

The developmental neurological disorder is disorders that affect the brain function and change neural growth and cause problems in social, cognitive and emotional function (1). One of the most common neurological disorders is the autism spectrum disorder (2), which is characterized by other disorders in the field of social interaction, communication and repeated behavior (3). Recent estimates show that 1 child with autism is diagnosed in every 54 children (4), which is worrying about the number of diagnostics. Meanwhile, the training of the autistic child is also in contrast to the usual children, a different experience for parents that affect their various psychological aspects (5). Research has shown the relationship between child autism and psychological distress (6), emotional problems and psychosocial stress (7), anxiety and depression (8) and reduced life satisfaction and low quality of life (9) in mothers of autistic children. generalized anxiety and social anxiety are also common anxiety disorders among mothers of autism spectrum (10).

generalized anxiety disorder is a very common, chronic, costly psychiatric disorder, as an overvalent and sustained anxiety concern about both inner and external daily events, with psychological and physical complaints such as excitation, restlessness, fatigue, focus problems, Irritability and sleep problems are known (11). Concerns are also a chain of thoughts with a relatively controllable negative emotional theme (12). People with generalized anxiety disorder are worried about future events, past errors, financial issues, their health and their loved ones, their job performance and procedure (13).

Meanwhile, social anxiety also refers to anxiety or fear that is created in intermediate or functional situations (14). People with high social anxiety than the negative assessment of others toward themselves or the practice that causes the shame (15). Research shows that social anxiety is associated with feelings and behaviors and symptoms of dissatisfaction with themselves and others. Selective attention to threats makes social anxiety more severe and deviate the judgment of social events (16). Apart from emotional factors, cognitive mechanisms such as cognitive flexibility may also affect the levels of anxiety (17). Cognitive flexibility refers to the ability to adjust beliefs and / or individual behaviors for better adaptation with environmental and objective measures with changing environmental needs (18). High cognitive flexibility represents high cognitive control and the ability to re-evaluate current situations that these abilities and cognitive skills are related to emotional adjustment strategies (19); Therefore, it can be assumed that cognitive flexibility may interact with the ability to adjust excitement to protect against anxiety.

The emotion regulation is a key factor in anxiety (20), Therefore, attention to this important factor in examining the relationship between cognitive flexibility with generalized anxiety and social anxiety is of particular importance. The emotion regulation of management involves managing emotions and emotional reactions, analysis of the cause of excitement, the choice of reaction, as well as the ability to postpone immediate satisfaction, and refers to the explicit or implicit control of the individual on emotional states (22). Success in the excitement depends on the adaptation of the answers to situational demands, including stressful events. Due to the unfavorable implications of mental health are strengthened by emotional responses, the emotion regulation may moderate this relationship (23). Instead of the importance of the role of cognitive flexibility and emotion regulation on inclusive anxiety and social anxiety, few studies have been studied in this area, which can be referred to the research by Rosa-Alcazaret al (24),

which in a study on 95 adults (61-61 years) Low cognitive flexibility is significant with comprehensive anxiety disorder and obsessive-compulsive disorder ($P < 0.01$). Also, Liu et al (25) In the study, aimed at investigating the relationship between victimization of peers and social anxiety in adolescents with the role of cognitive flexibility mediation, reported a significant negative relationship between cognitive flexibility and social anxiety. Kadovic et al (26) reported the ability to adjust and control emotional control as a predictor of stress in 203 health professionals. Akkus and Peker (27) also examined the relationship between interpersonal excitement and symptoms of social anxiety with the role of mediator of negative mood regulation expectations. There is a significant negative correlation between the regulation of interpersonal excitement and the symptoms of social anxiety ($P < 0.01$), and the relationship between the intermediate relationship of negative creation regulation in anxiety symptoms Social is positive and significant ($P < 0.01$).

In the interior, further studies have examined the effect of the effectiveness of psychological interventions on the various psychological dimensions of mothers of autism children, among which can be effective in the effectiveness of group education based on adoption and commitment to self-concept and child interaction (28), the effectiveness of intervention-based Acceptance and commitment to perceived social support, cognitive flexibility and emotional exchange (29). Among the studies in this study, Sepandund (30) in a study aimed at the role of cognitive flexibility in urban anxiety with neuroticism on a sample of 300 students from students showed that cognitive flexibility components of about 18% of the variance of inclusive anxiety of individuals Predes the neuroticism ($p < 0.01$). Shaannjad et al. (31) in a research investigation of the role of the difficulty of regulating the excitement of psychological flexibility and feeling loneliness in infertile women, indicating that psychological flexibility has a negative and significant correlation with the feeling of loneliness and the role of the difficulty of adjusting the excitement. In the relationship between psychological flexibility and feeling, it is positive and significant ($p < 0.01$). Also, the effectiveness of excitement training on rumination and anxiety control of students with social anxiety disorder was also reported by Mohammadi et al. (32). While previous research has shown that cognitive flexibility and excitement regulation can lead to an increase in anxiety, research has not been done on how cognitive flexibility can interact with the excitement to reduce the undesirable implications of mental health Therefore, the present study seeks to assess the relative contribution of the regulation of excitement and cognitive flexibility on comprehensive anxiety and social anxiety among mothers of autistic children, and also seeking the answer to the question of whether the model for prediction of social anxiety and social anxiety based on cognitive flexibility in mothers of autistic children with the role of mediator is a meaningful excitement?

Research method:

The purpose of this study was to determine the use of applied research and method of correlation and path analysis. The exogenous variable in this research was cognitive flexibility, intermediate variable (endogenous) regulation of excitement and interstitial variable (main dependent) of inclusive anxiety and social anxiety. The research population consisted of all mothers of autistic children, who had referred to Autism Autism in Tehran in the second 6 months in 2023 that including Tehran Autism, Quality, Payer and May, who were available from them to 130 questionnaires Filled the relevant, with the removal of confident

questionnaires and analyzed by statistical assessment using elongation tests, chuns and maulanobis, and the sample was reduced to 122. In the case of sample size in the path analysis method, the size of the sample is 10 times the number of model parameters and the best size sample size is 20 times the number of model parameters. Therefore, it is best to be the sample size between 10 and 20 times the number of model parameters (33). The input criteria of mothers of autism were: the male child to autism dysfunction, the minimum level of cycle literacy to fill the questionnaires and satisfaction to enter the research, as well as the output criteria included: questionnaires and maternal incidence of mental disorders that were based on The self-reported criterion that was included in the questionnaire was determined. To analyze the data obtained from Pearson correlation coefficient and path analysis using SPSS-21 and Lisrell software at a significant level ($p < 0.05$). Data annotation tools were:

The short-term anxiety disorder of Spitzer et al. (2006): This scale has seven main questions and an additional question and Likert from 0 to 3. From the sum of the scores of seven questions, the total anxiety score is obtained when the domain is between 0 and 21. The questions of this scale were selected from 13 questions to measure total anxiety disorder on 2982 patients from 15 clinical centers in 12 US states. Cronbach's alpha coefficient of this scale was 0.92 and its retest coefficient was reported in two weeks, 83/0, indicating a high internal consistency and good reliability of this scale (34). Garcotamia 3 et al. (35) In the research, the simultaneous validity of the inclusive anxiety disorder scale was based on the correlation between the scores of this test and the scales of Hamilton anxiety, anxiety and depression scales, and the health status questionnaire of the World Health Organization, $83 / , 83 / 0r =$ and $64.0R =$ reported. In the research of Naynian et al. (36), the reliability of the instrument was reported by Cronbach's alpha method, 0.85 and its validity index with the calculation of correlation coefficient with state anxiety scale and $71.0R = 0.71$ and 5.52 respectively. In this study, the reliability of the short-scale anxiety disorder by Cronbach's alpha method was 0.77.

Social Anxiety Scale of Conner (2006): The social anxiety scale is a scale of 17 materials that measures three subscales of fear, avoidance and physiological discomfort. The subjects' responses are ranked based on the 5-degree Likert scale from at all (0) to infinity (4). Bazid, with the results for interpretation of scores, cutting points 4 with yields of 80% of detection accuracy and cutting point of 50% with detection efficiency of 89% of people with social anxiety disorder separates people without this disorder (38). The internal consistency of this scale was obtained using Cronbach's alpha method 0.94 (37). Concerned validity of the social anxiety scale with fob and cognitive anxiety scale, $r = 0.83$, $r = 0.47$, and the validity of the differentiation of the social anxiety scale by ranking self-esteem and the list of body images, respectively, respectively, respectively. The reliability of the tool was reported by Cronbach's alpha, 0.97 (38). In this study, the reliability of social anxiety scale was 0.68 using Cronbach's alpha method.

Cognitive Flexibility Questionnaire of Dennis and Vander Wal (2010): This questionnaire is a 20-item self-report tool that is used to measure a kind of cognitive flexibility that is needed in the success of a person to challenge with inefficient thoughts and replacement with more efficient thoughts. The scoring of this questionnaire is based on the 7-degree Likert scale (completely opposite = 1), and the options 2, 4, 7, 9, 11, and 17 are reversed. The total score of this questionnaire can vary from 20 to 140 and the higher the individual score indicates a higher cognitive flexibility. This instrument tries three aspects of cognitive flexibility as a) desire to

perceive difficult situations as controllable situations, b) the ability to perceive several alternative justification for events and behavior of humans and c) the ability to create several alternative solutions for difficult situations. Builders have used Cronbach's alpha for the questionnaire, which has been between 0.75 and 0.86 (39). In Iran, in the research and Abuvalal al-Husseini, Cronbach's alpha, problem solving processing was 0.78 and control perception of 0.81. In the present study, Cronbach's alpha is 0.87.

Gross and John (2003) Adjustment Questionnaire: This questionnaire consists of 10 questions that measures two components of cognitive retest (questions 1, 3, 7, 8 and 10) and emotional subsidence (questions 2, 4, 6 and 9). The subject responds based on a 7-degree scale of strongly opposed (1 score) to agree with (7). The scope of scores is between 10 and 70. The makers reported internal correlation questionnaire for assessment of 0.79 and suppressive 0.73 (41). Inside Iran, Cronbach's alpha was used to examine the trust of the questionnaire, which coefficients for subsidence of 0.81 and cognitive retry assessment were 0.79 (42). In the present study, Cronbach's alpha is 0.88.

Findings:

The demographic findings on 122 participants in the research included the age and sex of the child with autism disorder, mother's age, marital status, job status and education. The age of the autistic children between 7 and 11 years old, the age of mothers between 24 and 51 years (mean age 36.4 years, standard deviation of 6.95), the majority of mothers (86.4%) married, (9.3%) absolute and (4. 3%) Widow, 71.1% of mothers of unemployed and the rest of the employed, in the table (1) average, standard deviation and correlation coefficient of research variables.

Table 1: Average, standard deviation and correlation coefficient of research variables

variables	Average	standard deviation	1	2	3	4
1. Cognitive flexibility	44.31	9.906	1			
2. emotion regulation	47.29	6.213	.56 **	1		
3. generalized anxiety	13.22	2.175	-.44 **	-.42 **	1	
4. Social anxiety	37.55	7.359	-.37 **	-.38 **	.410 **	1

** p<0.01 , * p<0.05

As seen in Table 1, there is a significant relationship between cognitive flexibility, excitement adjustment, with inclusive anxiety and social anxiety at 0.01. According to significance, the linear relationship between the variables was necessary for the path analysis, and also before the path analysis, the normalization of the criterion variables (comprehensive anxiety and social anxiety), the independence of errors and the same predictive variables were also studied. The results of Kolmogorov's test showed normal variables ($P < 0.5$). Also, the amount of Watson's camera in this research was reported in the agitative range (1.5 to 2.5), indicating the independence of errors. One of the other terms is the lack of linear predictive variables and the measure of this condition is the inflation of variance. If this numerical factor is less than 10, the lack of linear variables are confirmed. In the present study, the inflation of variance in all variables was smaller than 10 and the lack of linearity was confirmed. The path analysis method

was used to test the model. The measurement parameters of direct relationships are presented in Table 2.

Table 2: Estimates of the coefficients of the direct effect of the exogenous variable (cognitive flexibility) by adjusting the excitement (middle dependent) and inclusive anxiety and social anxiety (main dependent)

Paths	Standard coefficients	Standard deviation	Non-standard coefficients	p	T
from cognitive flexibility to generalized anxiety	-.302	.021	-.066	.002	-3.118
from cognitive flexibility to social anxiety	-.227	.075	-.169	.026	-2.250
from cognitive flexibility to emotion regulation	.566	.047	.355	.000	7.485
From the emotion regulation to inclusive anxiety	-.259	.034	-.091	.009	-2.668
From the emotion regulation to social anxiety	-.253	.120	-.300	.014	-2.508

As seen in Table 2, all variables whose direct paths end up with the criterion variable has a higher value or smaller than 1.96 ± 1.96 ($p < 0.05$) on the criterion variables. It was also used to investigate the role of the intermediate variables from Bootstrap method and, in accordance with both low-level and upper limit, the results showed that cognitive flexibility was able to predict excitatory anxiety and social anxiety ($P < 0.01$). In Table (3), the indexes of fitting the research model are listed.

Table 3: Indicators of fitting model

Model fit indicator	X2/DF	(RMSE)	(GFI)	(IFI)	(CFI)	(NFI)
Model	3/35	0/032	0/98	0/98	0/98	0/96

The fitting indices in the table 3 indicates good fitting of data with the model, so the cognitive flexibility can predict excitement and social anxiety in mothers of autism spectrum in children.

Discussion and conclusion:

The aim of this study was to investigate the role of cognitive flexibility in predicting generalized anxiety and social anxiety in mothers of autism children with emotion regulation mediation. The results of this study showed that cognitive flexibility with generalized anxiety ($r = -0.44$ and $P < 0.01$) and social anxiety ($r = -0/37$ and $p < 0/01$) has a negative and significant relationship, with Rosa-Alcazar et al. (24), Sepahvand (30) in a negative and significant relationship ($P < 0.01$) between cognitive flexibility and research anxiety and research Liu et al. (25) in a negative and significant relationship ($p < 0.01$) was a cognitive flexibility with social

anxiety. In explaining these findings, it is possible to say the birth and training of the child with autism causes shock, denial, felt guilt, grief, helplessness and anxiety in family members, especially mothers (43), in this regard, cognitive flexibility to mothers of children with autism disorder Helps to increase the contact with the present time and accept physical thoughts and feelings associated with concerns and symptoms of inclusive anxiety due to their problems and their children, including functional disabilities, cognitive disorders, adaptive constraints, the challenging behavior of the autism child. Instead of trying to control or avoid these problems, as well as the unfavorable prognosis of their childhood illness, with the proper acceptance and management of these challenges (44). Also, children of the autism spectrum are in the minority compared to the common children of society and need to take care of special equipment, and this is concerned about the mothers in the way people treat people with their children and increase social anxiety (45). In the social anxiety, the individual focuses on the judgment of others and its performance and distance from its emotions, as a result, shows more flexibility. Thus, in general, people with social anxiety disorder are less self-efficacy and less successful than normal people, in the flexibility of intellectual assessment and the use of cognitive retaliation ($P < 0.01$); Therefore, this disorder can sustain the effect of inability to create compatibility or flexibility response to unexpected conditions. Basic, non-flexible beliefs about social interactions can play a role in creating signs of social anxiety.

Also, the findings of this study were conducted with Kadovic et al. (26), Akku and Peker (27), Shabannejad et al. (31), Mohammadi et al (32) And social anxiety was aligned. Mothers of autistic children are emotionally sensitive people, and as a result, compared to other common mothers of ordinary children, they also have problems in emotional regulation. Researchers have shown that poor emotional understanding and lack of emotion or lack of awareness of emotional states and inability to adjust them are important predictors of anxiety, especially social anxiety and inclusive anxiety (46). Social anxiety people have a lot of problems in emotional regulation (47) that these problems, as well as limited access to effective emotional adjustment strategies and poor ability to conflict on target behavior at the time of disturbance, are also related to comprehensive anxiety and chronic concern (48). According to research, it was found that emotional intensity predicts the severity of visual excitement and poor emotional understanding of comprehensive anxiety disorder and social anxiety disorder (49). The reason for this can be due to the defects of excitement in anxiety disorders as a phenomenon of diagnostic, there are several anxiety disorders and in a large number of them. As a result, the excitement is effective on both inclusive anxiety and social anxiety (50).

Also, the results of the path analysis to examine the proposed model showed that the emotion regulation in the relationship between flexibility and social anxiety plays an important role. In explaining the indirect effect of cognitive flexibility by adjusting the excitement on the inclusive and social anxiety of the autism spectrum mothers, high cognitive flexibility people focus on the beneficial activities and experiences after confronting its mind problems and experiences. And try to make the importance and seriousness of the unfortunate event (51) that this procedure can lead to more positive emotional results and lower scores in inclusive anxiety and social anxiety. Compared to negative flexibility, positive flexibility may have a closer relationship with the relationship between excitement and anxiety regulation. Anxiety disorders with negative interpretation or inclination to interpret ambiguous situations are identified as a negative or catastrophic solution. Adjustment provides a form of flexibility in

reforming the feelings of the individual, which is required in accordance with the cognitive flexibility required for the appeals and thoughts; Therefore, excitement adjustment with the effect on the relationship between cognitive flexibility and comprehensive anxiety and cognitive anxiety plays an important role in examining the role of cognitive flexibility in predicting comprehensive anxiety and social anxiety.

Limitation:

This study was associated with methodological and executive constraints, most notably the volume of the low example, which can be considered by the causes of the presence of mothers (avoidance, employment, the need for child care and ...). Also, data collection was carried out based on self-reported scales, which are distorted due to unconscious defenses, prejudice in responding and personal introduction practices. This research has important results in the field of prevention, treatment and consulting services for mothers with children with autism disorder. In addition, the effect of personality traits, socioeconomic level and satisfaction of mothers' lives. Accordingly, it is suggested that this study is performed on other specimens in other provinces, as well as both sexes to provide more formal ability, and also examines similar studies in other groups of children with specific needs and compared to them.

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