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The Relationship Between Parental Bonding and Eating Disorders in Female High School Students: The Mediating Role of Perfectionism

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ABSTRACT

Background: Eating disorders are among the most common psychological problems in adolescents, especially girls. Investigating the underlying and explanatory factors is of particular importance. The present study aimed to examine the relationship between parental bonding and eating disorders in female high school students, considering the mediating role of perfectionism.

Method: This research was descriptive-correlational in design. The statistical population included all female high school students (second level) in Babolsar during the 2023–2024 academic year. A sample of 215 students was selected using multistage cluster random sampling. The data collection tools were the Parental Bonding Instrument (Parker, 1979), the Frost Multidimensional Perfectionism Scale (Frost, 1990), and the Eating Disorder Diagnostic Scale (Stice, 2000). The data were first analyzed in SPSS 24 for descriptive statistics and data preparation, and then structural equation modeling (SEM) was conducted using AMOS 24.

Results: Maternal bonding (β= –0.59) and paternal bonding (β= –0.22) had significant negative effects on maladaptive perfectionism. In turn, maladaptive perfectionism had a significant positive effect on eating disorders (β = 0.25). The direct effects of maternal (β= –0.13) and paternal bonding (β= –0.03) on eating disorders were not significant. However, the indirect effects of maternal (β= –0.15) and paternal bonding (β= –0.06) on eating disorders through maladaptive perfectionism were statistically significant.

Conclusion: Designing intervention programs and empowerment initiatives for parents and at-risk individuals is essential, as perfectionism can lead to eating disorders. These interventions can help reduce eating disorder-related problems and improve the mental health of students.

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Extended Abstract

Introduction

Adolescence is accompanied by significant changes in body image perceptions and eating patterns and is therefore considered a critical period for the emergence of eating disorders. Research has shown that various individual and interpersonal factors contribute to explaining these disorders. One important interpersonal factor is the parent–child relationship, particularly the construct of parental bonding, which is defined through the dimensions of care and control. Unhealthy bonds can play a crucial role in the development of maladaptive personality traits such as negative perfectionism. On the other hand, perfectionism—especially its negative form—is recognized as a significant risk factor in the formation and persistence of eating disorders. From the perspective of cognitive-behavioral theories and schema therapy, it is expected that adverse parental experiences lead to the formation of maladaptive cognitive patterns such as perfectionism, which in turn make individuals vulnerable to eating disorders. Considering inconsistent evidence regarding the direct relationship between parental bonding and eating disorders, investigating the mediating role of perfectionism in this relationship is important. The present study aims to examine a model in which weak parental bonding is related to eating disorder symptoms in adolescents through the mediation of negative perfectionism.

Method

This descriptive-correlational study utilized structural equation modeling (SEM). The statistical population consisted of female high school students in Babolsar County during the 2023–2024 academic year. Sampling was performed using multistage cluster random sampling. Initially, several girls' schools were randomly selected, and then several classes were randomly chosen within each school. Based on Klein's (2011) recommendation for SEM (20 participants per parameter) and considering potential dropout, 250 participants were selected, with data from 215 ultimately analyzed. Inclusion criteria included being a female high school student and providing informed consent to participate. Exclusion criteria included incomplete questionnaires, withdrawal during data collection, or severe psychological disorders. Data were collected using three validated questionnaires: the Parental Bonding Instrument (Parker, 1979), Frost's Multidimensional Perfectionism Scale (1990), and the Eating Disorder Diagnostic Scale (Stice, 2000). The validity and reliability of these instruments have been confirmed in previous domestic and international studies, and Cronbach's alpha coefficients in the current study were acceptable. After obtaining necessary permissions from the Department of Education, the study was conducted in schools with informed consent from participants. Data analysis was performed using SPSS version 24 and SEM with AMOS version 24.

Results

The final analysis included data from 210 female students. Normality of variables was confirmed through skewness and kurtosis indices. Statistical assumptions such as absence of multicollinearity and independence of errors were examined and confirmed using variance inflation factor (VIF), tolerance index, and Durbin-Watson test. Descriptive and correlational findings indicated a significant negative relationship between parental bonding (both mother and father) and negative perfectionism. Negative perfectionism was positively and significantly correlated with eating disorder symptoms, whereas parental bonding did not have a significant direct relationship with eating disorders. Structural equation modeling via AMOS was used to test the conceptual model. Initially, the model showed weaker fit indices, but after model modification and adding covariance between some error terms, model fit improved. Fit

indices such as GFI = 0.90, AGFI = 0.82, CFI = 0.91, and NFI = 0.90 were all within acceptable ranges, although the AGFI index (0.82) remained slightly above the ideal cutoff. Path analysis revealed that bonding with mother and father negatively and significantly predicted negative perfectionism. Negative perfectionism, in turn, had a significant positive effect on eating disorders. However, parental bonding did not have a significant direct effect on eating disorder symptoms. Bootstrap analysis confirmed that negative perfectionism significantly mediated the relationship between parental bonding and eating disorders. Specifically, weak parental bonds can increase negative perfectionism, which in turn may lead to heightened eating disorder symptoms in adolescent girls.

Conclusion

Findings of the present study demonstrated that weak parental bonding does not have a significant direct effect on eating disorder symptoms but may play an indirect role via negative perfectionism. This finding aligns with theoretical models such as social expectations, social learning, and schema therapy that emphasize the role of dysfunctional parenting styles in the formation of schemas like harsh standards, defectiveness, and shame, which lead to maladaptive perfectionism. Adolescents raised in such environments may resort to unhealthy eating behaviors to seek approval or a sense of control. These results highlight the importance of the mediating role of cognitive constructs in the pathway from parenting to eating disorders. Nevertheless, limitations such as the cross-sectional design, exclusive focus on individual psychological variables, reliance on self-report instruments, and restriction of the sample to non-clinical female adolescents should be considered. To increase external validity, future research is recommended to include more diverse populations and employ longitudinal designs. Practically, training parents in supportive parenting styles and organizing school-based workshops for adolescents focusing on self-acceptance and emotion regulation could be effective in early prevention of eating disorders.

Ethical Considerations

Ethics Code: This study was conducted with official approvals from the Babolsar Department of Education, after providing comprehensive explanations to school principals, counselors, and students and obtaining informed consent from participants. Throughout all stages, ethical principles including confidentiality, anonymity, and voluntary participation were strictly observed.

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Authors' Contributions: First author: Conceptualization, manuscript writing (introduction, discussion, conclusion), editing, project management.

Second author: Project supervision, final manuscript editing.

Third author: Methodology, data collection.

Fourth author: Statistical analyses, software, validation.

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Introduction

Adolescence is characterized by remarkable changes in eating patterns as well as attitudes toward weight and body image. During this stage, many adolescents experience concerns about their weight, body shape, and varying degrees of body dissatisfaction (1). Such physical and psychological changes during puberty can serve as contributing factors to the emergence of eating disorders in adolescents (2).

Eating disorders represent a category of highly complex clinical conditions characterized by abnormal eating patterns, excessive preoccupation with body shape, and distorted body image perception. These disorders significantly impair both physical and psychological functioning (3). The Diagnostic and Statistical Manual of Mental Disorders (DSM) has enhanced the description and understanding of eating disorders by categorizing them into three diagnostic groups: anorexia nervosa (characterized by food restriction and significant weight loss), bulimia nervosa (characterized by excessive food intake within a short period accompanied by inappropriate compensatory behaviors), and binge-eating disorder (characterized by excessive food consumption without inappropriate compensatory behaviors and with relatively less concern about weight and body shape). This disorder primarily affects adolescent girls and young women between the ages of 13 and 25–30 years (3). In non-clinical samples, 7.5% of adolescent girls and 2.1% of adolescent boys have been reported to exhibit eating disorders, confirming the higher prevalence of these disorders among females (4). Therefore, examining the risk factors for eating disorders, which can potentially elicit weight- and shape-related concerns during this sensitive developmental period, may be beneficial for many adolescents who are affected by these public health issues.

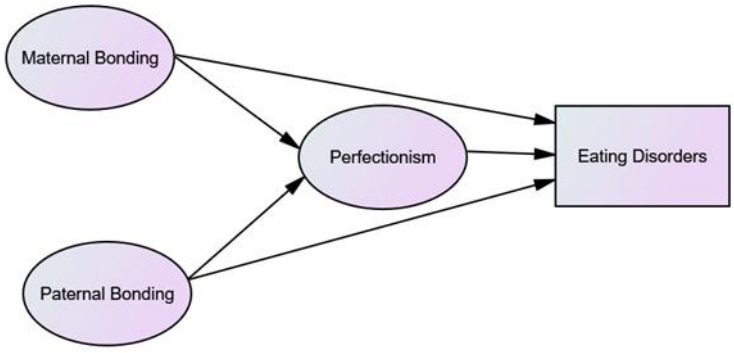
Eating disorders in adolescents appear to be associated with individual vulnerability; however, the influence of the family should also be considered as an important factor related to the onset and maintenance of the pathology (5). Family factors related to the onset, course, and treatment of eating disorders have been extensively studied and reported in the research literature (6). Among the most significant aspects in this regard are the relationships between children and their parents, which are often examined based on attachment theory or the construct of parental bonding (7). Attachment is considered a set of interactive behaviors between a caregiver and a child that serve general functions such as caregiving, stress regulation, enhancing security, and facilitating survival (8), and it plays a significant role in personality development and psychological functioning in adulthood. Parental contribution to parent–child relationships is typically assessed using the Parental Bonding Instrument (9). Parker defines the parental contribution to bonding across two dimensions: care and overprotection. The care dimension encompasses warmth, affection, and empathy to emotional coldness, indifference, and neglect. The overprotection/control dimension includes control, excessive protection, intrusion, lingering in infancy, and prevention of independent behavior to allowing autonomy and self-determination. Developmental psychologists have examined the relationship between attachment processes and individual development (10). Through repeated experiences, children learn to understand the behavior of others. They develop internal working models of their own and others' behaviors and emotions, which can be activated to respond to specific interpersonal transactions (10). If the caregiver acknowledges the child's need for comfort and protection while also respecting the need for independent exploration of the environment, the child is likely to develop an internal model of the self as valuable and self-reliant. However, if the caregiver rejects the child's need for exploration, the child's internal model is likely to consist of a sense

of inadequacy (11). High levels of overprotection/control, combined with an internalized sense of inadequacy, may lead individuals to feel insufficiently competent to manage their responsibilities independently. Consequently, they may attempt to achieve a sense of control and self-affirmation through eating disorder symptoms; however, this also fosters greater loneliness and dependency, ultimately hindering change (12). Insufficient care may also lead an individual to conclude that they are inherently flawed (13) and unvalued by significant others; consequently, to avoid the negative emotions arising from this perception, they may resort to maladaptive strategies for managing stress and negative emotions, including alterations in eating patterns (12). Recent research on eating disorders and attachment patterns has further indicated that maladaptive attachment styles may play a role in the development of eating disorders (7–21).

The effect of parental bonding on individual risk factors associated with eating disorders has been examined in various studies. Perfectionism is one such factor and has been the subject of extensive clinical and theoretical investigation (19, 20). Perfectionism has a longstanding and close relationship with family dynamics and has long been recognized as a contributing factor in the development of eating disorders. In other words, perfectionism may amplify the role of the family in the onset, progression, and maintenance of eating disorders (22, 24). Although parental bonding has been a focus of interest in the context of eating disorders, findings from Montelione et al. (2022) indicated that this variable does not directly lead to the development of eating disorders. This suggests that the relationship between parental bonding and eating disorders is likely mediated through intermediary variables (7). One of these proposed mediating variables is perfectionism. In this regard, Cortés-García et al. (2022), drawing on theoretical frameworks related to personality development, demonstrated that perfectionism can serve a mediating role in this pathway. In other words, dysfunctional parental bonding may create a context for the development of perfectionistic traits in adolescents, which, in turn, increases their vulnerability to eating disorders. This explanation is also consistent with cognitive-behavioral theories, which emphasize the role of maladaptive beliefs and unrealistic standards in the emergence of eating disorders (25, 26).

Given that perfectionistic traits can be observed prior to adulthood and have their roots in childhood, there is a growing interest in studying perfectionism in children and adolescents. Regarding perfectionism, evidence indicates that authoritarian and harsh parenting styles are strongly associated with maladaptive or dysfunctional perfectionism rather than adaptive perfectionism (27). Parents may be overtly critical and strict, with expectations and standards set excessively high. Perfectionistic parents can serve as models for similar attitudes and behaviors. Parental approval of a child's behavior often depends on the child's fulfillment of the parents' performance and behavioral expectations. Failure to achieve such success results in a persistent pattern of parental criticism and the induction of guilt, encouraging the child to accept and internalize these harsh and rigid standards (28). This, in turn, renders children prone to negative self-evaluations in areas where they cannot meet such external and self-imposed standards (29). The argument is that when parents are unable or unwilling to meet their child's needs for affection, autonomy, and emotional security, the child develops perfectionistic traits and behaviors as an attempt to fulfill these unmet needs. For instance, harsh parents who lack adequate care or warmth, including neglectful and abusive parents, may push the child toward perfectionism as a means to escape or minimize further abuse or neglect (30). Furthermore, parents who are excessively concerned with making mistakes may

transmit this concern to their child in the form of overprotection and reinforcement of perceived flaws, thereby facilitating the intergenerational transmission of a perfectionistic mindset (29). Studies have also indicated that parental bonding can predict perfectionism (29–40). When perfectionistic tendencies manifest as doubt, worry, or strict adherence to rigid rules and expectations regarding food, weight, and appearance, they may act as a risk factor for the development of eating disorders (23, 41–43). Overall, the existing literature supports the relationship between perfectionism and eating pathology. Perfectionism appears to predict both the onset and maintenance of eating disorders (23, 41–43, 46–49). Individuals with high levels of perfectionism may be at risk for prolonged illness and poor prognosis (44, 45). An empirical study has shown that perfectionism is a causal risk factor for eating pathology (46). However, findings from Soltani et al. (2020) and Drieberg et al. (2019) indicated no significant relationship between perfectionism and eating symptoms (50, 51). Early identification of eating disorders is crucial. A longer duration of untreated illness can lead to more severe outcomes, including extended hospitalization and reduced recovery rates. Therefore, examining the factors influencing the development of this disorder is essential for implementing preventive and intervention strategies. Indeed, during a typical stage of the life cycle, such as adolescence, family relationships between parents and children can have a significant impact on various aspects of daily life, including the child's relationship with weight and dietary habits. Specifically, regarding eating disorders, the research literature identifies family relationships as an element that can play a significant role in the onset and maintenance of eating disorders. Parental bonding has been widely recognized as a risk factor for eating disorders. However, its influence on determining the psychological pathology of eating disorders has not been thoroughly investigated. Consequently, this study will assess its interaction with eating disorder symptoms. Furthermore, few studies support the mediating role of perfectionism in the relationship between the family environment and eating disorder symptoms. Therefore, the present study can clarify the mediating role of perfectionism in the relationship between parental bonding and eating disorder symptoms. Accordingly, the main research question of this study is to develop a model to determine whether poor parental bonding can lead to maladaptive perfectionism, and, through perfectionistic dysfunction, predict eating disorders in adolescence.



Method

Research Design: The present study was descriptive-correlational and employed structural equation modeling (SEM).

Participants: The statistical population of this study consisted of female high school students in the second grade in Babolsar during the 1403–1402 academic year. The sample was selected using a multistage

cluster random sampling method from schools in Babolsar. After providing explanations about the topic and the importance of the study and obtaining informed consent from the students, the questionnaires were administered. Considering Klein's (52) recommendation that the minimum sample size for SEM is 200 participants, with 20 participants per parameter to be estimated, and to account for potential attrition and increase accuracy, a sample of 250 participants was initially selected. After excluding incomplete questionnaires, data from 215 participants were included in the analysis.

Instruments

1. Parker Parenting Bond Questionnaire (PBI): This 25-item questionnaire was developed by Parker et al. (1979) and assesses adolescents' perceptions of parenting styles before the age of 16, using separate forms for mothers and fathers (9). The instrument includes four subscales: intimate relationship, efforts for dependency, indifference, and encouragement of autonomy, and is scored on a four-point Likert scale (0 to 3). Higher scores indicate supportive parenting, whereas lower scores reflect cold and controlling parenting styles. Both domestic and international studies have supported the reliability and validity of this instrument. In Parker et al.'s study (9), split-half reliability was reported as 0.88 for the care scale and 0.74 for the protection scale in a non-clinical sample. Confirmatory factor analysis also indicated good validity. The correlation coefficient between the two factors in non-clinical samples ranged from r= 0.25 to r= 0.40, indicating good discriminant validity (9). A study by Behzadi et al. (1394) in Iran, which aimed to validate this questionnaire, demonstrated satisfactory convergent reliability and validity. Cronbach's alpha for the subscales ranged from 0.75 to 0.88. Construct validity was assessed using confirmatory factor analysis, with fit indices indicating an acceptable model (RMSEA= 0.06, CFI= 0.91, GFI= 0.90), supporting the appropriateness of the instrument for the Iranian population (53). In the present study, Cronbach's alpha coefficients for the mother form ranged from 0.70 to 0.84 and for the father form from 0.77 to 0.90, indicating adequate internal consistency.

2. Frost Multidimensional Perfectionism Scale (FMPS): This 35-item scale, developed by Frost et al. (1990) based on the multidimensional model of perfectionism, assesses six components: concern over mistakes, doubt about actions, parental expectations, parental criticism, personal standards, and organization (54). Items are rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), with higher scores indicating higher levels of perfectionism. In the Iranian version of the questionnaire, internal consistency for the total scale was 0.86, and for the subscales, it ranged from 0.47 to 0.85. Test-retest reliability over a one-week interval was 0.90 for the total scale and 0.53 to 0.85 for the subscales. Convergent validity was also supported through appropriate correlations with measures of positive and negative perfectionism (55). In their study, Liaghat and Ghasemi (1393) reported an internal consistency of 0.81 and convergent validity via a correlation of 0.28 with the Test Anxiety Questionnaire, which was significant at $p< 0.001$ (56). Frost et al. (1990) reported subscale internal consistency coefficients ranging from 0.73 to 0.93 and an overall internal consistency of 0.90. Convergent and discriminant validity of the FMPS have been established (54). Construct validity was confirmed with factor loadings between 0.49 and 0.82, and convergent validity was further supported by significant correlations with depression (r= 0.54), anxiety (r= 0.51), and cognitive worry (r= 0.60) (54). In the present study, Cronbach's alpha coefficients for the subscales ranged from 0.64 to 0.83, and for the overall negative perfectionism scale,

Cronbach's alpha was 0.89, indicating satisfactory reliability of this instrument.

3. Eating Disorder Diagnostic Scale (EDDS): The Eating Disorder Diagnostic Scale (EDDS) measures symptoms of eating disorders and was developed by Stice et al. (2000) (57). This scale comprises three subscales designed to assess symptoms of anorexia nervosa, bulimia nervosa, and binge-eating disorder, providing diagnostic information for both clinical and non-clinical populations. According to Stice et al. (2004), the EDDS demonstrates strong criterion, predictive, and convergent validity. Its reliability has been confirmed through test-retest methods, and it shows acceptable internal consistency (58). Test-retest Kappa coefficients for diagnosing eating disorders range from 0.80 to 0.90 (57). In the original study by Stice et al. (2000), content validity was established through expert review, and criterion validity was reported as excellent, with concordance rates of 0.99 for anorexia nervosa, 0.96 for bulimia nervosa, and 0.93 for binge-eating disorder (57). In Iran, Khabir et al. (1393) reported internal consistency and Spearman-Brown and Guttman split-half correlations of 0.84, 0.82, and 0.83, respectively (59). The scale demonstrated good agreement with clinical diagnoses, confirmatory factor analysis, and item-total correlations. Construct validity assessed via confirmatory factor analysis revealed appropriate factor loadings, and model fit indices—including GFI, AGFI, NFI, CFI, IFI, and TLI—exceeded 0.90, with RMSEA = 0.06, indicating satisfactory model fit and alignment of items with the intended construct (59). Therefore, the EDDS demonstrates good reliability and validity in Iran and can be used in both clinical and research settings for the assessment of eating disorders. In the present study, Cronbach's alpha for the questionnaire was 0.79, indicating satisfactory reliability.

Procedure: The present study was conducted as follows. After obtaining the necessary approvals from the Babolsar Department of Education, a list of female high schools in the second grade was obtained. Using a multistage cluster random sampling method, several schools were randomly selected, and within each school, a number of classes were randomly chosen. All students in the selected classes were considered as the study sample. Before data collection, the overall objectives of the study were explained verbally and in writing to school principals, counselors, and then to the students. Informed consent was obtained from all participants. It was emphasized that participation was entirely voluntary, and participants could withdraw at any stage. Participants were also assured that their information would remain confidential and would only be reported in aggregate form in the study results. Inclusion criteria were: being a second-grade high school student, female gender, and willingness to participate with informed consent. Exclusion criteria included incomplete questionnaires, withdrawal during completion, or a history of severe psychological disorders or prior psychiatric hospitalization. Questionnaires were administered in person at the schools during scheduled times, individually, under the supervision of the researcher and the school counselor. After collection, the data were entered into SPSS 24 for preliminary analyses and hypothesis testing. Structural equation modeling (SEM) was then performed using AMOS 24 to examine the relationships among the variables.

Results

A total of 215 students participated in this study. During the data screening process (to ensure multivariate normality), five participants were excluded. Therefore, the final sample consisted of 210 students. Among them, 136 were in the tenth grade, 56 in the eleventh grade, and 18 in the twelfth grade. The mean age of the participants was 16.30 years (SD = 0.81). Table 1 presents the means, standard deviations, skewness, kurtosis, and correlation matrix of the study variables.

The results shown in Table 1 indicate that the distributions of the study variables were within the acceptable range, allowing for the use of parametric statistical analyses. Moreover, the data demonstrate that all study variables were significantly correlated with each other, except for parental bonding (mother and father), which did not show a significant correlation with eating disorder symptoms.

Table 1. Mean, Standard Deviation, Skewness, Kurtosis, and Correlation Matrix of the Study Variables

Variable	M	SD	Skewness	Kurtosis	1	2	3	4
Maternal Bonding	41.23	6.37	-0.53	2.80	1			
Paternal Bonding	38.48	7.13	-0.48	0.91	0.20**	1		
Negative perfectionism	64.66	14.97	0.02	-0.11	-0.42**	-0.61**	1	
Eating disorder	22.36	13.89	0.87	0.14	-0.06	0.02	0.35**	1

**P< 0.01

To examine the relationship between maternal and paternal attachment and eating disorders through negative perfectionism, structural equation modeling (SEM) was employed. Prior to conducting SEM, its assumptions were assessed. Regarding the normality of the data distribution, skewness and kurtosis values for all variables fell within the critical range of ±3, indicating that the normality assumption was satisfied. The assumption of no multicollinearity among the predictor variables was also confirmed, as the variance inflation factor (VIF) values for maternal attachment, paternal attachment, and body image were 1.04, 1.04, and 1.01, respectively, all below the critical threshold of 2. Correspondingly, the tolerance values for these variables were 0.96, 0.96, and 0.99, approaching the recommended value of 1.

Next, the independence of residuals for the predictor variables was tested using the Durbin-Watson statistic. Since the Durbin-Watson value was 1.66, which falls within the acceptable range of 1.5–2.5, this assumption was also confirmed.

Initially, the fit indices of the initial model were examined. The results indicated that the initial model did not demonstrate acceptable fit. Therefore, to improve model fit, covariances were specified among certain correlated errors. After applying these modifications, the model fit indices were re-evaluated and showed a considerable improvement. The fit indices for both the initial and modified models are presented in Table 2.

Table 2. Model Fit Indices

Index	IFI	NFI	CFI	AGFI	GFI	X^2/DF	RMSEA
Initial Model	0.72	0.78	0.81	0.74	0.82	4.75	0.13
Modified Model	0.91	0.90	0.91	0.82	0.90	3.09	0.10
Acceptable Range	<0.90	<0.90	<0.90	<0.90	<0.90	<3	<0.08

The fit indices of the modified model, presented in Table 2, indicate a relatively satisfactory model fit. Absolute fit indices, including the Goodness-of-Fit Index (GFI) and Adjusted Goodness-of-Fit Index (AGFI), as well as comparative fit indices, including the Comparative Fit Index (CFI), Incremental Fit Index (IFI), and Normed Fit Index (NFI), all fall within the acceptable range. However, the χ^2/df ratio and the Root Mean Square Error of Approximation (RMSEA), which serve as parsimonious fit indices, do not reach the recommended levels, indicating that model parsimony has not been fully achieved.

Figure 1 illustrates the tested research model along with standardized coefficients.

Table 3 presents the results of the direct effects of the predictor variables on the mediators and outcome variable. The results indicate that the direct effect of maternal attachment on negative perfectionism (β= -0.59, p< 0.01) and the direct effect of paternal attachment on negative perfectionism (β= -0.22, p< 0.01) are negative and statistically significant.

Additionally, the direct effect of negative perfectionism on eating disorders (β= 0.25, p< 0.05) is positive and statistically significant. However, the direct effect of maternal attachment on eating disorders (β= -0.13, p> 0.05) and the direct effect of paternal attachment on eating disorders (β= -0.03, p> 0.05) are not statistically significant.

Table 4 presents the results of the indirect effects of the predictor variables on the outcome variable through the mediators using the bootstrap method.

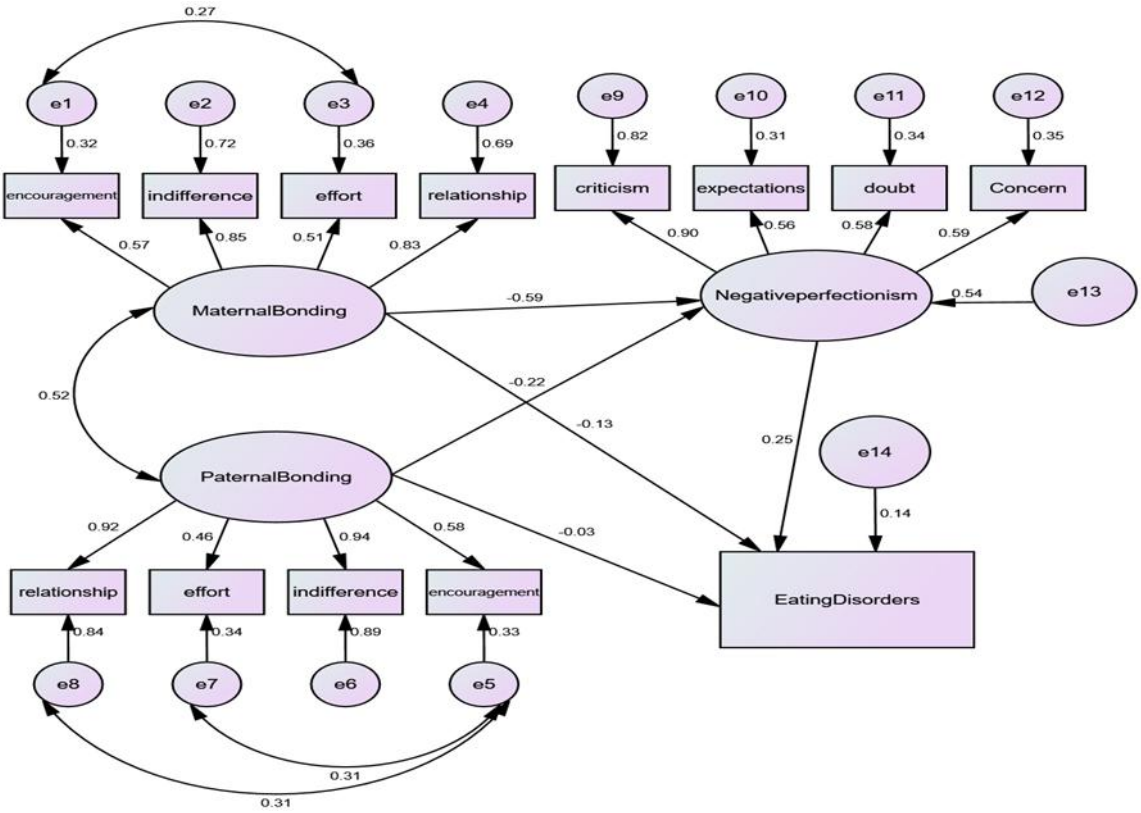


Figure 1. Tested Research Model

Table 3. Direct Effects of Predictor Variables on Mediators and Outcome Variable

Independent Variable	Dependent Variable	Standardized Coefficient (β)	Unstandardized Coefficient (B)	t-value	p-value
Maternal Bonding	Negative Perfectionism	-0.59	-0.78	-5.80	<0.01
	Eating Disorder	-0.13	-0.55	-1.14	0.253
Paternal Bonding	Negative Perfectionism	-0.22	-0.21	-2.89	<0.01
	Eating Disorder	-0.03	-0.10	-0.41	0.679
Negative Perfectionism	Eating Disorder	0.25	0.77	2.06	0.039

Table 4. Indirect Effects Using the Bootstrap Method

Predictor Variable	Mediator Variable	Outcome Variable	Bootstrap CI (Lower – Upper)	Effect Size	p-value
Maternal Bonding	Negative Perfectionism	Eating Disorder	-0.325 – -0.004	-0.15	0.047
Paternal Bonding	Negative Perfectionism	Eating Disorder	-0.178 – -0.001	-0.06	0.038

The results presented in Table 4 indicate that the indirect effect of maternal bonding on eating disorders through negative perfectionism (effect= -0.15) and the indirect effect of paternal bonding on eating disorders through negative perfectionism (effect= -0.06) are both statistically significant. Therefore, negative perfectionism mediates the relationships between maternal and paternal bonding and eating disorders.

Discussion

The findings of the present study indicated that weak maternal bonding does not directly predict eating disorder symptoms. Similarly, no direct effect was observed in the relationship between paternal bonding and eating disorders. These results are inconsistent with some previous studies (14–24) but are in line with the findings of others, such as Loth et al. (18), Kerr et al. (15), and Monteleone et al. (7). For instance, Kerr et al. (2021) found that only low maternal acceptance was associated with eating disorder symptoms, whereas low paternal acceptance did not play a significant role (15). Moreover, Monteleone et al. (2019) reported that patients with eating disorders, compared to healthy individuals, perceived lower parental care and higher parental control. However, this attachment style alone was not a significant predictor of eating disorder symptoms. Taken together, these findings suggest that the relationship between parental bonding and eating disorders is likely not simple or linear, but rather influenced by moderating and contextual factors. Monteleone et al. (2019) further demonstrated that the effects of parental bonding styles particularly high maternal control become significant when individuals experienced low levels of emotional care or negative emotional experiences during childhood. This highlights that maladaptive parental bonds become a risk factor for psychological maladjustment only when combined with other adverse developmental experiences. Accordingly, the lack of a direct relationship between parental bonding and eating disorders in the present study may be attributable to the presence of mediating or moderating variables, such as attachment style, emotional experiences, or other contextual factors. These results underscore the necessity of adopting a multifactorial and interactive approach in explaining eating disorders (7).

The findings of the present study indicated that weak parental bonding can directly predict negative perfectionism. This result is consistent with previous research (29, 31, 32, 33). Two prominent theoretical models explaining the origins of perfectionism are the social expectations model and the social learning model, both of which emphasize the role of parents in the development of perfectionism in children (32). The social expectations theory, proposed by Flett et al. (2002), suggests that perfectionism emerges in response to experiences of conditional acceptance from parents (29). Within this framework, parents who set high standards for their children and express affection or approval only when these expectations are met create a context conducive to the development of perfectionistic beliefs in their children (30). This theory is rooted in Missildine's (1963) perspective, which posited that the parents of perfectionistic individuals continually demand higher performance and standards rather than praising their accomplishments. This process can lead to the internalization of parental criticism and the formation of maladaptive cognitive patterns, such as self-blame, heightened sensitivity to failure, and extreme standards (28). Studies by Enns et al. (2002) and Damian et al. (2013) have provided empirical support for this view, demonstrating that parental expectations are primarily associated with adaptive dimensions of perfectionism, whereas parental criticism relates to its maladaptive dimensions (39, 40). According to the social learning theory, perfectionism develops through observing and imitating parental behaviors. In this model, parents who display perfectionistic behaviors—such as strict performance evaluation, rewarding only complete success, or exhibiting high anxiety toward mistakes—serve as powerful role models for their children. Children observe these behaviors, learn these attitudes and strategies, and gradually internalize them. Although genetic factors may also play a role in the development of personality traits such as perfectionism, research indicates that a substantial portion of

individual differences is attributable to environmental influences, particularly social learning (30). Studies by Vukasović and Bratko (2015), Curran et al. (2020), Appleton et al. (2010), and Hewitt et al. (2017) further support the correlation between dimensions of parental perfectionism and those observed in their children (33, 34, 35, 36).

The findings of the present study regarding the significant relationship between negative perfectionism and eating disorder symptoms are consistent with many previous studies (23, 41–43, 46–49), yet they contrast with the results of some other research, including Soltani et al. (2020) and Drieberg et al. (2019) (50, 51). In Drieberg's study, no direct relationship between perfectionism and eating disorders was observed, and the role of perfectionism was explained indirectly through anxiety and depression. Similarly, in Soltani's research, differences in sampling methods, measurement instruments, or statistical structures may have contributed to the discrepancy in findings.

These inconsistencies may arise from variations in the type of perfectionism examined (e.g., distinguishing between adaptive and maladaptive dimensions), sample characteristics (clinical vs. non-clinical), or cultural differences in the definition and experience of performance pressures. In the present study, the focus was on negative perfectionism as a maladaptive construct characterized by excessive self-criticism, concern over mistakes, and unrealistic standards, which, based on theoretical and empirical evidence, plays a prominent role in the development of eating disorders (46).

The role of negative perfectionism in relation to eating disorders can be explained using Young's schema theory of early maladaptive schemas. Controlling and non-supportive parenting styles may lead to the formation of schemas such as "rigid standards," "defectiveness and shame," and "overachievement." These schemas form the foundation of negative perfectionism, prompting the individual to adopt unrealistic standards and engage in chronic self-criticism (42). Under such circumstances, adolescents may engage in unhealthy eating behaviors—such as extreme restriction, rigid dieting, or preoccupation with body shape—in an effort to gain control and approval (42, 46).

The findings of the present study indicate that weak parental bonding does not have a direct significant effect on the manifestation of eating disorder symptoms. However, through the mediation of negative perfectionism, it can provide a pathway for the development of these symptoms in adolescents. This result is consistent with theoretical models and previous empirical findings emphasizing the role of cognitive mediating mechanisms in the influence of parenting experiences on psychological pathology (7, 22, 24, 42). According to the findings of Deas et al. (2010), perceptions of negative parenting styles—particularly high control and low maternal care—are significantly associated with increased early maladaptive schemas, including rigid standards, defectiveness and shame, and failure. These schemas constitute the core components of negative perfectionism, characterized by excessive self-criticism, fear of failure, and the need to meet unrealistic standards. In such contexts, adolescents learn that they are only valuable if they achieve high standards, and any failure or mistake is interpreted as a reflection of their worthlessness. This maladaptive form of perfectionism, marked by excessive concern over mistakes, doubts about actions, and high social expectations, can manifest in behaviors such as strict dieting, binge eating, or food avoidance in pursuit of an "ideal" body image. When faced with triggers related to body image, nutrition, or weight, these behaviors may appear as compensatory actions, food restriction, or extreme dietary control. The development of such patterns can be explained through theoretical frameworks

such as Young's schema therapy and the cognitive model of eating disorders (22, 42). Supporting this conceptual pathway, a clinical study by Cortés-García et al. (2022) demonstrated that the relationship between insecure attachment to the mother and eating disorder symptoms is mediated by mechanisms including negative perfectionism, rumination, and low self-esteem. In this study, maladaptive perfectionism emerged as the strongest mediating variable, indicating that the influence of dysfunctional parenting styles on eating disorders primarily occurs through the formation of unrealistic expectations and chronic self-criticism in adolescents (25).

The findings of the present study indicated that weak parental bonding does not directly predict eating disorder symptoms; however, it can exert a significant effect through the mediation of negative perfectionism. These results are consistent with theoretical models such as the "social expectations" and "social learning" frameworks and align with the schema therapy approach. Specifically, controlling and dysfunctional parenting styles can foster the development of schemas such as "rigid standards" and "defectiveness and shame," which form the foundation of negative perfectionism and, ultimately, increase vulnerability to eating disorders. Accordingly, considering the mediating role of these cognitive constructs can inform the design of effective preventive and therapeutic interventions for adolescents.

Despite the valuable findings of the present study, several limitations should be considered when interpreting and generalizing the results. First, the study employed a cross-sectional design; therefore, causal inferences among variables should be made cautiously. Future research is recommended to utilize longitudinal or experimental designs to examine causal pathways. This study primarily focused on individual-level psychological variables, while interpersonal, cultural, and social factors—such as media pressure, social network influences, cultural norms regarding the ideal body, and even socio-economic variables—may play significant moderating or contextual roles in the development of eating disorders, which were not addressed in this research. Including these factors in future models could provide a more comprehensive understanding of the psychological and social mechanisms underlying eating disorders. The sample was limited to non-clinical female high school students from a single city, which restricts the generalizability of the findings to other age groups, genders (e.g., adolescent boys), and clinical populations (e.g., adolescents with a formal diagnosis of eating disorders). Therefore, conducting similar studies across diverse populations in terms of age, gender, culture, and clinical status could help test the robustness of the proposed model in various contexts. All variables were assessed using self-report measures, which may increase the risk of response bias, including social desirability. Utilizing multi-source assessments or structured interviews in future research could enhance measurement accuracy. From a practical perspective, given the mediating role of negative perfectionism in the pathway between parental bonding and eating disorders, it is recommended to design preventive and educational programs for parents that emphasize supportive, non-critical, and accepting parenting styles. Educating parents about the negative consequences of excessive expectations and extreme perfectionism may help reduce the risk of psychological problems such as eating disorders. Additionally, school-based workshops for adolescents focusing on enhancing self-acceptance, reducing extreme standards, and improving emotion regulation may serve as effective interventions for early prevention.

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