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Prediction of Risky Behaviors Based on Behavioral Brain Systems and Emotional Neglect With the Mediating Role of Cognitive Emotion Regulation Strategies Among Young Adults in Tehran

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A B S T R A C T

Purpose: The present study aimed to predict risky behaviors based on behavioral brain systems and emotional neglect, with the mediating role of cognitive emotion regulation strategies among young adults in Tehran.

Methods and Materials: It employed a descriptive–correlational design using structural equation modeling. The statistical population comprised all students enrolled at universities in Tehran during the 2022–2023 academic year. The study sample consisted of 400 university students who were selected through multistage cluster sampling and completed the Snow et al. Youth Risky Behaviors Questionnaire (2019), the Childhood Trauma Questionnaire–Short Form developed by Bernstein et al. (1995), the Cognitive Emotion Regulation Questionnaire–Short Form by Garnefski et al. (2002), and the Behavioral Brain Systems Questionnaire by Carver and White (1994). The collected data were analyzed using SPSS version 27 and AMOS version 24.

Findings: The results indicated that the direct paths from the behavioral inhibition system and the behavioral activation system to risky behaviors were not statistically significant. In contrast, adaptive emotion regulation strategies had a significant negative relationship with risky behaviors ($\beta = -0.232$, $p \leq .001$), maladaptive emotion regulation strategies had a significant positive relationship with risky behaviors ($\beta = 0.358$, $p \leq .001$), and emotional neglect was significantly associated with risky behaviors ($\beta = 0.302$, $p \leq .001$). Overall, 32% of the variance in risky behaviors was explained by behavioral brain systems, emotional neglect, and adaptive and maladaptive emotion regulation strategies. The standardized indirect path coefficients from the behavioral inhibition system to risky behaviors, from emotional neglect to risky behaviors, and from the behavioral activation system to risky behaviors through maladaptive strategies were statistically significant. Additionally, the standardized indirect path coefficient from the behavioral activation system to risky behaviors through adaptive strategies was significant.

Conclusion: Based on these findings, it is recommended that university counseling centers, in addition to screening for risky behaviors among students, prioritize training in emotion regulation strategies.

Keywords: *Risky behaviors; emotion regulation strategies; emotional neglect; behavioral activation and inhibition systems; young adults.*

1. Introduction

Risk-taking and high-risk behaviors among adolescents and young adults constitute a persistent public health and mental health challenge because they contribute to preventable morbidity and mortality, compromise educational and social functioning, and increase the probability of chronic psychosocial problems in later developmental stages. Contemporary psychological research increasingly frames risky behaviors (e.g., substance use, unsafe sexual behavior, self-harm, and other health-compromising behaviors) as multi-determined outcomes that emerge from the interaction of neurobehavioral sensitivity systems, early relational and caregiving adversities, and downstream self-regulatory processes that shape how individuals respond to stress, negative affect, and interpersonal threat. Within this perspective, understanding why some young people escalate from normative experimentation to persistent high-risk patterns requires integrative models that simultaneously consider temperament-like neurobehavioral systems, adverse developmental contexts such as emotional neglect, and proximal cognitive–emotional mechanisms, particularly emotion regulation strategies.

In parallel with global trends, Iranian studies in adolescent and young adult samples have highlighted that high-risk behaviors are meaningfully connected with psychological vulnerability factors, including emotion dysregulation, attachment-related patterns, and adverse childhood experiences. Findings indicating that emotion regulation competencies are modifiable and responsive to intervention underscore why these variables are increasingly treated not only as correlates but also as plausible mechanisms of change in prevention and treatment programs targeting risky behaviors. For example, mindfulness-based approaches have been shown to improve emotion regulation and reduce the tendency toward high-risk behaviors in vulnerable adolescent groups, suggesting a practical pathway from enhanced regulatory capacities to behavioral risk reduction (Sharei et al., 2025). Similarly, emotional schema therapy—an approach focused on how individuals interpret, evaluate, and respond to emotional experiences—has demonstrated effectiveness in improving emotion regulation and decreasing high-risk behaviors among adolescent girls, reinforcing the centrality of regulatory processes in risk trajectories (Reyhani & Ahovan, 2024). These intervention findings support the broader theoretical proposition that emotion regulation is not merely a background trait; it is a malleable mechanism with potential causal relevance for risk behavior prevention and reduction.

A major line of evidence also points to the developmental origins of risky behaviors in early caregiving adversity, particularly forms of maltreatment and neglect. Emotional neglect—characterized by caregivers' failure to provide adequate emotional responsiveness, warmth, validation, and support—has been consistently associated with elevated vulnerability to internalizing and externalizing problems, including risky and self-destructive behaviors. In clinical and community samples, childhood maltreatment has shown robust links to suicidal thoughts and behaviors in young people, underscoring the potentially severe behavioral sequelae of adverse early environments (Angelakis et al., 2020). More specifically, childhood emotional neglect has been associated with sexual risk behavior among individuals receiving mental health services, suggesting that deficits in early emotional caregiving may influence identity development, relational functioning, and subsequent risk-related decision-making in adolescence and adulthood (Spidel & Kealy, 2023). Within adolescence, maltreatment has likewise been linked to risky behavior through intermediate family and interpersonal dynamics such as parent–adolescent conflict and violent tendencies, indicating that early adversity may activate maladaptive relational cycles that amplify behavioral risk (Bişkin, 2024). Taken together, these findings motivate models that place emotional neglect as a distal determinant that shapes downstream self-regulation and interpersonal adaptation, thereby increasing the likelihood of risky behaviors.

Attachment theory provides an additional conceptual bridge between early caregiving conditions and later behavioral outcomes. From this viewpoint, early sensitive caregiving contributes to secure attachment and the development of adaptive self-regulation, whereas neglectful or inconsistent caregiving increases insecurity and vulnerability to dysregulated coping. Empirically, attachment has been shown to function as a mediator in the association between externalizing behavior problems and risky sexual behaviors in adolescence, indicating that attachment-related processes may transmit risk from broader behavioral dysregulation into domain-specific risky behaviors (Therriault et al., 2024). In Iranian adolescent samples, attachment styles have been associated with high-risk behaviors through psychological and self-process pathways, including self-compassion and emotion regulation-related constructs (Noroozi & Janjani, 2023; Salimi et al., 2023). Moreover, attachment styles have been

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examined in relation to high-risk sexual behavior, with evidence that childhood sexual abuse history and family factors (e.g., birth order) may modify these associations, highlighting the developmental complexity of sexual risk pathways (Chokan Sonbol et al., 2023). Importantly, attachment processes are not only descriptive; they can be improved through evidence-based parenting interventions. Meta-analytic evidence indicates that parenting-focused programs such as video-feedback interventions can enhance child attachment and reduce externalizing behaviors, suggesting that strengthening caregiving quality is a viable prevention route for downstream behavioral problems that often co-occur with risky behavior patterns (van Ijzendoorn et al., 2023). This broader attachment literature reinforces the need to integrate early relational adversity and attachment-related vulnerabilities into explanatory models of risky behaviors.

While early adversity and attachment vulnerabilities provide a developmental foundation, more proximal cognitive–emotional mechanisms likely determine how risk unfolds in everyday contexts. Cognitive emotion regulation strategies refer to the habitual ways individuals cognitively process, interpret, and respond to negative events and emotional arousal. These strategies are commonly categorized as adaptive (e.g., positive reappraisal, acceptance, refocusing on planning) and maladaptive (e.g., catastrophizing, rumination, self-blame). A meta-analytic synthesis has demonstrated that emotion regulation in children and adolescents mediates the association between family factors and internalizing symptoms, emphasizing that regulatory processes form a central pathway through which family environments influence mental health outcomes (Lin et al., 2024). Extending this logic to risky behaviors is theoretically coherent because many high-risk acts occur under conditions of heightened negative affect, interpersonal threat, or arousal, when regulatory strategies determine whether an individual can tolerate distress and select goal-consistent coping rather than impulsive or avoidant behaviors.

A growing empirical base supports the specific role of cognitive emotion regulation in predicting risky behaviors among adolescents. Iranian studies have documented that attachment styles and cognitive emotion regulation jointly predict adolescents' tendency toward high-risk behaviors, indicating that early relational patterns may influence risk partly through shaping how adolescents regulate emotions cognitively (Sefidrood & Hobbi, 2023). Similarly, risky behaviors have been predicted based on psychological basic needs satisfaction, cognitive emotion regulation, and attachment styles, with evidence that mental vitality can operate as a mediator; such findings suggest that regulatory strategies are embedded within broader motivational and well-being systems that influence behavioral choices under stress (Mohammadi-Hosseini-Asl et al., 2022; Mohammadi Hosseini Asl et al., 2022). In a related Iranian study focused on emotional disorders, emotion regulation, experiential avoidance, and repetitive negative thinking were implicated in the prediction framework, reinforcing that maladaptive cognitive–emotional patterns can serve as transdiagnostic contributors to both psychopathology and risk behaviors (Yaztappeh et al., 2023). In more targeted models, self-harming behaviors have been predicted based on cognitive emotion regulation strategies and distress tolerance, with internalized shame mediating these associations; this evidence is particularly relevant because self-harm and other high-risk behaviors often share regulatory and self-evaluative mechanisms (e.g., shame, self-criticism) (Abbasi Abrazgah et al., 2024). Collectively, these studies converge on the proposition that cognitive emotion regulation strategies represent a mechanistic layer linking distal vulnerabilities (attachment insecurity, unmet needs, adverse experiences) to proximal behavioral outcomes.

In addition to cognitive emotion regulation, neurobehavioral systems provide an individual-differences framework for understanding why some young people exhibit stronger approach or avoidance tendencies under reward and threat conditions. Gray's reinforcement sensitivity theory and its operationalizations highlight two major systems: the Behavioral Activation System (BAS), which is sensitive to reward cues and facilitates approach behavior, and the Behavioral Inhibition System (BIS), which is sensitive to punishment cues, uncertainty, and conflict, and facilitates avoidance or anxiety-related responses. Variations in these systems have been linked to impulsivity and risky sexual behavior, suggesting that heightened approach motivation (or specific configurations of BIS/BAS) can predispose adolescents to high-risk choices, particularly in emotionally arousing situations (Teimory et al., 2019). However, neurobehavioral sensitivity alone is unlikely to produce risky behaviors deterministically; rather, its impact may depend on the person's regulatory skills and developmental context. From an interactional or mediation standpoint, BIS/BAS may influence the selection of emotion regulation strategies (e.g., impulsive reward pursuit undermining deliberate reappraisal; threat sensitivity

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fostering rumination), which then shape behavioral outcomes.

Evidence also suggests that emotion regulation and related volitional capacities are central to self-harm and suicidality, outcomes often conceptually and empirically linked to the broader domain of risky behaviors. For example, volitional determinants—processes supporting intentional control and self-regulation—have been shown to relate to self-harm behavior and suicidal risk in clinical populations, emphasizing that the capacity for self-directed control under distress is a critical factor in harmful behavior trajectories (Blasczyk-Schiep et al., 2018). Moreover, studies examining emotion regulation as a mediator between emotional neglect and risky behaviors in adult or high-risk settings (e.g., prisoners) further support the plausibility of mediation pathways wherein neglect shapes regulatory patterns that increase behavioral risk (Manesh & Malak, 2025). This is particularly informative for youth research because it implies continuity: early emotional neglect may calibrate regulatory systems in ways that persist and manifest as elevated risk in multiple contexts, from adolescence into adulthood.

From a prevention and intervention perspective, multi-component programs that address both psychosocial and behavioral risk factors provide additional support for integrative models. A randomized clinical trial of collaborative care targeting violence risk behaviors, substance use, and posttraumatic and depressive symptoms in injured adolescents indicates that coordinated interventions addressing mental health symptoms and behavioral risk can yield meaningful improvements (Zatzick et al., 2014). Such findings are consistent with the conceptualization of risky behaviors as embedded within broader emotional and stress-response systems, rather than isolated choices. If risky behaviors are shaped by early neglect, attachment insecurity, and neurobehavioral sensitivity, then regulatory processes—particularly cognitive emotion regulation strategies—are theoretically positioned as key, modifiable mediators that can be targeted in clinical and preventive efforts.

Accordingly, the present study is situated at the intersection of three empirically grounded domains: (a) neurobehavioral sensitivity systems (BIS/BAS) and their role in approach–avoidance behavior under reward and threat; (b) emotional neglect as a salient developmental adversity linked to dysregulated behavior and risk; and (c) cognitive emotion regulation strategies as proximal mechanisms that translate vulnerabilities into observable risky behaviors. Although prior work has examined subsets of these relationships—for instance, attachment and cognitive emotion regulation in predicting risky behavior (Noroozi & Janjani, 2023; Sefidrood & Hobbi, 2023), or emotional neglect in relation to risky outcomes (Bişkin, 2024; Spidel & Kealy, 2023), or BIS/BAS with impulsivity and risky sexual behavior (Teimory et al., 2019)—there remains a need for models that evaluate these components simultaneously in a unified structural framework, particularly in Iranian youth and student populations. Integrating these predictors within structural equation modeling can clarify which influences are direct, which are mediated through cognitive emotion regulation strategies, and how much variance in risky behaviors can be explained when neurobehavioral systems and emotional neglect are considered together.

In addition, embedding the study within the broader developmental and intervention literature strengthens interpretability and translational relevance. The demonstrated effectiveness of emotion-focused interventions (e.g., mindfulness-based therapy, emotional schema therapy) in reducing high-risk tendencies (Reyhani & Ahovan, 2024; Sharei et al., 2025), alongside evidence that parenting and attachment-focused programs can reduce externalizing behaviors (van Ijzendoorn et al., 2023), underscores that the risk architecture under investigation is clinically actionable. Similarly, findings linking maltreatment to severe behavioral outcomes such as suicidality (Angelakis et al., 2020) and linking shame- and distress-related processes to self-harm (Abbasi Abrazgah et al., 2024) highlight that identifying mechanistic pathways is not only theoretically important but also essential for designing targeted screening and prevention strategies. Finally, the convergence of evidence that emotion regulation mediates family and developmental risk processes (Lin et al., 2024) supports the central hypothesis that cognitive emotion regulation strategies may function as a mediating mechanism connecting behavioral brain systems and emotional neglect to risky behaviors.

The aim of the present study was to predict risky behaviors based on behavioral brain systems and emotional neglect, with the mediating role of cognitive emotion regulation strategies among young people in Tehran.

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2. Methods and Materials

2.1. Study Design and Participants

The present study was applied in terms of purpose and, in terms of methodology, was a descriptive–correlational study conducted using structural equation modeling (SEM), specifically structural regression equations (a combination of path analysis and factor analysis). The statistical population of this study consisted of all students enrolled in universities in Tehran during the 2022–2023 academic year. A multistage cluster sampling method was employed. First, three universities in Tehran—University of Tehran, Shahid Beheshti University, and Allameh Tabataba'i University—were randomly selected. Then, from each university, two faculties were chosen, and from each faculty, 80 students were selected (80 × 6 = 480). In this study, based on the formula proposed by Soper (2023), the desired effect size was set at 0.10, statistical power at 0.80, the number of latent variables at 4, and the number of observed variables (questionnaire components) at 11. The Type I error rate was set at 0.05 to achieve confidence levels of 95% or 99%, resulting in an estimated minimum sample size of 116 and a maximum of 1,454 participants. In addition, according to Kline (2011), an adequate sample size for testing structural equation models ranges from 2.5 to 5 times the number of questionnaire items. Given that 88 items were assessed in the present study, the estimated sample size was 220 participants (2.5 × 88). However, due to the possibility of incomplete responses, a final sample size of 400 participants was considered.

Both paper-and-pencil and online versions of the questionnaires were prepared. At the beginning of the questionnaire, explanations regarding participation conditions were provided. In addition, information about the research objectives and confidentiality of data was explained. Following these explanations, demographic questions and the questionnaires were presented. To access the target sample, the online form was provided to administrators for dissemination in virtual student groups of the University of Tehran, Shahid Beheshti University, and Allameh Tabataba'i University, along with an explanation of the research objectives. Interested students willing to cooperate and complete the questionnaire were invited to contact or message the phone number provided at the end of the announcement. At this stage, the questionnaire link, along with a brief explanation, was sent to interested students. The paper-and-pencil version was also distributed at the universities, and administration guidelines were included at the beginning of the questionnaires. Data collection took place from April 2024 to July 2024. Given that in the online questionnaire all items had to be answered in order to proceed to subsequent pages and complete the response process, this method helped prevent missing data. To adhere to ethical principles, participants were informed about the content and objectives of the study and the confidentiality of information prior to completing the questionnaires. Only those who voluntarily agreed to participate completed the questionnaires, and participants were free to withdraw at any time during completion. No personal identifying information was collected, and participants were assured that confidentiality of demographic information and responses would be maintained. Questionnaires exhibiting specific response patterns (e.g., identical responses to even-numbered items or selecting the same option across consecutive items, as examined individually by the researcher) were excluded from statistical analysis.

2.2. Measures

Youth Risky Behavior Survey (YRBS): The Youth Risky Behavior Survey is one of the instruments that is revised and published every two years. The YRBS (2019) is the most recent version of the risky behavior assessment, designed by Snow and psychometrically standardized on a normative sample. This questionnaire consists of 95 items, of which 87 items assess risky behaviors, including tobacco use (7 items), substance addiction and misuse (26 items), unhealthy sexual behaviors (17 items), physical inactivity (9 items), unhealthy nutrition (5 items), and behaviors related to injuries and violence (23 items), while 8 items assess mental health. Items are scored on a five-point Likert scale. The YRBS (2019) includes components such as electronic vapor products, self-medication, video and computer games, and sexually transmitted infections such as chlamydia and gonorrhea, which were not included in previous versions (Underwood et al., 2020). The psychometric properties of the Youth Risky Behavior Questionnaire were examined by Zahmatkesh Rokhi et al. (2021). The results of confirmatory factor analysis supported a six-factor structure comprising a total of 25 items. Cronbach's alpha coefficients for all domains were reported to be above 0.70. The intraclass correlation coefficient of 0.73 indicated satisfactory reliability of the questionnaire.

Childhood Trauma Questionnaire–Short Form (CTQ-SF): The Childhood Trauma Questionnaire was developed

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by Bernstein et al. in 1994. The second version with 53 items was introduced in 1995, and the final version consisting of 34 items was established in 1998. The short form of the Childhood Trauma Questionnaire contains 25 items and is applicable to individuals aged 12 years and older. It assesses five domains of childhood adversity: physical abuse (Items 2, 9, 10, 12, and 13), sexual abuse (Items 16, 17, 22, 23, and 24), emotional abuse (Items 4, 11, 19, 20, and 21), physical neglect (Items 1, 3, 5, 8, and 15), and emotional neglect (Items 6, 7, 14, 18, and 25). The scale is scored on a five-point Likert scale ranging from 1 (never) to 5 (always). Scores for each subscale range from 5 to 25, and the total score ranges from 25 to 125. The subscales are based on the following theoretical definitions: physical abuse refers to intentional injury or physical harm inflicted on a child under the age of 18 by an older individual, such that there is a risk of death, injury, or threat to the child's physical health or loss of a body part. Physically harmful behavior typically manifests as bruises, burns, fractures, abdominal injuries, or poisoning. Emotional abuse occurs when an individual conveys to a child that they are worthless, defective, unloved, unwanted, or dangerous, and that their value depends solely on meeting the needs of others; when severe and repetitive, such experiences lead to psychological harm. Persistent teasing, humiliation, or verbal assaults are also considered forms of emotional abuse. Sexual abuse refers to sexual behavior between a child and an adult, or between two children when one is clearly older or uses force or coercion. The perpetrator and victim may be of the same or opposite sex. Physical neglect refers to acts of omission in which a child's basic material needs—such as nutrition, safety, education, medical care, clothing, and shelter—are inadequately met. Emotional neglect refers to acts of omission in which a child's emotional needs are not adequately addressed, such as failure to form secure attachments or to express interest, love, support, and attention. In other words, emotional neglect involves failure to provide essential emotional needs and caregivers' inability to offer fundamental psychological–emotional support, including love, encouragement, belonging, and protection. The reliability of this instrument, assessed through test–retest and Cronbach's alpha methods, has been reported to range from 0.79 to 0.94. Concurrent validity with clinicians' ratings of childhood trauma has been reported to range from 0.59 to 0.78 (Bernstein et al., 2003). The reliability of the CTQ was also reported by Roy (2011), using test–retest and Cronbach's alpha methods, with coefficients ranging from 0.79 to 0.94. In Iran, Ebrahimi et al. (2012) reported Cronbach's alpha coefficients for the short form ranging from 0.81 to 0.98.

Cognitive Emotion Regulation Questionnaire–Short Form (CERQ-SF): The short form of the Cognitive Emotion Regulation Questionnaire is an 18-item self-report instrument comprising two categories of strategies: positive cognitive emotion regulation strategies (positive refocusing, putting into perspective, acceptance, and refocus on planning) and negative cognitive emotion regulation strategies (self-blame, other-blame, rumination, and catastrophizing). Items are rated on a five-point Likert scale ranging from 1 (never) to 5 (always). This questionnaire was developed by Garnefski et al. to identify individuals' cognitive coping strategies following the experience of negative or stressful life events and is applicable to individuals aged 12 years and older. Scores for each strategy are obtained by summing the scores of the items corresponding to that strategy (Garnefski et al., 2002). In a study by Hassani, the internal consistency reliability of the scale, assessed using Cronbach's alpha, ranged from 0.76 to 0.92, and test–retest reliability ranged from 0.51 to 0.77. The validity of the questionnaire was supported through principal component analysis with varimax rotation, intercorrelations among subscales ranging from 0.32 to 0.67, and satisfactory criterion validity (Hassani, 2010).

Carver and White Behavioral Brain Systems Questionnaire: The Behavioral Inhibition/Activation Scale was developed by Carver and White. This scale assesses the activity levels of behavioral brain systems and consists of 20 items rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire includes two subscales: the Behavioral Activation System (BAS) subscale and the Behavioral Inhibition System (BIS) subscale. The BIS subscale consists of seven items assessing sensitivity of the behavioral inhibition system, while the BAS subscale includes 13 items assessing the activity of the behavioral activation system (Carver & White, 1994). Johnson et al. (2010) reported internal consistency coefficients of 0.74 for the BIS subscale and 0.73 for the BAS subscale. In the present study, reliability was assessed using Cronbach's alpha, yielding coefficients of 0.74 for behavioral inhibition and 0.77 for behavioral activation.

2.3. Data Analysis

For data analysis, descriptive statistics including frequency, percentage, mean, standard deviation, minimum, maximum, skewness, and kurtosis were first used to describe

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sample characteristics. Subsequently, structural equation modeling was employed to examine the assumptions of SEM and to test the conceptual model of the study. To analyze indirect effects, the bootstrap method using the macro proposed by Preacher and Hayes (2010) was applied. In addition, correlation and regression coefficients were calculated and reported using SPSS version 26, with a significance level set at 0.05.

3. Findings and Results

In this study, the mean age (and standard deviation) of the male students participating in the research was 23.15 (SD = 7.64), with a minimum age of 22 and a maximum age of 45 years. The mean age of the female students participating in the study was 22.88 (SD = 7.48), with a minimum age of 22 and a maximum age of 45 years. Among the participating students, 81 individuals (16.63%) were enrolled in an associate degree program, 231 individuals (47.40%) in a bachelor's program, 119 individuals (24.40%) in a master's program, and 56 individuals (11.40%) in a doctoral program. The frequency and percentage distribution of participants' sex are reported; based on the table, 200 students (41.1%) were female and 287 students (58.9%) were male.

Table 1

Distribution of the mean, standard deviation, minimum, and maximum of the study variables

Variable	Mean	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
Inhibition	19.60	2.89	8	28	−0.305	1.193
Drive	10.86	2.04	4	16	−0.014	0.019
Reward Responsiveness	17.26	2.41	7	20	−1.076	1.157
Fun Seeking	11.49	2.18	4	16	−0.272	0.079
Activation	39.66	4.93	25	51	−0.336	−0.117
Self-Blame	5.43	2.26	2	10	0.241	−0.854
Acceptance	6.72	2.25	2	10	−0.156	−0.831
Rumination	6.99	2.15	2	10	−0.276	−0.795
Positive Refocusing	6.16	2.33	2	10	0.073	−0.941
Refocus on Planning	7.54	2.07	2	10	−0.484	−0.622
Positive Reappraisal	7.75	2.10	2	10	−0.627	−0.496
Putting Into Perspective	6.49	2.12	2	10	−0.115	−0.691
Catastrophizing	5.37	2.48	2	10	0.421	−0.908
Other-Blame	4.58	2.13	2	10	0.713	0.166
Adaptive Strategies	34.72	7.86	10	50	−0.223	−0.232
Maladaptive Strategies	22.37	6.42	8	40	0.171	0.296
Emotional Neglect	17.40	4.93	9	36	1.105	1.663
Tobacco Use	11.60	5.44	8	40	2.028	4.357
Substance Use and Addiction	10.10	5.28	6	30	1.321	0.981
Unhealthy Sexual Behavior	8.24	4.82	5	25	1.570	1.724
Physical Inactivity	10.71	4.64	5	25	0.699	−0.137
Unhealthy Nutrition	9.64	4.85	5	25	0.903	−0.025
Self-Harm Behaviors	9.82	4.68	4	20	0.372	−0.962
Risky Behaviors	59.69	22.93	33	154	1.139	1.082

As shown in Table 1, the mean (and standard deviation), minimum, and maximum values of the study variables are reported. Based on the table, the mean total score for behavioral inhibition was 19.60 (SD = 2.89), behavioral activation was 39.66 (SD = 4.93), adaptive cognitive emotion regulation strategies were 34.72 (SD = 7.86), maladaptive cognitive emotion regulation strategies were 22.37 (SD = 6.42), emotional neglect was 17.40 (SD = 4.93), and risky behaviors were 59.69 (SD = 22.93).

The results showed that the tolerance statistics for all predictor variables were greater than 0.10 and the variance inflation factor (VIF) values for all predictors were less than 10. Therefore, according to Kline's (2010) criteria, no multicollinearity was observed in this study. In addition, the results indicated that the Durbin–Watson statistic for all exogenous variables (behavioral inhibition, behavioral activation, and emotional neglect) and the mediators (adaptive and maladaptive cognitive emotion regulation strategies) ranged from a minimum of 1.897 to a maximum of 2.164 (and was less than 4). This range suggested that the model did not violate the assumption of no autocorrelation among error terms, which is a key assumption of regression

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modeling. Moreover, the Durbin–Watson statistic for the mediators (adaptive and maladaptive cognitive emotion regulation strategies) and the endogenous variable (risky behaviors) was also less than 4 (approximately greater than 1.80 and less than 2.00), indicating that the model did not present concerns regarding autocorrelation among error terms. Finally, the Durbin–Watson statistic for all variables (behavioral inhibition, behavioral activation, and emotional neglect) and the endogenous variable (risky behaviors) was below 2 (approximately greater than 1.50 and less than 2.00), further supporting the absence of problematic autocorrelation among the error terms.

Table 2

Pearson Correlation Matrix of Study Variables

Variable	1	2	3	4	5	6
1. Behavioral Inhibition	—					
2. Behavioral Activation	−.46**	—				
3. Emotional Neglect	−.15**	−.27**	—			
4. Adaptive Cognitive Emotion Regulation Strategies	−.09	.39**	.09	—		
5. Maladaptive Cognitive Emotion Regulation Strategies	.30**	−.23**	.26**	−.27**	—	
6. Risky Behaviors	−.07	.09	.44**	−.25**	.37**	—

*p < .05. ** p < .001.

As shown in Table 2, the correlation coefficients between behavioral brain systems, emotional neglect, and adaptive and maladaptive cognitive emotion regulation strategies with risky behaviors are presented at the significance levels of p < .001 and p < .05, and most of them are statistically significant. Significant relationships are indicated by * (p < .05) and ** (p < .001). As shown in the table, there was no association between behavioral inhibition and risky behaviors (r = −0.074, p > .05). Likewise, there was no association between the behavioral activation system and risky behaviors (r = 0.089, p > .05). Emotional neglect showed a positive and significant association with risky behaviors (r = 0.436, p < .001). Adaptive cognitive emotion regulation strategies showed a negative and significant association with risky behaviors (r = −0.254, p < .001). Maladaptive cognitive emotion regulation strategies showed a positive and significant association with risky behaviors (r = 0.369, p < .001).

Table 3

Goodness-of-fit indices for the proposed model

Indices	Index name	Proposed model	Modified model	Acceptable fit
Absolute fit indices	Chi-square goodness-of-fit test (χ^2)	728.389	528.390	Greater than 5%
Goodness-of-Fit Index (GFI)	0.88	0.92	≥ 0.90	
Adjusted Goodness-of-Fit Index (AGFI)	0.86	0.90	≥ 0.90	
Comparative fit indices	Non-Normed Fit Index (NNFI)	0.88	0.92	≥ 0.90
Normed Fit Index (NFI)	0.88	0.92	≥ 0.90	
Comparative Fit Index (CFI)	0.88	0.94	≥ 0.90	
Relative Fit Index (RFI)	0.88	0.89	≥ 0.90	
Incremental Fit Index (IFI)	0.89	0.94	0–1	
Parsimonious fit indices	Parsimonious Normed Fit Index (PNFI)	0.74	0.78	≥ 0.50
Root Mean Square Error of Approximation (RMSEA)	0.09	0.07	≤ 0.10	
Normed chi-square (CMIN/DF)	4.563	3.282	Value between 1 and 3	
Degrees of freedom	162	161	—	

As shown in Table 3, the fit indices resulting from testing the proposed model are presented. Initially, given the value of the root mean square error of approximation, the remaining model fit indices were not satisfactory. To achieve an acceptable fit, and based on the modification indices suggested by AMOS, the model achieved an

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adequate fit after removing weak paths and correlating one error term. The chi-square statistic (χ^2) in the modified model became significant; however, because this index is typically significant in large samples, it cannot be considered a fully reliable criterion for evaluating the fit of the proposed model to the data. Other fit indices—such as the chi-square to degrees of freedom ratio (χ^2/df) with a value of 3.282, the Incremental Fit Index (IFI) with a value of 0.94, the Comparative Fit Index (CFI) with a value of 0.94, the Goodness-of-Fit Index (GFI) with a value of 0.92, the Non-Normed Fit Index/Tucker–Lewis Index (NNFI = 0.92), the Adjusted Goodness-of-Fit Index (AGFI = 0.90), the Normed Fit Index (NFI = 0.92), and the Root Mean Square Error of Approximation (RMSEA) with a value of 0.07 in both the proposed and modified models—indicate a satisfactory fit of the modified model to the data. Therefore, given the acceptable absolute fit indices, comparative fit indices, and parsimonious fit indices, the modified model demonstrated an adequate fit; its results are presented in Figure 1. The standardized and unstandardized direct path coefficients for the well-fitting model are presented in Table 4.

Figure 1

Path diagram of the proposed model: Exogenous variables (behavioral brain systems and emotional neglect), mediated by adaptive and maladaptive cognitive emotion regulation strategies, predicting the endogenous variable (risky behaviors)

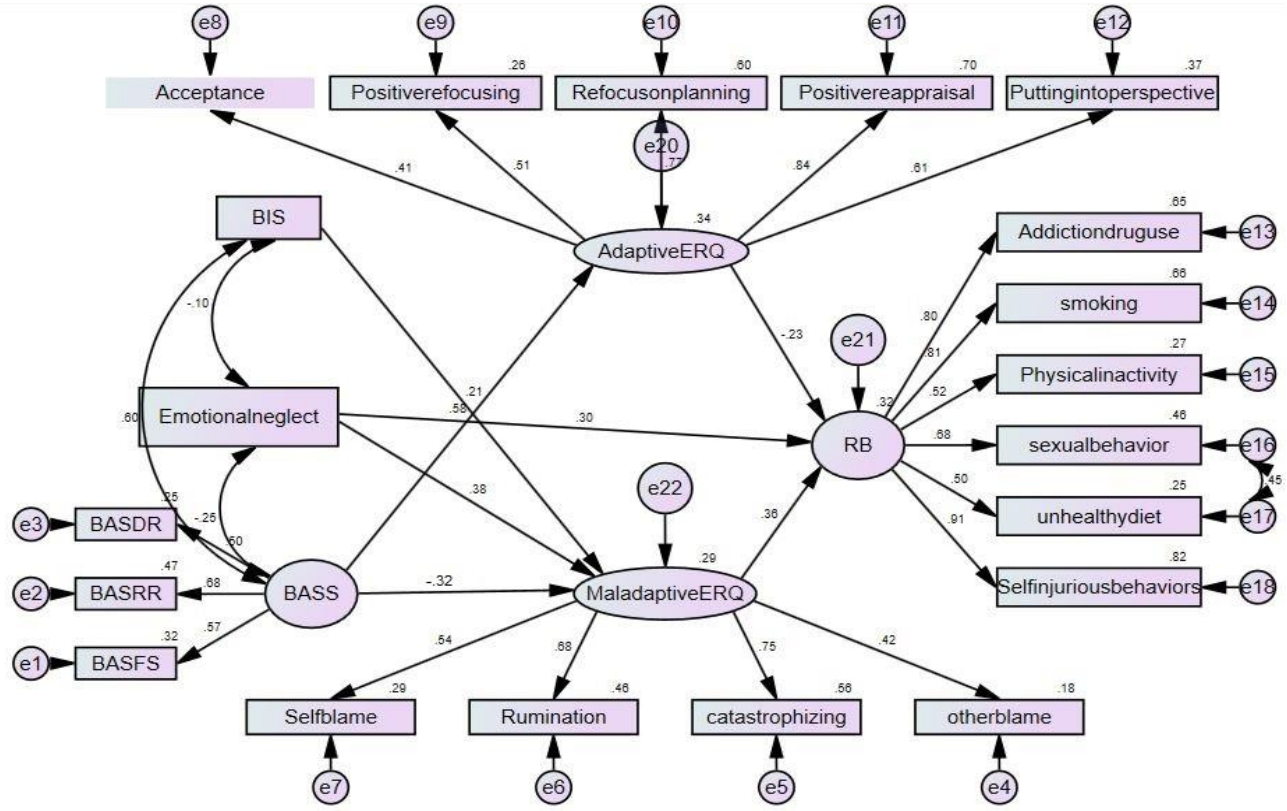

Table 4

Measurement parameters of direct relationships in the proposed model

Paths	β	B	S.E.	C.R.	p
Behavioral activation system <--- Maladaptive cognitive emotion regulation strategies	−0.320	−0.235	0.073	−3.202	≤ .001
Emotional neglect <--- Maladaptive cognitive emotion regulation strategies	0.376	0.075	0.014	5.352	≤ .001
Behavioral inhibition <--- Maladaptive cognitive emotion regulation strategies	0.209	0.067	0.025	2.722	.006
Behavioral activation system <--- Adaptive cognitive emotion regulation strategies	0.585	0.442	0.076	5.795	≤ .001
Adaptive cognitive emotion regulation strategies <--- Risky behaviors	−0.232	−1.063	0.269	−3.948	≤ .001
Maladaptive cognitive emotion regulation strategies <--- Risky behaviors	0.358	1.685	0.340	4.960	≤ .001
Emotional neglect <--- Risky behaviors	0.302	0.285	0.047	6.068	≤ .001

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The results in Table 4 present the standardized and unstandardized regression weights for the observed indicators related to each construct and for the latent constructs. Accordingly, the standardized direct effects of the behavioral activation system on maladaptive cognitive emotion regulation strategies (β = −0.320, p ≤ .001), emotional neglect on maladaptive cognitive emotion regulation strategies (β = 0.376, p ≤ .001), behavioral inhibition on maladaptive cognitive emotion regulation strategies (β = 0.209, p ≤ .05), behavioral activation on adaptive cognitive emotion regulation strategies (β = 0.585, p ≤ .001), adaptive cognitive emotion regulation strategies on risky behaviors (β = −0.232, p ≤ .001), maladaptive cognitive emotion regulation strategies on risky behaviors (β = 0.358, p ≤ .001), and emotional neglect on risky behaviors (β = 0.302, p ≤ .001) were statistically significant (p ≤ .05). Therefore, given the error level of p ≤ .01 for these relationships, it can be inferred that these path coefficients are significantly different from zero at the p ≤ .01 level. In contrast, the direct paths from behavioral inhibition to adaptive cognitive emotion regulation strategies and to risky behaviors were not significant. The direct path from emotional neglect to adaptive cognitive emotion regulation strategies was also not significant. Finally, the direct path from behavioral activation to risky behaviors was not significant. The findings further indicated that 34% of the variance in adaptive cognitive emotion regulation strategies and 29% of the variance in maladaptive cognitive emotion regulation strategies were explained by emotional neglect and the behavioral inhibition and activation systems. Ultimately, 32% of the variance in risky behaviors was explained by behavioral brain systems, emotional neglect, and adaptive and maladaptive cognitive emotion regulation strategies.

Considering the fit indices for the proposed and final models presented in Tables 3 and 4, the modified model demonstrated satisfactory fit with the data.

The results of structural equation modeling indicated that the behavioral inhibition system did not influence risky behaviors through adaptive cognitive emotion regulation strategies (p > .05). Therefore, the first indirect hypothesis was rejected.

The results of structural equation modeling indicated that the behavioral inhibition system had an indirect effect on risky behaviors through maladaptive cognitive emotion regulation strategies (β = −0.075, p ≤ .05). Therefore, the second indirect hypothesis was supported.

The results of structural equation modeling indicated that emotional neglect did not influence risky behaviors through adaptive cognitive emotion regulation strategies (p > .05). Therefore, the third indirect hypothesis was rejected.

The results of structural equation modeling indicated that emotional neglect had an indirect effect on risky behaviors through maladaptive cognitive emotion regulation strategies (β = 0.135, p ≤ .05). Therefore, the fourth indirect hypothesis was supported.

The results of structural equation modeling indicated that the behavioral activation system had an indirect effect on risky behaviors through adaptive cognitive emotion regulation strategies (β = −0.133, p ≤ .05). Therefore, the fifth indirect hypothesis was supported.

The results of structural equation modeling indicated that the behavioral activation system had an indirect effect on risky behaviors through maladaptive cognitive emotion regulation strategies (β = −0.115, p ≤ .05). Therefore, the sixth indirect hypothesis was supported.

Table 5

Standardized bootstrap results for the indirect relationships among study variables

Paths	Effect	Bias	S.E.	Lower bound	Upper bound	p
Behavioral inhibition <--- Maladaptive strategy <--- Risky behaviors	0.075	0.001	0.034	0.030	0.140	.05
Emotional neglect <--- Maladaptive strategy <--- Risky behaviors	0.135	0.005	0.030	0.094	0.195	.05
Behavioral activation system <--- Maladaptive strategy <--- Risky behaviors	−0.115	−0.001	0.036	−0.103	0.185	.006
Behavioral activation system <--- Adaptive strategy <--- Risky behaviors	−0.133	−0.003	0.048	−0.112	−0.174	≤ .001

As shown in Table 5, for the indirect paths from the behavioral inhibition system to risky behaviors, from emotional neglect to risky behaviors, and from the behavioral activation system to risky behaviors through maladaptive strategies, the lower and upper bounds of the confidence intervals did not include zero. The confidence level was 0.95, and the number of bootstrap resamples was 2,000. Based on these findings, the behavioral inhibition system, emotional neglect, and the behavioral activation

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system exerted significant indirect effects on risky behaviors through maladaptive strategies.

In addition, the indirect path from the behavioral activation system to risky behaviors through adaptive strategies had a confidence interval whose lower and upper bounds did not include zero. The confidence level was 0.95, and the number of bootstrap resamples was 2,000. Based on this finding, the behavioral activation system exerted a significant indirect effect on risky behaviors only through adaptive strategies. Overall, the mediating role of maladaptive cognitive emotion regulation strategies in the relationships between the behavioral inhibition system, the behavioral activation system, and emotional neglect was stronger than that of adaptive cognitive emotion regulation strategies.

4. Discussion and Conclusion

The present study aimed to examine a structural model in which risky behaviors were predicted by behavioral brain systems and emotional neglect, with cognitive emotion regulation strategies functioning as mediating mechanisms. The findings provide a nuanced understanding of how distal neurobehavioral sensitivities and early emotional adversity translate into high-risk behaviors through specific regulatory pathways. Overall, the modified structural model demonstrated acceptable fit indices, and the pattern of direct and indirect effects offers important theoretical and applied implications for the psychology of risk in adolescents and young adults.

One of the central findings of this study was that emotional neglect had a significant direct effect on risky behaviors. This result is consistent with a substantial body of international and Iranian research indicating that deficiencies in early emotional caregiving are strongly associated with later engagement in maladaptive and high-risk behaviors. Emotional neglect deprives children and adolescents of essential emotional validation, responsiveness, and support, which undermines the development of secure attachment and adaptive self-regulation capacities. Meta-analytic evidence has shown that childhood maltreatment, including emotional neglect, is robustly associated with suicidal and self-destructive behaviors among young people (Angelakis et al., 2020). Similarly, emotional neglect has been linked to sexual risk behaviors and identity dysfunction in clinical populations, highlighting its pervasive influence on self-concept and behavioral regulation (Spidel & Kealy, 2023). Within adolescent samples, childhood maltreatment has also been shown to predict risky behaviors through interpersonal conflict and aggressive tendencies, suggesting that early emotional deprivation sets in motion maladaptive relational and behavioral patterns (Bişkin, 2024). The present findings extend this literature by demonstrating that emotional neglect retains a direct association with risky behaviors even when neurobehavioral systems and emotion regulation strategies are included in the model, underscoring its role as a powerful developmental risk factor.

In addition to its direct effect, emotional neglect exerted a significant indirect effect on risky behaviors through maladaptive cognitive emotion regulation strategies. This result supports theoretical models positing that early emotional deprivation shapes how individuals learn to process and manage negative emotions. When caregivers fail to provide emotional guidance and co-regulation, children are more likely to develop maladaptive cognitive strategies such as rumination, catastrophizing, and self-blame. These strategies, in turn, increase vulnerability to impulsive, avoidant, or self-damaging behaviors as means of coping with distress. Prior studies in Iranian adolescent samples have shown that cognitive emotion regulation plays a mediating role between attachment styles and high-risk behaviors (Noroozi & Janjani, 2023; Sefidrood & Hobbi, 2023). Similarly, research has demonstrated that emotional neglect predicts risky behaviors through deficits in emotion regulation among adult and forensic populations (Manesh & Malak, 2025). The present findings align with and extend these results by confirming, within a single structural model, that maladaptive cognitive emotion regulation strategies are a key mechanism through which emotional neglect increases the likelihood of risky behaviors.

Consistent with expectations, maladaptive cognitive emotion regulation strategies showed a strong positive direct association with risky behaviors, whereas adaptive strategies demonstrated a significant negative association. These findings reinforce the growing consensus that the way individuals cognitively respond to emotional distress is a critical determinant of whether distress escalates into risky behavior. Adolescents and young adults who rely on maladaptive strategies such as rumination and catastrophizing may experience prolonged negative affect and impaired decision-making, increasing the appeal of high-risk behaviors as short-term relief or distraction. In contrast, adaptive strategies such as positive reappraisal, acceptance, and refocusing on planning facilitate emotional modulation and problem-solving, thereby reducing the need

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for risky coping behaviors. Meta-analytic evidence supports the mediating role of emotion regulation in the relationship between family factors and psychological outcomes in youth, emphasizing its centrality in developmental risk pathways (Lin et al., 2024). Iranian studies have similarly reported that cognitive emotion regulation strategies predict high-risk behaviors and mediate the effects of attachment styles and basic psychological needs satisfaction (Mohammadi-Hosseini-Asl et al., 2022; Mohammadi Hosseini Asl et al., 2022). The current results corroborate these findings and further demonstrate that adaptive and maladaptive strategies operate in opposite directions within the same model, highlighting the importance of differentiating between types of regulation strategies rather than treating emotion regulation as a unitary construct.

Another important aspect of the findings concerns the role of behavioral brain systems. In the present study, the behavioral activation system (BAS) and behavioral inhibition system (BIS) did not show significant direct effects on risky behaviors. This suggests that neurobehavioral sensitivities alone may not be sufficient to predict engagement in risky behaviors when more proximal psychological mechanisms are taken into account. However, both systems exerted significant indirect effects on risky behaviors through cognitive emotion regulation strategies, indicating that their influence is conditional rather than direct. This pattern is theoretically consistent with reinforcement sensitivity theory, which posits that BAS and BIS shape motivational and emotional responses to reward and punishment cues but do not inevitably lead to specific behaviors in the absence of regulatory processes.

Specifically, the behavioral inhibition system had a significant indirect effect on risky behaviors through maladaptive cognitive emotion regulation strategies, but not through adaptive strategies. Individuals with heightened BIS sensitivity tend to experience increased anxiety, threat sensitivity, and conflict monitoring. Without effective regulatory skills, such heightened sensitivity may foster maladaptive cognitive patterns such as rumination and self-blame, which, in turn, elevate the risk of maladaptive behaviors. Although BIS is often associated with avoidance rather than risk-taking, previous research suggests that chronic anxiety and negative affect may paradoxically increase engagement in risky behaviors as a form of emotional escape or relief. The present findings support this indirect pathway and are consistent with studies linking neurobehavioral systems, impulsivity, and risky sexual behavior (Teimory et al., 2019). They also align with research emphasizing the role of volitional and self-regulatory capacities in self-harm and suicidal behaviors, where dysregulated threat sensitivity and impaired control contribute to harmful outcomes (Blasczyk-Schiep et al., 2018).

The behavioral activation system demonstrated significant indirect effects on risky behaviors through both adaptive and maladaptive cognitive emotion regulation strategies. Interestingly, the direction of these indirect effects differed depending on the type of strategy. Through maladaptive strategies, BAS sensitivity increased risky behaviors, whereas through adaptive strategies, it was associated with reduced risky behaviors. This dual pathway underscores the ambivalent role of reward sensitivity in adolescent behavior. On one hand, heightened BAS sensitivity can promote impulsivity and sensation-seeking, particularly when individuals lack adaptive regulatory skills, thereby increasing vulnerability to risky behaviors. On the other hand, when accompanied by adaptive cognitive strategies, reward sensitivity may be channeled into goal-directed and constructive behaviors, reducing the likelihood of harmful risk-taking. This finding resonates with intervention research showing that improving emotion regulation skills—through approaches such as mindfulness-based therapy—can reduce high-risk behaviors even among highly vulnerable adolescents (Sharei et al., 2025). It also aligns with evidence that emotion-focused and schema-based interventions can modify emotional responding and decrease risky behaviors (Reyhani & Ahovan, 2024). The present study thus adds to the literature by empirically demonstrating that the behavioral activation system is not inherently maladaptive; rather, its behavioral consequences depend on the regulatory strategies through which emotional arousal is processed.

Taken together, the findings highlight cognitive emotion regulation strategies as a central explanatory mechanism linking both distal (emotional neglect) and dispositional (behavioral brain systems) factors to risky behaviors. This integrative perspective is consistent with developmental and clinical models emphasizing that risky behaviors emerge from the interaction of early adversity, temperament-like sensitivities, and modifiable psychological processes. The fact that a substantial proportion of variance in risky behaviors was explained by the combined effects of behavioral brain systems, emotional neglect, and emotion regulation strategies underscores the value of multivariate, process-oriented models. Moreover, the stronger mediating role of maladaptive strategies compared to adaptive ones

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suggests that reducing maladaptive regulation patterns may be particularly critical in prevention and intervention efforts.

These findings are also congruent with broader intervention and prevention research. Collaborative care and integrated mental health interventions targeting emotional distress, trauma-related symptoms, and behavioral risk have demonstrated effectiveness in reducing violence risk and substance use among adolescents (Zatzick et al., 2014). Similarly, evidence that parenting and attachment-focused interventions can reduce externalizing behaviors and improve emotional regulation supports the notion that addressing early emotional environments can have downstream effects on risk behaviors (van Ijzendoorn et al., 2023). The present study complements these lines of research by clarifying the psychological mechanisms through which such interventions may exert their effects, namely by altering maladaptive cognitive emotion regulation strategies that bridge vulnerability and behavior.

Despite its contributions, the present study has several limitations that should be acknowledged. First, the cross-sectional design precludes causal inferences regarding the directionality of the relationships among emotional neglect, behavioral brain systems, emotion regulation strategies, and risky behaviors. Second, the reliance on self-report measures may have introduced response biases, such as social desirability or recall bias, particularly in the assessment of childhood emotional neglect and risky behaviors. Third, the sample was drawn from a student population in Tehran, which may limit the generalizability of the findings to non-student populations or to adolescents and young adults in other cultural or socioeconomic contexts.

Future studies would benefit from longitudinal designs that allow for the examination of developmental trajectories and causal pathways linking early emotional neglect, neurobehavioral systems, emotion regulation strategies, and risky behaviors over time. Incorporating multi-informant and multi-method assessments, such as caregiver reports, behavioral tasks, or physiological indicators of emotion regulation, could strengthen the validity of findings. Additionally, future research could explore potential moderators, such as gender, socioeconomic status, or cultural factors, that may influence the strength or direction of the observed relationships.

From an applied perspective, the findings highlight the importance of screening for emotional neglect and maladaptive cognitive emotion regulation strategies in educational and clinical settings. Preventive and therapeutic programs should prioritize the development of adaptive emotion regulation skills, particularly for individuals with high sensitivity in behavioral brain systems. Interventions that integrate emotion regulation training with trauma-informed and attachment-based approaches may be especially effective in reducing risky behaviors among adolescents and young adults.

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.

References

Abbasi Abrazgah, M., Bostansara, M., & Aghighi Ravan, F. (2024). The Model for Predicting Self-Harming Behaviors Based on Cognitive Emotion Regulation Strategies and Emotional Distress Tolerance in Adolescents Visiting Harm Reduction Centers in Tehran: The Mediating Role of Internalized Shame. *Applied Family Therapy Journal (AFTJ)*, *5*(5), 164-172. https://journals.kmanpub.com/index.php/aftj/article/view/3527

Angelakis, I., Austin, J. L., & Gooding, P. (2020). Association of Childhood Maltreatment With Suicide Behaviors Among Young People: A Systematic Review and Meta-analysis.

E-ISSN: 3041-8828

JAMA Network Open, *3*(8), e2012563-e2012563. https://doi.org/10.1001/jamanetworkopen.2020.12563

Bişkin, S. Ö. (2024). Childhood Maltreatment and Adolescent Risky Behavior: Mediating the Effect of Parent–Adolescent Conflict and Violent Tendencies. *Behavioral Sciences*, *14*(11), 1058. https://doi.org/10.3390/bs14111058

Blasczyk-Schiep, S., Kazen, M., Jaworska-Andryszewska, P., & Kuhl, J. (2018). Volitional determinants of self-harm behaviour and suicidal risk in persons with borderline personality disorder. *The European Journal of Psychiatry*, *32*(2), 77-86. https://www.sciencedirect.com/science/article/pii/S0213616317301271

Chokan Sonbol, F. S., Rezaeian Faraji, H., & Abdollahi, A. (2023). The relationship between attachment styles and high-risk sexual behavior: Investigating the moderating role of birth order and sexual abuse history in childhood. *Rooyesh-e-Ravanshenasi Journal (RRJ)*, *12*(7), 31-40. https://dor.isc.ac/dor/20.1001.1.2383353.1402.12.7.4.0

Lin, S. C., Kehoe, C., Pozzi, E., Liontos, D., & Whittle, S. (2024). Research Review: Child emotion regulation mediates the association between family factors and internalizing symptoms in children and adolescents – a meta-analysis. *Journal of Child Psychology and Psychiatry*, *65*(3), 260-274. https://doi.org/10.1111/jcpp.13894

Manesh, S. E., & Malak, S. K. (2025). The Structural Relationships of Emotional Neglect With Risky Behaviors in Prisoners Considering the Mediating Role of Emotion Regulation Strategies. *Hn*, *3*(1), 111-122. https://doi.org/10.61838/kman.hn.3.1.12

Mohammadi-Hosseini-Asl, F., Sakin-Azari, R., Abdol Tajadini, P., & Aghdasi, A. (2022). Predicting risky behaviors based on the satisfaction of psychological basic needs, cognitive emotional regulation, and attachment styles with the mediating role of mental vitality in female adolescents. *Journal of Cognitive Psychology and Psychiatry*, *9*(2), 117-130. https://doi.org/10.32598/shenakht.9.2.117

Mohammadi Hosseini Asl, F., Saken Azari, R., Abdoltajedini, P., & Aghdasi, A. N. (2022). The Role of Attachment Styles, Cognitive Emotion Regulation and Subjective Vitality in Predicting High-Risk Behaviors of Female Adolescents. *Quarterly Journal of Child Mental Health*, *9*(3), 121-135. https://doi.org/10.52547/jcmh.9.3.11

Noroozi, Y., & Janjani, P. (2023). Investigating the mediating role of difficulty in emotion regulation in the relationship between attachment styles and rumination in high-risk behaviors of adolescent girls. *Journal of Arak University of Medical Sciences*, *26*(3), 41-46. https://doi.org/10.61186/jams.26.3.41

Reyhani, S., & Ahovan, M. (2024). The effectiveness of emotional schema therapy on regulating emotions and reducing high-risk behaviors in female adolescents. *Journal of Research in Behavioural Sciences*, *22*(1), 137-149. https://doi.org/10.29252/rbs.22.1.137

Salimi, F., Shahyad, S., ghahvehchi-hosseni, f., & Davari, R. (2023). Mediating the dimensions of self-compassion on attachment styles and high-risk behaviors of students: Identifying educational challenges. *Edu-Str-Med-Sci*, *15*(6), 622-629. http://edcbmj.ir/article-1-2746-en.html

Sefidrood, M., & Hobbi, M. B. (2023). The Role of Attachment Styles and Cognitive Emotion Regulation in Predicting the Tendency to High-Risk Behaviors in Adolescents. *International Journal of Applied Behavioral Sciences*, *10*(1), 1-8. https://doi.org/10.22037/ijabs.v9i4.34259

Sharei, A., Kasaeei Esfahani, A., & Salmani, A. (2025). The Effect of Mindfulness Therapy on Emotion Regulation, Cognitive Self-Awareness, and Tendency to High-Risk Behaviors in Orphaned and Poorly Monitored Adolescents: A Quasi-Experimental Study. *Journal of Rafsanjan University of Medical Sciences*, *23*(9), 812-827. https://doi.org/10.61186/jrums.23.9.812

Spidel, A., & Kealy, D. (2023). Sexual Risk Behavior Among Individuals Seeking Outpatient Mental Health Services: Associations With Childhood Emotional Neglect and Identity Dysfunction. *Bulletin of the Menninger clinic*, *87*(1), 6-24. https://doi.org/10.1521/bumc.2023.87.1.6

Teimory, S., Ramezani, F., & Yazdanpanah, F. (2019). The relationship between behavior brain systems and impulsivity with high-risk sexual behavior. *frooyesh*, *8*(10), 47-54. http://frooyesh.ir/article-1-1619-en.html

Therriault, D., Lemelin, J. P., Toupin, J., Martin-Storey, A., & Déry, M. (2024). Associations Between Externalizing Behavior Problems and Risky Sexual Behaviors in Adolescence: Attachment as a Mediator. *Journal of adolescence*, *96*(2), 394-410. https://doi.org/10.1002/jad.12285

van Ijzendoorn, M. H., Schuengel, C., Wang, Q., & Bakermans-Kranenburg, M. J. (2023). Improving parenting, child attachment, and externalizing behaviors: Meta-analysis of the first 25 randomized controlled trials on the effects of Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline. *Development and Psychopathology*, *35*(1), 241-256. https://doi.org/10.1017/S0954579421001462

Yaztappeh, J. S., Mousavi, S. E., Shahkaram, H., Kianimoghadam, A. S., Bakhtiari, M., Didar, F., Emami, A., Rajabi, M., & Arani, A. M. (2023). Prediction of Emotional Disorders Based on Neuroticism with Emotion Regulation, Experiential Avoidance, and Repetitive Negative Thinking. *International Journal of High Risk Behaviors and Addiction*, *12*(2). https://doi.org/10.5812/ijhrba-134761

Zatzick, D., Russo, J., Lord, S. P., Varley, C., Wang, J., Berliner, L., Jurkovich, G., Whiteside, L. K., O'Connor, S., & Rivara, F. P. (2014). Collaborative Care Intervention Targeting Violence Risk Behaviors, Substance Use, and Posttraumatic Stress and Depressive Symptoms in Injured Adolescents: A Randomized Clinical Trial. *JAMA Pediatrics*, *168*(6), 532-539. https://doi.org/10.1001/jamapediatrics.2013.4784

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