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Modeling Personality Disorder Symptoms Based on Parenting Styles, Temperament, and Childhood Emotional Abuse: The Mediating Roles of Ego Strength and Impulse Control in Patients with Hypertension

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ABSTRACT

Purpose: This study aimed to develop and test a structural model of personality disorder symptoms based on parenting styles, temperament, and childhood emotional abuse, considering the mediating roles of ego strength and impulse control among patients with hypertension.

Methods and Materials: This descriptive-correlational study employed structural equation modeling. The statistical population comprised patients with hypertension who attended hospitals and healthcare centers in Tehran during the second half of 2023. A total of 250 patients were selected through purposive sampling. Data were collected using the Personality Styles and Disorders Inventory, Baumrind Parenting Styles Questionnaire, Cloninger Temperament and Character Inventory, Bernstein Childhood Trauma Questionnaire, Markstrom Ego Strength Inventory, and Barratt Impulsiveness Scale. The hypothesized structural model and direct and indirect relationships among the variables were examined using SPSS and AMOS software.

Findings: The proposed structural model demonstrated an acceptable fit to the observed data. Parenting styles had significant direct effects on impulse control and personality disorder symptoms. Temperament significantly predicted ego strength, while childhood emotional abuse exerted significant direct effects on both ego strength and personality disorder symptoms. Ego strength had a significant negative direct effect on personality disorder symptoms, whereas impaired impulse control had a significant positive direct effect on these symptoms. Bootstrap analyses confirmed that ego strength significantly mediated the relationships of temperament and childhood emotional abuse with personality disorder symptoms. Impulse control also significantly mediated the relationship between parenting styles and personality disorder symptoms. Collectively, the predictor and mediator variables accounted for 71% of the variance in personality disorder symptoms.

Conclusion: Personality disorder symptoms in patients with hypertension appear to arise from the interaction of family-related experiences, dispositional characteristics, and adverse childhood emotional experiences. Ego strength and impulse control constitute important psychological mechanisms through which these distal factors influence personality pathology.

Keywords: Personality Disorders; Parenting Styles; Temperament; Childhood Emotional Abuse; Ego Strength; Impulse Control; Hypertension.

1. Introduction

Hypertension is one of the most prevalent chronic health conditions and represents a major challenge for healthcare systems because of its persistent course, need for long-term self-management, and association with cardiovascular, cerebrovascular, renal, and psychological complications. Although its biological determinants are well established, contemporary models increasingly recognize that hypertension is influenced not only by physiological processes but also by emotional regulation, enduring personality characteristics, stress exposure, behavioral patterns, and interpersonal functioning. Psychological distress can affect treatment adherence, health behaviors, autonomic arousal, and the interpretation of bodily symptoms, thereby complicating blood pressure control. Evidence that psychological interventions can improve emotion regulation and reduce distress among patients with chronic hypertension further supports the relevance of psychological mechanisms in this population (Vahedi Moghadam et al., 2024). Similarly, mindfulness-based approaches have been associated with reduced anxiety and improved blood pressure-related outcomes among patients with cardiovascular disease and hypertension, indicating that emotional and cognitive functioning may play a meaningful role in the course and management of hypertensive conditions (Kolahi et al., 2022). Anxiety-related processes may also mediate the relationship between health behavior and blood pressure, reinforcing the need to examine psychological pathways in the development and maintenance of elevated blood pressure (Yan et al., 2020).

Among the psychological variables relevant to chronic medical conditions, personality pathology has particular importance. Personality disorders are characterized by persistent and inflexible patterns of cognition, affect, impulse regulation, self-functioning, and interpersonal behavior that deviate from sociocultural expectations and cause clinically significant impairment. These disorders are not rare phenomena confined to psychiatric settings. A global systematic review and meta-analysis demonstrated that personality disorders are present in a substantial proportion of the general population and constitute an important public mental health concern (Winsper et al., 2020). Personality disorder symptoms may interfere with the management of chronic illness through mistrust of healthcare providers, inconsistent treatment engagement, emotional instability, poor adherence, impulsive behavior, interpersonal conflict, and maladaptive coping. In patients

with essential hypertension, mental and personality disorders have been identified as clinically relevant comorbidities that may complicate diagnosis, treatment cooperation, and overall health outcomes (Kaya & Demir, 2024). The management of hypertension may be especially challenging in patients with borderline personality disorder because emotional dysregulation, impulsivity, self-harming tendencies, unstable relationships, and difficulties sustaining therapeutic cooperation can hinder continuity of care (Roininen et al., 2024).

Personality pathology is heterogeneous and encompasses a range of symptom patterns, including antisocial, paranoid, schizoid, avoidant, obsessive-compulsive, schizotypal, narcissistic, passive-aggressive, dependent, borderline, histrionic, depressive, and self-sacrificing features. These symptoms may differ in expression, yet they commonly involve disturbances in affective regulation, identity, behavioral inhibition, interpersonal trust, and adaptive functioning. Borderline personality pathology is particularly associated with impulsiveness, unstable mood, interpersonal dysfunction, and self-destructive behavior. Longitudinal findings have shown that borderline personality disorder criteria are associated with an increased risk of suicide attempts across extended follow-up periods (Yen et al., 2021). Interpersonal problems in borderline personality disorder are also closely related to deficits in mentalizing, difficulties in emotion regulation, and impulsiveness (Euler et al., 2021). Moreover, actigraphic and behavioral evidence suggests that impulsivity and mood instability distinguish individuals with borderline and bipolar disorders from healthy controls, highlighting the centrality of behavioral regulation in severe personality-related psychopathology (McGowan et al., 2020).

The relationship between impulsivity and personality pathology extends beyond borderline presentations. Impulsivity is considered a transdiagnostic phenotype involving inadequate planning, rapid behavioral responding, reduced consideration of consequences, and difficulty inhibiting actions. These features are observed across several personality disorders and contribute to comorbidity with substance- and alcohol-use disorders (Koudys et al., 2023). In antisocial personality disorder, impulsivity is linked to aggression, repeated rule violations, and recidivism, suggesting that deficient behavioral inhibition may intensify the externalizing manifestations of personality pathology (Martin et al., 2019). Impulsivity is also associated with emotional instability, poor academic and social functioning, and maladaptive decision-making. Students with borderline

personality traits have been found to differ from psychologically healthy students in cognitive flexibility, impulsivity, and qualitative academic performance (Bafandeh et al., 2023). In patients with hypertension, impulsivity may be particularly consequential because it can undermine medication adherence, dietary regulation, physical activity, sleep routines, and attendance at follow-up appointments. Research examining mindfulness in hypertensive patients has shown that psychological intervention may influence impulsivity, defense mechanisms, and behavioral brain systems, further indicating that impulse-related processes are clinically relevant in this population (Aghili & Seyed, 2024).

Impulse control, however, should not be understood as an isolated behavioral characteristic. It develops through the interaction of temperament, emotional learning, family experiences, cognitive regulation, and ego functioning. Temperament refers to relatively stable biologically influenced differences in emotional reactivity, behavioral activation, avoidance, persistence, reward sensitivity, and self-regulation. Temperamental dimensions may shape how individuals experience threat, novelty, frustration, attachment, and interpersonal reward. They may also affect the likelihood that a child develops adaptive or maladaptive coping patterns in response to parenting and environmental stress. Evidence from clinical child populations indicates that child temperament is related to parenting characteristics and emotional or behavioral difficulties (Sahithya & Raman, 2021). Temperament can also influence how children respond to structured environments and behavior-management demands, as illustrated by findings in pediatric dental settings, where temperamental characteristics affect behavioral management problems (Do et al., 2023). Longitudinal evidence has further shown that childhood behavioral problems are predicted by early individual and contextual characteristics, including dimensions related to temperament and self-regulation (Stülz et al., 2019).

From a developmental perspective, temperament does not directly determine personality disorder symptoms; rather, it interacts with caregiving, emotional socialization, attachment experiences, and later self-regulatory capacities. Certain temperamental profiles, such as high novelty seeking, elevated harm avoidance, low persistence, reduced reward dependence, or weak self-directedness, may increase vulnerability to unstable affect, avoidance, impulsivity, and interpersonal dysfunction. Biological pathways may also contribute to the relationship between personality traits and psychopathology. Monoamine neurotransmitter systems

have been associated with both personality traits and mood disorders, suggesting that individual differences in temperament and emotional reactivity may partly reflect underlying neurobiological processes (Shao & Zhu, 2020). Mood-related psychopathology further demonstrates the overlap between affective instability, impulsive behavior, and enduring personality characteristics, even though mood disorders and personality disorders remain diagnostically distinct (Malhi et al., 2020). Accordingly, temperament may influence personality disorder symptoms both directly and indirectly through capacities such as ego strength and behavioral inhibition.

Parenting styles constitute another major developmental factor in the formation of personality organization and self-regulation. Parenting style refers to relatively stable patterns of parental control, responsiveness, warmth, discipline, and autonomy support. Authoritative parenting combines emotional warmth with appropriate structure and is generally associated with healthier emotional and social development. In contrast, authoritarian parenting emphasizes rigid control and obedience, whereas permissive parenting provides warmth but insufficient behavioral boundaries. Research has demonstrated that parenting style is associated with children's social-emotional development, including emotional competence, interpersonal adjustment, and behavioral regulation (Zena & Heeralal, 2021). Parenting and parent-child relationships are also associated with disruptive mood dysregulation, suggesting that family interaction patterns influence irritability and emotional instability (Pourmavaddat & Dehghan Manshadi, 2022). Negative emotional socialization and excessive parental control may further shape the development of childhood irritability, particularly when combined with individual vulnerability (Ravi et al., 2022).

Harsh or maladaptive parenting can contribute to aggression, emotional dysregulation, insecure attachment, and the internalization of dysfunctional beliefs. A moderated mediation model of harsh parenting and children's aggressive behavior demonstrated that parenting practices influence externalizing outcomes through psychological and relational pathways (Liu et al., 2022). Parenting styles are also linked to antisocial personality features, indicating that inadequate supervision, coercive discipline, and low emotional responsiveness may contribute to persistent rule-breaking and disregard for others (Mohammadi, 2021). More recent evidence has connected parenting styles with borderline personality traits and self-injurious behavior in adolescents, highlighting the role of family environments in

severe forms of emotional and behavioral dysregulation (Dai et al., 2025). Developmental reviews similarly emphasize the role of parenting in the emergence of borderline personality disorder, particularly through invalidation, inconsistent boundaries, insecure attachment, and poor emotion socialization (Kaur & Sanches, 2023).

The effects of parenting may depend on both parental behavior and the child's dispositional characteristics. Children with high emotional reactivity, low frustration tolerance, or strong novelty seeking may require consistent but responsive caregiving to develop adequate impulse control. Conversely, authoritarian or permissive parenting may amplify temperamental vulnerability by either increasing emotional suppression and fear or failing to establish predictable limits. Authoritative parenting may function as a protective mechanism by supporting distress tolerance, behavioral regulation, and adaptive decision-making. Evidence suggests that authoritative parenting can mediate or modify relationships between maladaptive personality characteristics and risky behavior in adolescents (Enayati et al., 2025). Therefore, parenting styles may affect personality disorder symptoms both directly and indirectly through the development of impulse control and ego-related capacities.

Childhood emotional abuse and other forms of childhood maltreatment represent particularly powerful risk factors for personality pathology. Childhood trauma includes emotional, physical, and sexual abuse as well as emotional and physical neglect. These experiences may disrupt attachment security, self-concept, affect regulation, trust, and the capacity to interpret interpersonal situations accurately. Childhood trauma has been associated with high-risk behaviors in adolescents with borderline personality disorder, indicating that early adverse experiences can contribute to self-harm, impulsivity, and maladaptive coping (Zashchirinskaia & Isagulova, 2023). Structural models have also demonstrated that childhood abuse experiences influence borderline personality symptoms through schema modes, perceived maternal parenting, and emotion-regulation difficulties (Kiaei et al., 2021). These findings suggest that the effects of early trauma are not limited to immediate distress but may become embedded in enduring psychological structures.

The consequences of childhood abuse may be especially severe when emotional exploitation and neglect occur within close caregiving relationships. Such experiences may teach the child that emotional needs are unsafe, unacceptable, or likely to be manipulated. Over time, this can contribute to

shame, anger, distrust, unstable identity, and defensive interpersonal patterns. In individuals with hypertension, childhood emotional neglect and exploitation have been found to predict personality disorder symptoms through anger-related mechanisms (Kharamin & Dehestani, 2021). Childhood trauma may also affect ego strength, thereby reducing the individual's capacity to integrate emotional experiences and manage internal conflict. Research has shown that complex trauma predicts personality disorders through the mediating role of ego strength (Jarareh et al., 2022). These findings support a developmental pathway in which early maltreatment weakens adaptive psychological organization, increasing susceptibility to personality disorder symptoms.

Ego strength refers to the capacity to maintain psychological integration, tolerate distress, regulate impulses, preserve a stable sense of identity, and respond adaptively to internal and external demands. It reflects the functional strength of the ego in balancing desires, moral standards, interpersonal realities, and environmental constraints. Individuals with strong ego capacities are better able to delay gratification, use mature defenses, sustain commitments, and recover from emotional disruption. By contrast, low ego strength may be reflected in unstable self-concept, rigid or primitive defenses, poor frustration tolerance, dependence on external validation, and difficulty integrating conflicting emotional states. Contemporary personality theory emphasizes that personality disorders involve disturbances in identity, object relations, affect regulation, and defensive functioning. An integrated developmental approach based on object relations theory highlights the importance of identity integration and ego organization in understanding adolescent personality disorders (Normandin et al., 2023).

Ego strength may therefore serve as a central mechanism linking temperament and childhood emotional abuse to personality disorder symptoms. A vulnerable temperament may challenge psychological integration, especially when individuals experience intense affective arousal or low persistence. At the same time, supportive caregiving may strengthen hope, will, purposefulness, competence, fidelity, love, care, and wisdom, whereas abuse and neglect may undermine these capacities. Empirical research has linked ego strength to personality organization and functioning in occupational contexts, showing that it contributes to adaptive performance and the management of stress (Nasirpour et al., 2022). Its role may be even more important in chronic illness, where individuals must sustain treatment

routines, cope with uncertainty, manage frustration, and maintain constructive relationships with healthcare providers.

The therapeutic literature also illustrates the clinical importance of strengthening emotion regulation, ego functioning, and behavioral control in individuals with trauma-related and personality-related difficulties. Dialectical behavior therapy for posttraumatic stress disorder has demonstrated efficacy in women with complex presentations following childhood abuse, indicating that interventions targeting emotion regulation, distress tolerance, and maladaptive behavioral responses can reduce severe trauma-related symptoms (Bohus et al., 2020). Such findings are relevant to personality pathology because childhood trauma, impulsivity, unstable relationships, and affective dysregulation frequently overlap across complex posttraumatic and personality-related conditions. Similarly, the effectiveness of metacognitive and positive psychotherapies in improving emotion regulation among patients with chronic hypertension suggests that psychological capacities can be modified even in the presence of persistent medical illness (Vahedi Moghadam et al., 2024).

Despite the growing literature, several gaps remain. Many studies have examined parenting, temperament, childhood trauma, ego functioning, impulsivity, personality disorders, or hypertension separately. Fewer studies have integrated these variables within a single explanatory model among patients with hypertension. Previous research has linked childhood emotional neglect and exploitation to personality disorders in hypertensive individuals (Kharamin & Dehestani, 2021), and other work has identified mental and personality disorders among patients with essential hypertension (Kaya & Demir, 2024). However, the simultaneous roles of parenting styles, temperament, childhood emotional abuse, ego strength, and impulse control have not been sufficiently clarified. This gap is clinically important because patients with hypertension may present with overlapping biological vulnerability, chronic stress, emotional dysregulation, maladaptive personality features, and difficulties in self-management.

A comprehensive structural model can help determine whether parenting styles, temperament, and childhood emotional abuse influence personality disorder symptoms directly or through more proximal psychological mechanisms. Ego strength may explain how dispositional vulnerability and childhood trauma become organized into enduring patterns of personality dysfunction, while impulse

control may explain how parenting experiences affect behavioral regulation and symptom expression. Such a model is consistent with developmental psychopathology, which views personality disorders as the product of interactions among biological dispositions, family environments, adverse experiences, and evolving self-regulatory capacities. It also has practical implications because ego strength and impulse control may represent modifiable treatment targets, even when early experiences and temperament cannot be changed. Identifying these pathways may support more individualized psychological assessment and intervention for patients whose hypertension is complicated by personality-related difficulties, emotional instability, or poor behavioral adherence.

Accordingly, the aim of the present study was to model personality disorder symptoms based on parenting styles, temperament, and childhood emotional abuse, with the mediating roles of ego strength and impulse control, among individuals with hypertension.

2. Methods and Materials

2.1. Study Design and Participants

In terms of purpose, this study was fundamental research, and in terms of data-collection method, it was classified as descriptive-correlational research using structural equation modeling.

The statistical population consisted of approximately 720 patients with hypertension who attended hospitals and healthcare centers in Tehran between September 2023 and March 2024. Using purposive sampling and based on the Krejcie and Morgan sample-size table, 250 individuals were selected as the study sample.

2.2. Data Collection Tools

Personality Styles and Disorders Inventory–Short Form (PSDI-S): This questionnaire was developed by Kuhl and Kazén (2009) and consists of 56 items and 14 components, each measuring a specific personality disorder or personality style. The subscales include antisocial personality disorder (Items 1, 15, 29, and 43), paranoid personality disorder (Items 2, 16, 30, and 44), schizoid personality disorder (Items 3, 17, 31, and 45), avoidant personality disorder (Items 4, 18, 32, and 46), obsessive–compulsive personality disorder (Items 5, 19, 33, and 47), schizotypal personality disorder (Items 6, 20, 34, and 48), optimistic personality style (Items 7, 21, 35, and 49), narcissistic personality

disorder (Items 8, 22, 36, and 50), passive-aggressive personality disorder (Items 9, 23, 37, and 51), dependent personality disorder (Items 10, 24, 38, and 52), borderline personality disorder (Items 11, 25, 39, and 53), histrionic personality disorder (Items 12, 26, 40, and 54), depressive personality disorder (Items 13, 27, 41, and 55), and self-sacrificing personality style (Items 14, 28, 42, and 56). Five items—2, 16, 30, 31, and 45—are reverse-scored. Each subscale yields a raw score ranging from 0 to 12, which is subsequently converted into a T score. Kuhl and Kazén (2009) emphasized that an individual-level deviation from the mean T score may indicate the possible presence of a personality disorder. Kuhl and Kazén (2009) reported Cronbach's alpha coefficients ranging from .64 to .79. Reliability coefficients ranging from .76 to .84 for the English version and from .65 to .85 for the Austrian version were subsequently reported by Prid, Geiger, and Peter (2014).

Parenting Styles Questionnaire: This questionnaire was developed by Baumrind (1973) and consists of 30 items assessing three parenting styles: permissive parenting (Items 1, 6, 10, 13, 14, 17, 19, 21, 24, and 28), authoritarian parenting (Items 2, 3, 7, 9, 12, 16, 18, 25, 26, and 29), and authoritative parenting (Items 4, 5, 8, 11, 15, 20, 22, 23, 27, and 30). Responses are scored on a five-point Likert scale ranging from 0 ("strongly agree") to 4 ("strongly disagree"). To examine the construct validity of the questionnaire, Buri (1991) used a discriminant-validity approach and found that authoritarian parenting was negatively correlated with permissive parenting ($r = -.38$) and authoritative parenting ($r = -.48$), whereas permissive parenting was not significantly associated with authoritative parenting ($r = .07$). Using the test-retest method, Buri (1991) reported reliability coefficients of .81 for permissive parenting, .86 for authoritarian parenting, and .78 for authoritative parenting. He also reported Cronbach's alpha coefficients of .75, .85, and .82 for permissive, authoritarian, and authoritative parenting, respectively.

Temperament and Character Inventory (TCI): The Temperament and Character Inventory was developed to assess personality dimensions according to Cloninger's (1994) biopsychosocial model, which distinguishes between temperament and character. The questionnaire consists of 125 items and is appropriate for individuals aged 15 years and older. Cloninger's neurobiological model includes four temperament dimensions and their respective subscales: novelty seeking, comprising exploratory excitability versus stoic rigidity, impulsiveness versus reflection, extravagance

versus reserve, and disorderliness versus regimentation; harm avoidance, comprising anticipatory worry and pessimism versus uninhibited optimism, fear of uncertainty, shyness with strangers, and fatigability; reward dependence, comprising sentimentality, social sensitivity, attachment, and dependence; and persistence, which has no subscales in the 125-item version. The model also includes three character dimensions: self-directedness, comprising responsibility, purposefulness, resourcefulness, self-acceptance, and enlightened second nature; cooperativeness, comprising social acceptance, empathy, helpfulness, compassion versus renegefulness, and integrated conscience versus self-serving advantage; and self-transcendence, comprising self-forgetfulness, transpersonal identification, spiritual acceptance, and idealism versus practical realism. Each subscale consists of several items. Each item receives one point, and the score for each dimension is obtained by summing the scores of its constituent subscales. The items are constructed so that, depending on their content, either a true or false response may contribute to an increased score on a given scale. Raw scores are converted into standardized T scores, and separate normative profiles should be used for men and women. After score conversion, the resulting profile is ready for interpretation. Scores from 0 to 16.7 are classified as very low, scores from 16.7 to 33 as low, scores from 67 to 83.3 as high, and scores from 84 to 100 as very high. Scores within the very high and very low ranges represent stronger and more stable emotional and characterological characteristics than scores within the high and low ranges. In the study by Dadfar et al. (2009), the reliability of the questionnaire was assessed using Cronbach's alpha and test-retest procedures. Its validity was examined through factor analysis with Promax rotation, intercorrelations among the scales, Pearson correlations between age and scale scores, comparisons of questionnaire scores by gender, and cross-cultural comparisons using independent-samples *t* tests. Cronbach's alpha coefficients ranged from .44 for persistence to .81 for self-transcendence. The mean reliability coefficient was .68, and the Cronbach's alpha coefficient for the total scale was .74.

Childhood Trauma Questionnaire–Short Form (CTQ-SF): The Childhood Trauma Questionnaire–Short Form was developed by Bernstein et al. (2003) to assess childhood adversity and trauma. It is a screening instrument designed to identify individuals with histories of childhood abuse and neglect and can be administered to both adults and adolescents. The questionnaire assesses five forms of

childhood maltreatment: sexual abuse, physical abuse, emotional abuse, emotional neglect, and physical neglect. It contains 28 items, of which 25 assess the principal dimensions of the questionnaire and three constitute a minimization/denial scale intended to identify respondents who may underreport childhood difficulties. In the study by Bernstein et al. (2003), Cronbach's alpha coefficients for emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect among adolescents were .87, .86, .95, .89, and .78, respectively. Concurrent validity coefficients based on therapists' ratings of childhood trauma ranged from .59 to .78 (Bernstein et al., 2003). In Iran, Ebrahimi, Dezhkam, and Seqhatoleslam reported Cronbach's alpha coefficients ranging from .81 to .98 for the questionnaire's five dimensions.

Psychological Inventory of Ego Strengths (PIES): The Psychological Inventory of Ego Strengths was developed by Markstrom et al. (1997) and measures eight ego strengths: hope, will, purpose, competence, fidelity, love, care, and wisdom. The inventory consists of 64 closed-ended items rated on a five-point Likert scale ranging from 1 ("not at all characteristic of me") to 5 ("completely characteristic of me"). Items 4, 6, 10, 11, 12, 14, 16, 21, 22, 23, 25, 26, 27, 29, 30, 34, 36, 40, 41, 42, 43, 47, 48, 50, 51, 54, 55, 58, 61, and 64 are reverse-scored. Total scores range from 64 to 320. Scores closer to 320 indicate greater ego strength, whereas scores closer to 64 indicate lower ego strength. Each subscale score is obtained by summing the scores for its corresponding items. As the developers of the instrument, Markstrom et al. (1997) examined its validity and reliability and confirmed its face, content, and construct validity. They reported a Cronbach's alpha coefficient of .68 for the total inventory. Altafi (2009) reported a Cronbach's alpha coefficient of .91 and a split-half reliability coefficient of .77 in an Iranian sample.

Barratt Impulsiveness Scale (BIS-11): This questionnaire was developed by Barratt et al. (2004) and consists of 30

items. It assesses non-planning impulsiveness (Items 1, 5, 7, 9, 10, 12, 17, 19, and 25), motor impulsiveness (Items 2, 3, 8, 11, 13, 14, 16, 18, 20, 21, 22, and 24), and cognitive impulsiveness (Items 4, 6, 15, and 23). Responses are rated on a four-point Likert scale ranging from 1 ("never") to 4 ("always"). The maximum possible score is 120. Ekhtiari et al. (2008) evaluated the validity and reliability of the Persian version and reported Cronbach's alpha coefficients of .84 and .83 for the total score among individuals with substance dependence and healthy individuals, respectively. In the study by Javid et al. (2012), Cronbach's alpha coefficients for non-planning impulsiveness, motor impulsiveness, cognitive impulsiveness, and the total scale were .80, .67, .70, and .81, respectively. The corresponding test-retest reliability coefficients were .79, .73, .49, and .77.

2.3. Data Analysis

Data were analyzed using IBM SPSS Statistics, Version 24, and AMOS, Version 22. The findings were presented using descriptive and inferential statistics after examining the assumptions of structural equation modeling, including normality, correlations among the study variables, and the goodness of fit of the proposed model.

3. Findings and Results

Of the 250 patients with hypertension who participated in the study, 173 (69.20%) were men and 77 (30.80%) were women. Regarding marital status, 49 participants (19.60%) were single, 151 (60.40%) were married, and 50 (20.00%) were divorced. Participants were distributed across four age groups: 66 individuals (26.40%) were 40–44 years old, 58 (23.20%) were 45–49 years old, 69 (27.60%) were 50–54 years old, and 57 (22.80%) were 55 years or older. The largest age group was therefore the 50–54-year category.

Table 1

Descriptive Statistics and Correlations of the Study Variables with Personality Disorder Symptoms

Variable	M	SD	Skewness	Kurtosis	Correlation with Personality Disorder Symptoms
Permissive parenting	22.26	11.92	−0.36	−1.38	.52**
Authoritarian parenting	13.09	9.94	0.78	−0.67	.57**
Authoritative parenting	22.76	8.54	−0.49	−0.80	−.51**
Temperament	132.44	27.89	0.38	−0.75	−.42**
Childhood emotional abuse	63.53	22.21	0.17	−1.07	.60**
Ego strength	166.17	40.90	0.13	−0.97	−.56**
Impulse-control difficulties	49.99	14.14	0.73	−0.37	.59**
Personality disorder symptoms	58.35	28.86	0.30	−0.87	—

As presented in Table 1, the mean total score for personality disorder symptoms was 58.35 (SD = 28.86). All skewness and kurtosis coefficients were within acceptable ranges. Personality disorder symptoms were positively and significantly correlated with permissive parenting ($r = .52, p < .01$), authoritarian parenting ($r = .57, p < .01$), childhood emotional abuse ($r = .60, p < .01$), and impulse-control difficulties ($r = .59, p < .01$). In contrast, authoritative parenting ($r = -.51, p < .01$), temperament ($r = -.42, p < .01$), and ego strength ($r = -.56, p < .01$) were negatively and significantly correlated with personality disorder symptoms. Among the model variables, childhood emotional abuse demonstrated the strongest positive correlation with personality disorder symptoms, whereas ego strength showed the strongest negative correlation.

Table 2

Goodness-of-Fit Indices for the Initial and Modified Structural Models

Fit Index	Initial Model	Modified Model	Acceptable Criterion
Comparative Fit Index (CFI)	.73	.92	> .90
Normed Fit Index (NFI)	.67	.92	> .90
Goodness-of-Fit Index (GFI)	.71	.91	> .90
Incremental Fit Index (IFI)	.68	.93	> .90
Relative Fit Index (RFI)	.59	.91	> .90
Tucker–Lewis Index (TLI)	.61	.91	> .90
Adjusted Goodness-of-Fit Index (AGFI)	.70	.91	> .90
χ^2/df	3.56	2.83	< 3.00
Root Mean Square Error of Approximation (RMSEA)	.101	.078	< .08

The initial structural model did not demonstrate an adequate fit to the data. Therefore, nonsignificant paths from temperament and childhood emotional abuse to impulse control, temperament to personality disorder symptoms, and parenting styles to ego strength were removed, and theoretically defensible modification indices were applied.

Before testing the structural model, the assumptions of structural equation modeling were examined. The absolute values of the skewness and kurtosis coefficients were below 3 and 10, respectively, indicating acceptable univariate normality. Inspection of scatterplots supported the linearity of the relationships among the study variables. The Durbin–Watson statistic was 1.112, which fell within the acceptable range of 1 to 3 and indicated independence of residuals. Furthermore, tolerance values ranged from .547 to .745, while variance inflation factor values ranged from 1.342 to 1.829. Because all tolerance values exceeded .10 and all VIF values were below 10, no problematic multicollinearity was detected among parenting styles, temperament, childhood emotional abuse, ego strength, and impulse control.

The modified model demonstrated an acceptable fit, as indicated by $\chi^2/df = 2.83$, CFI = .92, NFI = .92, GFI = .91, IFI = .93, RFI = .91, TLI = .91, AGFI = .91, and RMSEA = .078. Accordingly, the absolute, incremental, comparative, and parsimonious fit indices supported the adequacy of the modified structural model.

Table 3

Direct, Indirect, and Total Effects in the Modified Structural Model

Structural Path	Unstandardized Estimate	Critical Ratio	Direct Effect (β)	Indirect Effect (β)	Total Effect (β)
Childhood emotional abuse → Ego strength	−0.625	−5.314**	−.44**	—	−.44**
Parenting styles → Impulse-control difficulties	−0.276	−7.043**	−.78**	—	−.78**
Temperament → Ego strength	0.237	4.453**	.34**	—	.34**
Ego strength → Personality disorder symptoms	−0.064	−2.002*	−.12*	—	−.12*
Impulse-control difficulties → Personality disorder symptoms	0.363	2.477*	.26*	—	.26*
Parenting styles → Personality disorder symptoms	−0.211	−2.218**	−.43**	−.20**	−.63**
Temperament → Personality disorder symptoms	—	—	.00	−.04*	−.04*
Childhood emotional abuse → Personality disorder symptoms	0.119	2.002*	.16*	.05*	.21**

As shown in Table 3, childhood emotional abuse had a significant negative direct effect on ego strength ($\beta = -.44$, $p < .01$), whereas temperament had a significant positive direct effect on ego strength ($\beta = .34$, $p < .01$). Parenting styles had a significant negative effect on impulse-control difficulties ($\beta = -.78$, $p < .01$). Ego strength negatively predicted personality disorder symptoms ($\beta = -.12$, $p < .05$), while impulse-control difficulties positively predicted these symptoms ($\beta = .26$, $p < .05$). Parenting styles also had a significant negative direct effect on personality disorder symptoms ($\beta = -.43$, $p < .01$), as well as a significant indirect

effect through impulse control ($\beta = -.20$, $p < .01$), resulting in a total effect of $\beta = -.63$. Temperament had no significant direct effect on personality disorder symptoms but exerted a significant negative indirect effect through ego strength ($\beta = -.04$, $p < .05$). Childhood emotional abuse had both a significant positive direct effect ($\beta = .16$, $p < .05$) and a significant positive indirect effect through ego strength ($\beta = .05$, $p < .05$), producing a total effect of $\beta = .21$ ($p < .01$). Overall, the model variables explained 71% of the variance in personality disorder symptoms.

Figure 1

Final Model

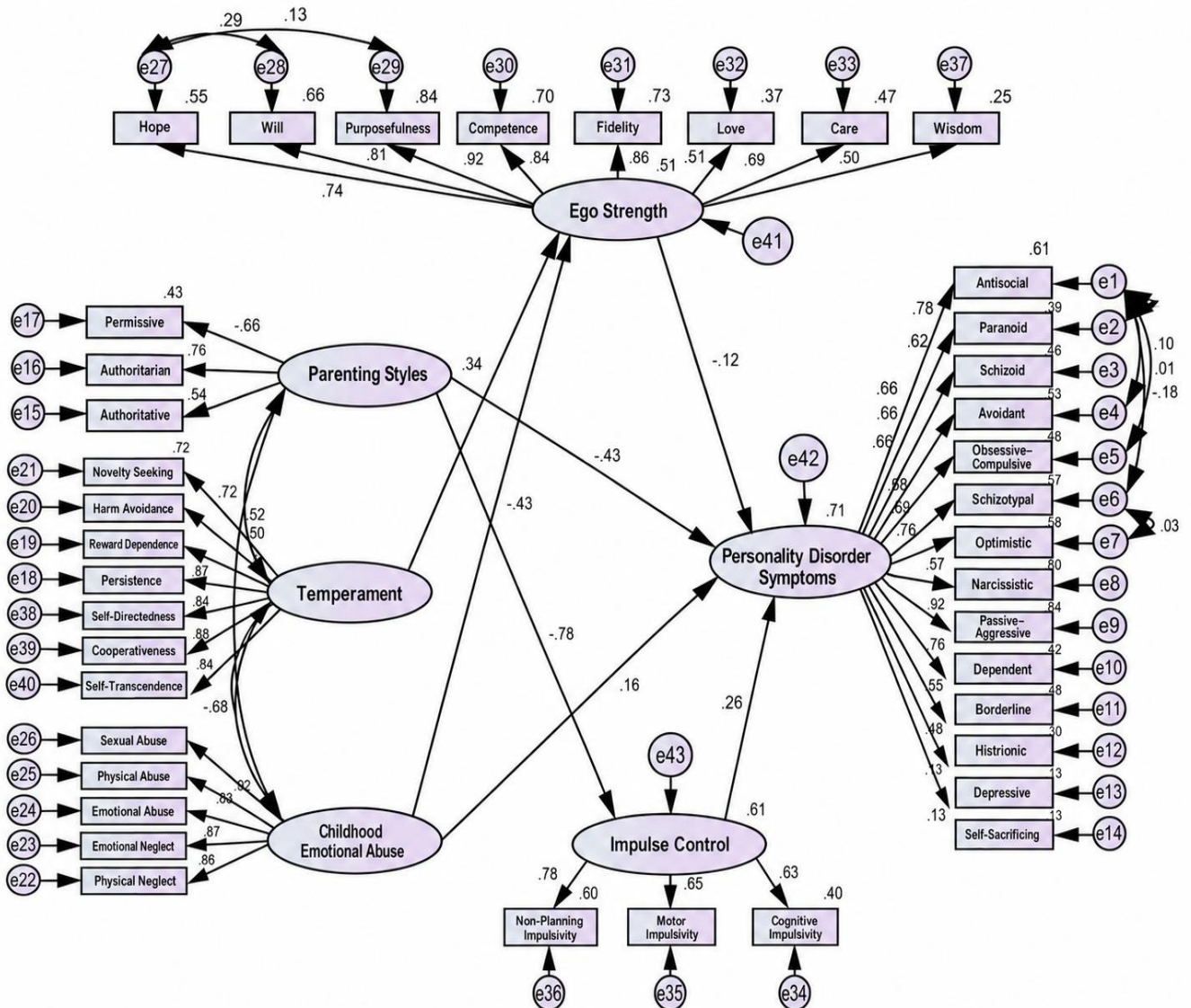


Table 4
Bootstrap Analysis of the Indirect Effects

Indirect Path	Bootstrap Estimate	SE	95% CI Lower Bound	95% CI Upper Bound
Temperament → Ego strength → Personality disorder symptoms	-0.2233	0.0424	-0.3175	-0.1497
Parenting styles → Impulse-control difficulties → Personality disorder symptoms	0.0174	0.0019	0.0040	0.0093
Childhood emotional abuse → Ego strength → Personality disorder symptoms	0.2369	0.0581	0.1350	0.3652

The bootstrap results indicated that none of the 95% confidence intervals for the indirect effects included zero. The indirect effect of temperament on personality disorder symptoms through ego strength was significant because its confidence interval ranged from -0.3175 to -0.1497. The mediating effect of impulse-control difficulties in the relationship between parenting styles and personality disorder symptoms was also significant, with a confidence interval ranging from 0.0040 to 0.0093. Similarly, ego strength significantly mediated the association between childhood emotional abuse and personality disorder symptoms, as the confidence interval ranged from 0.1350 to 0.3652. These findings confirmed the hypothesized mediating roles of ego strength and impulse control and supported the main research hypothesis.

4. Discussion and Conclusion

The present study examined a structural model of personality disorder symptoms based on parenting styles, temperament, and childhood emotional abuse, with ego strength and impulse control serving as mediating variables among individuals with hypertension. The findings supported the proposed conceptual framework after the removal of nonsignificant paths and theoretically defensible model modifications. The final model demonstrated acceptable fit indices and explained 71% of the variance in personality disorder symptoms, indicating that a substantial proportion of personality-related difficulties in patients with hypertension can be understood through the combined effects of developmental family experiences, temperamental characteristics, childhood maltreatment, ego functioning, and impulse regulation. The results further showed that parenting styles and childhood emotional abuse had significant direct effects on personality disorder symptoms. Temperament did not exert a significant direct effect but was indirectly associated with personality disorder symptoms through ego strength. Childhood emotional abuse also influenced personality disorder symptoms indirectly through

ego strength, while the association between parenting styles and personality disorder symptoms was mediated by impulse control.

The first major finding was that parenting styles had a significant direct effect on personality disorder symptoms. Based on the structure and coding of the latent parenting variable, a more adaptive parenting orientation, characterized by greater authoritative parenting and lower permissive and authoritarian parenting, was associated with fewer personality disorder symptoms. This finding is consistent with research indicating that parenting practices contribute to the development of enduring emotional, interpersonal, and behavioral patterns. Authoritative parenting, through the balanced provision of warmth, behavioral limits, and autonomy support, can promote emotional security, frustration tolerance, responsibility, and stable self-regulation. Conversely, authoritarian parenting may foster fear, emotional inhibition, shame, hostility, and rigid interpersonal expectations, whereas permissive parenting may limit the development of behavioral boundaries and the capacity to delay gratification. The association between parenting styles and children's social-emotional development reported in earlier research supports the importance of parenting in the formation of adaptive personality functioning (Zena & Heeralal, 2021). Similarly, parenting styles and the quality of the parent-child relationship have been linked to disruptive mood dysregulation and difficulties in emotional control (Pourmaveddat & Dehghan Manshadi, 2022).

The direct relationship between parenting and personality disorder symptoms is also consistent with studies focused on specific personality-related outcomes. Maladaptive parenting has been implicated in antisocial personality features, particularly when parental monitoring, emotional responsiveness, and consistent discipline are inadequate (Mohammadi, 2021). Parenting environments characterized by harshness and coercion may increase aggressive behavior through emotional and cognitive mechanisms (Liu et al., 2022). In addition, parenting has been identified as an

important developmental factor in borderline personality disorder, especially through invalidating responses, inconsistent attachment experiences, and insufficient support for emotion regulation (Kaur & Sanches, 2023). The reported association of parenting styles with borderline traits and nonsuicidal self-injury further demonstrates that dysfunctional parenting can contribute to serious emotional and behavioral manifestations of personality vulnerability (Dai et al., 2025). Thus, the present finding supports the view that personality disorder symptoms are partly rooted in repeated relational experiences through which individuals learn how to understand themselves, regulate affect, respond to authority, and form expectations about others.

Parenting styles also had a significant indirect effect on personality disorder symptoms through impulse control. More adaptive parenting was associated with fewer impulse-control difficulties, which were subsequently associated with fewer personality disorder symptoms. This finding suggests that one of the principal mechanisms through which parenting affects personality functioning is the development of behavioral inhibition and the ability to regulate immediate urges. Authoritative parents typically establish predictable boundaries while allowing gradual autonomy, thereby helping children learn to tolerate frustration, consider consequences, and delay gratification. In contrast, overly permissive parenting may fail to provide adequate behavioral structure, while authoritarian parenting may produce externally controlled obedience without the internalization of adaptive self-regulation. Evidence that authoritative parenting can reduce risky behavior through psychological mechanisms such as distress tolerance is consistent with this interpretation (Enayati et al., 2025). Research on parental control and negative emotion socialization also indicates that parenting practices shape the developmental course of irritability and emotional reactivity (Ravi et al., 2022).

The mediating role of impulse control is especially relevant because impulsivity is a central transdiagnostic characteristic of several personality disorders. Difficulties in planning, behavioral restraint, and cognitive control are associated with unstable interpersonal behavior, aggression, substance misuse, and poor decision-making. Transdiagnostic models have identified impulsivity-related phenotypes as important mechanisms underlying the comorbidity of personality disorders with substance- and alcohol-use disorders (Koudys et al., 2023). In borderline personality disorder, impulsiveness is closely associated with emotion-regulation difficulties and interpersonal

dysfunction (Euler et al., 2021). It is also related to mood instability and irregular behavioral patterns across borderline and bipolar presentations (McGowan et al., 2020). Among individuals with antisocial personality disorder, impulsivity is associated with aggression and recidivism, illustrating how failures of behavioral inhibition may intensify maladaptive personality traits (Martin et al., 2019). The finding is also aligned with evidence that individuals with borderline personality traits demonstrate greater impulsivity and lower cognitive flexibility than those without such traits (Bafandeh et al., 2023).

The direct positive effect of impulse-control difficulties on personality disorder symptoms further confirms the central role of impulsivity in personality pathology. Individuals with inadequate impulse control may respond to internal tension through immediate action rather than reflective processing. This pattern can lead to interpersonal conflict, aggression, self-harm, unstable commitments, risky decisions, and nonadherence to social or medical expectations. In patients with hypertension, impulse-control problems may have additional clinical implications because they can interfere with medication adherence, dietary restriction, physical activity, and stress management. The reported effectiveness of mindfulness in modifying impulsivity, defense mechanisms, and behavioral brain systems among patients with hypertension supports the relevance of impulse control in this medical group (Aghili & Seyedi, 2024). Psychological interventions that reduce anxiety and improve self-regulation have also been associated with improved outcomes in patients with cardiovascular disease and hypertension (Kolahi et al., 2022). Therefore, impulse-control difficulties may simultaneously contribute to personality symptoms and hinder effective hypertension management.

Another major finding was that temperament had a significant positive effect on ego strength, while its effect on personality disorder symptoms was entirely indirect. This suggests that temperamental characteristics may not necessarily produce personality pathology directly; rather, their consequences depend on the individual's capacity to integrate emotions, tolerate stress, and maintain adaptive psychological functioning. Temperament includes relatively stable differences in novelty seeking, harm avoidance, reward dependence, persistence, self-directedness, cooperativeness, and self-transcendence. These dimensions influence emotional reactivity and behavioral tendencies, but their clinical expression may be shaped by later psychological development. Previous studies have

demonstrated that temperament affects behavioral management and responses to stressful situations in children (Do et al., 2023). Temperamental characteristics are also associated with parenting patterns and emotional problems in clinical child populations (Sahithya & Raman, 2021). Longitudinal evidence similarly indicates that early behavioral problems arise from interactions among individual dispositions and environmental conditions (Stülz et al., 2019).

The absence of a significant direct path from temperament to personality disorder symptoms may indicate that temperament represents a vulnerability rather than an inevitable cause of personality dysfunction. For example, high harm avoidance or novelty seeking may create susceptibility to anxiety or impulsivity, but these traits may not become pathological when the individual possesses sufficient ego strength, stable identity, mature defenses, and adaptive coping capacities. Neurobiological research linking monoamine pathways with personality traits and mood disorders supports the biological foundations of individual differences in affective reactivity (Shao & Zhu, 2020). Nevertheless, clinical outcomes depend on how these dispositions are psychologically organized. The overlap between mood instability, impulsivity, and personality characteristics observed in mood disorders also supports the need to distinguish temperamental vulnerability from established personality pathology (Malhi et al., 2020).

Ego strength had a significant negative direct effect on personality disorder symptoms. Thus, individuals with greater hope, will, purposefulness, competence, fidelity, capacity for love, care, and wisdom reported fewer personality disorder symptoms. Ego strength enables individuals to integrate conflicting emotions, maintain a stable sense of self, tolerate frustration, regulate impulses, and use mature coping strategies. Low ego strength may lead to identity instability, primitive defenses, emotional fragmentation, dependency, and rigid or chaotic interpersonal patterns. Developmental object-relations approaches conceptualize personality disorders as disturbances in identity integration, internal representations, defensive functioning, and relational organization (Normandin et al., 2023). The present results support this theoretical position by showing that ego strength serves as a proximal protective factor against personality disorder symptoms.

Previous research has similarly identified ego strength as a meaningful mediator between complex trauma and personality disorders (Jarareh et al., 2022). Ego strength has

also been associated with personality organization and the capacity to function adaptively under occupational stress (Nasirpour et al., 2022). These findings indicate that ego strength is not merely an abstract psychodynamic construct; it has measurable implications for emotional stability, behavioral consistency, and adjustment across contexts. Among patients with hypertension, stronger ego functioning may facilitate acceptance of illness, sustained health behavior, productive communication with healthcare professionals, and greater tolerance of chronic stress. Conversely, weak ego functioning may increase emotional reactivity and contribute to maladaptive responses to the restrictions and uncertainty associated with hypertension.

Childhood emotional abuse had both significant direct and indirect effects on personality disorder symptoms. Greater childhood maltreatment was directly associated with more severe personality symptoms and indirectly associated with these symptoms through reduced ego strength. This finding is consistent with developmental models suggesting that abuse and neglect can disrupt identity formation, attachment security, self-worth, emotional regulation, and interpersonal trust. Childhood trauma has been associated with high-risk behavior among adolescents with borderline personality disorder (Zashchirinskaia & Isagulova, 2023). Similarly, childhood abuse experiences have been linked to borderline personality symptoms through maladaptive schema modes, perceived maternal parenting, and emotion-regulation difficulties (Kiaei et al., 2021). These findings suggest that early trauma becomes clinically significant not only because of the event itself but because of the psychological structures and coping patterns formed in response to it.

The direct effect of childhood emotional abuse may reflect the enduring influence of humiliation, rejection, manipulation, and unmet emotional needs on personality development. Children exposed to emotional abuse may internalize beliefs that they are defective, unsafe, powerless, or unworthy of care. Emotional neglect may additionally impair the development of self-soothing, trust, and the capacity to identify and communicate emotional needs. Previous research among individuals with hypertension found that childhood emotional neglect and exploitation predicted personality disorders through anger-related processes (Kharamin & Dehestani, 2021). The present study extends that evidence by identifying ego strength as another explanatory mechanism. Trauma may weaken the capacity to integrate emotional experiences, leading to unstable

identity, intense affect, defensive rigidity, and maladaptive interpersonal behavior.

The significant indirect effect of childhood emotional abuse through ego strength is also consistent with treatment research involving survivors of childhood abuse. Dialectical behavior therapy for complex posttraumatic presentations has demonstrated that targeting emotion regulation, distress tolerance, and behavioral control can reduce severe trauma-related symptoms (Bohus et al., 2020). Although trauma history cannot be altered, its psychological consequences can be addressed by strengthening the person's capacity to understand emotions, regulate behavior, and establish more coherent self-functioning. The present finding therefore suggests that ego strength may be a clinically valuable target for patients with hypertension who also report childhood trauma and personality-related difficulties.

Overall, the explanatory power of the model indicates that personality disorder symptoms in individuals with hypertension are best understood through an integrative biopsychosocial and developmental perspective. Research has documented the presence of mental and personality disorders among patients with essential hypertension (Kaya & Demir, 2024), while systematic evidence suggests that borderline personality disorder creates specific challenges for hypertension treatment and continuity of care (Roininen et al., 2024). Psychological interventions that improve emotion regulation in chronic hypertension further demonstrate that emotional and personality-related processes are clinically modifiable (Vahedi Moghadam et al., 2024). The present findings suggest that family history, temperament, childhood trauma, ego strength, and impulse control should be considered together rather than as isolated variables. This integrated view may help explain why some patients experience persistent psychological and behavioral difficulties that complicate the management of hypertension.

This study had several limitations. Its cross-sectional and correlational design prevented causal conclusions about the proposed developmental pathways. Although structural equation modeling can evaluate theoretically specified relationships, it cannot establish the temporal order of parenting experiences, childhood abuse, ego strength, impulse control, and current personality disorder symptoms. The use of purposive sampling among patients attending hospitals and health centers in Tehran may also limit the generalizability of the findings to patients in other regions, rural settings, or different healthcare systems. All variables were assessed through self-report questionnaires, making the findings vulnerable to recall bias, shared-method variance,

social desirability, and inaccurate reporting of childhood experiences. Furthermore, the study assessed personality disorder symptoms rather than establishing categorical clinical diagnoses through structured diagnostic interviews. Potential confounding factors, including hypertension severity, duration of illness, medication adherence, psychiatric treatment, socioeconomic status, and comorbid medical conditions, were not comprehensively controlled.

Future studies should employ longitudinal designs beginning in childhood or adolescence to examine how parenting, temperament, maltreatment, ego development, and impulse control interact over time to predict personality pathology and hypertension-related outcomes. Replication with probability sampling and participants from diverse cultural, socioeconomic, and geographic backgrounds would strengthen external validity. Researchers should combine self-report instruments with structured clinical interviews, parent or family reports, behavioral measures of impulse control, physiological indicators, and medical records. Comparative studies involving hypertensive patients, individuals with other chronic illnesses, and medically healthy participants could clarify whether the identified pathways are specific to hypertension. Future research should also examine additional mediators and moderators, including emotion regulation, attachment style, anger, distress tolerance, mentalization, coping strategies, and perceived social support. Intervention studies could determine whether strengthening ego functioning and impulse control reduces personality disorder symptoms and improves hypertension self-management.

Healthcare providers should incorporate brief psychological screening into the routine assessment of patients with hypertension, particularly when patients demonstrate emotional instability, impulsive behavior, repeated nonadherence, interpersonal conflict, or difficulty sustaining treatment. Clinical assessment should address childhood adversity, parenting history, personality-related symptoms, ego functioning, and impulse-control difficulties in a sensitive and nonjudgmental manner. Multidisciplinary treatment plans may combine medical care with psychotherapy focused on emotion regulation, distress tolerance, reflective functioning, identity integration, and behavioral self-control. Patients with trauma histories should receive trauma-informed care that emphasizes safety, collaboration, and gradual development of adaptive coping capacities. Family-based or psychoeducational interventions may also be useful when current family interactions reinforce emotional dysregulation or poor health behavior.

Strengthening psychological self-regulation may improve not only personality functioning but also adherence to medication, dietary recommendations, physical activity, and long-term blood-pressure management.

Authors' Contributions

All authors significantly contributed to this study.

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

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

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