

The Relationship Between Attachment Styles and Childhood Trauma and Cyberbullying Among Adolescents

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ABSTRACT

Objective: The present study aimed to investigate the relationship of attachment styles and childhood trauma with cyberbullying among adolescent male secondary-school students in Babol, Iran.

Methods and Materials: This applied study employed a descriptive-correlational design. The statistical population consisted of 4,500 male students enrolled in the second cycle of secondary education in Babol during the 2025–2026 academic year. Based on the Krejcie and Morgan table, 354 students were selected through convenience sampling. Data were collected electronically using the Collins and Read Attachment Scale, the Childhood Trauma Questionnaire developed by Bernstein et al., and the Cyberbullying Questionnaire developed by Antoniadou et al. The questionnaires were administered through the SHAD educational platform. Data were analyzed using descriptive statistics, Pearson's correlation coefficient, and multiple regression analysis in SPSS version 20, with the significance level set at $p < .05$.

Findings: Secure attachment was negatively correlated with total cyberbullying ($r = -.228$, $p < .01$), whereas avoidant attachment ($r = .265$, $p < .01$), anxious-ambivalent attachment ($r = .483$, $p < .01$), and total childhood trauma ($r = .438$, $p < .01$) were positively correlated with cyberbullying. Emotional abuse showed the strongest association among the childhood trauma dimensions with total cyberbullying ($r = .536$, $p < .01$). Regression analysis showed that secure attachment significantly and negatively predicted cyberbullying ($\beta = -.090$, $t = -2.295$, $p = .020$), whereas avoidant attachment ($\beta = .093$, $t = 2.344$, $p = .020$), anxious-ambivalent attachment ($\beta = .276$, $t = 6.716$, $p < .001$), and childhood trauma ($\beta = .191$, $t = 4.577$, $p < .001$) significantly and positively predicted cyberbullying. Among the predictors, anxious-ambivalent attachment had the largest absolute standardized regression coefficient.

Conclusion: These results highlight the importance of relational security and adverse childhood experiences in understanding adolescent cyberbullying and support the development of attachment-informed and trauma-sensitive preventive interventions.

Keywords: Attachment Styles; Childhood Trauma; Cyberbullying; Cybervictimization; Adolescents; Secondary-School Students

1. Introduction

The rapid expansion of digital communication technologies has fundamentally transformed the social environment of adolescents. Social networking platforms, instant messaging applications, online gaming environments, and educational communication systems have created new opportunities for interaction, self-expression, and social participation, while simultaneously introducing new forms of interpersonal aggression. Among these emerging problems, cyberbullying has attracted increasing attention because it extends aggressive behavior beyond the physical boundaries of schools and peer groups and allows harmful interactions to continue across time and space. Cyberbullying generally refers to intentional and repeated aggressive behavior conducted through digital or electronic communication technologies against individuals who may have difficulty defending themselves. Unlike conventional bullying, cyberbullying can involve anonymity, rapid dissemination of harmful content, persistent accessibility of abusive material, and potentially large audiences, thereby increasing both the reach and psychological salience of aggressive encounters. Research on adolescent cyberbullying has documented substantial variation in prevalence across countries, instruments, age groups, and operational definitions, yet the overall body of evidence indicates that both cyberbullying perpetration and cybervictimization constitute meaningful concerns during adolescence (Brochado et al., 2017). Given adolescents' extensive engagement with digital communication, identifying the psychological and developmental factors associated with cyberbullying has therefore become an important priority for researchers, educators, families, and mental health professionals.

Adolescence represents a particularly important developmental period for understanding cyberbullying because interpersonal relationships, identity formation, emotional regulation, and peer acceptance become increasingly salient during these years. Online environments often function as extensions of adolescents' offline social worlds, meaning that relational insecurities, social conflicts, and maladaptive coping patterns may be expressed through digital interactions. Cyberbullying can include hostile messages, online humiliation, exclusion from digital groups, dissemination of private information, impersonation, threats, harassment, and repeated targeting through social media or messaging platforms. The consequences of these experiences are not limited to temporary interpersonal

distress. Cyberbullying involvement has been associated with a variety of psychological, behavioral, and social difficulties, making it essential to examine both the factors that may increase adolescents' vulnerability to victimization and those that may contribute to aggressive online behavior. Evidence from research on minority adolescents, for example, has demonstrated meaningful associations among cyberbullying experiences, minority status, and indicators of mental health difficulties, emphasizing that cyberbullying must be understood within the broader psychosocial context of adolescent development (Duarte et al., 2018). Likewise, systematic evidence concerning lesbian, gay, bisexual, transgender, and queer youth has shown that cyberbullying may constitute an especially important source of interpersonal stress for socially vulnerable groups, highlighting the importance of prevention strategies that take adolescents' relational and social environments into account (Abreu & Kenny, 2017).

One of the most relevant theoretical frameworks for understanding adolescents' interpersonal behavior is attachment theory. Attachment develops initially within relationships between children and their primary caregivers and contributes to internal working models concerning the self, others, trust, emotional availability, and expectations regarding relationships. These internal representations may subsequently shape patterns of interpersonal closeness, emotional expression, conflict management, help-seeking, and responses to rejection. Attachment patterns are commonly conceptualized in terms of secure and insecure styles. Secure attachment is characterized by greater comfort with closeness, trust in others, and expectations that support will be available when needed. In contrast, avoidant attachment is generally characterized by discomfort with intimacy, emotional distancing, and reluctance to depend on others, whereas anxious or ambivalent attachment reflects heightened concerns regarding rejection, abandonment, and the availability of significant others. Although attachment develops in early relational contexts, its implications can remain evident across later developmental stages, including adolescence, when relationships with peers acquire increasing importance.

The relevance of attachment to cyberbullying lies in the possibility that adolescents' expectations about relationships influence how they interpret social cues, respond to interpersonal conflict, regulate emotions, and engage with peers in digital settings. Securely attached adolescents may be better able to seek support, manage rejection, and maintain reciprocal relationships, whereas insecure

attachment patterns may be associated with greater interpersonal mistrust, heightened sensitivity to rejection, emotional withdrawal, or maladaptive responses to conflict. Empirical research supports the relevance of attachment to cyberbullying. Li and colleagues found that parent-child attachment was associated with cyberbullying and demonstrated that broader cognitive and contextual factors, including belief in a just world and school climate, contributed to this relationship (Li et al., 2022). These findings indicate that the quality of attachment relationships may influence adolescents' online behavior both directly and through psychological and environmental processes that shape their responses to social situations.

Similarly, Fang and colleagues examined parental attachment in relation to cyberbullying and found that relational and psychological mechanisms such as loneliness contributed to the association between attachment and cyberbullying behavior (Fang et al., 2022). Their findings suggest that insecure or weakened attachment bonds may create vulnerabilities that become relevant in online social contexts. Adolescents who experience less secure relationships with caregivers may have greater difficulty developing adaptive interpersonal expectations and may be more vulnerable to loneliness, relational uncertainty, or problematic peer interactions. In online environments, where social cues are reduced and interpersonal interactions may be more ambiguous, these vulnerabilities may contribute to either aggressive behavior or increased susceptibility to victimization. Thus, examining different attachment styles separately may provide a more precise understanding of how secure, avoidant, and anxious-ambivalent relational orientations are associated with adolescents' involvement in cyberbullying.

Attachment also appears to play an important role in how adolescents respond to cybervictimization. Zhu and colleagues showed that parent-child attachment moderated associations between cyberbullying victimization and adolescents' physical and mental health problems, suggesting that stronger attachment relationships may serve a protective function in the context of online victimization (Zhu et al., 2021). This protective role is theoretically plausible because supportive attachment relationships may provide adolescents with emotional security, opportunities for disclosure, and more effective strategies for coping with stressful social experiences. In contrast, insecurely attached adolescents may be less likely to seek assistance following cybervictimization or may interpret online rejection and hostility in ways that intensify distress. These mechanisms

indicate that attachment is relevant not only to the perpetration of cyberbullying but also to the experience and consequences of being targeted online.

The wider family environment is also important in the development of bullying and cyberbullying behaviors. Parenting practices shape children's emotional development, social learning, behavioral control, and expectations concerning interpersonal relationships. Charalampous and colleagues demonstrated longitudinal associations between parenting style, bullying and cyberbullying behaviors, and peer attachment, indicating that family relational patterns may influence adolescent aggression partly through their effects on peer relationships (Charalampous et al., 2018). This evidence is particularly important because it connects parental relationships with later patterns of interaction in the peer domain. Adolescents who experience supportive and responsive caregiving may develop more adaptive social competencies, whereas those exposed to relational insecurity may be more likely to experience problematic peer interactions. Because cyberbullying occurs within social networks that are strongly influenced by peer dynamics, attachment relationships may represent one of the developmental pathways through which earlier family experiences become associated with online interpersonal behavior.

Another major developmental factor that may contribute to cyberbullying is childhood trauma. Childhood trauma encompasses adverse experiences such as emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Such experiences can have enduring consequences for emotional development, interpersonal trust, self-perception, stress regulation, and behavioral adjustment. Childhood adversity may influence how young people perceive interpersonal threats, regulate anger and distress, interpret ambiguous social situations, and establish relationships with others. Adolescents with histories of maltreatment may therefore be vulnerable to both aggressive responses and victimization in peer relationships. Importantly, childhood trauma should not be considered a single homogeneous experience. Different forms of abuse and neglect may have distinct psychological consequences, and examining both total trauma and its specific dimensions may clarify which forms of adversity are most strongly related to cyberbullying involvement.

Recent evidence has increasingly connected childhood trauma with online aggressive behavior. Cao and colleagues examined the association between childhood trauma and adolescent cyberbullying and found that childhood trauma

was related to cyberbullying through psychological processes involving emotional intelligence and online social anxiety (Cao et al., 2023). Their findings provide support for a developmental pathway in which adverse childhood experiences may undermine adolescents' emotional and interpersonal functioning, subsequently increasing their vulnerability to maladaptive online behavior. Adolescents exposed to abuse or neglect may experience difficulties identifying and managing emotions, interpreting others' intentions, or coping adaptively with online social stress. These difficulties may increase the probability of responding aggressively in digital environments or becoming involved in reciprocal cycles of online conflict.

The relationship between childhood trauma and cyberbullying may also be understood through its effects on attachment. Adverse childhood experiences frequently occur within caregiving environments and may therefore disrupt the development of a stable sense of interpersonal safety. Araujo and colleagues, in their review of adverse childhood experiences, attachment, and emotional regulation, emphasized the interconnected nature of early adversity, attachment patterns, and later emotional functioning (Araujo et al., 2026). Childhood maltreatment may undermine trust in caregivers and contribute to insecure internal working models, while insecure attachment may in turn affect the development of adaptive emotion-regulation strategies. In adolescence, these developmental consequences may become particularly important because young people face increasingly complex social interactions both offline and online. Consequently, attachment styles and childhood trauma may represent theoretically related but distinct predictors of cyberbullying.

Neglect may be especially important within this developmental framework because its effects can be subtle, cumulative, and relationally embedded. Unlike overt forms of maltreatment, neglect involves the absence of necessary emotional or physical care and may shape children's expectations regarding their own worth and the reliability of others. Topino and Gori demonstrated that childhood neglect was associated with later self-conception and attachment, highlighting the enduring relational consequences of insufficient caregiving (Topino & Gori, 2025). Emotional neglect, in particular, may interfere with the development of a stable sense of emotional support and interpersonal security. Adolescents with such histories may experience greater difficulty trusting others, expressing emotional needs, or maintaining balanced interpersonal boundaries. In digital contexts, these difficulties may contribute to

heightened sensitivity to exclusion, problematic efforts to obtain social validation, or maladaptive responses to interpersonal conflict.

Childhood emotional trauma has also been examined directly in relation to cyberbullying. Yahdi investigated the relationship between childhood emotional trauma and cyberbullying among adolescents and considered the mediating role of parenting styles and anger-related cognitive processes (Yahdi, 2025). Such work is important because it suggests that early trauma may influence cyberbullying through the development of particular emotional and family-related mechanisms rather than operating only as a direct risk factor. Adolescents exposed to emotionally harmful childhood environments may develop persistent patterns of negative affect, interpersonal vigilance, or difficulty managing conflict, all of which may become relevant in online communication. The relative anonymity and psychological distance provided by digital communication may further lower barriers to aggressive expression, particularly when adolescents lack effective strategies for regulating emotionally charged interpersonal situations.

Cyberbullying victimization should also be considered alongside perpetration because adolescents may occupy multiple roles in online aggression. Some individuals who experience cybervictimization may later respond aggressively toward others, while others may remain primarily victims. The boundaries between perpetration and victimization can therefore be fluid. Chan and Wong examined coping with cyberbullying victimization among adolescents and showed that young people employ different strategies when confronted with online aggression (Chan & Wong, 2017). The effectiveness of these strategies may depend on available social support, attachment security, and prior experiences of adversity. Adolescents with secure relationships may be more likely to disclose victimization and seek support, whereas those with insecure attachment patterns or histories of maltreatment may engage in avoidance, retaliation, or other less adaptive responses. For this reason, studying cybervictimization and cyberbullying perpetration as related but distinct dimensions can provide a more comprehensive understanding of online aggression.

The complexity of cyberbullying also has implications for prevention. Educational interventions have increasingly been designed to reduce traditional bullying and cyberbullying by improving awareness, social skills, empathy, coping strategies, and school responses. A systematic review and meta-analysis by Ng and colleagues

found that educational interventions can contribute to the prevention and reduction of bullying and cyberbullying among adolescents, although effectiveness varies according to intervention characteristics and study design (Ng et al., 2020). These findings suggest that prevention efforts may benefit from moving beyond general awareness and incorporating developmental risk factors. If attachment insecurity and childhood trauma are associated with cyberbullying, interventions may need to include relational support, trauma-informed approaches, emotion-regulation skills, and mechanisms for strengthening trusted relationships with parents, teachers, counselors, and peers.

A further challenge is that cyberbullying is embedded within broader social inequalities and vulnerabilities. The literature demonstrates that adolescents' experiences of online aggression can differ according to social position, identity, and access to supportive relationships. Duarte and colleagues showed that minority status and cyberbullying were meaningfully related to mental health indicators among adolescents (Duarte et al., 2018), while Abreu and Kenny's systematic review emphasized the heightened relevance of cyberbullying for LGBTQ youth and the need for targeted prevention and intervention efforts (Abreu & Kenny, 2017). These findings reinforce the idea that cyberbullying cannot be understood exclusively as an isolated behavioral problem. Rather, it is situated within adolescents' developmental histories, family relationships, peer networks, and broader social contexts.

Despite the growing literature, several issues remain insufficiently clarified. First, many studies focus on cyberbullying prevalence, psychological consequences, or specific social correlates without simultaneously examining developmental relational factors such as attachment styles and childhood trauma. Second, attachment is often represented by a global indicator of parent-child attachment, whereas distinguishing secure, avoidant, and anxious-ambivalent attachment may reveal different patterns of association with cyberbullying. Third, childhood trauma encompasses several qualitatively different experiences, including emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect, and their associations with cyberbullying may not be equivalent. Fourth, existing findings have emerged from diverse cultural and educational contexts, and the relationships among attachment, childhood trauma, and cyberbullying may vary according to social and family structures. The evidence synthesized by Brochado and colleagues regarding substantial heterogeneity in cyberbullying prevalence

further underscores the importance of examining cyberbullying within specific populations rather than assuming that patterns observed in one setting apply uniformly to another (Brochado et al., 2017).

Investigating these variables among Iranian adolescents is particularly relevant because adolescents' digital engagement occurs within a specific family, educational, and sociocultural context. Family relationships continue to play an important role in adolescents' emotional and social development, while digital communication increasingly forms part of peer interaction. Previous research has independently linked parent-child attachment to cyberbullying (Fang et al., 2022; Li et al., 2022), demonstrated the protective relevance of attachment in cybervictimization (Zhu et al., 2021), shown connections between parenting, peer attachment, and bullying behavior (Charalampous et al., 2018), and identified childhood trauma as a meaningful correlate of adolescent cyberbullying (Cao et al., 2023; Yahdi, 2025). Furthermore, the broader literature indicates that early adverse experiences may influence attachment and emotional regulation across development (Araujo et al., 2026; Topino & Gori, 2025). Taken together, these findings provide a strong theoretical rationale for simultaneously examining attachment styles and childhood trauma in relation to cyberbullying.

Such an investigation may contribute to both theoretical understanding and applied prevention. From a developmental perspective, considering attachment and trauma together can help clarify how relational security and adverse childhood experiences are associated with adolescents' behavior in digital environments. From an applied perspective, identifying significant associations may help school psychologists, counselors, educators, and family-based practitioners recognize adolescents who may be more vulnerable to cyberbullying involvement and develop interventions that address not only online behavior but also underlying relational and developmental factors. This approach is consistent with contemporary efforts to address cyberbullying through comprehensive interventions rather than relying solely on disciplinary or technological solutions (Ng et al., 2020). It also recognizes that coping responses to cybervictimization are shaped by adolescents' relational and psychological resources (Chan & Wong, 2017) and that effective prevention may require attention to the broader social vulnerabilities surrounding online aggression (Abreu & Kenny, 2017; Duarte et al., 2018).

Therefore, the aim of the present study was to investigate the relationship of attachment styles and childhood trauma

with cyberbullying among adolescent male secondary-school students in Babol.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed an applied, descriptive-correlational research design to investigate the relationships between attachment styles, childhood trauma, and cyberbullying among adolescent students. The statistical population consisted of all male students enrolled in the second cycle of secondary education in Babol, Iran, during the 2025–2026 academic year. According to information obtained from the Babol Department of Education, the target population comprised approximately 4,500 students. The required sample size was determined using the Krejcie and Morgan sample size determination table, according to which 354 participants were required for a population of this size. Because some questionnaires were expected to be incomplete, inadequately completed, or excluded because they did not meet the criteria for statistical analysis, 30 additional questionnaires were distributed. Accordingly, a total of 384 questionnaires were made available to eligible students. After screening the returned questionnaires and excluding incomplete or otherwise unusable responses, data from 354 students were retained for the final statistical analyses. Participants were selected using convenience sampling. This sampling strategy was adopted because the study was conducted under exceptional national circumstances, including wartime conditions and the consequent transition of schools to non-face-to-face educational activities, which substantially restricted direct access to students and prevented the implementation of probability-based or random sampling procedures. After obtaining the required institutional permissions and coordinating with the Babol Department of Education and administrators of eligible schools, the questionnaires were administered electronically. Students in Grades 10, 11, and 12 were approached through the SHAD educational platform, and those who met the study requirements and voluntarily agreed to participate were included in the study. Before participation, the objectives and procedures of the research were explained to the students, and informed consent was obtained. Participation was voluntary, and students were informed of their right to withdraw from the study at any stage without adverse consequences. Confidentiality and anonymity were assured, collected information was used exclusively for scientific purposes,

and research data were stored securely. The electronic questionnaires were designed using the Porsline online questionnaire platform and distributed through SHAD with the cooperation of school administrators. Data collection was conducted online over a two-month period. After completion of data collection, the responses were screened for completeness and eligibility and subsequently entered into SPSS for statistical analysis.

2.2. Measures

Collins and Read Adult Attachment Scale. Attachment styles were assessed using the Collins and Read Attachment Scale developed by Collins and Read in 1990. The instrument consists of 18 items and assesses three dimensions of attachment: secure attachment, avoidant attachment, and anxious-ambivalent attachment. The secure attachment subscale comprises Items 1, 6, 8, 12, 13, and 17; the avoidant attachment subscale includes Items 2, 5, 7, 14, 16, and 18; and the anxious-ambivalent attachment subscale consists of Items 3, 4, 9, 10, 11, and 15. Responses are rated using a five-category Likert-type format ranging from completely disagree to completely agree, scored from 0 to 4. Items 1, 5, 8, 16, 17, and 18 are reverse-scored. Scores for the items belonging to each dimension are combined to obtain the corresponding attachment-style score, with higher scores indicating a greater tendency toward that attachment pattern. Collins and Read reported Cronbach's alpha coefficients of 0.81, 0.78, and 0.85 for the secure, avoidant, and anxious attachment dimensions, respectively. The scale was subsequently standardized in Iran, where evidence supporting its construct validity was reported through divergent validity assessment, and test-retest administration over a one-month interval indicated satisfactory reliability. Subsequent Iranian studies have also reported acceptable internal consistency coefficients for the instrument and its subscales. For example, Cronbach's alpha coefficients of 0.79 for secure attachment and 0.69 for both avoidant and anxious attachment have been reported, while other studies have documented coefficients of approximately 0.79–0.83 for the relevant attachment dimensions. These findings support the use of the scale as an appropriate measure of individual differences in attachment patterns in Iranian samples.

Childhood Trauma Questionnaire. Childhood trauma was assessed using the Childhood Trauma Questionnaire developed by Bernstein and colleagues in 2003. The questionnaire contains 28 items and evaluates five principal

dimensions of childhood maltreatment: emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. Emotional abuse is assessed by Items 3, 8, 14, 18, and 25; physical abuse by Items 9, 11, 12, 15, and 17; sexual abuse by Items 20, 21, 23, 24, and 27; emotional neglect by Items 5, 7, 13, 19, and 28; and physical neglect by Items 1, 2, 4, 6, and 26. Items 10, 16, and 22 constitute a minimization or denial validity index and are not included in the calculation of the total childhood trauma score. Responses are provided on a five-point Likert scale ranging from 1 (very little/never) to 5 (very much/very often), with Items 2, 5, 7, 13, 19, 26, and 28 reverse-scored. Based on the 25 substantive items, the total score can range from 25 to 125, with higher scores reflecting greater exposure to adverse or traumatic childhood experiences. The validity-index items can also be used to identify potentially invalid response patterns, and questionnaires demonstrating excessive minimization or denial can be excluded from analysis according to the scoring guidelines. Bernstein and colleagues reported Cronbach's alpha coefficients of 0.87 for emotional abuse, 0.86 for physical abuse, 0.95 for sexual abuse, 0.89 for physical neglect, and 0.78 for emotional neglect in adolescent samples. They also reported satisfactory concurrent validity through associations between questionnaire scores and clinicians' ratings of childhood maltreatment. Subsequent investigations in both clinical and nonclinical populations have provided additional evidence for the validity of the instrument. Iranian studies have similarly supported its content, face, criterion-related, and construct validity, with reported Cronbach's alpha coefficients generally ranging from approximately 0.70 to 0.98 across the total scale and individual dimensions. More recent Iranian studies have also documented internal consistency coefficients in the acceptable range for the total score and subscales, supporting the applicability of the questionnaire for assessing childhood trauma in Iranian populations.

Cyberbullying Questionnaire. Cyberbullying was measured using the Cyberbullying Questionnaire developed by Antoniadou and colleagues in 2016 to assess involvement in cyberbullying and cybervictimization among students. The questionnaire comprises 24 items organized into two dimensions: cybervictimization and cyberbullying perpetration. Items 1 through 12 assess experiences of being the target of cyberbullying, whereas Items 13 through 24 assess engagement in cyberbullying behaviors toward others. Each item is rated on a five-point frequency scale ranging from 1 (never) to 5 (several times a week), with

intermediate response options representing increasing frequency of occurrence. Accordingly, total scores range from 24 to 120, with higher scores indicating greater overall involvement in cyberbullying and cybervictimization experiences. Scores for the two subscales may also be calculated separately to distinguish perpetration from victimization. Antoniadou and colleagues reported Cronbach's alpha coefficients of 0.89 for the cyberbullying subscale and 0.80 for the cybervictimization subscale, demonstrating satisfactory internal consistency. The questionnaire was translated and psychometrically evaluated in Iran, where Cronbach's alpha coefficients of 0.75, 0.78, and 0.79 were reported for cyberbullying, cybervictimization, and the total scale, respectively. Subsequent Iranian studies have reported even higher reliability coefficients, including Cronbach's alpha values of approximately 0.91–0.95 for the overall questionnaire and approximately 0.94 for each of the two principal dimensions. Collectively, these findings indicate satisfactory reliability and support the use of the questionnaire for assessing cyberbullying involvement among Iranian adolescents.

2.3. Data Analysis

Data were analyzed using IBM SPSS Statistics version 20. Before inferential analyses, the collected questionnaires were screened for completeness, eligibility, and potentially invalid response patterns, and only complete and acceptable questionnaires were included in the final dataset. Descriptive statistics were used to summarize the characteristics and distributions of the study variables and included frequency, percentage, mean, standard deviation, minimum, and maximum values. Pearson's product-moment correlation coefficient was used to examine the bivariate relationships between attachment-style dimensions, childhood trauma and its dimensions, and cyberbullying outcomes. Multiple regression analysis was subsequently performed to determine the extent to which attachment styles and childhood trauma could statistically predict cyberbullying among adolescents. The assumptions required for correlational and regression analyses, including normality of the relevant distributions, linearity of associations, independence of errors, and the absence of problematic multicollinearity among predictor variables, were evaluated before interpretation of the regression model. Statistical analyses were conducted using a significance level of $p < .05$.

3. Findings and Results

The final sample consisted of 354 male students enrolled in the second cycle of secondary education in Babol. Regarding grade level, 155 students (43.8%) were in Grade 10, 70 (19.8%) were in Grade 11, and 129 (36.4%) were in Grade 12. Regarding field of study, 160 participants (45.2%)

were studying literature and humanities, 104 (29.4%) were enrolled in experimental sciences, and 90 (25.4%) were studying mathematics and physics. Thus, Grade 10 students constituted the largest proportion of the sample in terms of grade level, while students in literature and humanities represented the largest group according to academic field.

Table 1

Descriptive Statistics for the Study Variables

Variable	Mean	SD	Minimum	Maximum	N
Secure attachment	13.067	5.138	1.00	24.00	354
Avoidant attachment	10.895	5.496	0.00	24.00	354
Anxious-ambivalent attachment	11.635	5.169	0.00	24.00	354
Emotional abuse	7.257	2.958	5.00	18.00	354
Physical abuse	6.115	2.943	5.00	21.00	354
Sexual abuse	5.615	1.807	5.00	17.00	354
Emotional neglect	10.488	4.443	5.00	23.00	354
Physical neglect	7.234	2.513	5.00	16.00	354
Total childhood trauma	36.711	11.563	25.00	73.00	354
Cybervictimization	15.793	4.137	12.00	30.00	354
Cyberbullying perpetration	14.211	3.987	12.00	34.00	354
Total cyberbullying	30.005	7.182	24.00	61.00	354

As shown in Table 1, the mean scores for secure, avoidant, and anxious-ambivalent attachment were 13.067 (SD = 5.138), 10.895 (SD = 5.496), and 11.635 (SD = 5.169), respectively. Among the childhood trauma dimensions, emotional neglect had the highest mean score (M = 10.488, SD = 4.443), followed by emotional abuse (M = 7.257, SD = 2.958), physical neglect (M = 7.234, SD = 2.513), physical abuse (M = 6.115, SD = 2.943), and sexual abuse (M = 5.615, SD = 1.807). The mean total childhood trauma score was 36.711 (SD = 11.563). Regarding cyberbullying, the mean cybervictimization score was 15.793 (SD = 4.137), the mean cyberbullying perpetration score was 14.211 (SD = 3.987), and the mean total cyberbullying score was 30.005 (SD = 7.182).

Prior to conducting the inferential analyses, the relevant statistical assumptions were examined. Inspection of skewness and kurtosis showed that all retained study

variables had values within the acceptable range of -2 to $+2$. Specifically, skewness values ranged from -0.088 for secure attachment to 1.295 for cyberbullying perpetration, while kurtosis values ranged from -0.551 for avoidant attachment to 1.283 for physical abuse, indicating no substantial departure from normality. The Kolmogorov–Smirnov test also supported the approximate normality of the principal study variables, with nonsignificant results for secure attachment ($p = .08$), avoidant attachment ($p = .06$), anxious-ambivalent attachment ($p = .10$), total childhood trauma ($p = .07$), and total cyberbullying ($p = .07$). Accordingly, the distributional assumptions required for Pearson correlation analysis were considered satisfactory. The regression-specific assumptions of independence of residuals and absence of problematic multicollinearity should be evaluated using the final regression model containing only the predictors specified in the present study.

Table 2

Pearson Correlations of Attachment Styles and Childhood Trauma With Cyberbullying

Predictor	Cybervictimization, r	Cyberbullying Perpetration, r	Total Cyberbullying, r
Secure attachment	-.194**	-.209**	-.228**
Avoidant attachment	.223**	.246**	.265**
Anxious-ambivalent attachment	.423**	.430**	.483**
Emotional abuse	.415**	.536**	.536**
Physical abuse	.297**	.275**	.324**

Sexual abuse	.340**	.419**	.428**
Emotional neglect	.208**	.356**	.318**
Physical neglect	.035	.206**	.135*
Total childhood trauma	.322**	.454**	.438**

As presented in Table 2, secure attachment was significantly and negatively associated with cybervictimization ($r = -.194, p < .01$), cyberbullying perpetration ($r = -.209, p < .01$), and total cyberbullying ($r = -.228, p < .01$). In contrast, avoidant attachment showed significant positive correlations with cybervictimization ($r = .223, p < .01$), cyberbullying perpetration ($r = .246, p < .01$), and total cyberbullying ($r = .265, p < .01$). Anxious-ambivalent attachment was also positively and significantly related to cybervictimization ($r = .423, p < .01$), cyberbullying perpetration ($r = .430, p < .01$), and total cyberbullying ($r = .483, p < .01$). Regarding childhood trauma, emotional abuse was significantly associated with cybervictimization ($r = .415, p < .01$), cyberbullying perpetration ($r = .536, p < .01$), and total cyberbullying ($r =$

$.536, p < .01$). Physical abuse, sexual abuse, and emotional neglect likewise showed significant positive correlations with all three cyberbullying outcomes. Physical neglect was not significantly associated with cybervictimization ($r = .035, p = .50$), but it was significantly related to cyberbullying perpetration ($r = .206, p < .01$) and total cyberbullying ($r = .135, p < .05$). Finally, total childhood trauma showed significant positive relationships with cybervictimization ($r = .322, p < .01$), cyberbullying perpetration ($r = .454, p < .01$), and total cyberbullying ($r = .438, p < .01$). Among the attachment dimensions, anxious-ambivalent attachment demonstrated the strongest bivariate association with total cyberbullying, whereas among the childhood trauma dimensions, emotional abuse showed the strongest correlation with the total cyberbullying score.

Table 3

Multiple Regression Coefficients for Predicting Cyberbullying From Attachment Styles and Childhood Trauma

Predictor	B	SE	β	t	p
Secure attachment	-0.126	0.055	-0.090	-2.295	.020
Avoidant attachment	0.122	0.052	0.093	2.344	.020
Anxious-ambivalent attachment	0.384	0.057	0.276	6.716	< .001
Childhood trauma	0.119	0.026	0.191	4.577	< .001

As shown in Table 3, all three attachment styles and childhood trauma significantly predicted cyberbullying among adolescents. Secure attachment was a significant negative predictor of cyberbullying ($B = -0.126, SE = 0.055, \beta = -0.090, t = -2.295, p = .020$), indicating that higher secure attachment was associated with lower cyberbullying scores when the other predictors were held constant. In contrast, avoidant attachment significantly and positively predicted cyberbullying ($B = 0.122, SE = 0.052, \beta = 0.093, t = 2.344, p = .020$). Anxious-ambivalent attachment was also a significant positive predictor ($B = 0.384, SE = 0.057, \beta = 0.276, t = 6.716, p < .001$) and had the largest absolute standardized regression coefficient among the predictors included in the model. Childhood trauma likewise significantly and positively predicted cyberbullying ($B = 0.119, SE = 0.026, \beta = 0.191, t = 4.577, p < .001$). Therefore, after simultaneously accounting for the other predictors, higher avoidant attachment, anxious-ambivalent attachment, and childhood trauma were associated with higher levels of

cyberbullying, whereas higher secure attachment was associated with lower levels of cyberbullying.

4. Discussion

The present study investigated the relationship of attachment styles and childhood trauma with cyberbullying among adolescent male secondary-school students in Babol. The findings showed that secure attachment was significantly and negatively associated with cybervictimization, cyberbullying perpetration, and the total cyberbullying score, whereas avoidant and anxious-ambivalent attachment styles were significantly and positively associated with all three cyberbullying outcomes. Among the attachment dimensions, anxious-ambivalent attachment demonstrated the strongest relationship with total cyberbullying. The findings also indicated that childhood trauma was significantly associated with cyberbullying. Emotional abuse, physical abuse, sexual abuse, and emotional neglect were positively related to

cybervictimization, cyberbullying perpetration, and total cyberbullying, whereas physical neglect was significantly associated with cyberbullying perpetration and total cyberbullying but not with cybervictimization. In addition, the total childhood trauma score showed significant positive correlations with cybervictimization, cyberbullying perpetration, and overall cyberbullying. Among the childhood trauma dimensions, emotional abuse demonstrated the strongest association with total cyberbullying. Overall, these findings suggest that adolescents' relational security and adverse developmental experiences are meaningfully associated with their involvement in harmful digital interactions.

The significant negative relationship between secure attachment and cyberbullying is consistent with previous research demonstrating that supportive and secure parent-child relationships may protect adolescents against maladaptive online behaviors. Li and colleagues showed that stronger parent-child attachment was associated with lower levels of cyberbullying and that this association operated within a broader psychosocial framework involving beliefs about fairness and school climate (Li et al., 2022). Similarly, Fang and colleagues reported that parental attachment was significantly associated with cyberbullying behavior and that loneliness partly explained this relationship (Fang et al., 2022). These findings align with the present results by suggesting that adolescents who experience greater relational security may be less likely to participate in cyberbullying and may also be less vulnerable to problematic digital interactions.

One explanation for this finding is that secure attachment contributes to the development of positive internal working models concerning the self and others. Adolescents with secure attachment are generally more likely to perceive others as available and trustworthy, seek support when distressed, and use more adaptive strategies when dealing with interpersonal conflict. In digital environments, where communication can be ambiguous, emotionally charged, and deprived of many nonverbal cues, these relational capacities may reduce the likelihood of interpreting online interactions as threatening or responding to conflict through aggression. Securely attached adolescents may also be more willing to disclose negative online experiences to parents, teachers, or peers and obtain assistance before such experiences escalate. This interpretation is supported by Zhu and colleagues, who found that parent-child attachment moderated the relationship between cyberbullying victimization and adolescents' health and mental health problems, suggesting

that supportive attachment may buffer the harmful effects of online victimization (Zhu et al., 2021). Thus, secure attachment may function as both a protective interpersonal resource and a source of resilience in the face of online adversity.

The finding that avoidant attachment was positively associated with cybervictimization, cyberbullying perpetration, and total cyberbullying can also be interpreted within attachment theory. Avoidant attachment is typically characterized by discomfort with emotional closeness, reduced reliance on others, suppression of attachment needs, and a tendency to distance oneself during interpersonal stress. Such patterns may limit adolescents' willingness to seek help or disclose distress when confronted with online harassment. At the same time, emotional distancing may facilitate disengagement from the emotional consequences of aggressive online behavior and reduce sensitivity to the interpersonal impact of harmful digital communication. Fang and colleagues' findings regarding parental attachment, loneliness, and cyberbullying provide partial support for this explanation because weakened attachment bonds may foster social disconnection and maladaptive approaches to online interaction (Fang et al., 2022). Similarly, the longitudinal findings of Charalampous and colleagues demonstrated that parenting style and peer attachment relationships are relevant to the development of bullying and cyberbullying behaviors (Charalampous et al., 2018). These findings collectively suggest that the quality of attachment relationships can influence adolescents' behavior not only within the family but also within peer and online environments.

The strongest attachment-related association observed in the present study concerned anxious-ambivalent attachment. This attachment style was positively associated with cybervictimization, perpetration, and total cyberbullying, with a stronger correlation with total cyberbullying than the secure and avoidant attachment styles. Adolescents with anxious-ambivalent attachment may be especially sensitive to signs of rejection, abandonment, exclusion, or inconsistency in interpersonal relationships. Online interactions may amplify these sensitivities because delayed replies, exclusion from digital groups, public comparisons, and ambiguous comments can be interpreted as interpersonal threats. Heightened concern about acceptance may also lead to excessive monitoring of online interactions and greater emotional reactivity to perceived rejection. Consequently, adolescents with anxious-ambivalent attachment may be more vulnerable to becoming involved in reciprocal online

conflicts, either as targets, perpetrators, or both. The findings of Li and colleagues, which emphasize the importance of parent-child attachment in cyberbullying, and Zhu and colleagues, which demonstrate the moderating role of attachment in cybervictimization outcomes, are consistent with the view that attachment insecurity may shape adolescents' interpretation and management of online social experiences (Li et al., 2022; Zhu et al., 2021).

The findings concerning childhood trauma also support the developmental perspective that adverse early experiences may have consequences extending into adolescents' digital relationships. Total childhood trauma was positively associated with cybervictimization, cyberbullying perpetration, and total cyberbullying. This result is consistent with Cao and colleagues, who found a significant association between childhood trauma and adolescent cyberbullying and identified emotional intelligence and online social anxiety as sequential mediating mechanisms in this relationship (Cao et al., 2023). Their findings suggest that childhood trauma may undermine capacities that are especially important for navigating online social environments, including emotional understanding, emotional regulation, and confidence in social interaction. Adolescents with histories of maltreatment may therefore have greater difficulty coping constructively with online conflict, interpreting ambiguous digital communication, or managing distress arising from interpersonal rejection.

The present findings are also compatible with evidence demonstrating close relationships among adverse childhood experiences, attachment, and emotion regulation. Araujo and colleagues emphasized that childhood adversity can disrupt attachment processes and emotional regulation across development (Araujo et al., 2026). Exposure to abuse or neglect may shape internal expectations that interpersonal relationships are unsafe, unpredictable, or rejecting. Such expectations can increase vigilance to threat, reduce interpersonal trust, and interfere with adaptive coping. Within online communication, these developmental vulnerabilities may result in heightened sensitivity to perceived humiliation, stronger emotional responses to provocation, or greater use of aggressive behavior as a defensive or retaliatory strategy. The present results therefore support the interpretation that childhood trauma may be associated with cyberbullying partly because it alters the developmental foundations of interpersonal functioning.

Among the dimensions of childhood trauma, emotional abuse showed the strongest relationship with total

cyberbullying and was also strongly associated with both cybervictimization and cyberbullying perpetration. This finding is particularly meaningful because emotional abuse directly targets a child's psychological sense of worth, acceptance, and interpersonal security. Repeated humiliation, rejection, criticism, intimidation, or emotional degradation during childhood may contribute to negative self-beliefs and hostile expectations concerning interpersonal relationships. In digital environments, adolescents with such experiences may be especially reactive to criticism or rejection and may interpret online exchanges through previously established expectations of hostility. Yahdi's study similarly linked childhood emotional trauma with cyberbullying among adolescents and examined the roles of parenting styles and anger-related cognitive processes in this relationship (Yahdi, 2025). This provides relevant support for the present finding and suggests that emotional trauma may increase the probability of cyberbullying through persistent affective and cognitive patterns involving anger, rejection sensitivity, and maladaptive interpersonal responses.

Emotional neglect was also positively associated with all cyberbullying outcomes. This result may reflect the importance of emotional availability and responsive caregiving for the development of self-worth, trust, and interpersonal competence. Children who experience emotional neglect may receive insufficient validation, support, or assistance in understanding and regulating emotions. These deficits may later contribute to difficulties managing conflict or seeking support during stressful peer interactions. Topino and Gori found that childhood neglect was associated with self-conception and attachment, highlighting how insufficient caregiving can have enduring consequences for both the individual's view of self and patterns of relating to others (Topino & Gori, 2025). In adolescents, such relational consequences may extend into online settings, where social acceptance, peer evaluation, and interpersonal comparison are particularly salient.

Physical abuse and sexual abuse were likewise positively related to cybervictimization, cyberbullying perpetration, and total cyberbullying. These forms of maltreatment may contribute to difficulties in interpersonal boundaries, trust, emotional regulation, and threat perception. Adolescents exposed to severe childhood adversity may become more vigilant to potential threats or may rely on defensive and aggressive interpersonal strategies when they perceive conflict. In some cases, previous victimization may contribute to involvement in other forms of victimization,

while in others it may increase the likelihood of externalizing behavior toward peers. Cao and colleagues' findings concerning the association between childhood trauma and cyberbullying support the broader conclusion that maltreatment experiences can increase vulnerability to maladaptive online behavior (Cao et al., 2023). The present findings extend this evidence by indicating that several specific forms of abuse are associated with both victimization and perpetration in cyberspace.

Physical neglect showed a somewhat different pattern. It was significantly associated with cyberbullying perpetration and total cyberbullying but was not significantly related to cybervictimization. This may indicate that the psychological consequences of physical neglect are less directly related to becoming the target of online aggression than the consequences of emotional forms of maltreatment. Physical neglect primarily involves failures to provide adequate material care, supervision, or physical necessities, and its effects may manifest through broader behavioral or environmental pathways rather than through heightened sensitivity to interpersonal rejection. Nevertheless, its significant relationship with cyberbullying perpetration suggests that inadequate caregiving and supervision may still increase the likelihood of problematic digital behavior. Reduced parental monitoring may permit greater unsupervised exposure to online environments, while broader disruptions in caregiving may affect behavioral regulation. This interpretation is compatible with the evidence of Charalampous and colleagues showing that parenting processes influence bullying and cyberbullying behavior (Charalampous et al., 2018) and with findings linking neglect to later attachment and self-conception difficulties (Topino & Gori, 2025).

The observed relationships between childhood trauma and cybervictimization also indicate that developmental adversity may increase susceptibility to becoming a target in online environments. Victimization is not caused by characteristics of the victim; however, certain psychosocial vulnerabilities may influence peer dynamics, coping responses, help-seeking, or persistence of victimization. Chan and Wong showed that adolescents employ different coping strategies when experiencing cyberbullying victimization and that these strategies are relevant to how adolescents manage online aggression (Chan & Wong, 2017). Adolescents with trauma histories may have fewer adaptive coping resources or may be less willing to seek support because of previous experiences of interpersonal mistrust. Consequently, they may have greater difficulty

interrupting cycles of online harassment. Importantly, this explanation should not be interpreted as assigning responsibility to victims; rather, it underscores how prior adversity may affect the resources available to adolescents when responding to cyberbullying.

The findings also support the importance of considering cybervictimization and cyberbullying perpetration as related but distinct forms of involvement. The correlations observed in the present study indicate that attachment insecurity and childhood trauma are associated with both domains, suggesting that some underlying developmental vulnerabilities may increase the likelihood of occupying multiple roles in online aggression. This is consistent with the broader cyberbullying literature, which has demonstrated considerable variation in prevalence and role classification across adolescent samples (Brochado et al., 2017). Adolescents may move between victim and perpetrator roles, particularly when online aggression is reciprocal. Developmental factors such as insecure attachment, exposure to maltreatment, and difficulties with emotional and interpersonal functioning may contribute to this overlap.

The broader social context should also be considered when interpreting these findings. Cyberbullying does not occur independently of adolescents' social identities, peer networks, and experiences of inclusion or exclusion. Duarte and colleagues found meaningful relationships among minority status, cyberbullying, and mental health among adolescents (Duarte et al., 2018). Similarly, the systematic review by Abreu and Kenny demonstrated that LGBTQ youth may face distinctive vulnerabilities to cyberbullying and emphasized the importance of targeted prevention and intervention (Abreu & Kenny, 2017). Although the present study did not examine minority identity variables, these findings highlight the importance of recognizing that attachment and trauma operate within broader social contexts. Adolescents with developmental vulnerabilities who also experience social marginalization may face compounded risks in online environments.

The results have important implications for prevention and intervention. The significant associations of both attachment and childhood trauma with cyberbullying suggest that programs focusing exclusively on digital etiquette or punitive responses may be insufficient. Prevention efforts may be strengthened by addressing the relational and developmental processes underlying adolescents' online behavior. Ng and colleagues, in their systematic review and meta-analysis, showed that educational interventions can reduce traditional bullying and

cyberbullying, although outcomes vary across interventions (Ng et al., 2020). The current findings imply that greater attention to family relationships, attachment security, trauma-informed support, emotional competence, and coping skills may enhance such programs. Strengthening adolescents' capacity to seek support and manage interpersonal conflict may be particularly valuable for those with insecure attachment patterns or histories of childhood adversity.

5. Conclusion

Taken together, the results support a developmental-relational interpretation of adolescent cyberbullying. Secure attachment appears to be associated with lower involvement in cyberbullying, whereas avoidant and particularly anxious-ambivalent attachment are associated with greater involvement. Childhood trauma, especially emotional abuse, is also associated with higher levels of cybervictimization and cyberbullying perpetration. These findings are consistent with research demonstrating relationships between parent-child attachment and cyberbullying (Fang et al., 2022; Li et al., 2022), the protective relevance of attachment in the context of cybervictimization (Zhu et al., 2021), the contribution of parenting and peer attachment to cyberbullying behavior (Charalampous et al., 2018), and the association between childhood adversity and cyberbullying (Cao et al., 2023; Yahdi, 2025). They further reinforce evidence that adverse childhood experiences can shape attachment, emotional regulation, and self-conception over time (Araujo et al., 2026; Topino & Gori, 2025). Accordingly, adolescents' cyberbullying involvement should be understood not merely as isolated online misconduct but as behavior embedded within their developmental histories and relational environments.

6. Limitations & Suggestions

The present study had several limitations. First, the cross-sectional correlational design does not permit causal conclusions regarding whether attachment insecurity or childhood trauma leads to cyberbullying involvement. Second, all variables were measured through self-report questionnaires, which may be affected by social desirability, recall bias, underreporting of sensitive experiences, and common-method variance. Third, the participants were male students from the second cycle of secondary education in Babol, which limits the generalizability of the findings to female adolescents, younger students, adolescents who are

not enrolled in school, or populations from other geographical and cultural settings. Fourth, convenience sampling was used because of the practical restrictions prevailing during data collection, thereby reducing the representativeness of the sample. Fifth, childhood trauma was assessed retrospectively, and participants' current emotional states or memory processes may have influenced reporting of earlier experiences. Finally, potentially relevant contextual factors such as parental monitoring of internet use, daily time spent online, social media use patterns, family socioeconomic status, peer support, school climate, and previous exposure to traditional bullying were not examined.

Future studies should employ longitudinal designs to clarify the temporal relationships among attachment patterns, childhood trauma, cybervictimization, and cyberbullying perpetration and to determine whether these relationships remain stable across different stages of adolescence. Research should also include female adolescents and more geographically and socioeconomically diverse samples to improve generalizability. Probability sampling methods should be used when feasible. Future studies could distinguish adolescents who are primarily perpetrators, primarily victims, victim-perpetrators, and adolescents who are uninvolved in cyberbullying to determine whether developmental and relational characteristics differ across these groups. It would also be useful to examine mediating and moderating mechanisms, including emotion regulation, loneliness, rejection sensitivity, social anxiety, empathy, perceived social support, parental monitoring, peer attachment, and school climate. Multi-informant approaches incorporating reports from parents, teachers, or peers, as well as behavioral or digital indicators where ethically appropriate, could further reduce reliance on self-report data and provide a more comprehensive assessment of adolescent online behavior.

From a practical perspective, schools and adolescent mental health services should consider screening for relational and developmental vulnerabilities when developing cyberbullying prevention programs. Interventions could combine digital citizenship education with training in emotional regulation, constructive conflict management, empathy, help-seeking, and safe responses to online harassment. School counselors and psychologists should pay particular attention to adolescents who report insecure interpersonal relationships or histories of childhood adversity, while ensuring that assessment is conducted sensitively and confidentially. Parent-focused programs may

also help caregivers strengthen responsive communication, emotional availability, supervision of online activity, and supportive responses when adolescents disclose cyberbullying experiences. Trauma-informed counseling should be available for adolescents with histories of abuse or neglect, and schools should establish clear, confidential reporting mechanisms so that students experiencing cybervictimization can obtain support without fear of retaliation or stigmatization.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

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

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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