

The Mediating Role of Mentalization in the Relation between Childhood Maltreatment and Social Anxiety Symptoms in Early Adulthood

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Abstract

Introduction: Social anxiety is among the most common disorders in early adulthood that has huge adverse effects on the desired function of individuals. Although previous research emphasized the effect of childhood maltreatment on the emergence of social anxiety symptoms, it is still unclear how childhood maltreatment affects these symptoms. It seems that the mentalization ability, understanding and reflecting on one's own and another's mental world, is effective in this association.

Method: This study conducted structural equation modeling based on mediation analysis in terms of correlation methods. For this reason, 219 college students of the Shiraz University of Iran were investigated in this research. Participants completed self-report questionnaires assessing social anxiety, the Social Interaction Anxiety Scale (SIAS), reflective functioning with the short version of the Reflective Functioning Questionnaire (RFQ), and childhood trauma with the Childhood Trauma Questionnaire (CTQ). SmartPLS-3 and SPSS-26 were used for data analysis.

Results: The results showed that only emotional abuse has a direct effect on social anxiety symptoms ($\beta = 0.22$, $p < 0.01$). Moreover, uncertainty about mental states partially mediated the associations between emotional abuse and social anxiety in early adulthood ($\beta = 0.19$, $p < 0.01$). After gender analysis, it seemed that there were no differences between the male and female groups.

Conclusion: The results of this study extend current research and clarify the importance of the effect of emotional abuse as one of the types of childhood maltreatment on mentalization capacity and the effect of this relationship on social anxiety symptoms in early adulthood. Based on the findings of this research, it is possible to use improved mentalization ability for the prevention and treatment of social anxiety disorder.

Keywords: Mentalization, Social Anxiety, Childhood Maltreatment, Emotional Abuse

Introduction

Social anxiety is one of the common psychological disorders developed in relation to another person and social events because of fear and anxiety from other people's evaluations [1]. This disorder causes different kinds of difficulties in the patient's daily life and optimal functionality and is followed by diverse types of psychological disorders such as depression, substance use disorders, and suicide [2]. This disorder not only brings direct costs to the economy of countries, but also causes more costs due to its indirect issues such as sick leave, and reduced productivity at the workplace [3]. The report of this mental health condition is more observed in young adulthood than at any other time in life, and its prevalence has been enhanced in recent years [4]. The longitudinal study of Brown, Rottenberg and Goodman (2023) reveals that due to the lack of social support and unfavorable social comparisons, people with social anxiety problems show more suicidal

thoughts [5]. According to the prevalence and the range of dysfunction that is caused by this mental health condition, it seems that finding the mechanism and affecting factors for the emergence of this disorder can help to find an effective way to prevent and treat it.

One of the key questions in the etiology discussion is, why patients with social anxiety disorder experience more fear and anxiety from other people's evaluation in contrast to others in the same situation. Childhood experiences are one of the reasons that are investigated for the development of this condition. Encountering any kind of childhood misbehavior has been considered one of the most important and effective factors influencing social anxiety disorder [6]. Experiencing misbehavior is in connection with an increase in the severity of social anxiety symptoms and a decrease in resilience and quality of life [7]. Maltreatment can emerge as a broad spectrum such as physical, sexual, emotional abuse, and neglect [8]. It appears that emotional abuse is more effective in the onset of social anxiety disorder than the other types of misbehavior [9]. Of course, the association and impact of childhood abuse on social anxiety disorder aren't always noticed in all patients [10, 11]. Therefore, it sounds that some other factors are available that have a protective role for an individual, and in their presence, the past experiences aren't proceed; and the development of the disorder is obviated.

It can be implied that the reason for the impact of childhood maltreatment on social anxiety is due to the mind formed in this connection. What makes internal and external phenomena meaningful for an individual is the mind, and the person's mind is created in relation to other people [12]. Although the mind's ability to distinguish self from others is evolutionarily based, but the capability to interpret and perceive oneself and others is arising and extending on the attachment-based relationship with a caregiver during the development [12]. For instance, when a mother comforts her frightened child by saying, "You are scared," and offering a reassuring hug, the child not only comprehends his/her physical and emotional experiences but also recognizes that his/her mother accepts his/her in this distressing situation. This ability is called mentalization and the experimental measurement and the features that make it distinct are known as reflective functioning [13].

Reflective function is developmental attainment that permits the child to predict and give meaning to people's behavior, in fact, the organization of one's own and other's behavior is attributed to the mental state [14]. In fact, reflective functioning displays the obvious mentalization ability of an individual [12]. Mentalization is a process that we identify ourselves and others as intentional beings with mental states and this process can be conscious or unconscious [15]. When an individual has experienced maltreatment by a caregiver during their childhood, he/she is fearful of being brought to mind by his/her caregiver, therefore, he/she can't perceive and interpret part of the inner experience. On the other hand, when the child's psychological world is established and reflected congruently, the infant gains the capacity to

observe him/herself from the external world and the other from the internal state, and recognize underlying meanings behind the motives and behaviors [16]. The mentalizing capacity plays a vital and determinative role in adaptive functioning and mental development in adulthood [14, 17]. A mentalization ability however shows deficits in an individual who suffers from social anxiety disorder [18]. It should be noted that, even problem in mentalization capacity is observed in people with anxiety disorder under the diagnostic threshold [19].

The previous studies have investigated the mediating impact of mentalization capability on the link between childhood maltreatment and disorders such as externalizing disorder [20], aggression [21], post-traumatic stress disorder [22], depression [23], psychopathology in parenting [24], and violence [25]. Drawing inspiration from the mentalization theory, originally developed by Fonagy [26], the aim of this study was to bridge the gap between childhood maltreatment, mentalization, and social anxiety. To the best of our knowledge and considering the literature, no previous study has investigated this model in social anxiety. Therefore, the present study aimed to answer the question: "Does mentalization mediate the relationship between childhood maltreatment and social anxiety symptoms? Also, we decided to find out which of the childhood traumas by affecting what kind of mentalization constructs the basis of social anxiety symptoms in early adulthood.

Method

This cross-sectional study utilized structural equation modeling for correlation analysis. This study employed a cross-sectional design. The sample population included all the students of Shiraz University of Iran in the winter semester of 2022, who were in the early age of adulthood. Approval for the project was granted by the Shiraz University Human Research Ethics Committee (project no. IR.US.PSYEDU.REC.1401.002). The study protocol conforms to the ethical guidelines of the 1975 Declaration of Helsinki as reflected in a priori approval by the institution's human research committee. Participants included 230 college students who were inserted into this study in an accessible way. The questionnaires were given to the students of different faculties while researchers were cautious that each person completed the questionnaire alone. Inclusion criteria for participants in this research included being a student at Shiraz University, age range between 18 and 30 years, having no diagnosed mental disorders or physical illnesses, no substance or drug misuse, and informed consent form confirmation. Any student who did not meet the aforementioned conditions was excluded from the sample. Before submitting or completing the questionnaires, students were explained about privacy, confidentiality of information, and the way to complete the questionnaires. The missing questionnaires and participants who were diagnosed with an illness or psychological disorder or drug user or substance dependency were excluded from the sample. The participants with illness, psychological

disorders, drug users, and substance dependency were identified during the self-report assessment. Finally, after the questionnaire elimination, the questionnaire of 219 participants was analyzed and examined (average age=21.4, standard deviation= 1.9, minimum age=18, maximum age=26).

The tools used in this study were as follows:

Social Interaction Anxiety Scale (SIAS): The Social Interaction Anxiety Scale (SIAS) contains 20 items that are scaled between 0(not at all) and 4(extremely) on Likert Scale. Items describe a person's reaction to situations related to group and interpersonal social interaction, and a higher score indicates higher levels of anxiety in social interactions [27]. This scale is able to distinguish the symptoms of social anxiety from the other kinds of anxiety disorders [28]. This scale also measures social anxiety in the non-clinical sample [29]. Removing three items that are scored reversely in this scale helps improve the validity of this questionnaire [30]. Therefore, Heimberg et al. [30] have recommended utilizing a 17-question questionnaire. In this research, the 17-question version was used. Investigating the Persian version in Iran displays that this scale has good validity and reliability [31]. The value of Cronbach's alpha in this research was 0.92.

Reflective Functioning Questionnaire (RFQ): The assessment of reflective functioning was carried out using the short version of the Reflective Functioning Questionnaire (RFQ). This questionnaire contains eight questions on a 7-point Likert scale [13]. This questionnaire measures the ability of reflective functioning in the two dimensions of certainty and uncertainty of mental states. In other words, it measures how much an individual can realize the mental states of his/her self and others. Each dimension consists of six questions. The certainty dimension of the mental state is measured based on how much the participant disagrees with statements like "When I get angry, I say things without really knowing why I am saying them" and rescored reversely (3,2,1,0,0,0). Point 3 reflects an almost disagreement with that statement. Also, the uncertainty dimensions are rescored on the extent to which the participant agrees with the expression such as "Strong feelings often cloud my thinking" (0, 0, 0, 0, 1, 2, 3) that point 3 displays the most agreement with that sentence. The Persian version of this questionnaire has been investigated in Iran and has a Cronbach's alpha of 0.70 in the certainty dimension and 0.62 in the uncertainty dimension [32]. In the present study, Cronbach's alpha was 0.73 in the certainty dimension and 0.74 in the uncertainty dimension.

Childhood Trauma Questionnaire (CTQ): This tool has been developed by Bernstein et al. to measure childhood trauma experiences [33]. The first version was presented with 70 questions [34] which were later reduced to 28 questions on the Likert scale of 1(never true)-5(very often true) points in the modified version [33]. This questionnaire assesses five aspects of childhood mistreatment behaviors that includes, emotional abuse, physical abuse, sexual abuse, and emotional and physical neglect. The Persian version of this questionnaire has suitable validity in Iran [35]. In the present study, Cronbach's alpha was higher than 0.7 for all factors except the physical neglect factor ($\alpha_{\text{physical neglect}}=0.48$), which is why this particular factor was excluded from the analysis. Maximum value was related to sexual abuse=0.90.

Results

Before data analysis, the Missing Completely at Random (MCAR) test was applied to investigate the randomness of missing data distribution [36]. In the present research, the calculated P value in the MCAR test was greater than 0.05 for all factors which illustrates that the missing data distribution was random. The appropriate method for the substitution of the missing value is utilizing the Expectation Maximization (EM) algorithm [36]. In the present study, this method was implemented for replacement. The data of this research have been analyzed using SPSS Statistics 26 and Smart PLS version 3 software.

The frequency distribution of the participants in terms of gender, marital status, and educational level has been displayed in Table 1. As illustrated in Table 1, the majority of the participants are unmarried and undergraduate students.

The participant distribution across various faculties is as follows: School of Science=25, School of Economics, Management & Social Science= 20, School of Law & Political Science= 19, School of Education & Psychology= 63, School of Agriculture= 15, School of Art & Architecture=12, School of Engineering=40, and School of Literature & Humanity Science = 25.

Due to the invalidity of the physical neglect factor of childhood maltreatment in this study ($\alpha<0.7$), data analysis has been conducted without this factor.

The results of the Pearson correlation coefficient among the variables under study have been presented in Table 2.

Table 1. Frequency Distribution of Demographic Variables

		N(%)
Gender	Male	91(41.6)
	Female	128(58.4)
Education Level	Bachelor	163(74.4)
	Master	48(21.9)
	PhD	8(3.7)
Marital status	Single	206(94.1)
	Married	11(5.0)
	Divorced	2(0.9)

Table2. Correlations of Study Variables

		1	2	3	4	5	6	7
1	SA	-						
2	RFc	-0.43**	-					
3	RFuc	0.53**	-0.63**	-				
4	sxAb	0.15*	-0.15*	0.23**	-			
5	emoAb	0.33**	-0.23**	0.44**	0.36**	-		
6	emoNeg	0.16*	-0.09	0.18**	0.17*	0.38**	-	
7	PhyAb	0.02	-0.07	0.22**	0.44**	0.51**	0.31**	-

Note: SA= social anxiety, RFc= certainty about mental states, RFuc= uncertainty about mental states, sxAb= sexual abuse, emoAb=emotional abuse, emoNeg= emotional neglect, PhyAb= physical abuse. ** $p < .01$, * $p < .05$.

To assess whether the data is normally distributed, we employed both the Shapiro-Wilk and Kolmogorov-Smirnov tests, investigating the critical value of skewness and kurtosis and the shapes of the distributions. Based on the findings of these tests, with a P-value of less than 0.05 for Shapiro-Wilk and Kolmogorov-Smirnov tests, the absence of kurtosis and skewness in the normal range and abnormal shapes, the assumption that the data is normally distributed cannot be accepted. Employing covariance-based techniques or partial least square methods is recommended for analyzing data that fails to meet the normality assumption [37]. Therefore, data analysis has been conducted using SmartPLS3 software. All values of the Variance Inflation factor (VIF) index were examined for evaluation of collinearity, and the results demonstrated that all values fall beneath 5; thus, indicating the absence of collinearity between the predictive structures [38].

The assessment of a model is based on its reliability and internal validity [38]. The Average Variance Extracted (AVE), composite validity (CV), Cronbach's alpha, and Rho-A have been utilized to evaluate the fit of data in the SEM model. The results of this investigation are presented in Table 3. If CV values are higher than 0.6, the AVE values greater than 0.4 will be suitable and acceptable [39]. As illustrated in Table 3, all values of AVE are greater than 0.4, and all values of CV fall above 0.6 demonstrating that the convergent validity of data is acceptable. The values of CV that are greater than 0.7 indicates the favorable internal

consistency of the data which was higher than 0.7 for all evaluated variables in this study.

Cronbach's alpha has been used to assess the internal reliability. Cronbach's alpha higher than 0.7 demonstrates favorable stability of the variables [40]. Table 3 shows that Cronbach's alpha falls above 0.7 for all the measured variables. Of course, according to the limitations of Cronbach's alpha to ensure internal stability it's desirable to investigate composite validity, and its best values lie between 0.7 and 0.95 [38]. Rho index or composite reliability is applied in the partial least squares method to examine the internal validity of structures and its proper value is a number greater than 0.7 [41]. As is evident in Table 3, this value is higher than 0.7 for all the research structures.

To assess the discriminative validity, the Heterotrait-Monotrait (HTMT) ratio should be less than 0.85 (36); and this value is met for all the research-measured indicators.

The Bootstrap modal test with 5000 repetitions in a two-domain test and a level of 0.05 has been utilized to calculate the model. The results of the direct path in the structural model showed that the relationship between emotional abuse is meaningful for both dimensions of reflective functioning (certainty-uncertainty) ($P_{RFc}=0.013$, $P_{RFuc}=0.001$), in addition, just the uncertainty dimension in reflective functioning is significant on social anxiety ($P=0.001$). The path coefficients of the research model have been presented in Table 4.

Table3. Values for Adjustment Quality for the SEM Model

	AVE	CR	Cronbach's alpha	Rho-A
SA	0.45	0.93	0.92	0.93
RFc	0.47	0.82	0.73	0.75
RFuc	0.44	0.82	0.74	0.75
sxAb	0.72	0.92	0.90	0.90
emoAb	0.46	0.81	0.70	0.71
emoNeg	0.55	0.86	0.80	0.82
PhyAb	0.56	0.86	0.82	0.88

Note: SA= social anxiety, RFc= certainty about mental states, RFuc= uncertainty about mental states, sxAb= sexual abuse, emoAb=emotional abuse, emoNeg= emotional neglect, PhyAb= physical abuse. AVE= Average Variance Extracted, CR= Composite Reliability.

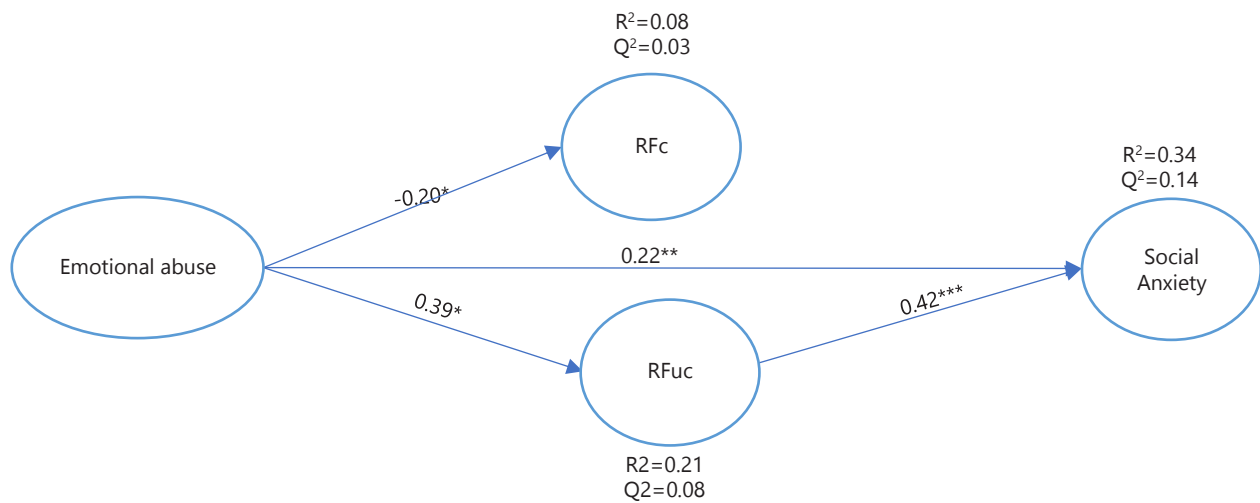
Table 4. Supported Paths Coefficient of Research Model

	Total effect	T-value	P	CI (95%)	conclusion
RFuc → SA	0.42	6.89	0.001	(0.35,0.63)	supported
emoAb → RFuc	0.39	4.27	0.001	(0.21,0.56)	supported
emoAb → RFc	-0.20	2.43	0.013	(-0.38, -0.05)	supported
emoAb → SA	0.22	3.56	0.01	(0.11,0.35)	supported
emoAb → RFuc → SA	0.19	3.26	0.001	(0.1,0.32)	supported

Note: SA= social anxiety, RFc= certainty about mental states, RFuc= uncertainty about mental states, emoAb=emotional abuse.

The relationships between variables and coefficients of the fitted model have been presented in Figure 1. Multi-Group Analysis (MGA) method has been used to measure the effect of demographic variables in the model. Considering that most of the sample was of the middle

economic level, single and undergraduate students, only the demographic variable of gender could be analyzed and investigated. The result of the MGA for the fitted model did not show a significant difference between male and female groups ($P = 0.09$, $t = 1.70$).



Note: RFc= certainty about mental states, RFuc= uncertainty about mental states.* $p < 0.05$,** $p < 0.01$

Figure.1. The fitted model between the types of maltreatment with social anxiety through reflective functioning.

Discussion

The aim of this study was to investigate the relationship between childhood maltreatment experience, reflective functioning ability, and social anxiety symptoms in the early age of adulthood in a group of college students. Since most of the previous studies have focused on examining the effect of mentalization on psychological problems for externalizing problems, it seems that the results of this study which considers one of the common (prevalent) internalizing problems, can affect the development of the importance of childhood maltreatment on this relation. According to the investigated data on 219 students of Shiraz University, the results demonstrated that emotional abuse leads to reduction in mentalization ability (uncertainty about mental states) which in turn strengthens social anxiety symptoms. In fact, the experience of emotional abuse in childhood causes a reduction in the certainty of mental states and an increase in the uncertainty of mental states in the group of college students. This finding is consistent with the results of the previous studies [21, 25]. Although the mentalization ability is an intrinsic and special characteristic in the human being's infant, childhood experiences are important for the development and adaptation of this ability [16]. In delineating the fact that the other kind of childhood maltreatment experiences were not directly related to reflective functioning, Quek et al. [42] suppose that emotional abuse experience has a more effective impact on the attachment relationship between child and caregiver than the other kinds of maltreatment [42]. In a reliable and responsive relationship with caregivers, the individual gains the ability to bring another to mind; the child who has been emotionally abused is exposed to failure in mentalization

capacity [21]. Since the fact that the adoption of mentalization capacity is not just a cognitive relationship, but develops and expands in the context of an emotional relationship with a reliable caregiver [12]; emotional abuse can cause disturbance in this process. It seems that internalized speech in an individual who experienced emotional abuse is in such a way that they transfer their experiences to the mind in a distorted way, and this issue is the bottleneck for appropriate reflective functioning [14].

The other result of this research is the effect of emotional abuse on the social anxiety symptoms of the investigated participants. This finding is coherent with the previous research [9, 43, 44]. In this study, the other kind of experienced maltreatment couldn't cause an explanation of social anxiety symptoms. The opinion of Li, Carracher, and Bird[23] is that the experience of physical and sexual abuse leads to the development of hostility and aggression toward the caregiver in the infant's mind, while the experience of emotional abuse causes internalizing disorders [23]. Also, emotional neglect is a passive method of maltreatment, although in emotional abuse the child is actively harmed by caregivers and important people in his/her life. In emotional abuse, the child learns that in general, social relationships can be harmful in emotional aspects [9]. The other factor can be the absence of concurrent disorders; it seems that if individuals experience all types of maltreatment in childhood, they will endure several psychological disorders and suffer from more severe symptoms [10]. As previously mentioned, the present study was conducted on a normal sample which can be a reason for the non-significance of other types of childhood abuse experiences. Also, Nanda et al. assume that by the onset of early adolescence and

entrance to university, individuals learn the diverse types of methods to cope with social anxiety and this leads to a decrease in the effect of past experienced maltreatment. This is while children and people who come for treatment and are suffering from a social anxiety disorder, have not yet learned proper coping methods [9]. According to this finding, it should be stated that emotional abuse is the most effective childhood maltreatment experience that can predict social anxiety symptoms.

In investigating the mediating role of reflective functioning in the relation between childhood maltreatment experience and social anxiety symptoms, the results of the present study demonstrated that emotional abuse causes an increase in social anxiety symptoms by means of uncertainty about mental states. To elucidate the underlying mechanism of why uncertainty about mental states increase social anxiety, it can be noted that, not accurate interpretation of thoughts and emotions in social situations, impedes the correct response in those situations. In essence, the difficulty in recognizing and comprehending what is transpiring within an individual can contribute to heightened social anxiety [45]. The mentalization ability enables an individual to interpret and give meaning to the surrounding world and phenomena [12]. An individual who has suffered from emotional abuse and has been in a hurtful emotional relationship can't properly transfer others, events, and phenomena to his/her mind because he/she has not been transferred to his/her mind appropriately. As a result, he/she is not able to have a correct interpretation of what is happening inside her/himself and the surrounding world when he/she is placed in social situations [15]. Also, this person can't withstand the ambiguous conditions in adulthood, and avoids those situations, or he/she is placed in that state with great anxiety. Actually, mentalization ability provides a kind of resilience factor for an individual [46], and a child who is deprived of this factor because of emotional abuse, faces a greater risk of psychological suffering such as social anxiety. To explain the insignificance of the other kinds of maltreatment in this relation, it must be mentioned that when maltreatment includes physical or sexual abuse and neglect, it means that a caregiver is not only a supportive factor for a child but a source of fear and anxiety, so we must expect wider personality disorders in individuals [12]. It's worth noting that the findings of previous studies [47, 48] revealed that the certainty about mental states also played a negative role in predicting anxiety, and this is contrary to the results of the present study. While the certainty dimension of reflective functioning showed a negative correlation with social anxiety in this research, it did not exhibit a significant predictive role. This discrepancy may be attributed to the concept of hypermentalization in the context of social anxiety, which may be active only in specific situations and not be a global factor [49].

To summarize, emotional abuse is one of the most influential experienced maltreatments in childhood which can lead to the onset of social anxiety in early adulthood due to problems in the mentalization process. As a result,

it can be proposed that future research investigate the effect of mentalization-based treatment on the improvement of reflective functioning ability and its effect on social anxiety especially in individuals whose social anxiety is due to the experience of emotional abuse in childhood.

This research was also faced with limitations. Self-report questionnaire of childhood traumas considers the diversity of these traumas without specifying the abusing or damaging person; It's essential to recognize that the significance and impact of abusive or neglectful behaviors can vary significantly among different caregivers [50]. Additionally, individuals form relationships with various attachment figures throughout their lives, including grandparents, peers, siblings, teachers, and therapists. The effects of childhood traumas can be influenced and modified by these interactions. Therefore, it is suggested that in future research the effect of caregivers or other people must be measured and separated. In addition, this research was conducted on normal people and cross-sectionally. This was due to the fact that the other factors that we can't identify in the cross-sectional design can be effective in this relation. Furthermore, self-report questionnaires are susceptible to exaggeration or memory distortion of events, which can introduce biases into the study. Therefore, it is suggested to conduct research on people with social anxiety disorder and evaluate this model over time.

Conclusion

The present study was conducted to examine the mediating role of mentalization in the relationship between childhood trauma and social anxiety in early adulthood. The result of the present study indicated that emotional abuse is the most effective childhood maltreatment that affects social anxiety symptoms in early adulthood. Also, uncertainty about mental states is a mediating factor in the effect of emotional abuse on social anxiety. Someone who has experienced emotional abuse is anxious in social situations due to the uncertainty of what she/he experiences in her/his inner world. In light of these results, it is advisable to consider implementing psychological interventions and training programs focused on enhancing mentalization abilities, such as mentalization-based therapy, for university students who have a history of emotional abuse.

Conflicts of Interest

The authors declare no conflicts of interest.

Ethical approval

This research adhered to all ethical principles and was approved by the Ethics Committee of Shiraz University with the ethical code IR.US.PSYEDU.REC.1401.002.

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