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Maladaptive emotional schemas as mediators in the link between childhood emotional neglect and affective symptoms in medical students

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Abstract

This study explores the link between childhood emotional neglect and the development of depression and anxiety, focusing on the mediating role of maladaptive emotional schemas. Conducted at the Zahedan Faculty of Medical Sciences, the research involved 273 students who completed the Childhood Trauma Questionnaire, the Depression, Anxiety, and Stress Scale, and the Leahy Emotional Schemas Questionnaire. Analysis using SPSS v22 and Hayes' PROCESS Macro revealed that both childhood emotional neglect and maladaptive emotional schemas significantly predict symptoms of depression (adjusted R^2=0.32) and anxiety (adjusted R^2=0.34). The study confirms that maladaptive emotional schemas mediate the relationship between childhood emotional neglect and mental health issues. This implies that individuals with histories of childhood emotional neglect are more prone to developing maladaptive emotional schemas, which may lead to depression and anxiety. The findings underscore the importance of addressing childhood emotional neglect and maladaptive emotional schemas in therapeutic settings when treating depression and anxiety. The research highlights the need for targeted interventions that consider these factors to mitigate the risk of depression and anxiety in individuals with such backgrounds.

Introduction

Mental disorders are among the leading global causes of disability. Among these, depression and anxiety are the most common. These disorders significantly impair a person's academic, occupational, and social abilities, leading to issues such as decreased academic performance, increased dropout rates, and hindered professional progress for students.[1] Therefore, research into depression and anxiety and understanding the factors that influence them is essential. One explanatory model for depression and anxiety emphasizes the role of neglect, trauma, and emotional schemas in the development and exacerbation of these disorders.[2,3]

Childhood traumas have various dimensions, including physical and emotional abuse, emotional neglect, sexual abuse, and physical neglect.[4] Reports and research indicate that sexual abuse occurs in 60.2% of cases, physical abuse in 55.2%, emotional abuse in 45.9%, emotional neglect in 83.4%, and physical neglect in 59.7% of the general population.[5] Consequently, neglect is the most prevalent form of trauma. Data from the International Child Abuse and Neglect Information System shows that the number of abuse victims has increased over the past 5 years, with approximately 75.3% of child abuse cases in 2015 related to neglect.[6] This research focus-

es on childhood emotional neglect, defined as emotional deprivation or the absence of a nurturing environment.[7] Emotional neglect results from inadequate upbringing, lack of care, and insufficient love,[8] which have harmful effects on mental health. Generally, emotional neglect increases the likelihood of developing mental disorders, particularly depression and anxiety.[9]

Numerous studies have examined the impact of emotional neglect on depression and anxiety. These studies have shown that experiencing emotional neglect in childhood makes individuals more vulnerable to these disorders.[10] Roth *et al.* studied a sample of 138 people and found that experiences of psychosocial neglect affect brain development and may increase the risk of anxiety. Such experiences may even alter brain structure by affecting the volume of the right amygdala.[11] In their longitudinal study, Herrenkohl *et al*. found that adults who experienced childhood emotional neglect reported more symptoms of depression and anxiety, as well as greater disturbances due to mental and physical problems.[12] These individuals exhibited levels of depression, psychological distress, and features of borderline personality disorder comparable to those who experienced sexual abuse or mixed types of abuse.[13] Childhood emotional neglect can impact emotional processing and cognition, leading to maladaptive emotional schemas.[14,15]

According to Leahy's theory of emotional schemas, people differ in their awareness, interpretations, evaluations, and acceptance of negative emotions, resulting in the use of different strategies to cope with their emotions.[3,16] For example, people can deal with emotional experiences in a suppressive way, but this increases the likelihood of negative thoughts returning in the long run. Alternatively, they can use more adaptive methods, such as expressing emotions, which reduce negative thoughts over time.[17,18] Leahy believes that emotional schemas can increase depression and anxiety in two ways: i) perceiving emotions as depression or anxiety, and ii) using maladaptive coping styles that perpetuate the morbid experience.[19] In this regard, negative emotional schemas include validation (others notice how I feel), being understandable (my emotions do not fit with reason and logic), guilt and shame (I should not have these feelings or I do not want others to understand how I feel), a simplistic view of emotions (emotions should not be confused with each other), higher values (my emotions are a reflection of my higher values), uncontrollability (I fear that my emotions are out of control), rationalism (I must be logical and wise and not emotional), persistence (my feelings last a long time), agreement (all people feel the same way), rumination (I sit and think about how bad I feel), emotional expression (I cannot let myself cry), and blame (others make me think this way). These schemas are also associated with depression, anxiety, post-traumatic stress disorder, metacognitive aspects of anxiety, alcohol use disorder, marital distress, and personality disorders. Rezaee *et al.* conducted a study aimed at confirming the role of maladaptive emotional schemas in the relationship between childhood emotional neglect and depression in the clinical population. The results showed that maladaptive emotional schemas effectively mediate this relationship.[20] Despite this, no study has yet examined the aforementioned variables in the context of medical school, which is considered one of the most challenging academic and emotional experiences.

Aspiring doctors face intense pressure from both academic and clinical environments, compounded by psychological factors such as maladaptive emotional schemas, childhood emotional neglect, and affective symptoms. These issues create a complex web that affects medical students' well-being, potentially exacerbating anxiety and depression. Addressing these factors in isolation provides only temporary relief, highlighting the need for a comprehensive support approach. Educational institutions should tailor mental health resources to the unique challenges faced by medical students, fostering awareness and understanding among educators and peers while offering accessible psychological support services like counseling and emotion regulation workshops. Such measures can alleviate the psychological challenges faced by future healthcare professionals.[21] According to this, the present study aims to explore the mediating role of maladaptive emotional schemas in the link between childhood emotional neglect and symptoms of depression and anxiety. Findings suggest that educating families can reduce misbehavior, thereby minimizing the trauma of neglect and the likelihood of developing maladaptive emotional schemas.

Materials and Methods

Study design and participants

In this cross-sectional study, the participants included all students from the Faculty of Medicine at Zahedan University of Medical Sciences. A sample of 273 individuals was selected using the purposive sampling method with the help of Cochran's formula.

Inclusion and exclusion criteria

The inclusion criteria for participating in the research were as follows: students from the Faculty of Medicine at Zahedan University of Medical Sciences, aged between 20 and 35 years, with no history of psychiatric diseases, and not undergoing psychotherapy during the research. Additionally, participants must be willing to participate in the research. The exclusion criteria included participants who filled out the questionnaires incompletely or with repeated, random, or careless response patterns, those involved in substance/medication use, or those not interested in cooperating.

Procedure

Participants who met the research criteria completed the questionnaires. Data were gathered from the Childhood Trauma Questionnaire, a short form of the 21-item Depression, Anxiety, and Stress Scale, and the Leahy Emotional Schemas Questionnaire, and then analyzed using statistical software.

Tools

The data collection tool includes the following three questionnaires.

Child Trauma Questionnaire

The questionnaire was initially designed in 1994 by Bernstein *et al.* with 70 items. In 1995, a 53-item version was introduced, and finally, in 1998, a 34-item version was developed. In 2003, a 25-question form was also created, which is applicable for individuals aged 12 and above. This version covers 5 areas of childhood trauma in the following order: i) emotional abuse; ii) physical abuse; iii) sexual abuse; iv) emotional neglect; and v) physical neglect. The scale is scored on a 5-point Likert scale (very low = 1 to very high = 5). The scores for each subscale range from 5 to 25, and the total score for the entire questionnaire ranges from 25 to 125. Cronbach's α coefficient is 0.78 for physical neglect and 0.91 for emotional neglect.[22] In Iran, research has shown that Cronbach's α for the short form ranges from 0.81 to 0.98, indicating good internal consistency.[23]

Depression, Anxiety, and Stress Scale-21 items

This scale consists of 21 items, which include 3 subscales, each

with 7 questions: the depression subscale (questions 3, 5, 10, 13, 16, 17, 21), the anxiety subscale (questions 2, 4, 7, 9, 15, 19, 20), and the stress subscale (questions 1, 6, 8, 11, 12, 14, 18). In this research, our focus is on depression and anxiety. The cut-off point for the questionnaire is a score above 21 for depression, a score above 15 for anxiety, and a score above 26 for stress.[24] Research shows high reliability and validity for this questionnaire in both clinical and non-clinical populations. Cronbach's α for the tension subscale is 0.90, for depression is 0.88, for anxiety is 0.82, and for the overall scale is 0.93. The scale was subjected to factor analysis in research, which indicated the existence of three factors: depression, anxiety, and tension. The results of this research showed that these three factors account for 66% of the total variance of the scale. The specific values for the stress, depression, and anxiety factors in the mentioned research were 0.97, 2.89, and 1.23, respectively, and the Cronbach's α coefficients for these three factors were 0.97, 0.92, and 0.95, respectively.[25]

Leahy Emotional Schemas Scale

The original version consists of 50 questions, which are scored on a 6-point Likert scale (1 being completely false about me to 6 being completely true about me).[26,27] In the Persian version of this scale, after analyzing the findings from the exploratory factor analysis of Leahy emotional schemas scale, and removing 2 schemas (numbness and duration) from the original form and adding 1 new schema (emotional self-awareness) to it, 13 schemas were considered for the Iranian form of this scale. Accordingly, the number of items determined for the 14 schemas of the original form was also reduced from 48 items to 37 items. These 13 schemas are: loss of control (3 items), need to be rational (4 items), emotional self-awareness (4 items), comprehensibility (3 items), rumination (4 items), low consensus (2 items), lack of acceptance of feelings (3 items), invalidation (2 items), higher values schema (3 items), simplistic view of emotion (2 items), guilt (3 items), low expression (2 items), blame (2 items). The total Cronbach's α for this version is 0.82, with subscale values ranging from 0.59 to 0.73.[28] In our study, the overall score of this scale was considered.

Data analysis

In this research, we investigate the mediating role of maladaptive emotional schemas in the relationship between childhood emotional neglect and symptoms of depression and anxiety, while controlling for the effect of gender. The analyses utilized Hayes' Process macro model 4 for IBM SPSS Statistics, employing a 5000-bootstrapping procedure by default to produce a 95% confidence interval for the indirect effect. According to Hayes and Preacher, there is a mediating role if the indirect effect is significant and the confidence interval does not include zero.[29,30] In general, the data were analyzed using SPSS v22 and Process software, along with Pearson correlation, simultaneous regression, and Hayes regression (bootstrap analysis) statistical methods.

Ethical approval

The current study has an ethics approval code with ID number IR.ZAUMS.REC.1400.015 in the Ethics Committee of Zahedan University of Medical Sciences.

Results

In the present study, the total number of participants was 273, with 174 women, accounting for 63.7% of the sample size, and 99 men, making up 36.3% of the total participants. This indicates that more women participated in our research. The average age of the participants was 23.55 years (standard deviation = 2.40), with a minimum age of 20 and a maximum age of 34 years. Initially, the univariate normal distribution of scores was examined using skewness and kurtosis tests, with the results presented in Table 1. Table 2 displays the correlation and descriptive indices of the research variables. To assess the direct path, we used the multiple linear regression method, with results shown in Table 3. Additionally, to examine the indirect effects, we employed Hayes' Process macro for SPSS, with results presented in Table 4. Figure 1 illustrates the standard path coefficients of the models.

According to Levin's suggestion in 1988, if skewness and kurtosis are not within the range of (-2, 2), the data do not have a normal distribution. Based on the results from Table 1, all research variables exhibit a normal distribution. According to the results from Table 2, the relationship between all variables is significant at the $p<0.01$ level. Among these, childhood emotional neglect and anxiety ($r=0.55$) have the highest correlation in this study. From the average anxiety and depression levels of the participants, it can be observed that the target group's levels of anxiety and depression are generally average.

According to the significance score and *t*-score (which rejects the null hypothesis) and with the help of the β coefficient, it can be seen that childhood emotional neglect and maladaptive emotional schemas significantly ($p<0.001$) predict depression and anxiety. According to the adjusted coefficient of determination, childhood

Table 1. Skewness index and kurtosis of research variables.

Index	Depression	Anxiety	CEN	MES
Skewness (SE)	0.52 (0.14)	0.66 (0.14)	0.11 (0.14)	0.12 (0.14)
Kurtosis (SE)	-0.54 (0.29)	-0.32 (0.29)	0.38 (0.29)	-0.26 (0.29)

CEN, childhood emotional neglect; MES, maladaptive emotional schemas; SE, standard error.

Table 2. Correlation matrix and descriptive indices of research variables.

Variables	1	2	3	4	M	SD
1. Depression	1	0.65**	0.52**	0.35**	14.39	5.35
2. Anxiety		1	0.55**	0.32**	13.37	4.90
3. CEN			1	0.22**	8.69	4.15
4. MES				1	29.67	9.30

CEN, childhood emotional neglect; M, mean; MES, maladaptive emotional schemas; SD, standard deviation; **p<0.01.

Table 3. Significance of standard and non-standard coefficients of independent and mediator variables with depression and anxiety.

Model	b	β	SE	t	p
CEN → Depression	0.46	0.60	0.06	9.18	<0.001
MES → Depression	0.24	0.14	0.02	4.85	<0.001
CEN → MES	0.23	0.50	0.13	3.77	<0.001
CEN → Anxiety	0.50	0.59	0.05	10.08	<0.001
MES → Anxiety	0.20	0.11	0.02	4.15	<0.001
R		[a]0.57		[b]0.59	
R^2		[a]0.33		[b]0.39	
Adjusted R^2		[a]0.32		[b]0.34	

CEN, childhood emotional neglect; MES, maladaptive emotional schemas; SE, standard error; [a]dependent variable: depression; [b]dependent variable: anxiety.

Table 4. Significance of the indirect path of research.

Model	Bootstrap CI 95%		Boost error	Effect
	Lower limit	Upper limit		
CEN → MES → Depression	0.02	0.12	0.02	0.07
CEN → MES → Anxiety	0.02	0.09	0.01	0.05

CEN, childhood emotional neglect; CI, confidence interval; MES, maladaptive emotional schemas.

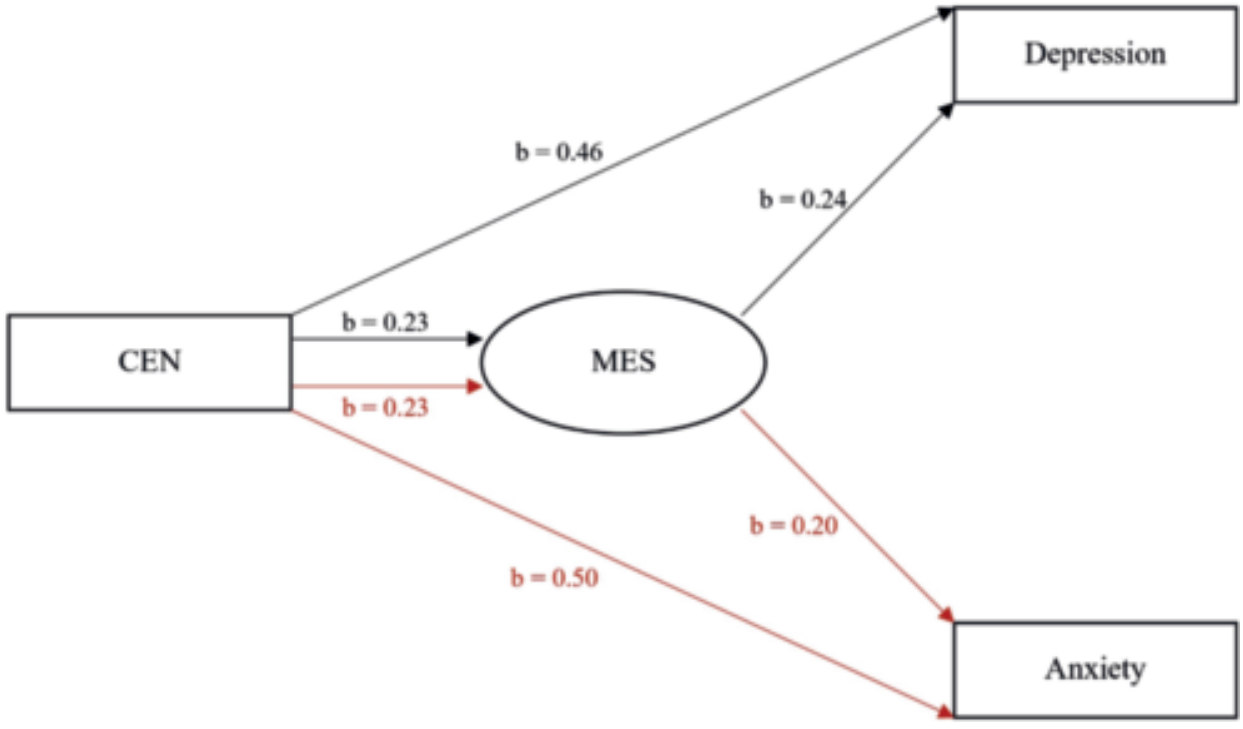

Figure 1. Illustration of the results from the mediation analysis described in the text, which tested MES as a potential mediator in the relationship between childhood emotional neglect and depression and anxiety among medical students, while controlling for the effect of gender (n=273). CEN, childhood emotional neglect; MES, maladaptive emotional schemas.

emotional neglect and maladaptive emotional schemas predict up to 32% of depression symptoms and up to 34% of anxiety symptoms.

To examine the indirect path, the bootstrap analysis showed that maladaptive emotional schemas mediate the relationship between childhood emotional neglect and symptoms of depression and anxiety, such that the upper and lower limits of the bootstrap (95% confidence interval) do not include zero.

Discussion

According to the obtained results, it can be said that childhood emotional neglect can predict symptoms of depression and anxiety. Additionally, maladaptive emotional schemas play a mediating role in the relationship between childhood emotional neglect and

these symptoms. Research findings show that childhood emotional neglect can predict symptoms of depression and anxiety. This result is consistent with the research of Kealy *et al*.,[31] Paterniti *et al*.,[32] Infurna *et al*.,[2,] and Perna *et al*.[33] This result can be explained as follows: individuals who are emotionally neglected often come from families where emotional support is lacking. As a result, these individuals may struggle with self-confidence, which is crucial for forming intimate relationships. Consequently, they may develop a negative view of themselves and their relationships, leading to social isolation and the development of maladaptive skills.[34] In the future, such individuals may become discouraged about relationships and develop a negative outlook on themselves, the future, and the world, laying the groundwork for depression and anxiety disorders.[35] Furthermore, the findings indicate that maladaptive emotional schemas play a mediating role in the relationship between childhood emotional neglect and symptoms of depression and anxiety. This is consistent with the research by Westphal *et al*., which showed that maladaptive emotional schemas mediate the relationship between childhood abuse and depression.[36] Similarly, Rezaee *et al*. demonstrate that emotional schemas mediate the relationship between childhood emotional neglect and depression symptoms.[20] To explain this finding, Wells' metacognitive theory about emotions can be applied. In the metacognitive model of emotions, the first step after emotions emerge is to pay attention to them. When an individual focuses on their emotions, three pathways for processing these emotions begin. In the first pathway, the person considers the emotion as normal, accepts and acknowledges it, and ultimately expresses it. By connecting spiritual and religious concepts, the process of acceptance and expression of these emotions is facilitated. Finally, emotions are well-integrated through this pathway. On the other hand, in the second path, the person begins to avoid situations immediately because they perceive their emotions intensely. This leads them to suppress their emotions and use ineffective strategies such as drug use, dissociative states, or even developing depression and anxiety. However, because these strategies are ineffective, these emotions persist for a long time, resulting in a feeling of being out of control. Ultimately, this sense of lack of control may drive the person to adopt other ineffective strategies, such as rumination, blaming others, worrying, and avoiding stimulating situations. This perpetuates negative emotions and eventually initiates a vicious cycle. In the third path, after paying attention to their emotions, individuals may develop negative interpretations of these emotions, such as feeling guilty for having them ("I should not have these emotions") or feeling different from others ("my emotions are different from those of others"), which are caused by maladaptive schemas. When a person's emotions are activated, adopting this perspective leads them to believe that their emotions are not normal. Consequently, they resort to ineffective strategies like rumination, blaming others, and avoiding situations. This fuels their negative interpretations of emotions and traps them in the vicious cycle mentioned in the second path. Borrowing from Wells' theory, Leahy explained the theory of emotional schemas, describing the emotional model as follows: emotional neglect deprives a child of the opportunity for healthy emotional learning. As a result, the person does not acquire skills such as accepting emotions, expressing emotions, and understanding the value of emotions. The development of these schemas increases the likelihood of experiencing depression and anxiety symptoms.[37] Additionally, the feeling of a lack of control over unpleasant emotions, caused by emotional neglect and avoidance by others, can be understood through classical theories such as learned helplessness. For example, according to Seligman's theory of learned helplessness, when individuals are placed in situations where the circumstances are beyond their control or when they face insurmountable problems, they may conclude that their efforts and responses are futile. As a result, they feel defeated and frustrated, ultimately experiencing a form of learned helplessness.[38] Numerous studies have shown that learned helplessness is associated with emotions related to depression and anxiety.[39]

Research limitations

It is suggested that, given that neglect and traumatic childhood experiences are the basis of many psychiatric disorders in adulthood, using a clinical population helps confirm this hypothesis. A limitation of this study is its implementation on a non-clinical population. The current research is based on external validity (due to the clear definition of independent and dependent variables, an appropriate sample, the absence of reaction and time effects, and minimizing researcher bias using self-report forms) and internal validity (due to the absence of selection differences, subject dropout, interference effects, and simultaneity, as well as the use of questionnaires with good validity). Another limitation is the reliance on cross-sectional data, which limits the ability to examine causality. Future research should use longitudinal designs for better insights.

Practical implications

The role of maladaptive emotional schemas as mediators suggests that they bridge the gap between past experiences of neglect and current psychological outcomes. Understanding this mediating role offers practical implications for both prevention and intervention strategies aimed at improving mental health among medical students. Interventions could focus on identifying and restructuring maladaptive emotional schemas through cognitive-behavioral therapy, which can help students recognize harmful thought patterns and replace them with healthier alternatives. Additionally, resilience-building programs that emphasize emotion regulation skills could be integrated into medical curricula to equip students with tools for managing stress more effectively. Furthermore, increasing awareness about the impact of childhood emotional neglect among educators and administrators can foster a more supportive learning environment. By acknowledging the diverse backgrounds from which students come and the potential challenges they face, institutions can develop policies that promote mental well-being alongside academic excellence.[40]

Conclusions

In conclusion, maladaptive emotional schemas as mediators in the link between childhood emotional neglect and affective symptoms hold significant promise for enhancing the mental health of medical students. By focusing on early identification and targeted interventions, it is possible to mitigate some of the adverse effects associated with these early experiences and support students in achieving both personal well-being and professional success.

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