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Child Temperament and Internalizing Symptoms: The Mediating Role of Resilience and Coping Flexibility

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A B S T R A C T

Purpose: The objective of this study was to examine whether resilience and coping flexibility mediate the relationship between child temperament and internalizing symptoms among school-aged children.

Methods and Materials: This study adopted a correlational design and was conducted on a sample of school-aged children recruited from public elementary and lower secondary schools in Tehran. Participants were selected using multistage cluster sampling, and data were collected through standardized parent-report questionnaires assessing child temperament, resilience, coping flexibility, and internalizing symptoms. After screening the data for missing values and normality assumptions, structural equation modeling was employed to test the hypothesized mediation model. Model fit was evaluated using multiple goodness-of-fit indices, and indirect effects were examined through bootstrapping procedures to determine the significance of mediational pathways.

Findings: Structural equation modeling revealed a significant direct effect of child temperament on internalizing symptoms. Child temperament also showed significant negative effects on both resilience and coping flexibility. Resilience and coping flexibility, in turn, were significant negative predictors of internalizing symptoms. Indirect effect analyses indicated that resilience significantly mediated the relationship between temperament and internalizing symptoms, and coping flexibility also emerged as a significant mediator. The total indirect effect was significant, demonstrating that resilience and coping flexibility jointly accounted for a substantial portion of the association between child temperament and internalizing symptoms, while the direct path remained significant, indicating partial mediation.

Conclusion: The findings suggest that child temperament influences internalizing symptoms not only directly but also indirectly through its impact on resilience and coping flexibility.

Keywords: *Child temperament; internalizing symptoms; resilience; coping flexibility; children*

1. Introduction

Internalizing symptoms in childhood and adolescence, including anxiety, depression, social withdrawal, and somatic complaints, represent a major public health concern due to their high prevalence, early onset, and long-term consequences for psychological, social, and academic functioning. Research has consistently shown that internalizing problems often emerge early in development and tend to persist across time, increasing the risk for recurrent emotional disorders in adulthood. Contemporary developmental psychopathology frameworks emphasize that internalizing symptoms do not arise from a single cause but rather from the dynamic interaction of biological dispositions, individual regulatory capacities, and environmental contexts. Within this multifactorial perspective, child temperament has been identified as one of the most stable and influential early-life characteristics shaping emotional reactivity and vulnerability to internalizing difficulties (Bozicevic et al., 2025; Zdanowicz et al., 2025). Temperament refers to constitutionally based individual differences in emotional, motor, and attentional reactivity and self-regulation, which are observable early in life and show moderate stability across development. Certain temperamental traits, particularly high negative emotionality, behavioral inhibition, and low effortful control, have repeatedly been linked to elevated risk for anxiety and depressive symptoms in children and adolescents.

Empirical evidence from both clinical and non-clinical populations supports the role of temperament as a transdiagnostic risk factor for internalizing psychopathology. Studies conducted across diverse age groups indicate that individuals characterized by high harm avoidance, emotional sensitivity, and low regulatory capacity are more likely to experience persistent negative affect and maladaptive emotional responses under stress (Vespa et al., 2024; 이 & Hee-Hwa, 2024). In childhood, these temperamental vulnerabilities may manifest as heightened fearfulness, sadness, or withdrawal in response to everyday challenges, thereby increasing susceptibility to internalizing symptoms when children encounter environmental stressors such as academic demands, peer difficulties, or family conflict. Longitudinal findings further suggest that temperament-related emotional reactivity interacts with caregiving environments to shape developmental trajectories of emotional adjustment, highlighting the importance of examining both dispositional and adaptive mechanisms underlying internalizing problems (Bozicevic et al., 2025; Jones, 2024).

Despite robust evidence linking temperament to internalizing symptoms, not all children with temperamental vulnerabilities develop emotional disorders. This observation has shifted research attention toward protective and mediating processes that may buffer or exacerbate the impact of temperament on psychological outcomes. Among these processes, resilience has emerged as a key construct explaining individual differences in adaptation to stress and adversity. Resilience is broadly defined as the capacity to maintain or regain psychological well-being in the face of challenges and has been conceptualized as a dynamic process involving emotional, cognitive, and behavioral resources. Children with higher resilience tend to display better emotion regulation, problem-solving abilities, and social competence, which collectively reduce the likelihood of internalizing symptoms even in the presence of risk factors (Guo et al., 2024; Lan & Radin, 2020). Recent studies indicate that resilience can mediate the relationship between early vulnerabilities and later emotional outcomes, suggesting that resilient capacities may attenuate the negative effects of difficult temperament on internalizing behaviors.

Research focusing on internalizing problems has increasingly emphasized the mediating role of resilience-related mechanisms in developmental models. For example, resilience has been shown to partially explain the association between adverse family environments and emotional problems in children and adolescents (Zhang et al., 2023). Similarly, evidence suggests that children with higher resilience are better able to regulate negative affect, seek social support, and interpret stressful situations in less threatening ways, thereby reducing anxiety and depressive symptoms. In clinical and community samples, resilience-based interventions have demonstrated effectiveness in reducing internalizing behaviors, further underscoring the importance of this construct in understanding emotional adjustment (Mohammad-Rajabi et al., 2024; Rahmani et al., 2024). However, resilience is not a unitary trait and often operates in conjunction with more specific regulatory processes, such as coping strategies and flexibility in coping.

Coping flexibility, defined as the ability to modify coping strategies according to situational demands and to abandon ineffective responses in favor of more adaptive ones, represents another critical mechanism linking temperament to internalizing symptoms. Unlike static coping styles, coping flexibility emphasizes dynamic adjustment and

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contextual sensitivity in stress management. Theoretical and empirical models propose that individuals with greater coping flexibility are more capable of managing emotional distress because they can evaluate the effectiveness of their coping efforts and shift strategies when necessary (Galatzer-Levy et al., 2012; Zong et al., 2010). In contrast, rigid or inflexible coping patterns have been associated with persistent negative affect, rumination, and vulnerability to anxiety and depression. Children with difficult temperamental traits may be particularly prone to inflexible coping, which in turn amplifies emotional problems when stressors are encountered.

A growing body of research supports the role of coping flexibility as a mediator between risk factors and internalizing outcomes. Studies in adolescent and adult populations have shown that coping flexibility mediates the relationship between stress exposure and depressive symptoms, as well as between early maladaptive schemas and internalizing behaviors (Kato et al., 2021; Van Wijk-Herbrink et al., 2018). During childhood, coping flexibility is still developing and may be strongly influenced by temperament-related emotional reactivity and regulatory capacity. Children with high negative emotionality or low effortful control may struggle to disengage from ineffective coping strategies, increasing the likelihood of sustained anxiety or depressive symptoms. Conversely, children who develop flexible coping skills may counterbalance temperamental risk by adapting more effectively to emotional challenges (Kılınç et al., 2023; Sobhani et al., 2021).

The integration of temperament, resilience, and coping flexibility within a single explanatory model offers a more comprehensive understanding of internalizing symptoms. While temperament provides a biological and dispositional foundation for emotional responses, resilience and coping flexibility represent modifiable processes that shape how these dispositions translate into psychological outcomes. Recent empirical studies highlight the importance of examining multiple mediators simultaneously, as resilience and coping flexibility may operate in parallel or sequential pathways to influence emotional adjustment (Choi et al., 2024; Guo et al., 2024). For instance, resilient children may be more likely to develop flexible coping repertoires, which in turn reduce internalizing symptoms. Alternatively, coping flexibility may function independently as a regulatory mechanism that mitigates the emotional impact of temperamental vulnerability.

Cultural and contextual factors further underscore the need for research in non-Western settings. Family dynamics, parenting practices, and social expectations can influence both the expression of temperament and the development of resilience and coping skills. Studies conducted in Middle Eastern and Asian contexts suggest that the pathways linking temperament to internalizing symptoms may differ from those observed in Western populations, highlighting the importance of culturally sensitive models (Yousefi Khaneh Bargh & Zeynali, 2024; ㅇ| & Hee-Hwa, 2024). In Iran, despite increasing attention to child and adolescent mental health, there remains a relative lack of integrative empirical studies examining how dispositional and adaptive factors jointly contribute to internalizing problems in children. Existing research has often focused on isolated predictors, such as parenting styles or emotional regulation strategies, without simultaneously considering temperament, resilience, and coping flexibility within a unified framework (Kanwar, 2024; Scarzello, 2023).

Addressing this gap is particularly important given the developmental significance of childhood as a period of rapid emotional and regulatory growth. Understanding how resilience and coping flexibility mediate the relationship between temperament and internalizing symptoms can inform early identification and prevention efforts. By identifying modifiable protective mechanisms, such research can guide the design of targeted interventions aimed at enhancing resilience and flexible coping skills among temperamentally vulnerable children, thereby reducing the risk of internalizing disorders later in life (Rahmani et al., 2024; Wills & Dishion, 2024). Moreover, a mediation-based approach aligns with contemporary transdiagnostic models of psychopathology, which emphasize shared mechanisms across emotional disorders rather than disorder-specific pathways.

In light of these considerations, the present study seeks to develop and test a mediation model in which resilience and coping flexibility explain the association between child temperament and internalizing symptoms among school-aged children in Tehran. By integrating dispositional and adaptive constructs within a single structural framework and examining their interrelations in a culturally specific context, this study aims to contribute to a more nuanced understanding of emotional vulnerability and protection in childhood. The aim of this study was to examine the mediating roles of resilience and coping flexibility in the relationship between child temperament and internalizing symptoms in children.

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2. Methods and Materials

2.1. Study Design and Participants

The present study employed a correlational design using structural equation modeling to examine the relationships among child temperament, resilience, coping flexibility, and internalizing symptoms. The study population consisted of school-aged children residing in Tehran, Iran, during the academic year in which data were collected. Participants were recruited through a multistage cluster sampling procedure from public elementary and lower secondary schools in different municipal districts of Tehran in order to ensure socioeconomic and cultural diversity. After obtaining approval from school authorities, information letters and consent forms were distributed to parents, and assent was obtained from children prior to participation. Inclusion criteria included being within the target age range, enrollment in a regular education program, and the absence of diagnosed severe neurological or developmental disorders as reported by parents. Children with incomplete questionnaires or whose parents declined consent were excluded from the final analysis. The final sample size was considered adequate for structural equation modeling based on commonly accepted criteria related to model complexity and statistical power. Data collection was conducted in a quiet classroom setting under the supervision of trained research assistants, with standardized instructions provided to all participants to minimize administration bias.

2.2. Measures

Child temperament was assessed using the Early Adolescent Temperament Questionnaire–Revised (EATQ-R), originally developed by Ellis and Rothbart in 2001 and later refined for use with school-aged children and early adolescents. This standardized instrument is grounded in Rothbart's psychobiological model of temperament and is designed to assess constitutionally based individual differences in emotional reactivity and self-regulation. The parent-report version used in the present study consists of 65 items organized into four major subscales: Effortful Control, Negative Affectivity, Surgency/Extraversion, and Affiliation. Parents rate each item on a 5-point Likert scale ranging from 1 (almost always untrue) to 5 (almost always true), with higher scores indicating stronger expression of the respective temperamental dimension. Subscale scores are calculated by averaging item responses, and a composite temperament profile can be derived when required for structural modeling. Numerous international and Iranian studies have reported satisfactory construct validity, convergent validity with related personality and emotional measures, and acceptable internal consistency coefficients for the EATQ-R, confirming its reliability and validity for assessing child temperament in diverse cultural contexts.

Resilience was measured using the Child and Youth Resilience Measure (CYRM-28), developed by Ungar and colleagues in 2008 within a social–ecological framework of resilience. This widely used standardized tool assesses individual, relational, and contextual resources that enable children to cope effectively with adversity. The CYRM-28 consists of 28 items grouped into three core subscales: Individual Capacities and Skills, Relationships with Primary Caregivers, and Contextual/Community Resources. Items are rated on a 5-point Likert scale ranging from 1 (not at all) to 5 (a lot), with higher total and subscale scores indicating greater resilience. Total resilience scores are obtained by summing or averaging item responses across subscales. Extensive empirical research has demonstrated strong factorial validity, cross-cultural applicability, and good internal consistency of the CYRM-28, and its psychometric properties have been confirmed in multiple studies involving children and adolescents, including validations conducted in Middle Eastern and Iranian populations.

Coping flexibility was assessed using the Coping Flexibility Scale for Children (CFS-C), developed by Kato in 2012 and subsequently adapted for use with younger populations through parent-report formats. This instrument is based on the dual-process model of coping flexibility, emphasizing both the ability to discontinue ineffective coping strategies and the capacity to generate and implement alternative strategies when situational demands change. The scale consists of 20 items divided into two subscales: Evaluation Coping (monitoring and evaluating coping effectiveness) and Adaptive Coping (modifying or switching coping strategies). Items are rated on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree), with higher scores reflecting greater coping flexibility. Subscale scores and a total coping flexibility score are computed by summing item responses. Previous studies have reported adequate construct validity, significant associations with psychological adjustment indicators, and satisfactory reliability indices, supporting the use of the CFS-C as a valid and reliable measure of coping flexibility in child and adolescent samples.

Internalizing symptoms were measured using the Strengths and Difficulties Questionnaire (SDQ) – Parent

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Form, originally developed by Goodman in 1997. The SDQ is a brief behavioral screening instrument designed to assess emotional and behavioral problems in children and adolescents. The questionnaire consists of 25 items divided into five subscales: Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention, Peer Relationship Problems, and Prosocial Behavior. For the purposes of the present study, the Internalizing Symptoms score was calculated by summing the Emotional Symptoms and Peer Relationship Problems subscales, yielding a composite measure of internalizing difficulties. Items are rated on a 3-point Likert scale ranging from 0 (not true) to 2 (certainly true), with higher scores indicating greater symptom severity. A large body of international research has confirmed the SDQ's factorial validity, criterion validity, and acceptable internal consistency, and its reliability and validity have also been well established in Iranian child and adolescent populations, supporting its suitability for assessing internalizing symptoms in the present study.

2.3. Data Analysis

Data analysis was conducted using statistical software appropriate for both preliminary analyses and structural equation modeling. Initially, data were screened for missing values, outliers, and normality assumptions. Descriptive statistics were calculated to summarize participant characteristics and main study variables, and bivariate correlations were examined to explore initial associations among temperament, resilience, coping flexibility, and internalizing symptoms. Measurement models were evaluated to ensure adequate factor structure and construct validity of the latent variables prior to testing the structural model. Structural equation modeling was then employed to test the hypothesized mediation model in which resilience and coping flexibility mediated the relationship between child temperament and internalizing symptoms. Model fit was evaluated using multiple fit indices, and indirect effects were tested using bootstrapping procedures to assess the significance of mediational pathways. All statistical tests were conducted at an appropriate significance level, and the overall analytical approach was designed to provide a rigorous examination of both direct and indirect relationships among the study variables.

3. Findings and Results

Table 1 presents the demographic characteristics of the participants included in the final analysis. This table provides an overview of the sample in terms of age, gender distribution, grade level, and parental educational status, offering essential contextual information for interpreting the subsequent statistical findings. The descriptive profile of the sample indicates that participants were drawn from a broad range of elementary and lower secondary school grades in Tehran, ensuring adequate developmental variability for examining temperament, resilience, coping flexibility, and internalizing symptoms. The demographic composition suggests a balanced representation of boys and girls and reflects the typical urban family structure and educational background observed in metropolitan Tehran. Overall, the characteristics reported in Table 1 confirm that the sample was appropriate and sufficiently heterogeneous for testing the proposed structural model.

Table 1

Demographic Characteristics of the Participants (N = 384)

Variable	Category	Frequency	Percentage
Gender	Boys	191	49.7
	Girls	193	50.3
Age (years)	8–9	96	25.0
	10–11	142	37.0
	12–13	146	38.0
Grade Level	Elementary school	214	55.7
	Lower secondary school	170	44.3
Father's education	High school or less	112	29.2
	Diploma	138	35.9
	University degree	134	34.9
Mother's education	High school or less	126	32.8
	Diploma	141	36.7
	University degree	117	30.5

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As shown in Table 1, the sample consisted of 384 children, including 191 boys (49.7%) and 193 girls (50.3%), indicating a nearly equal gender distribution. Participants' ages ranged from 8 to 13 years, with a mean age of 11.02 years and a standard deviation of 1.54 years. The largest proportion of children fell within the 12–13-year age group (38.0%), followed by the 10–11-year group (37.0%) and the 8–9-year group (25.0%). In terms of educational level, 55.7% of participants were enrolled in elementary school, while 44.3% were attending lower secondary school. Regarding parental education, approximately one-third of fathers (34.9%) and mothers (30.5%) held university degrees, while the remaining parents reported diploma or high school-level education. This distribution reflects moderate educational diversity within the sample and supports the generalizability of the findings to urban school-aged children in Tehran.

Table 2

Descriptive Statistics of Study Variables (N = 384)

Variable	Mean	Standard Deviation	Minimum	Maximum
Child temperament	102.47	14.36	68	138
Resilience	71.82	11.94	39	98
Coping flexibility	64.15	10.27	36	92
Internalizing symptoms	17.63	6.41	4	36

The descriptive statistics presented in Table 2 indicate that the mean score for child temperament was 102.47 with a standard deviation of 14.36, suggesting moderate variability in temperamental characteristics across participants. Resilience scores had a mean of 71.82 and a standard deviation of 11.94, reflecting generally moderate to high adaptive capacity among children. The mean score for coping flexibility was 64.15 with a standard deviation of 10.27, indicating noticeable individual differences in children's ability to adapt their coping strategies. Internalizing symptoms showed a mean of 17.63 and a standard deviation of 6.41, suggesting that while most children fell within a non-clinical range, a subset exhibited elevated emotional symptoms. The observed ranges for all variables demonstrate sufficient dispersion, supporting their suitability for correlational and structural analyses.

Table 3

Pearson Correlation Matrix Among Study Variables (N = 384)

Variable	1	2	3	4
1. Child temperament	1			
2. Resilience	−0.42	1		
3. Coping flexibility	−0.36	0.54	1	
4. Internalizing symptoms	0.49	−0.58	−0.51	1

The correlation results in Table 3 reveal meaningful associations among the main study variables. Child temperament was moderately and positively correlated with internalizing symptoms (r = 0.49), indicating that more difficult temperamental characteristics were associated with higher levels of emotional problems. Child temperament also showed significant negative correlations with resilience (r = −0.42) and coping flexibility (r = −0.36), suggesting that children with more challenging temperamental traits tended to exhibit lower adaptive resources. Resilience was strongly and negatively correlated with internalizing symptoms (r = −0.58), while coping flexibility also demonstrated a substantial negative correlation with internalizing symptoms (r = −0.51). Additionally, resilience and coping flexibility were positively correlated with each other (r = 0.54), indicating that children who were more resilient also tended to demonstrate greater flexibility in coping. These correlation patterns provided preliminary support for the hypothesized mediating roles of resilience and coping flexibility.

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Table 4

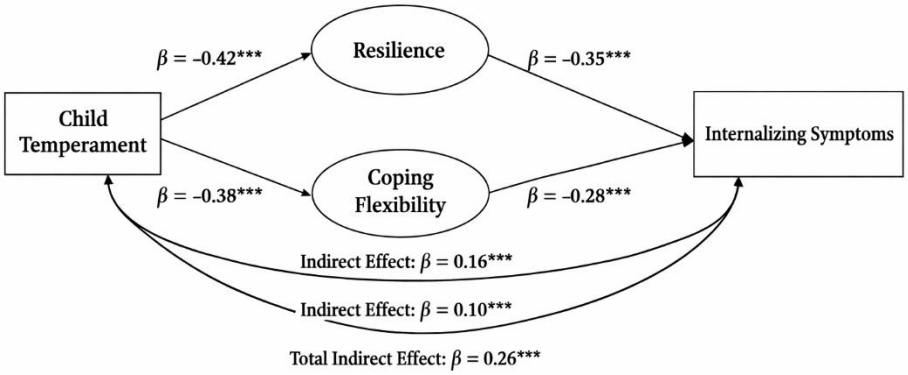
Structural Equation Modeling Results for Direct and Indirect Effects (N = 384)

Path	Standardized β	Standard Error	t-value	p-value
Temperament → Internalizing symptoms	0.31	0.05	6.20	<0.001
Temperament → Resilience	−0.42	0.06	−7.00	<0.001
Temperament → Coping flexibility	−0.35	0.05	−6.40	<0.001
Resilience → Internalizing symptoms	−0.39	0.06	−6.50	<0.001
Coping flexibility → Internalizing symptoms	−0.28	0.05	−5.60	<0.001
Indirect effect (via resilience)	0.16	0.03	5.33	<0.001
Indirect effect (via coping flexibility)	0.10	0.02	5.00	<0.001
Total indirect effect	0.26	0.04	6.50	<0.001

The structural equation modeling results presented in Table 4 indicate that child temperament had a significant direct effect on internalizing symptoms (β = 0.31, p < 0.001), confirming that temperament was a meaningful predictor of emotional difficulties. Temperament also exerted significant negative effects on resilience (β = −0.42, p < 0.001) and coping flexibility (β = −0.35, p < 0.001), suggesting that more difficult temperamental profiles were associated with lower adaptive capacities. Both resilience (β = −0.39, p < 0.001) and coping flexibility (β = −0.28, p < 0.001) significantly predicted internalizing symptoms in a negative direction. Indirect effect analyses using bootstrapping showed that resilience (β = 0.16) and coping flexibility (β = 0.10) each significantly mediated the relationship between temperament and internalizing symptoms. The total indirect effect (β = 0.26) was statistically significant, indicating partial mediation and supporting the proposed model.

Figure 1

Structural model of the mediating roles of resilience and coping flexibility in the relationship between child temperament and internalizing symptoms



4. Discussion and Conclusion

The present study examined the relationships among child temperament, resilience, coping flexibility, and internalizing symptoms, with a particular focus on the mediating roles of resilience and coping flexibility. The findings provide empirical support for the proposed structural model and contribute to a growing body of literature emphasizing the interaction between dispositional vulnerabilities and adaptive regulatory processes in the development of internalizing problems. Overall, the results indicate that child temperament is a significant predictor of internalizing symptoms, both directly and indirectly, through its effects on resilience and coping flexibility. These findings align with contemporary developmental psychopathology perspectives that conceptualize internalizing symptoms as the outcome of dynamic

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interactions between biologically based traits and modifiable psychosocial mechanisms.

Consistent with prior research, the direct positive association between child temperament and internalizing symptoms suggests that children characterized by more difficult or reactive temperamental traits are at heightened risk for emotional difficulties. This result is in line with studies demonstrating that temperament traits such as negative emotionality, behavioral inhibition, and low regulatory capacity are robust predictors of anxiety and depressive symptoms across developmental stages (Vespa et al., 2024; Zdanowicz et al., 2025). The present findings extend this evidence to a non-Western context, indicating that the temperament–internalizing link is also salient among school-aged children in Tehran. From a developmental standpoint, children with heightened emotional reactivity may experience everyday stressors as more intense or threatening, which can increase vulnerability to persistent negative affect and internalizing symptomatology. This interpretation is consistent with empirical work showing that temperament shapes children's emotional responses to both interpersonal and environmental challenges (Bozicevic et al., 2025; Jones, 2024).

Beyond the direct pathway, the results highlight the importance of resilience as a key mediating mechanism. The significant negative association between temperament and resilience suggests that children with more challenging temperamental profiles tend to exhibit lower levels of adaptive capacity. In turn, resilience was strongly and negatively associated with internalizing symptoms, indicating that resilient children experience fewer emotional problems. These findings are consistent with previous research demonstrating that resilience buffers the effects of individual and contextual risk factors on internalizing outcomes (Guo et al., 2024; Lan & Radin, 2020). Resilience encompasses a range of emotional, cognitive, and behavioral resources, including emotional regulation, optimism, and effective problem-solving, which may enable children to manage stress more effectively despite temperamental vulnerabilities. The mediating role of resilience observed in this study supports theoretical models that view resilience as a dynamic process rather than a static trait, capable of altering developmental trajectories even in the presence of biologically based risk factors.

The mediating effect of coping flexibility further underscores the role of adaptive regulatory processes in explaining the temperament–internalizing relationship. Children with more difficult temperamental characteristics showed lower levels of coping flexibility, which in turn predicted higher levels of internalizing symptoms. This finding is consistent with evidence indicating that inflexible coping patterns are associated with sustained emotional distress, rumination, and maladjustment, whereas flexible coping enables individuals to adjust strategies according to situational demands (Galatzer-Levy et al., 2012; Zong et al., 2010). In line with prior studies, coping flexibility emerged as a significant protective mechanism that mitigates the impact of temperamental risk on emotional outcomes (Kato et al., 2021; Kılınç et al., 2023). Children who are able to evaluate the effectiveness of their coping strategies and shift approaches when necessary may be better equipped to regulate negative emotions, thereby reducing anxiety and depressive symptoms.

Importantly, the results indicate that resilience and coping flexibility function as parallel mediators rather than redundant constructs. Although resilience and coping flexibility were positively correlated, each uniquely contributed to explaining the association between temperament and internalizing symptoms. This finding is consistent with prior models suggesting that resilience represents a broader adaptive capacity, while coping flexibility reflects a more specific regulatory skill within the resilience framework (Sobhani et al., 2021; Van Wijk-Herbrink et al., 2018). The simultaneous inclusion of both mediators provides a more nuanced understanding of how temperamental vulnerabilities translate into emotional outcomes. Children with difficult temperaments may be at increased risk for internalizing symptoms not only because of heightened emotional reactivity but also because such reactivity undermines the development of resilient capacities and flexible coping responses.

The present findings also resonate with research emphasizing the transdiagnostic nature of internalizing problems. Rather than being linked to specific diagnostic categories, internalizing symptoms appear to share common underlying mechanisms related to emotion regulation, coping, and adaptation. Studies examining family, parenting, and social factors have similarly identified resilience-related processes as central pathways linking early vulnerabilities to emotional outcomes (Scarzello, 2023; Zhang et al., 2023). In this context, temperament can be understood as a distal risk factor that exerts its influence through more proximal regulatory mechanisms. This interpretation aligns with evidence showing that interventions targeting coping skills and emotional regulation can reduce internalizing symptoms even when

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temperamental vulnerabilities persist (Mohammad-Rajabi et al., 2024; Rahmani et al., 2024).

Cultural considerations further strengthen the contribution of this study. Prior research suggests that the expression of temperament and the development of coping and resilience are shaped by cultural norms, parenting practices, and social expectations (Yousefi Khaneh Bargh & Zeynali, 2024; 이 & Hee-Hwa, 2024). The findings of the present study indicate that the mediating roles of resilience and coping flexibility are evident within the Iranian cultural context, supporting the cross-cultural relevance of these constructs. At the same time, cultural values emphasizing family cohesion, emotional restraint, or academic achievement may influence how children experience and regulate emotional distress. The significant associations observed in this study suggest that, despite cultural differences, fundamental developmental mechanisms linking temperament, adaptive regulation, and internalizing symptoms remain broadly consistent across societies (Choi et al., 2024; Kanwar, 2024).

Taken together, the results support an integrative developmental model in which child temperament contributes to internalizing symptoms through its impact on resilience and coping flexibility. These findings extend existing literature by empirically demonstrating the simultaneous mediating roles of these two adaptive mechanisms in a non-Western child population. By highlighting modifiable processes that can buffer temperamental risk, the study provides valuable insights for prevention and intervention efforts aimed at reducing internalizing problems in childhood. Moreover, the use of structural equation modeling allowed for a comprehensive examination of direct and indirect pathways, offering a more sophisticated understanding of the interplay among dispositional and regulatory factors (Guo et al., 2024; Wills & Dishion, 2024).

Despite its contributions, the present study has several limitations that should be acknowledged. First, the cross-sectional design limits the ability to draw causal conclusions about the relationships among temperament, resilience, coping flexibility, and internalizing symptoms. Although the proposed mediation model is theoretically grounded, longitudinal data would be necessary to establish temporal ordering and developmental pathways. Second, reliance on parent-report measures may introduce shared method variance and reporting bias, as parents' perceptions of their children's behaviors and emotions may be influenced by their own psychological characteristics. Third, the sample was drawn exclusively from urban schools in Tehran, which may limit the generalizability of the findings to rural populations or other cultural contexts. Finally, although the study focused on key mediating variables, other potentially relevant factors, such as parenting practices, peer relationships, and socioeconomic status, were not included in the model.

Future studies should employ longitudinal designs to examine how temperament, resilience, and coping flexibility interact over time to influence the developmental course of internalizing symptoms. Incorporating multiple informants, such as teachers and children themselves, as well as observational measures, would provide a more comprehensive assessment of the study constructs. Future research could also explore additional mediators and moderators, including parenting styles, family stress, and school-related factors, to further elucidate the complex pathways leading to internalizing problems. Cross-cultural comparative studies would be particularly valuable for identifying cultural variations in the mechanisms linking temperament to emotional adjustment. Finally, experimental and intervention-based research is needed to determine whether enhancing resilience and coping flexibility can effectively reduce internalizing symptoms among temperamentally vulnerable children.

From a practical perspective, the findings highlight the importance of early identification of children with temperamental vulnerabilities and the implementation of preventive interventions that strengthen resilience and coping flexibility. Educational and clinical programs can focus on teaching children adaptive emotion regulation strategies, problem-solving skills, and flexible coping approaches tailored to their developmental level. Parents and teachers can be trained to recognize individual temperamental differences and to provide supportive environments that foster adaptive regulation rather than reinforce avoidance or rigidity. School-based mental health initiatives that integrate resilience-building activities into the curriculum may be particularly effective in reducing emotional difficulties at a population level. By targeting modifiable protective mechanisms, practitioners can help mitigate the impact of temperamental risk and promote healthier emotional development in children.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

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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

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the study and participated in the research with informed consent.

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