

Original Article

The Mediating Role of Self-Criticism and Perfectionism in the Relationship Between Attachment Styles and Social Anxiety Among High School Students in Bojnurd City

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Abstract

The present study aimed to investigate the relationship between insecure attachment styles (avoidant and anxious) and social anxiety, with the mediating role of self-criticism and perfectionism. This descriptive study employed a correlational path analysis design. The statistical population consisted of all high school students in Bojnurd city, Iran. A total of 288 participants were selected using a multi-stage cluster sampling method. Participants completed a set of measures, including the Hazan and Shaver Attachment Style Questionnaire, the Self-Criticism Scale, the Frost Multidimensional Perfectionism Scale, and the Connor-Davidson Anxiety Inventory. The data were analyzed using SPSS and LISREL software. Results indicated that the indirect effect of avoidant attachment style on social anxiety was mediated by perfectionism ($\beta = 0.30$). The indirect effect of anxious attachment style on social anxiety was mediated by self-criticism ($\beta = 0.78$) and perfectionism ($\beta = 0.24$). The findings of this study support the mediating role of self-criticism and perfectionism in the relationship between insecure attachment styles and social anxiety.

Keywords

Attachment styles
Social anxiety
Self-criticism
Perfectionism

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Introduction

Social anxiety disorder (SAD) is one of the most prevalent anxiety disorders, characterized by excessive and persistent fear of social situations. The onset of SAD typically occurs in childhood or early adolescence, particularly as peer relationships become increasingly important. It is estimated that 8-13% of the general population suffers from SAD (Kessler, et al., 2012; Ruscio, et al., 2008; Mosleh Kholtapeh & Nazari., 2022; Rasul Mufassery et al., 2023). When examining SAD from a dimensional perspective and considering subclinical features, forms of shyness and behavioral inhibition in social situations are observed in over half of the adolescent and young adult population (Aderka et al., 2012). Insecure attachment style has been identified as a significant factor contributing to the development of SAD, according to previous research (Brumariu & Kerns, 2008; Brumariu & Obsuth, 2013; Wang, 2023; Carcedo,

et al., 2023; Mammadova, 2023).

Attachment style was first described by Bowlby (Ainsworth, 1982) as a biobehavioral motivational control system designed to monitor the proximity of familiar caregivers and seeking their support for survival. This system is particularly activated in situations of threat or distress. The caregiver's response in these situations determines the child's physical safety and, ultimately, their internal sense of security. Repeated experiences with caregivers are organized into internal working models of self and attachment figure, which guide the operation of the attachment system and reflect the child's expectations for future interpersonal relationships (Ainsworth, 1982). Three types of primary attachment styles have been traditionally described for children, but they also adequately describe adults: Avoidant, Anxious and Secure. Avoidant (also called dismissing or fearful) individuals typically had cold and unresponsive caregivers during childhood. They are uncomfortable

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with closeness in relationships and tend to overvalue independence. Anxious (also called preoccupied or ambivalent) individuals experienced inconsistent caregiving in childhood. They have a strong need for close relationships but experience intense and persistent fear of abandonment and often perceive people as "not being there enough" for them. Secure individuals are characterized by a sense of comfortable closeness and the ability to rely on others. These different attachment patterns are used to guide the ways in which interpersonal relationships are formed throughout life and are strongly associated with the development of various forms of psychopathology (Blatt & Levy, 2003). Early life experiences can lead individuals to perceive themselves as inferior, unwanted, and weaker in social situations, and to perceive others as rejecting (Brumariu & Obsuth, 2013; Ollendick & enoit, 2012). These behaviors lead to the development of shame and avoidance of others throughout development, which further reinforces anxiety in social domains (Weisman et al., 2011).

In addition to attachment style, identifying mediating variables is crucial for understanding and treating social anxiety. While previous research has highlighted perfectionism and self-criticism as key factors in the development of social anxiety (Lazarus & Shahar, 2012), their mediating role in the relationship between insecure attachment styles and social anxiety has not been explored. It is important to note that although these variables are considered personality traits, research suggests that they can be treated with psychotherapy (Kiel, 2024).

Self-criticism involves the harsh and punitive judgment and self-evaluation (Lazarus & Shahar, 2018; Khosravi et al., 2022). Highly self-critical individuals are particularly sensitive to rejection and criticism from others and are more likely to evaluate performance-related events negatively (Jung & Hong, 2022). Self-criticism is also associated with heightened negative emotions and diminished positive emotions (Gadassi Polack et al., 2021). Beyond its negative impact on daily life, several theoretical models posit self-criticism as a factor contributing to vulnerability to depression and other mental health disorders (Loew et al., 2020). Patients with social anxiety disorder consistently score higher on self-criticism measures compared to healthy control groups (Cox et al., 2002; Iancu et al., 2015). Mikulincer and Shaver (2013) conceptualize self-criticism as a result of insecure attachment experiences.

On the other hand, perfectionism is defined as a multidimensional personality structure that adversely affects psychological and physical functioning across the lifespan (Hewitt & Flett, 1991; Frost et al., 1990). In addition to being a central feature in obsessive-compulsive personality disorder, perfectionism is also observed in other personality disorders and in various clinical conditions, including social anxiety disorder (Ruscio et al., 2008; Pietrabissa et al., 2020; Dobos et al., 2021; Sasagawa & Essau, 2022; Mohammadi & Roshan Chasli, 2021; Ciprovac et al., 2019; Besharat, 2004).

When parental care is insufficient, various forms of attachment insecurity can develop in children, which can contribute to different components of perfectionism (Ariapooran et al., 2022). A clinical review reported higher levels of perfectionism among participants with eating, anxiety, and mood disorders. These findings support the idea that perfectionism is a central feature warranting recognition as both a symptom of illness and a valuable target for intervention (Pinto et al., 2017).

Not all individuals with insecure attachment styles will develop social anxiety disorder. Therefore, identifying the mediating variables that contribute to social anxiety in individuals with insecure attachment styles is crucial. Therefore, the aim of the present study is to investigate the mediating role of self-criticism and perfectionism in the relationship between insecure attachment style and social anxiety.

Method

Participants

The present study was a descriptive correlational study using a path analysis design. The statistical population consisted of all male high school students in Bojnurd city, Iran. Multistage cluster sampling was used to select the sample. In the first stage, four schools were randomly selected from among the male high schools in Bojnurd city. Then, three classes were randomly selected from each school. During school visits, students were informed about the confidentiality of their information and that analyses would be performed anonymously and as a group. At the time of presenting the scales and before completing them, the participants were explained about the type of research and the activity they were supposed to do. Then, a consent form was given to them for using their information, and the data analysis was only performed for those who had given their written consent. The researcher committed to offering an interpretation of the questionnaire results upon request, ensuring adherence to psychological considerations. For this purpose, the researcher's email and phone number were provided to the participants. After completing the questionnaires, the participants were thanked with a gift. The minimum sample size required for structural models is 200 (Abaspour, 2013). Therefore, the present study was conducted on 288 male high school students. The inclusion criteria were: (1) being a male high school student in Bojnurd city, and (2) being between 15 and 18 years old. The exclusion criteria were: (1) failing to complete the questionnaire after receiving it, and (2) missing responses for more than 15 questions. Data collection in this study was conducted using the following instruments:

Instrument

Attachment Styles Questionnaire:

This questionnaire, developed by Hazan & Shaver (1987), has three subscales (secure, avoidant and ambivalent attachment). Cronbach's alpha for the

secure, avoidant and ambivalent subscales was 0.85, 0.84 and 0.85, respectively. The content validity of the Adult Attachment Scale was assessed by measuring the correlation coefficients between the scores of fifteen psychologists. Kendall's coefficients of concordance for secure, avoidant and ambivalent attachment styles were 0.57, 0.61, and 0.80, respectively. The concurrent validity of the Adult Attachment Scale was assessed through the simultaneous implementation of the Interpersonal Problem Scale and Coopersmith Self-Esteem Inventory (CSEI) in a sample of 3 subjects. Pearson correlation coefficients indicated a significant negative correlation between secure attachment style and interpersonal problem subscales ($r = 0.61$ to 0.83) and a significant positive correlation between secure attachment style and self-esteem subscales ($r = 0.39$ to 0.41). These results indicated sufficient validity of the Adult Attachment Scale. In addition, by determining three factors of secure attachment style, avoidant attachment style and ambivalent attachment style, factor analysis results confirmed the construct validity of the Adult Attachment Scale (Besharat, 2000).

Self-Criticism Questionnaire (SCQ):

The Self-Criticism Questionnaire (SCQ), developed by Gilbert et al. (2004), is a 22-item self-report instrument designed to assess levels of self-criticism. It demonstrates good internal consistency with a Cronbach's alpha of 0.81 (Gilbert et al., 2004). Khanipour (2014) validated a 14-item Persian adaptation of the SCQ. This version retains the original instrument's two-factor structure: self-incompetence and self-loathing. Khanipour (2014) also established content validity through expert review and high reliability (Cronbach's alpha = 0.94) for the total score (Shoostari & Khanipour, 2014).

Perfectionism Questionnaire:

The Frost Multidimensional Perfectionism Scale (FMPS) (Frost et al., 1990) is a widely used 35-item self-report measure designed to assess perfectionism across six key dimensions: Concern over Mistakes (9 items): Captures the tendency to worry excessively about making errors. Doubts About Actions (4 items): Evaluates the tendency to question one's choices and actions. Parental Expectations (5 items): Assesses the perceived pressure to meet high parental standards. Parental Criticism (4 items): Measures the perceived level of critical feedback received from parents. Personal Standards (7 items): Evaluates the individual's tendency to set and strive for unreasonably high standards. Orderliness (6 items): Assesses the importance placed on organization, tidiness, and

structure. Participants rate their responses on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The FMPS demonstrates good internal consistency, with subscale coefficients ranging from 0.73 to 0.93 and a total score coefficient of 0.90 (Frost et al., 1990). An Iranian student population study reported test-retest reliability of 0.86 and internal consistency of 0.75 (Abaspour, 2013).

Conover's Social Anxiety Inventory (SPAI):

Conover's Social Anxiety Inventory (SPAI) (Beidel, 1989) is a widely used 17-item self-report measure designed to assess social anxiety or social phobia. It consists of three subscales: Fear (6 items): Captures the emotional experience of fear associated with social situations. Avoidance (7 items): Evaluates the tendency to avoid social situations due to anxiety. Physiological Discomfort (4 items): Assesses the physical symptoms (e.g., sweating, blushing) experienced in social settings. Participants respond on a 5-point Likert scale (Fathi Ashtiani & Dasani, 2008). The SPAI demonstrates strong construct validity, supported by exploratory and confirmatory factor analyses, with all items significantly loading onto their respective subscales. Internal consistency is also satisfactory, with correlations between items and the total score ranging from 0.378 to 0.708 (all significant at $p < 0.01$), and a Cronbach's alpha of 0.869 (Fathi Ashtiani & Dasani, 2008). A study by Selajgha and Bakhshani (2013) reported good test-retest reliability (0.78 to 0.89) in individuals diagnosed with social anxiety disorder. Additionally, high internal consistency was observed in a non-clinical sample, with a Cronbach's alpha of 0.94 (Selajgha & Bakhshani, 2013).

In this research, data analysis was performed at two levels: descriptive and inferential. At the descriptive level, frequencies, percentages, means, and related tables were provided. At the inferential level, correlation coefficient tests, regression analysis, and path analysis were used. Statistical analyses were performed using SPSS and LISREL software.

Results

The average age of the participants in this study was 16.49 years. The highest parental education level was a bachelor's degree (49%), while the lowest was a doctorate (13%). The highest parental income level was categorized as middle income (52%), whereas the lowest was high income (11%). Table 1 presents the dispersion indices and the results of the skewness and kurtosis tests, which were used to assess the normality of the score distribution.

Table 1. Descriptive Statistics and Normality Tests

Component	Mean	Standard Deviation	Skewness	Kurtosis
Avoidant Attachment Style	8.5	0.77	0.85	0.26
Anxious Attachment Style	21.6	0.92	0.171	0.81
Self-Criticism	13.5	0.88	0.194	0.98
Perfectionism	11.2	0.81	0.85	0.275
Social Anxiety	6.5	0.91	0.19	0.566

The mean and standard deviation indices of the variables indicate an adequate spread of the data, and the skewness and kurtosis indices confirm that the distribution of the research variables is normal.

Testing the Theoretical Model and Research Hypotheses:

Table 2. Correlation Matrix of Research Variables

Variable	Avoidant Attachment Style	Anxious Attachment Style	Self-Criticism	Perfectionism	Social Anxiety
Avoidant Attachment Style	1				
Anxious Attachment Style	0.577	1			
Self-Criticism	0.468	0.790	1		
Perfectionism	0.655	0.728	0.770	1	
Social Anxiety	0.526	0.658	0.586	0.745	1

Based on Table (2), all of the relationships have a positive and significant correlation at the 0.01 level. Therefore, the research variables can be analyzed using path analysis. Consequently, we can use path analysis in the LISREL software to analyze the research hypotheses.

Since the correlation matrix serves as the foundation for analyzing causal models, particularly in structural equation modeling, the correlation matrix of the research variables is presented in Table 2. This includes their correlation coefficients and significance levels, which are provided to examine the relationships between the variables before testing the theoretical model.

Direct Effects

Figure 1 shows the tested model of the present study. Table 7 also reports the direct effect coefficients, the t-statistic for each path, and the significance level of the paths.

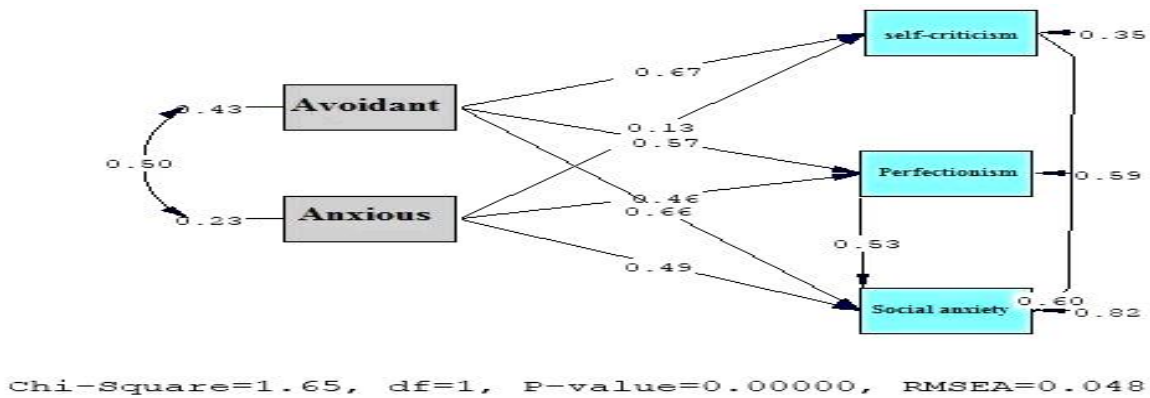


Figure 1. The Tested Model of the Present Study (Standardized Values)

Figure 1 illustrates the tested model of the current research. This structural equation model examines the relationships among avoidant attachment style (AAS), anxious

attachment style (AAS), self-criticism (SC), perfectionism (P), and social anxiety (SA). The model is hypothesized to explain the relationships between these variables.

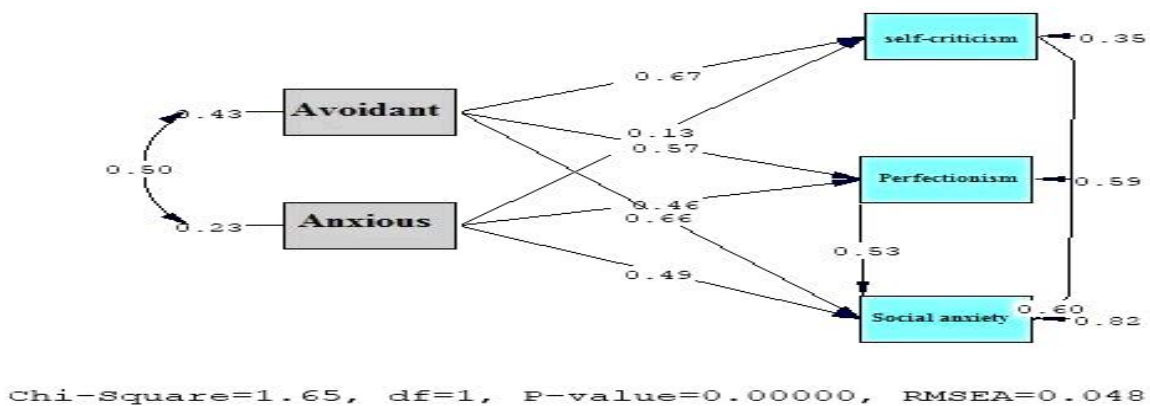


Figure 2. The Tested Model of the Present Study (Significance Values)

Figure 2 illustrates the significance values for the tested model of the current research. The model is a structural equation model that examines the relationships between avoidant attachment style (AAS), anxious attachment

style (AAS), self-criticism (SC), perfectionism (P), and social anxiety (SA). The model is hypothesized to explain the relationships between these variables.

Table 3. Estimation of Direct Effect Coefficients

Variables	Path Coefficient	Standard Error	t-statistic	Result
Avoidant Attachment Style → Self-Criticism	0.67	0.32	6.85	Significant
Anxious Attachment Style → Self-Criticism	0.13	0.41	1.99	Significant
Avoidant Attachment Style → Perfectionism	0.57	0.36	5.58	Significant
Anxious Attachment Style → Perfectionism	0.46	0.41	5.84	Significant
Avoidant Attachment Style → Social Anxiety	0.66	0.35	3.66	Significant
Anxious Attachment Style → Social Anxiety	0.49	0.41	5.97	Significant
Self-Criticism → Social Anxiety	0.60	0.32	6.32	Significant
Perfectionism → Social Anxiety	0.53	0.28	6.15	Significant

According to Table (3), the direct effect of avoidant attachment style on self-criticism (0.67) is significant with a t-statistic of 2.06. The direct effect of anxious attachment style on self-criticism is significant at an acceptable level with a coefficient of 0.13 and a t-statistic of 0.32.

The direct effect of avoidant attachment style on perfectionism (0.57) is significant with a t-statistic of 1.58. The direct effect of anxious attachment style on perfectionism is significant at an acceptable level with a coefficient of 0.46 and a t-statistic of 1.12.

The direct effect of avoidant attachment style on social anxiety (0.66) is significant with a t-statistic of 1.89. The direct effect of anxious attachment style on social anxiety (0.49) is significant at an acceptable level with a t-statistic of 1.19.

The direct effect of self-criticism on social anxiety (0.60) is significant with a t-statistic of 1.88. The direct effect of perfectionism on social anxiety (0.53) is significant at an acceptable level with a t-statistic of 1.90.

Indirect Effects and Examination of the Mediation of Perfectionism and Self-Criticism

One of the features of the path analysis method is the estimation of indirect effects of variables on each other. Indirect effects are the product of the direct effects involved. This feature allows researchers to examine the mediating role of variables in the model under study. Table (4) shows the estimates of the indirect effect coefficients.

Table 4. Estimation of indirect Effect Coefficients

Path	Coefficient	Standard Error	t-statistic	Result
Avoidant Attachment Style → Self-Criticism → Social Anxiety	0.40	-	-	Significant
Anxious Attachment Style → Self-Criticism → Social Anxiety	0.78	-	-	Significant
Avoidant Attachment Style → Perfectionism → Social Anxiety	0.30	-	-	Significant
Anxious Attachment Style → Perfectionism → Social Anxiety	0.24	-	-	Significant

Since indirect effects are only identifiable in standardized values and are the product of direct effects, according to Table (4), the indirect effect of avoidant attachment style on social anxiety through self-criticism is 0.40 and through perfectionism is 0.30. Therefore, self-criticism and perfectionism play a mediating role in the relationship between avoidant attachment style and social anxiety. The indirect effect of anxious attachment

style on social anxiety through self-criticism is 0.78 and through perfectionism is 0.24. Therefore, self-criticism and perfectionism play a mediating role in the relationship between anxious attachment style and social anxiety.

Table 5 shows the standardized coefficients for direct, indirect, and total effects, as well as the explained variance of the variables.

Table 5. Standardized Coefficients of Direct, Indirect, Total Effects, and Explained Variance of Variables

Variables	Path Coefficient	Indirect Effect	Total Effect	Explained Variance
Avoidant Attachment Style → Self-Criticism	0.67	-	0.67	33%
Anxious Attachment Style → Self-Criticism	0.13	-	0.13	8%
Avoidant Attachment Style → Perfectionism	0.57	-	0.57	41%
Anxious Attachment Style → Perfectionism	0.46	-	0.46	28%
Avoidant Attachment Style → Social Anxiety	0.66	0.28	0.94	54%
Anxious Attachment Style → Social Anxiety	0.49	0.41	0.90	58%
Self-Criticism → Social Anxiety	0.60	-	0.60	56%
Perfectionism → Social Anxiety	0.53	-	0.53	39%

According to Table 5, avoidant attachment style (33%) and anxious attachment style (8%) explain the variance in self-criticism. Similarly, avoidant attachment style

(41%) and anxious attachment style (28%) explain the variance in perfectionism. Finally, avoidant attachment style (54%) and anxious attachment style (58%)

collectively, both directly and indirectly, explain the variance in social anxiety. Additionally, self-criticism and perfectionism independently account for 56% and 39% of the variance in social anxiety, respectively.

Discussion

The findings of the present study support the mediating role of self-criticism in the relationship between attachment style and social anxiety. Previous studies have examined the mediating role of self-criticism in the relationship between attachment style and psychological disorders, particularly depression. However, a search by the researcher found no studies that examined the mediating role of self-criticism in the relationship between attachment style and social anxiety. Therefore, the present study aligns with the broader framework of the studies by [DeSantis et al \(2019\)](#), [Mahdavi Rad et al \(2023\)](#), [Rogier et al \(2023\)](#), and [Lincoln et al \(2024\)](#).

The findings of the present study support the mediating role of self-criticism in the relationship between attachment style and social anxiety. While previous research has explored the mediating role of self-criticism in the link between attachment style and various psychological disorders, particularly depression, no studies were identified that specifically investigated its mediation in the attachment style-social anxiety association. Therefore, the present study contributes to a broader framework established by [DeSantis et al. \(2019\)](#), and [Kim et al \(2020\)](#), [Ghaderi et al \(2020\)](#), and [Kamalou \(2020\)](#).

One possible explanation for these findings is that high levels of avoidant attachment predict high levels of self-criticism, which is associated with high levels of internalizing disorders such as social anxiety. Individuals with high levels of avoidant attachment (those who have negative internal working models of others) may be more likely to develop a self-critical personality style, as they tend to internalize rejection from others and may develop self-critical beliefs as a coping mechanism against being rejected. Additionally, the anticipation of rejection due to reliance on others can lead them to protect themselves by avoiding reliance on them. Furthermore, individuals with high levels of self-criticism can become vulnerable to distress when they experience difficulties in achieving their goals (e.g., avoiding rejection, loss of control, and independence) ([De Santis, et al., 2019](#)). These avoidances can set the stage for the development of social anxiety ([Flett et al., 2021](#)).

Additionally, the results showed that anxious attachment was associated with self-criticism. Self-criticism acted as a mediator between anxious attachment and internalizing disorders ([De Santis et al., 2019](#)). This indirect effect aligns with several theories and studies ([Besser & Priel, 2005](#); [Luyten & Blatt, 2011](#)) that found self-criticism to mediate the link between anxious and avoidant attachment styles and depressive symptoms in adults. It is possible that young individuals with high levels of anxious attachment (characterized by a negative internal working model of

self and a desire for interpersonal closeness alongside a fear of rejection or abandonment) develop self-critical attitudes to foster compassion and intimacy while preventing rejection, loss of control, and independence ([Cantazaro & Wei, 2010](#)). In fact, young people with an anxious attachment style may engage in heightened self-criticism to correct perceived wrongdoings in an effort to maintain relationships and gain love and approval ([Cantazaro & Wei, 2010](#)). Supporting this finding, [Murphy & Bates \(1997\)](#) and [Zuroff & Fitzpatrick \(1995\)](#) found that anxious attachment was associated with self-criticism. The feelings of inadequacy stemming from self-criticism lead to a fear of rejection, which further shapes the conditional assumption that "I will only engage in social interactions when I am sure that I will not be rejected." Ultimately, the fear of negative evaluation from others in anxious attachment styles leads to self-criticism and eventually social anxiety.

The present study also confirmed the mediating role of perfectionism in the relationship between attachment style and social anxiety. Previous studies have examined the mediating role of perfectionism in the relationship between attachment style and psychological disorders, particularly depression. However, a search by the researcher found no studies that examined the mediating role of perfectionism in the relationship between attachment style and social anxiety. Therefore, the present study is in line with the broader framework of studies by [Lafontaine et al. \(2019\)](#), [Fang & Wang \(2024\)](#), [Carfagno et al \(2024\)](#), [Kaya et al. \(2023\)](#), and [Dakanalis et al. \(2014\)](#). One possible explanation for these findings is that when parents do not provide sufficient emotional support—often referred to as "not good enough" parenting—children may develop attachment insecurities. These insecurities can lay the foundation for the development of different components of perfectionism ([Ko, et al., 2019](#)).

Individuals with anxious attachment, driven by a fear of rejection and abandonment, may engage in behaviors that reinforce their possessions and successes (promoting perfectionism) and prevent criticism and rejection, in order to gain love, closeness, and admiration from others. The development of perfectionistic behaviors is rooted in childhood, especially in early relationships with caregivers. Child-parent caregiving relationships can evoke feelings of doubt, shame, and an intense desire for attachment and acceptance ([Bowlby, 1982](#)). If these needs and desires are not met, it can lead to perfectionistic behaviors aimed at establishing connection and acceptance, and avoiding humiliation and rejection by significant others ([Hewitt, et al., 2017](#)). It is obvious that these styles of responding to needs and desires will contribute to the development and progression of social anxiety.

When the attachment system is activated, individuals with insecure attachment styles either seek to establish closeness and emotional dependence on others (hyperactive strategies in anxious attachment style) or try to react with self-reliance and independence

(deactivating strategies in avoidant attachment) (Hewitt, et al., 2017). In fact, perfectionistic individuals may oscillate between hyperactive and deactivating strategies when coping with attachment-related threats. By striving to be perfect, flawless, and (seemingly) infallible, they seek connection and approval through inconsistent behaviors such as excessive reassurance-seeking and maintaining distance from others. Additionally, they often employ defensive mechanisms to protect themselves, including hostility, social avoidance, and suppression of emotions (Hewitt, et al., 2017). These defenses can contribute to the development of social anxiety.

Insecure avoidant and anxious attachment styles lead to distrust in oneself and others, creating unrealistic expectations of both. This dynamic contributes to the development and maintenance of negative perfectionism in insecure individuals. Perfectionism causes individuals to perceive themselves as flawed in social situations, fostering an inferiority complex that hinders social interaction. Additionally, by idealizing relationships, they consider their social communication skills inadequate, further emphasizing their shortcomings and catastrophizing potential rejection. The outcome of these mechanisms is that these individuals avoid social interaction unless they are certain that they will not face rejection and can establish a "perfect" relationship. However, since these mechanisms are unrealistic and extreme, they are rarely achievable in real-world scenarios, and the consequence of this failure is the emergence and persistence of social anxiety.

Conclusion

In summary, social anxiety is a prevalent problem among students, and according to the findings of this research, this happens through perfectionism and self-criticism. In fact, students who set high standards for themselves and fail to meet those standards suffer from social anxiety. Additionally, students who have an insecure attachment style begin to blame themselves when they do not perform well in their assignments, further exacerbating their social anxiety. These findings confirm the relationship between insecure attachment styles and social anxiety. The present study has several limitations that should be considered when interpreting and generalizing the results. First, as this was a cross-sectional study, it does not allow for causal inferences. Additionally, the sample consisted of male high school students in North Khorasan province, so generalizing the results to samples with different demographic characteristics such as age, education, and so on is limited. On the other hand, all the instruments used in this study were self-report, which may lead to underestimation or overestimation of responses by the subjects. To address the limitations of the present study, it is suggested that:

Researchers conduct longitudinal studies in this area to provide stronger evidence on the pathways leading to social anxiety. The use of other assessment methods in parallel with self-report questionnaires can increase the

accuracy of the results.

Conflict of interest

No potential conflict of interest was reported by the authors.

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