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Structural Model of Children's Behavioral Problems Based on Mothers' Adverse Childhood Experiences with the Mediating Role of Maternal Mentalization

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A B S T R A C T

Objective: This study aimed to investigate the structural model of children's behavioral problems based on mothers' adverse childhood experiences (ACEs), with maternal mentalization as a mediating factor.

Methods and Materials: A correlational design using structural equation modeling (SEM) was employed. The sample consisted of 323 mothers with children aged 6 to 12 years in Isfahan, selected through convenience sampling during 2023–2024. Data were collected using the World Health Organization's Adverse Childhood Experiences International Questionnaire (ACE-IQ), the Achenbach Child Behavior Checklist (CBCL) parent version, and the Persian version of the Reflective Functioning Questionnaire (Mentalization Questionnaire). Data analysis was conducted using SPSS-24 and AMOS-24, applying confirmatory factor analysis, maximum likelihood estimation, and bootstrapping with 2,000 resamples to test direct and indirect pathways.

Findings: The results revealed that maternal ACEs were positively and significantly associated with children's internalizing and externalizing behavioral problems. Maternal ACEs were also negatively and significantly related to maternal mentalization. In turn, maternal mentalization showed a significant negative relationship with children's behavioral problems. Structural modeling confirmed that maternal mentalization partially mediated the relationship between maternal ACEs and children's behavioral outcomes. Bootstrapping results demonstrated that the indirect effects of maternal ACEs on both internalizing and externalizing problems through maternal mentalization were statistically significant. Model fit indices indicated acceptable to excellent fit across all parameters, supporting the robustness of the structural model.

Conclusion: The findings highlight the intergenerational transmission of adversity, demonstrating that mothers' adverse childhood experiences contribute to children's

behavioral problems both directly and indirectly through diminished maternal mentalization. Strengthening maternal reflective functioning may serve as a critical intervention target to reduce the negative impact of maternal trauma histories on child behavioral outcomes. These results emphasize the importance of trauma-informed, family-centered interventions to disrupt cycles of adversity and promote healthier socioemotional development in children.

Keywords: *Adverse childhood experiences, Mentalization, Internalizing behavioral problems, Externalizing behavioral problems*

1. Introduction

Behavioral problems in childhood represent one of the most pressing challenges in developmental psychology and public health, as they not only affect children's immediate functioning but also have long-term consequences for mental health, education, and social outcomes. Internalizing problems, such as anxiety and depression, alongside externalizing problems, including aggression and rule-breaking behavior, often emerge in early childhood and can persist across developmental stages if left unaddressed (Abd Rahim et al., 2023). A growing body of research has highlighted the intergenerational roots of these behavioral difficulties, showing that parents' early life experiences—particularly adverse childhood experiences (ACEs)—play a critical role in shaping children's developmental trajectories (Jimenez et al., 2016; Merrick et al., 2019). This perspective underscores the significance of examining maternal ACEs and their impact on children's behavioral adjustment, especially through psychological mechanisms such as maternal mentalization.

Adverse childhood experiences encompass a wide range of negative events, including abuse, neglect, household dysfunction, and exposure to violence (Lucenko et al., 2015; McDonald et al., 2019). Seminal work has established ACEs as robust predictors of poor health and behavioral outcomes across the lifespan (Hughes & Aldercotte, 2017; Merrick et al., 2019). Mothers with histories of multiple ACEs are more likely to experience psychological distress, parenting difficulties, and difficulties in regulating emotions, all of which can negatively affect their children's socioemotional adjustment (Madigan et al., 2017; Schiff et al., 2017). Moreover, large-scale epidemiological research demonstrates that ACEs are highly prevalent, with considerable variation across sociocultural contexts, highlighting the need for context-specific examinations of their effects (Gil, 2023; Marsicek et al., 2019).

The intergenerational transmission of adversity occurs through multiple pathways, including genetic vulnerabilities, environmental stressors, and psychosocial mechanisms. One of the most influential psychosocial mechanisms is maternal mental health. Research suggests that maternal depression and anxiety are significant mediators linking maternal ACEs with children's emotional and behavioral problems (Letourneau et al., 2023; Racine et al., 2018). Stress and trauma experienced in early life can disrupt neurobiological development, leading to heightened vulnerability to stress and impaired emotion regulation in adulthood (Lupien et al., 2018). This, in turn, compromises the parent's ability to respond sensitively to their children's needs, thereby reinforcing cycles of maladaptation (Adkins et al., 2020; Brown et al., 2020).

In addition to maternal mental health, the construct of mentalization, or reflective functioning, has gained increasing attention as a potential mechanism explaining how parental ACEs influence child development. Mentalization refers to the ability to understand one's own and others' behaviors in terms of underlying mental states (Fonagy, 2018). High levels of maternal mentalization support sensitive caregiving and foster children's socioemotional competence, while deficits in mentalization are associated with harsh or inconsistent parenting and child maladjustment (Alvarez et al., 2022; Smaling et al., 2016). Maternal reflective functioning can therefore serve both as a protective factor and as a mediator in the link between maternal adversity and child behavioral outcomes (Hughes et al., 2017; Senehi et al., 2018).

Several studies support the notion that maternal ACEs are associated with impaired mentalization. For example, Wagner-Skacel and colleagues (Wagner-Skacel et al., 2022) found that adults with histories of childhood trauma displayed greater difficulties in mentalizing, often accompanied by dissociative tendencies. Similarly, Sklyarov (Sklyarov, 2019) highlighted the detrimental impact of ACEs on attachment and mentalization, particularly in populations with complex trauma histories. Within the Iranian context, Dorouger and colleagues (Dorouger et al., 2020) validated a culturally adapted version of the Mentalization Questionnaire, paving the way for research

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that examines how deficits in this capacity may contribute to intergenerational cycles of behavioral dysfunction.

Importantly, maternal mentalization has been directly linked to children's emotional regulation and behavioral problems. Alvarez and colleagues (Alvarez et al., 2022) demonstrated that maternal mentalization abilities in early childhood predict better emotion regulation in children, while Hughes and Aldercotte (Hughes et al., 2017) found that maternal mind-mindedness buffered children at risk of disruptive behavior. Conversely, low levels of reflective functioning have been associated with children's externalizing problems such as aggression and rule-breaking (Smaling et al., 2016). These findings suggest that maternal mentalization serves as a crucial bridge between maternal adversity and child developmental outcomes.

Beyond maternal psychological capacities, broader ecological factors play an important role. Family violence, parental conflict, and lack of social support exacerbate the effects of maternal ACEs on children's outcomes (Schiff et al., 2017; Sullivan et al., 2024). Parenting styles and attachment also contribute significantly, as evidenced by research showing that child temperament interacts with maternal attachment to predict behavioral problems in children with working mothers (Yousefi Khaneh Bargh & Zeynali, 2024). Moreover, cultural factors such as the use of therapeutic interventions like drama therapy (Kajani & Raeisi, 2018) or cognitive-behavioral play therapy (Tavakoli et al., 2024) highlight potential avenues for mitigating behavioral difficulties in children exposed to risk.

The impact of maternal ACEs on child behavioral outcomes is not uniform but moderated by factors such as child sex and parental coping capacities (Arikan & Kumru, 2020; Letourneau et al., 2023). Additionally, contextual factors like the COVID-19 pandemic have exacerbated parenting stress and further illuminated the vulnerabilities of families with trauma histories (Brown et al., 2020). Such findings underscore the importance of adopting a nuanced perspective that integrates individual, relational, and contextual dimensions when examining intergenerational transmission of adversity.

Evidence also suggests that interventions targeting parent–child relationships can play a transformative role. Parent–child interaction therapy, for instance, has shown effectiveness in reducing behavioral problems even among children with developmental conditions such as subthreshold autism (Seçer et al., 2025). Similarly, interventions designed to strengthen parental reflective functioning and mentalization capacities offer promising pathways for disrupting cycles of adversity (Senehi et al., 2018). Such approaches are grounded in attachment theory and mentalization-based treatment frameworks (Fonagy, 2018), both of which emphasize the centrality of understanding mental states in fostering adaptive relational and developmental outcomes.

Moreover, there is increasing recognition that adverse experiences in parents not only affect behavioral outcomes but also have biomedical consequences for children. For example, Madigan and colleagues (Madigan et al., 2017) showed that maternal ACEs predicted infant health risks through both biomedical and psychosocial pathways. Similarly, Racine and colleagues (Racine et al., 2018) reported that maternal adversity was associated with impaired infant development, reinforcing the need to examine both psychological and biological mechanisms. This integrative approach helps explain why prevention and intervention efforts targeting ACEs have become a global health priority (Hughes & Aldercotte, 2017; Merrick et al., 2019).

Despite the robust evidence base, significant gaps remain in understanding the mechanisms by which maternal ACEs translate into child behavioral problems in diverse cultural settings. Much of the literature has focused on Western populations, while fewer studies have examined these processes in Middle Eastern contexts. This gap highlights the importance of culturally informed research that considers local parenting practices, family structures, and stressors unique to specific populations (Driscoll, 2023; Gil, 2023). Furthermore, standardized tools for assessing ACEs and mentalization have only recently been validated in non-Western populations (Dorouger et al., 2020), providing an opportunity for advancing research in these contexts.

Taken together, the literature indicates that maternal ACEs exert a profound impact on child behavioral problems, both directly and indirectly through maternal mentalization, mental health, and parenting practices. Understanding these pathways is essential for designing effective preventive and therapeutic interventions. By integrating insights from developmental psychopathology, attachment theory, and trauma research, studies of this kind contribute to a more comprehensive understanding of how early adversity shapes intergenerational health and development (Cooke et al., 2019; McDonald et al., 2019; Schiff et al., 2017).

In sum, the intergenerational transmission of adversity is a complex but critical area of inquiry. The evidence demonstrates that maternal histories of childhood adversity can compromise reflective functioning and parenting,

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thereby increasing the risk of internalizing and externalizing problems in children. Yet, resilience is also possible, particularly when protective factors such as maternal mentalization, social support, and therapeutic interventions are present (Alvarez et al., 2022; Hughes et al., 2017; Senehi et al., 2018). The present study builds upon this literature by examining the structural model of children's behavioral problems based on mothers' adverse childhood experiences, with maternal mentalization as a mediator.

2. Methods and Materials

2.1. Study design and Participant

The present study employed a correlational design using structural equation modeling (SEM). The statistical population included all mothers in Isfahan who had children aged 6 to 12 years. Based on Kline's rule (Kline, 2012), which suggests considering 10 to 20 participants per observed variable in model-based research, 330 mothers with children in the 6–12 age range from Isfahan responded to the research questionnaires. After removing 7 outlier cases, the final sample size was reduced to 323 participants. The participants were selected using convenience sampling. The questionnaires were administered in two formats: written and online (via Porsline). Since professional research ethics required that the researcher be available and accessible during questionnaire completion, an executive team was formed, all of whom were psychologists familiar with the study's objectives, the questionnaire items, and administration procedures.

Participants were accessed through three main channels: (1) eligible individuals available to the researcher and the executive team (including relatives, friends, neighbors, and local residents), (2) the researcher's clinical clients, and (3) mothers of children attending preschools and elementary schools. In the second case, to enhance motivation, show appreciation, and maintain ethical standards, mothers who agreed to participate received a 10% discount for clinical services. In the third case, after consultation and coordination with school administrators who agreed to cooperate (e.g., Ofogh Preschool Shahin Shahr, Ofogh Girls' Elementary School Shahin Shahr, Negin Behesht Preschool Isfahan, Roshd Bartar Preschool Isfahan, Golban Khord Preschool and Boys' Elementary School Isfahan, Mahad Schools Sepahan Shahr, and Nahal Danesh Shahin Shahr), a free lecture on parenting and sexual education was presented at each school.

In all cases, parents attending the sessions were first informed about the research, its objectives, group data analysis, and confidentiality of their information, followed by a one-hour lecture. After the lecture, questionnaires or their online links were distributed, and participants were given 30 minutes to complete them, choosing whichever method they preferred. Following completion, a 30-minute question-and-answer session was provided free of charge. It should be noted that in all cases, the completion of the questionnaires was voluntary and conducted in accordance with ethical research principles. As previously stated, after removing outlier cases, the sample size was reduced to 323 participants.

2.2. Measures

Adverse Childhood Experiences International Questionnaire (ACE-IQ): Given the importance of adverse childhood experiences (ACEs), the World Health Organization (WHO) developed and published the ACE-IQ in 2011. Researchers worldwide, either independently or in collaboration with international organizations such as UNICEF, continue to investigate ACEs in the context of their own countries (Gil, 2023; World Health Organization, 2018). In this study, the questionnaire was translated and its validity and reliability evaluated for the first time in Iran. The WHO ACE-IQ categorizes ACEs into 13 domains: physical abuse, sexual abuse, emotional abuse, physical and emotional neglect, living with family members with mental illness or suicidal tendencies, living with family members who were incarcerated, witnessing violence against family members, severe family dysfunction such as alcohol or substance abuse, single or no parenthood, parental separation or divorce, bullying, community violence, and collective violence. In the Persian adapted version, construct validity and internal consistency reliability of the subscales were examined. Cronbach's alpha coefficients were as follows: physical abuse = .67, sexual abuse (contact) = .84, emotional abuse = .60, physical neglect = .60, emotional neglect = .61, family violence = .78, unhealthy family environment = .60, bullying = .62, community violence = .81, and collective violence = .71. The overall Cronbach's alpha was reported as .87, indicating acceptable reliability and sufficient psychometric properties of the tool for assessing mothers' adverse childhood experiences in an Iranian sample.

Persian Version of the Reflective Functioning Questionnaire, referred to as the Mentalization

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Questionnaire (Dorouger et al., 2020): This 26-item self-report questionnaire was developed in a three-phase study. Factor analysis revealed two factors: certainty and uncertainty about one's own and others' mental states (Fonagy et al., 2016). The questionnaire uses a 7-point Likert scale ranging from strongly disagree (1) to strongly agree (7), with reverse scoring applied for the uncertainty subscale. The instrument developers reported internal consistency reliabilities for the certainty and uncertainty subscales as .77 and .65, respectively, in a clinical sample, and .63 and .67, respectively, in a nonclinical sample. Test-retest reliability over a three-week interval was .84 for the uncertainty subscale and .75 for the certainty subscale (Fonagy, 2018). Exploratory factor analysis of the Iranian version also confirmed the two-factor structure of certainty and uncertainty. In the localized version used in the present study, Cronbach's alpha was .95 for the certainty subscale, .79 for the uncertainty subscale, and .87 for the overall scale, indicating high reliability of the tool in the Iranian sample.

Child Behavior Checklist (CBCL), Parent Form (Achenbach & Rescorla, 2007): The CBCL is one of the parallel forms of the Achenbach System of Empirically Based Assessment (ASEBA), designed to evaluate child and adolescent problems across eight main domains: anxiety/depression, withdrawal/depression, somatic complaints, social problems, thought problems, attention problems, rule-breaking behavior, and aggressive behavior. Of these, rule-breaking and aggressive behavior constitute the second-order index of externalizing problems. The CBCL also measures emotional-behavioral problems as well as academic and social competencies of children aged 6 to 18 years from the parents' perspective. It typically takes 20–25 minutes to complete and consists of 115 items scored on a three-point Likert scale (0 = not true, 1 = somewhat or sometimes true, 2 = very true or often true). The CBCL produces three broad-band scores: (1) internalizing problems, (2) externalizing problems, and (3) total problems. In the present study, only internalizing and externalizing problems were used, reducing the total items to 62. The internalizing problems scale includes the subscales of withdrawn/depressed (WD), somatic complaints (SC), and anxious/depressed (AD). The externalizing problems scale includes rule-breaking behavior (RB) and aggression (AG). The CBCL can be completed by one parent or by someone who is well-acquainted with the child's competencies and behavioral problems. It can be administered as a self-report or an interview and can be used to assess behavioral changes over time or following intervention. Overall reliability coefficients for the CBCL have been reported as .97 (Cronbach's alpha) and .94 (test-retest reliability). Content validity (based on rational item selection and classical item analysis), criterion validity (through comparisons with psychiatric interviews and the CSI-4 scale), and construct validity (based on internal relationships among scales and group differentiation) have been reported as satisfactory (Achenbach & Rescorla, 2007). The instrument was first translated into Persian and standardized by Tehrani-Doost et al. (2002). In the Persian version used in this study, Cronbach's alpha coefficients for the subscales were as follows: anxiety/depression = .81, somatic complaints = .82, withdrawn/depression = .70, rule-breaking behavior = .71, aggression = .87, internalizing problems = .85, and externalizing problems = .86. The overall Cronbach's alpha was .93, indicating excellent reliability of the instrument for assessing children's behavioral problems from the parental perspective in an Iranian sample.

2.3. Data Analysis

For data analysis and hypothesis testing, structural equation modeling was applied. The research model was tested using the two-step approach recommended by Anderson and Gerbing (1988). In this approach, first, the relationships between observed variables and latent variables were examined using confirmatory factor analysis. Then, the conceptual research model was tested using the maximum likelihood estimation method. Finally, to examine the significance of indirect effects, the bootstrap method was applied.

3. Findings and Results

The results show that the mean (standard deviation) age of the participants in the sample was 36.62 (6.67) years, the mean (standard deviation) duration of their marriage was 22.34 (5.54) years, and the mean (standard deviation) age at the birth of their first child was 25.95 (4.69) years. Finally, examination of the children's demographic characteristics indicated that among them, 168 (52%) were boys and 155 (48%) were girls, with a mean (standard deviation) age of 8.24 (2.52) years. In terms of education, 106 (32.8%) of the children were in preschool and 205 (63.5%) were in elementary school, while 12 (3.7%) were not attending school. Descriptive characteristics of the research variables, including mean, standard deviation, minimum and maximum scores, as well as normality indices such as

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skewness and kurtosis, were calculated. The results of these analyses are presented in Table 1.

Table 1

Descriptive Characteristics and Normality Indices of the Research Variables

Variable	Component	SD	Mean	Min Score	Max Score	Skewness	Kurtosis
Mothers' adverse childhood experiences	Emotional abuse	1.62	2.09	0	6	0.565	-0.211
	Physical abuse	1.52	1.25	0	6	1.182	-0.861
	Sexual abuse (contact)	1.92	1.10	0	9	0.561	-1.557
	Family violence	2.58	3.59	0	9	0.322	-0.840
	Unhealthy family environment	0.75	0.39	0	4	1.055	-0.856
	Emotional neglect	1.84	3.12	0	8	0.440	-0.189
	Physical neglect	1.27	0.59	0	6	1.254	-0.379
	Bullying	1.65	1.38	0	6	0.930	-0.259
	Community violence	2.54	3.52	0	9	0.233	-0.933
	Collective violence	1.18	0.66	0	6	0.811	-1.313
	Total score	10.42	17.73	0	57	0.792	0.507
Maternal mentalization	Certainty	7.90	23.60	7	48	0.713	0.662
	Uncertainty	6.38	30.62	11	49	-0.311	-0.101
	Total score	12.01	54.23	18	90	0.242	0.324
Child behavioral problems	Anxiety/Depression	4.56	6.71	0	24	1.015	0.915
	Somatic complaints	2.92	11.40	0	14	-1.522	2.074
	Withdrawal/Depression	2.31	2.07	0	10	1.307	1.186
	Internalizing problems	8.60	11.46	0	42	1.148	1.027
	Rule-breaking	3.08	3.33	0	16	1.308	1.732
	Aggression	5.73	8.31	0	30	1.096	1.135
	Externalizing problems	8.25	11.64	0	43	1.143	1.179
	Total score	15.01	23.11	0	75	1.075	0.976

According to Table 1, comparison of the mean and standard deviation values indicates that the distribution of scores in most variables was relatively balanced, and the range of scores (minimum to maximum) shows that the participants adequately covered the response spectrum. Furthermore, the skewness and kurtosis values of all observed variables were within the acceptable range of ±2. Therefore, the distribution of the variables can be considered statistically normal. Overall, these results indicate appropriate data quality, adequacy of variable distributions, and suitable conditions for further analyses within the structural model framework.

Before testing the model and examining its results, correlations between the main model variables were investigated using Pearson correlation analysis to gain insight into their relationships. The correlation coefficients between the main model variables—mothers' adverse childhood experiences, maternal mentalization, and child behavioral problems—are presented in Table 2.

Table 2

Correlation Coefficients Between the Main Model Variables

Variables	1	2	3
1. Mothers' adverse childhood experiences	1		
2. Maternal mentalization	-0.213**	1	
3. Child behavioral problems	0.382**	-0.304**	1

**p<0.01

The results of Table 2 show that child behavioral problems had a significant negative correlation with maternal mentalization ($r = -0.304$, $p < .01$) and a significant positive correlation with mothers' adverse childhood experiences ($r = 0.382$, $p < .01$).

Furthermore, multicollinearity between the predictor variables of the model—mothers' adverse childhood experiences and maternal mentalization—was examined using the tolerance and variance inflation factor (VIF) indices. The results indicated that the tolerance value was

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0.915 for adverse childhood experiences and 0.872 for mentalization, while the VIF values were 1.093 and 1.147, respectively. Since the tolerance values were greater than 0.10 and the VIF values were less than 10, it can be concluded that no multicollinearity existed between the predictor variables, and the conditions were appropriate for structural model analysis. In general, the results presented in this section indicate that all fundamental assumptions of structural equation modeling were met, and therefore, no barriers existed for conducting the analysis. To examine and test the structural model of children's behavioral problems based on mothers' adverse childhood experiences with the mediating role of maternal mentalization, the two-step approach proposed by Anderson and Gerbing (1988) was used. In this approach, the relationships between observed and latent variables were first examined using confirmatory factor analysis (CFA) as part of the measurement model. Then, the structural and measurement models of the study (Figure 1) were tested simultaneously using SEM. Table 3 presents the fit indices for the final model.

Table 3

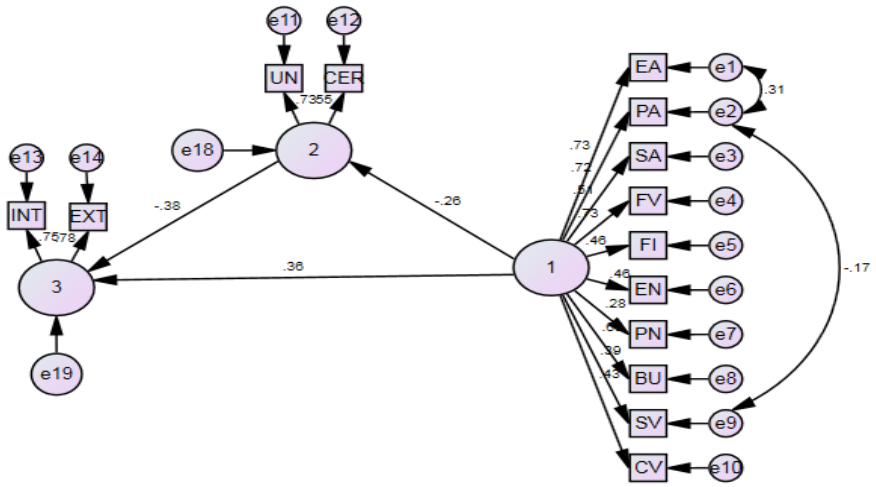
Fit Indices of the Final Model (Confirmatory Factor Analysis)

Fit Index Type	Acceptable Fit	Good Fit	Excellent Fit	Observed Value	Fit Result
χ^2 (df) value	$\chi^2/df < 5$	$\chi^2/df < 3$	$\chi^2/df < 2$	151.9 (72)	Excellent
χ^2 test p-value				.001	
χ^2/df ratio				2.11	
RMSEA	< .10	< .08	< .05	.059	Good
SRMR	< .10	< .08	< .05	.0507	Good
CFI	> .80	> .90	> .95	.927	Good
NFI	> .80	> .90	> .95	.872	Acceptable
TLI	> .80	> .90	> .95	.908	Good
GFI	> .80	> .90	> .95	.940	Good
AGFI	> .80	> .90	> .95	.912	Good

As shown in Table 3, all fit indices for the final model ranged from excellent (for χ^2/df) to acceptable (for NFI). These results indicate that the empirical data were consistent with and supported the final model of the study. In the next step, the parameters of the core structural model of children's behavioral problems based on mothers' adverse childhood experiences, with the mediating role of maternal mentalization, including factor loadings and standardized path coefficients, were estimated and are presented in Figure 1.

Figure 1

Final Model



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1 = Mothers' adverse childhood experiences; 2 = Maternal mentalization; 3 = Children's behavioral problems; EA = Emotional abuse; PA = Physical abuse; SA = Sexual abuse; FV = Family violence; FI = Unhealthy family environment; EN = Emotional neglect; PN = Physical neglect; BU = Bullying; SV = Community violence; CV = Collective violence; CER = Certainty; UC = Uncertainty

The results show the estimated parameters of the model, including factor loadings and their significance, unstandardized and standardized direct path coefficients, and their significance levels.

Table 4

Estimated Parameters of the Core Research Model

Direct Path	Standardized Path Coefficient (β)	Unstandardized Path Coefficient	Critical Ratio	Significance (p)
Emotional abuse → Mothers' adverse childhood experiences (factor loading)	.73	1.00	---	---
Physical abuse → Mothers' adverse childhood experiences (factor loading)	.72	0.93	14.14	.001
Sexual abuse → Mothers' adverse childhood experiences (factor loading)	.50	0.42	8.20	.001
Family violence → Mothers' adverse childhood experiences (factor loading)	.73	1.59	11.48	.001
Unhealthy family environment → Mothers' adverse childhood experiences (factor loading)	.46	0.39	7.46	.001
Emotional neglect → Mothers' adverse childhood experiences (factor loading)	.45	0.70	7.41	.001
Physical neglect → Mothers' adverse childhood experiences (factor loading)	.28	0.24	4.63	.001
Bullying → Mothers' adverse childhood experiences (factor loading)	.65	0.90	10.38	.001
Community violence → Mothers' adverse childhood experiences (factor loading)	.39	0.84	6.34	.001
Collective violence → Mothers' adverse childhood experiences (factor loading)	.43	0.36	6.95	.001
Uncertainty → Maternal mentalization (factor loading)	.735	1.00	---	---
Certainty → Maternal mentalization (factor loading)	.55	0.93	4.26	.001
Internalizing problems → Child behavioral problems (factor loading)	.75	1.00	---	---
Externalizing problems → Child behavioral problems (factor loading)	.78	0.99	7.79	.001
Mothers' adverse childhood experiences → Child behavioral problems	.36	1.95	4.66	.001
Mothers' adverse childhood experiences → Maternal mentalization	-.26	-1.04	-3.32	.001
Maternal mentalization → Child behavioral problems	-.38	-0.53	-3.52	.001

The results indicate that all factor loadings of the indicators on their respective latent variables were significant. Finally, to examine the significance of the indirect effects of mothers' adverse childhood experiences on child behavioral problems through maternal mentalization, and to test the mediating role of the mediator variables, the bootstrap method with 2,000 resamples was applied. Table below summarizes these results.

Table 5

Bootstrap Results for Testing the Significance of Indirect Effects in the Model

Indirect Path	Standardized Indirect Effect	Lower Bound	Upper Bound	Significance (p)
Mothers' adverse childhood experiences → Child behavioral problems (via maternal mentalization)	.101	.043	.180	.002
Mothers' adverse childhood experiences → Child internalizing behavioral problems (via maternal mentalization)	.346	.252	.431	.001

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Mothers' adverse childhood experiences → Child externalizing behavioral problems (via maternal mentalization)	.357	.253	.444	.001

The examination of the significance of indirect effects shows that the effects of maternal mentalization as a mediator in the model were significant. Specifically, the relationships between mothers' adverse childhood experiences and child behavioral problems, mothers' adverse childhood experiences and child internalizing problems, and mothers' adverse childhood experiences and child externalizing problems were all mediated significantly through maternal mentalization.

4. Discussion and Conclusion

The present study investigated the structural model of children's behavioral problems based on mothers' adverse childhood experiences (ACEs), with maternal mentalization as a mediating variable. The results confirmed that maternal ACEs were significantly associated with both internalizing and externalizing behavioral problems in children, and that this relationship was partially mediated by deficits in maternal mentalization. More specifically, mothers who reported higher levels of ACEs displayed lower levels of reflective functioning, which in turn predicted greater emotional and behavioral problems in their children. These findings align with a growing body of research on the intergenerational transmission of trauma, demonstrating how early adverse environments in one generation can manifest in behavioral vulnerabilities in the next (Hughes & Aldercotte, 2017; Merrick et al., 2019).

The results showed that maternal ACEs exerted a direct and significant effect on child behavioral outcomes. This is consistent with prior studies showing that adverse experiences such as abuse, neglect, and household dysfunction are robust predictors of children's socioemotional difficulties (Jimenez et al., 2016; McDonald et al., 2019). Children of mothers with high ACEs are at elevated risk of internalizing problems such as anxiety and depression, as well as externalizing problems like aggression and rule-breaking behavior (Racine et al., 2018; Schickedanz et al., 2018). The mechanism underlying these associations can be traced to the enduring impact of trauma on stress regulation systems. Chronic early stress disrupts neurobiological development, particularly the hypothalamic-pituitary-adrenal (HPA) axis, rendering adults more vulnerable to psychological distress and maladaptive parenting practices (Brown et al., 2020; Lupien et al., 2018). Such patterns confirm that maternal ACEs are not merely historical events but have ongoing implications for children's developmental trajectories.

A key contribution of this study was the demonstration of maternal mentalization as a mediating pathway. The findings indicated that mothers with higher ACE exposure exhibited lower levels of mentalization, which then increased the likelihood of their children's behavioral difficulties. This supports theoretical models positing that reflective functioning is a core mechanism through which early adversity is transmitted across generations (Fonagy, 2018; Smaling et al., 2016). Mentalization allows parents to interpret children's behaviors in terms of underlying mental states rather than reacting impulsively or punitively. When parents lack this ability, they may misinterpret their child's emotions and behaviors, respond harshly, or fail to provide sensitive guidance. This can exacerbate children's difficulties with self-regulation and social functioning (Alvarez et al., 2022; Senehi et al., 2018). The present findings thus extend earlier work by providing empirical evidence for this mediating role in an Iranian context, which has been less represented in prior studies.

The observed association between maternal ACEs and diminished reflective functioning is consistent with earlier studies. Wagner-Skacel and colleagues (Wagner-Skacel et al., 2022) found that adults with histories of childhood trauma exhibited lower capacities for mentalization and higher dissociative tendencies. Similarly, Sklyarov (Sklyarov, 2019) reported that adverse childhood histories negatively affect both attachment and mentalization capacities, particularly in populations with complex trauma histories. The present study supports these findings by highlighting that the erosion of reflective functioning among trauma-exposed mothers represents a critical risk pathway for children's behavioral adjustment. This underscores the importance of maternal psychological resources in mediating the intergenerational impact of adversity.

The significance of maternal mentalization for children's behavioral development is further corroborated by prior research. Alvarez and colleagues (Alvarez et al., 2022) demonstrated that mothers with higher reflective functioning fostered better emotion regulation in their children, while Hughes and Aldercotte (Hughes et al., 2017) found that maternal mind-mindedness buffered children against disruptive behaviors, even in the presence of other risk factors. Conversely, low reflective functioning has been

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linked to externalizing difficulties such as aggression and defiance (Smaling et al., 2016). The present findings reinforce these results, showing that reflective functioning is not only a protective resource but also a mediating factor that helps explain why children of trauma-exposed mothers are more likely to exhibit maladaptive behavioral outcomes.

Another important observation from this study is that maternal ACEs were directly related to children's behavioral problems even after accounting for mentalization, suggesting partial mediation. This pattern indicates that other mechanisms, such as maternal depression, parenting stress, and socio-environmental factors, may also play important roles (Cooke et al., 2019; Letourneau et al., 2023). Schiff and colleagues (Schiff et al., 2017) showed that maternal depression and lack of social support amplify the impact of trauma histories on children's behavioral problems. Similarly, Brown and colleagues (Brown et al., 2020) observed that stressors such as the COVID-19 pandemic heightened parenting stress, particularly among trauma-exposed parents, leading to harsher discipline and reduced parental sensitivity. These findings suggest that mentalization is only one of several interlocking mediators and that comprehensive models should integrate psychological, relational, and contextual factors.

The results also align with evidence that maternal ACEs compromise both biomedical and psychosocial pathways to child health. Madigan and colleagues (Madigan et al., 2017) demonstrated that maternal adversity predicted infant health risks via maternal depression and risky health behaviors. Similarly, Racine and colleagues (Racine et al., 2018) reported that maternal ACEs were associated with impaired infant development, highlighting that the effects of maternal trauma are not confined to psychosocial functioning but also extend to biological outcomes. This broader perspective reinforces the importance of examining multiple layers of influence when studying intergenerational transmission of adversity.

The findings of this study also resonate with research emphasizing the moderating role of contextual factors. For instance, Arikan and Kumru (Arikan & Kumru, 2020) observed that the associations between maternal symptoms and child behavior problems vary depending on contextual stressors. Similarly, Letourneau and colleagues (Letourneau et al., 2023) found that the intergenerational transmission of ACEs was moderated by child sex, with boys and girls showing different susceptibility to maternal depression and anxiety. These results suggest that the pathways from maternal ACEs to child behavioral outcomes are not uniform but vary based on child and family characteristics.

From an intervention perspective, the findings highlight the importance of targeting parental reflective functioning to disrupt cycles of adversity. Programs that enhance parents' ability to mentalize—such as mentalization-based interventions—have shown promise in improving parent-child interactions and reducing child behavioral problems (Fonagy, 2018; Senehi et al., 2018). Similarly, therapeutic approaches such as play therapy have been effective in addressing children's behavioral difficulties, with evidence from cognitive-behavioral and gestalt play therapy approaches showing improvements in aggression, impulsivity, and emotional regulation (Kajani & Raeisi, 2018; Tavakoli et al., 2024). Parent–child interaction therapy has also been shown to reduce behavioral problems even in children with developmental vulnerabilities such as subthreshold autism (Seçer et al., 2025). These interventions collectively emphasize the potential of targeting both parents and children in breaking intergenerational cycles of adversity.

Taken together, the findings of this study contribute to the growing literature on intergenerational trauma by highlighting maternal mentalization as a crucial mechanism linking maternal ACEs to children's behavioral problems. While the findings corroborate existing theories and evidence, they also extend knowledge by providing culturally specific data and by demonstrating the robustness of these associations in an Iranian sample. By integrating insights from developmental psychopathology, attachment theory, and trauma research, this study offers a comprehensive understanding of how maternal histories of adversity shape children's socioemotional development.

5. Limitations and Suggestions

Despite its contributions, the study has several limitations that warrant consideration. First, the reliance on self-report measures, particularly for assessing maternal ACEs and mentalization, introduces potential biases related to memory recall and social desirability. Second, the cross-sectional design prevents definitive conclusions about causal relationships, even though the structural equation modeling approach provides a strong analytic framework. Longitudinal designs would be necessary to confirm temporal ordering and developmental trajectories. Third, the study sample was limited to mothers in a specific geographic region, which may restrict generalizability to other cultural

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contexts or paternal populations. Finally, the study focused exclusively on maternal factors, overlooking the potential contributions of fathers, extended family members, and broader community contexts.

Future research should employ longitudinal and multi-informant designs to capture the dynamic and evolving nature of intergenerational transmission of adversity. Incorporating observational methods of parenting and child behavior would provide more objective data and mitigate the limitations of self-report measures. Expanding research to include fathers, caregivers, and diverse cultural settings would offer a more holistic understanding of family processes. Additionally, future studies should investigate multiple mediators, including maternal depression, parenting stress, and social support, alongside reflective functioning, to build a more comprehensive model of intergenerational transmission. Finally, integrating biological measures such as cortisol levels or neuroimaging could shed light on the psychobiological mechanisms underlying these associations.

The findings have practical implications for interventions aimed at reducing behavioral problems in children of trauma-exposed mothers. First, preventive programs should focus on screening for ACEs among parents and providing early support to those at risk. Second, interventions that enhance parental reflective functioning and promote mentalization should be incorporated into parenting programs. Third, schools and community health centers can play an active role in identifying at-risk families and providing accessible therapeutic services. Finally, policy initiatives should prioritize trauma-informed care approaches that address both parental histories of adversity and current parenting challenges, thereby fostering resilience and healthier developmental outcomes in children.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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