

Predicting Social Anxiety Among Adolescents Based on Peer Rejection and Friendship Quality: The Mediating Role of Negative Self-Evaluation

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ABSTRACT

Objective: This study aimed to predict social anxiety among adolescents based on peer rejection and friendship quality and to examine the mediating role of negative self-evaluation in these relationships.

Methods and Materials: The study employed a cross-sectional correlational design with mediation analysis. Participants were 368 adolescents aged 13–18 years enrolled in Grades 8–12 in public secondary schools in Ontario, Canada, during the 2025–2026 academic year, selected through multistage cluster sampling. Social anxiety was assessed using the Social Anxiety Scale for Adolescents, friendship quality using the Friendship Quality Questionnaire, peer rejection through a classroom-based sociometric peer-nomination procedure, and negative self-evaluation using the Negative Self-Evaluation Scale. Data were analyzed using Pearson correlation, multiple and hierarchical regression analyses, and PROCESS Model 4 with 5,000 bootstrap resamples. Age and gender were statistically controlled.

Findings: Peer rejection significantly predicted higher negative self-evaluation ($\beta = .30$, $p < .001$), whereas friendship quality significantly predicted lower negative self-evaluation ($\beta = -.35$, $p < .001$). In the final regression model, negative self-evaluation was the strongest predictor of social anxiety ($\beta = .46$, $p < .001$), while peer rejection remained a significant positive predictor ($\beta = .20$, $p < .001$) and friendship quality remained a significant negative predictor ($\beta = -.12$, $p = .002$). The final model explained 46.1% of the variance in social anxiety. Bootstrapping confirmed significant indirect effects of peer rejection through negative self-evaluation ($B = 1.87$, 95% CI [1.23, 2.60]) and friendship quality through negative self-evaluation ($B = -3.37$, 95% CI [-4.57, -2.35]), indicating partial mediation.

Conclusion: The findings indicate that peer rejection and friendship quality are significantly associated with adolescent social anxiety both directly and indirectly through negative self-evaluation, highlighting self-evaluative processes as an important mechanism linking peer experiences with social anxiety.

Keywords: Social anxiety; Peer rejection; Friendship quality; Negative self-evaluation; Adolescents; Mediation

1. Introduction

Adolescence is a critical developmental period characterized by rapid biological, cognitive, emotional, and social transformations that substantially reshape the way individuals perceive themselves and relate to others. During this stage, young people gradually move toward greater autonomy from parents while simultaneously becoming more psychologically invested in relationships with peers, classmates, close friends, and broader social groups. These developmental changes increase the importance of social acceptance, interpersonal competence, self-definition, and perceived belonging, making peer experiences particularly influential in adolescents' psychological adjustment (Uzun, 2021; Vertel et al., 2024). Although adolescence provides substantial opportunities for identity development, increasing independence, and social learning, it also represents a period of heightened vulnerability to emotional difficulties when young people experience interpersonal rejection, social exclusion, unfavorable comparison, or persistent uncertainty regarding how they are evaluated by others. Contemporary research increasingly conceptualizes adolescent mental health as the outcome of interactions among personal characteristics, family processes, school adaptation, peer relationships, and broader social environments rather than as the product of isolated individual vulnerabilities (Lin & Guo, 2024; Zhang et al., 2025). Within this developmental context, social anxiety is particularly important because its core concerns involve social evaluation, belonging, embarrassment, and perceived interpersonal inadequacy, all of which become highly salient during adolescence.

Social anxiety refers to persistent fear, apprehension, or distress in situations in which an individual anticipates being observed, judged, criticized, embarrassed, or negatively evaluated by others. During adolescence, such concerns may occur in classroom participation, conversations with unfamiliar peers, group activities, public performance, social gatherings, and situations involving potential acceptance or rejection. Although a degree of social self-consciousness is developmentally normative, elevated social anxiety may lead adolescents to avoid interpersonal interactions, restrict self-expression, withdraw from potentially rewarding activities, and interpret ambiguous peer behavior as threatening. Over time, these patterns may interfere with social competence, educational participation, friendship development, and psychological well-being. Research on adolescent mental health consistently identifies

interpersonal difficulties as important correlates of internalizing symptoms, emphasizing that strained social relationships can intensify vulnerability during a period when peer approval carries considerable developmental significance (Teigset et al., 2024; Wu & Xia, 2024). Social anxiety may also become embedded in a broader pattern of avoidance, low perceived social competence, and deteriorating interpersonal experiences, thereby creating reciprocal processes in which anxiety contributes to social withdrawal and social difficulties further strengthen anxiety.

The importance of adolescents' social environments is also evident in research examining broader psychosocial outcomes. Positive participation in structured social contexts can support psychological health by strengthening belonging, social connectedness, competence, and opportunities for supportive peer interaction (Wade et al., 2026). Conversely, social isolation and related interpersonal difficulties have been associated with problematic patterns of school attendance and disengagement, demonstrating that weakened social integration may have consequences extending beyond emotional distress to adolescents' educational functioning (Accogli, 2026). Such findings indicate that adolescent adjustment cannot be understood adequately without considering the quality of young people's day-to-day experiences with peers. Peer relationships may serve as a source of emotional security and validation, but they can also expose adolescents to rejection, victimization, exclusion, dominance, ridicule, and threats to social identity. The psychological consequences of these contrasting experiences are likely to be particularly pronounced among adolescents who interpret interpersonal events as evidence of personal inadequacy.

Peer rejection represents one of the most salient adverse interpersonal experiences during adolescence. It refers broadly to being disliked, excluded, avoided, marginalized, or insufficiently accepted by members of a peer group. Peer rejection differs conceptually from a single interpersonal conflict because it often reflects a more generalized social position within the peer ecology and can therefore shape adolescents' perceptions of their social value. Experiences of relational victimization and peer maltreatment have been associated with psychosocial maladjustment, suggesting that repeated negative peer experiences may compromise emotional security and perceptions of social competence (Vera et al., 2023). Similarly, the wider literature on peer victimization indicates that adverse peer experiences during childhood and adolescence can have effects that extend beyond the immediate social context and may be related to

enduring psychological vulnerability (Martínez et al., 2022). Research on bullying also demonstrates that peer adversity is closely intertwined with depressive and other internalizing outcomes, while supportive interpersonal resources may operate as protective factors (Kiing et al., 2025). Thus, being rejected by peers may constitute not merely an unpleasant social event but an experience with implications for adolescents' emerging self-concept and emotional functioning.

Peer rejection may be particularly relevant to social anxiety because rejection provides adolescents with direct interpersonal information that can be interpreted as confirmation that social interaction is dangerous or that they are likely to be judged unfavorably. Adolescents who repeatedly encounter exclusion may become increasingly vigilant to cues of disapproval and may anticipate similar experiences in future interactions. This expectation can produce avoidance, self-monitoring, inhibited behavior, and a heightened fear of negative evaluation. Rejection sensitivity is itself associated with psychological well-being, and self-esteem appears to be an important factor shaping how strongly rejection-related processes affect adjustment (Zülfiqar et al., 2023). Concerns about rejection have also been documented in adolescents coping with health-related differences, where perceived social support and self-esteem appear relevant to how interpersonal rejection concerns are experienced (Shani, 2023). These findings are consistent with the possibility that the effect of peer rejection on social anxiety is not exclusively direct; rather, rejection may alter how adolescents evaluate themselves, and these self-evaluations may subsequently influence the extent to which social situations are perceived as threatening.

At the same time, the presence of a close, supportive friendship may operate as a developmentally important interpersonal resource. Friendship quality encompasses dimensions such as companionship, trust, emotional support, validation, intimacy, assistance, constructive conflict resolution, and reliability. A high-quality friendship may provide adolescents with opportunities to disclose concerns, receive affirming feedback, practice interpersonal skills, and develop a sense of being valued by another person. Systematic evidence indicates that friendship quality is positively associated with adolescent subjective well-being and may therefore constitute a meaningful protective factor in psychological adjustment (Alsarrani et al., 2022). More broadly, personal relationships influence multiple aspects of mental and physical health among young people, reinforcing the importance of supportive social ties during periods of

developmental transition (Kanth, 2022). The formation and maintenance of peer relationships also occur within a wider developmental context that includes attachment experiences within the family, and systematic evidence suggests meaningful connections between parental attachment and adolescents' peer relationship functioning (Delgado et al., 2022).

Importantly, friendship quality may matter not only because adolescents have friends, but because the psychological characteristics of those relationships influence how young people understand their own social worth. Positive friendships can provide reassurance that adolescents are accepted, respected, and capable of maintaining meaningful interpersonal connections. In contrast, friendships characterized by conflict, instability, dominance, insufficient support, or insecurity may offer less protection against internalizing difficulties. Research on friendship power dynamics has shown that characteristics such as dominance within friendships can be related to self-esteem and adolescent internalizing symptoms, emphasizing that friendship processes influence both self-perception and emotional functioning (Schacter et al., 2023). Similarly, evidence suggests that adolescents differ in their susceptibility to friendship quality and that the need for approval may shape the psychological impact of supportive or unsupportive friendships (Clapham et al., 2025). Friendship quality has also been linked with self-esteem and emotional intelligence, suggesting that positive peer relationships are connected to important intrapersonal resources rather than functioning solely as external social supports (Ye, 2022).

The relationship between friendship processes and emotional adjustment becomes especially relevant in contexts involving interpersonal threat. Cyberbullying, for example, can undermine friendship-related functioning and psychological well-being, with self-esteem operating as a meaningful mechanism linking adverse peer experiences to broader adjustment outcomes (Park et al., 2026). Likewise, contemporary peer experiences increasingly occur through digital environments, where social media introduces new opportunities for connection but also expands adolescents' exposure to social comparison, exclusion, feedback, public evaluation, and digitally mediated interpersonal stress (Nesi et al., 2023). Longitudinal evidence regarding digital stress further suggests that adolescents' self-concept clarity and their experiences in online contexts can influence one another over time (Dodan & Negru-Subtrica, 2025). These developments are relevant to social anxiety because the

adolescent peer environment now extends beyond face-to-face interaction, potentially increasing the frequency and visibility of socially evaluative experiences.

A central psychological mechanism that may connect peer rejection and friendship quality with social anxiety is negative self-evaluation. Negative self-evaluation refers to a relatively unfavorable way of perceiving and judging oneself, including tendencies toward self-criticism, perceived inadequacy, low personal worth, and negative interpretation of one's own characteristics. During adolescence, self-evaluations are especially sensitive to interpersonal feedback because the self-concept is undergoing substantial development and peer responses provide socially meaningful information about competence, attractiveness, likability, and belonging. Adolescents who are rejected may internalize those experiences and infer that rejection reflects stable personal shortcomings. In contrast, adolescents who experience supportive friendships may receive repeated interpersonal evidence that they are valued, accepted, and worthy of closeness. Thus, peer rejection and friendship quality may influence social anxiety partly because each contributes to the adolescent's interpretation of the self within social relationships.

The importance of self-evaluative processes is supported by research examining self-esteem as a mediator of adolescent emotional and interpersonal functioning. Self-esteem has been shown to mediate associations between family functioning and anxiety symptomatology, suggesting that contextual experiences may influence anxiety partly by shaping how adolescents evaluate themselves (Farmakopoulou et al., 2024). Similarly, among rural adolescents, self-esteem has been implicated in pathways linking interpersonal beliefs to social anxiety symptoms, indicating that the evaluation of the self may be a central mechanism between social cognition and social anxiety (Saiding et al., 2025). Research on problematic digital gaming has also incorporated self-esteem, social anxiety, and self-concealment within an integrated explanatory model, further supporting the close interplay between social-evaluative concerns and internal perceptions of the self (Yayla et al., 2025). Low self-esteem and social avoidance have additionally been identified as relevant psychological pathways linking peer relationships with maladaptive behavioral outcomes (Shen et al., 2023). Although negative self-evaluation is not identical to low self-esteem, these findings collectively suggest that unfavorable self-perception may help explain why interpersonal difficulties become translated into emotional symptoms.

Negative self-evaluation may be especially important because it provides a cognitive bridge between what happens in adolescents' social environments and how future social situations are anticipated. A rejected adolescent may not necessarily develop substantial social anxiety if the rejection is interpreted as situational, temporary, or unrelated to personal worth. In contrast, rejection may become more psychologically damaging when it is incorporated into a broader negative self-schema, such as beliefs that one is unlikeable, socially incompetent, inferior, embarrassing, or fundamentally unacceptable. Such beliefs can make social situations appear threatening because interactions become opportunities for feared deficiencies to be exposed. This pattern may also increase self-focused attention and anticipatory worry, both of which can inhibit spontaneous interpersonal behavior. In this sense, negative self-evaluation may amplify the social meaning of rejection while reducing adolescents' confidence in their ability to manage interpersonal uncertainty.

Conversely, high-quality friendships may protect against social anxiety partly by weakening negative self-evaluations. Supportive friendships can offer consistent positive feedback, provide evidence of interpersonal competence, and create contexts in which adolescents can experience acceptance without excessive concern about judgment. Peer support has demonstrated psychological value even among adolescents and young people facing significant medical and psychosocial stressors, illustrating the broader importance of being understood and supported by similar others (Rosenberg et al., 2024). Confidence and belonging are also closely connected to the ecology of peer relationships, particularly among adolescents who may face barriers to participation or social inclusion (Alsayed, 2025). These findings highlight that peer relationships influence not only external social participation but also adolescents' internal sense of competence and social worth.

The relevance of self-evaluative and peer processes is also apparent among adolescents experiencing health or developmental challenges. Psychological and psychosocial difficulties related to visible conditions such as acne can affect adolescents' quality of life and social functioning, partly because appearance-related concerns intersect with self-consciousness and perceived evaluation by others (Wianti et al., 2024). Adolescents with visual impairments likewise face distinctive challenges related to well-being and social participation, demonstrating how perceived difference and interpersonal experiences can influence emotional adjustment (Chiracu & Buică-Belciu, 2023). Research

involving adolescents with anorexia nervosa has similarly emphasized the multidimensional nature of psychological functioning, in which personal, social, and contextual factors jointly contribute to symptom severity and subsequent adjustment (Thibault et al., 2023). Taken together, these studies reinforce a broader developmental principle: adolescents' emotional outcomes are shaped not only by objective circumstances but also by how social experiences interact with identity, self-evaluation, perceived acceptance, and access to supportive relationships.

Despite substantial evidence connecting peer adversity, friendship quality, self-esteem, and internalizing symptoms, several conceptual gaps remain. First, studies frequently examine peer rejection or friendship quality independently, although adolescents may simultaneously experience both broader peer-group difficulties and varying levels of support within close friendships. A young person may be rejected by a wider peer group while still maintaining one highly supportive friendship, or may be generally accepted but experience a close friendship characterized by low support or instability. Examining peer rejection and friendship quality concurrently therefore permits a more differentiated understanding of adolescent social ecology. Second, many studies emphasize broad constructs such as psychological well-being, depression, life satisfaction, or general anxiety, whereas social anxiety is particularly dependent on concerns about interpersonal evaluation and may therefore be especially sensitive to peer-related self-appraisals. Third, although self-esteem has received considerable attention, negative self-evaluation offers a more directly maladaptive cognitive construct that may capture how rejection-related experiences are internalized into unfavorable beliefs about the self. Finally, testing mediation is necessary to move beyond documenting associations and toward identifying plausible psychological processes through which interpersonal experiences are linked to social anxiety.

A mediation framework is therefore theoretically appropriate for understanding the proposed relationships. Peer rejection may exert a positive direct effect on social anxiety because recurrent exclusion makes social environments seem less safe and increases expectations of negative evaluation. It may also exert an indirect effect by increasing negative self-evaluation, which subsequently heightens social threat perception. Friendship quality is expected to operate in the opposite direction: supportive friendships may directly reduce social anxiety by increasing social security and opportunities for adaptive interaction, while indirectly reducing anxiety through more favorable

self-evaluation. These pathways are consistent with the broader evidence that peer relationships and self-related psychological resources are interconnected and jointly contribute to adolescent adjustment (Alsarrani et al., 2022; Clapham et al., 2025; Saiding et al., 2025). They also correspond with contemporary developmental perspectives emphasizing the interplay of social context, appraisal processes, and personal psychological resources rather than treating adolescent symptoms as isolated individual characteristics (Alsayed, 2025; Lin & Guo, 2024).

Accordingly, the aim of the present study was to predict social anxiety among adolescents from peer rejection and friendship quality and to examine the mediating role of negative self-evaluation in these relationships.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a quantitative, cross-sectional correlational design to examine the relationships between peer rejection, friendship quality, negative self-evaluation, and social anxiety among adolescents and to determine whether negative self-evaluation mediated the associations of peer rejection and friendship quality with social anxiety. The study population consisted of adolescents enrolled in public secondary schools in Ontario, Canada, during the 2025–2026 academic year. Participants were recruited from eight secondary schools using a multistage cluster sampling procedure. In the first stage, schools were selected from participating school districts to provide representation across different geographic and socioeconomic areas. In the second stage, classes within each participating school were randomly selected, and all students in the selected classes who met the eligibility criteria were invited to participate. A total of 391 students initially agreed to participate and received the study measures. After excluding questionnaires with substantial missing data, patterned responding, or failure to complete the principal study measures, data from 368 adolescents were retained for the final analyses. Participants ranged in age from 13 to 18 years and were enrolled in Grades 8 through 12. Eligibility criteria included being between 13 and 18 years of age, current enrollment in one of the participating secondary schools, sufficient proficiency in English to understand and complete the questionnaires, and provision of informed assent together with parental or guardian consent for participants for whom such consent was required. Adolescents were excluded when they had a

documented cognitive or developmental condition that substantially interfered with their ability to understand the questionnaires or when more than 20% of responses on the study measures were missing.

Data collection was conducted during regular school hours in classrooms or other designated quiet spaces within the participating schools. School administrators and teachers were informed about the purpose and procedures of the study before recruitment began. Adolescents were informed that participation was voluntary, that participation or refusal would have no effect on their academic standing or relationship with the school, and that they could discontinue participation at any time without penalty. Questionnaires were administered using standardized instructions, and participants completed the measures independently. To reduce potential order effects, the measures were presented in a standardized questionnaire package, and participants were instructed to respond according to their experiences during recent months and their current perceptions of peer relationships and themselves. Completion of the full assessment required approximately 30–40 minutes. Participant names were not recorded on the questionnaires, and identification codes were used to link study responses where necessary. All information was treated confidentially and used exclusively for research purposes. The study procedures were conducted in accordance with the ethical principles governing research involving human participants in Canada, including the principles of respect for persons, concern for welfare, and justice.

2.2. Measures

Social anxiety was assessed using the Social Anxiety Scale for Adolescents (SAS-A), developed by La Greca and Lopez. The SAS-A is a widely used self-report measure designed specifically to evaluate social anxiety symptoms during adolescence. The instrument consists of 22 items, of which 18 contribute to the assessment of social anxiety and four are filler items. The 18 scored items represent three dimensions: Fear of Negative Evaluation, Social Avoidance and Distress in New Situations, and Generalized Social Avoidance and Distress. Participants indicate how characteristic each statement is of them using a five-point Likert-type response format ranging from 1, indicating that the statement is not at all characteristic, to 5, indicating that it is characteristic all of the time. Scores on the 18 substantive items are summed to generate a total social anxiety score, with higher scores indicating greater social

anxiety. The SAS-A has been extensively used in adolescent populations and has demonstrated a stable multidimensional structure as well as satisfactory internal consistency, test–retest reliability, and construct validity. In the present study, the total SAS-A score was used as the primary outcome variable because the objective was to examine overall social anxiety rather than separate symptom dimensions. Internal consistency of the total scale and its dimensions was evaluated in the present sample using Cronbach's alpha and McDonald's omega coefficients.

Peer rejection was assessed through a classroom-based sociometric peer-nomination procedure. Sociometric assessment was selected because peer rejection is inherently relational and can be assessed more directly through the collective perceptions of an adolescent's peer group than exclusively through individual self-report. Participants received a roster containing the names of participating classmates and were asked to nominate classmates with whom they least preferred to spend free time, work collaboratively, or interact socially. The number of negative nominations received by each participant was calculated and standardized within the relevant classroom to account for differences in classroom size and the number of participating students. Higher standardized scores represented greater levels of peer rejection. To protect participants and minimize potential discomfort, individual nominations were kept strictly confidential, students were not informed of their own or other students' sociometric scores, and teachers and school personnel did not receive individual-level peer-rejection results. Sociometric scores were used only for statistical analysis and were stored separately from personally identifying information.

Friendship quality was measured using the Friendship Quality Questionnaire (FQQ) developed by Parker and Asher. The FQQ is a 40-item self-report instrument that assesses adolescents' perceptions of the characteristics and quality of a close friendship. Before completing the questionnaire, each participant was instructed to think of one person whom they considered a best or very close friend and to answer all items with reference to that friendship. Items are rated using a five-point Likert-type scale ranging from 1, indicating “not at all true,” to 5, indicating “really true.” The questionnaire assesses several central components of friendship, including companionship and recreation, validation and caring, help and guidance, intimate disclosure, conflict resolution, and conflict and betrayal. Previous research has supported the reliability and validity of the questionnaire for assessing perceived friendship

quality, and its dimensions reflect both supportive and conflict-related features of close peer relationships. Negatively worded conflict-related items were reverse-scored when calculating the overall positive friendship-quality index so that higher total scores consistently represented more supportive, secure, and satisfying friendships. The total friendship-quality score was used in the principal analyses, while the internal consistency of the instrument was examined in the study sample.

Negative self-evaluation was assessed using the Negative Self-Evaluation Scale (NSES), developed to provide an integrated assessment of maladaptive negative evaluations of the self. The measure was developed from research demonstrating substantial common variance among self-criticism, shame, and low self-esteem and was designed to capture the broader tendency to evaluate oneself negatively rather than treating these closely related constructs as completely independent processes. Participants rated each statement according to the extent to which it reflected their typical thoughts and feelings about themselves. Item scores were combined to produce an overall negative self-evaluation score, with higher scores representing a stronger tendency toward unfavorable self-judgment, perceived personal inadequacy, and self-critical evaluation. In the present study, negative self-evaluation was conceptualized as the psychological mechanism through which adverse peer experiences and the quality of close friendships could be associated with adolescents' social anxiety. This conceptualization is consistent with cognitive models proposing that concerns about undesirable or deficient aspects of the self are closely connected to social-evaluative anxiety and fears of scrutiny. Research on negative self-representation has similarly shown that concerns about exposing negatively perceived personal characteristics are strongly related to social anxiety. The internal consistency of the NSES was calculated for the present sample before hypothesis testing.

A brief demographic questionnaire was also administered to collect background characteristics relevant to the description of the sample and statistical control. The questionnaire included age, gender, school grade, family structure, and selected indicators of family socioeconomic background. Age and gender were considered as potential covariates because developmental and gender-related differences may be associated with interpersonal experiences and social anxiety during adolescence. Demographic information was collected before administration of the main psychological measures and was

coded anonymously together with the participants' questionnaire responses.

2.3. Data Analysis

Data were analyzed using IBM SPSS Statistics version 29, and mediation analyses were conducted using the PROCESS macro for SPSS. Before hypothesis testing, the dataset was screened for data-entry errors, missing values, univariate and multivariate outliers, and violations of the assumptions underlying the planned statistical procedures. Cases with extensive missing responses on the primary study variables were excluded before analysis. For cases with only a small proportion of missing responses within a scale, scores were handled according to the scoring recommendations applicable to the respective measure. The distributions of peer rejection, friendship quality, negative self-evaluation, and social anxiety were examined using descriptive indices, histograms, Q-Q plots, skewness, and kurtosis. Potential multivariate outliers were evaluated using Mahalanobis distance. Linearity and homoscedasticity were examined through scatterplots and standardized residual plots. Independence of residuals was evaluated using the Durbin-Watson statistic, while multicollinearity among predictor variables was assessed using tolerance values and variance inflation factors. Values of the variance inflation factor below 5.00 and tolerance values above .20 were considered indicative of an acceptable absence of problematic multicollinearity.

Descriptive statistics, including mean, standard deviation, minimum, maximum, frequency, and percentage, were calculated as appropriate to characterize the participants and principal study variables. The internal consistency of the questionnaire measures was examined using Cronbach's alpha and, where appropriate, McDonald's omega. Pearson product-moment correlation coefficients were calculated to determine the direction and magnitude of the bivariate relationships among peer rejection, friendship quality, negative self-evaluation, and social anxiety. The primary hypotheses were subsequently examined using multiple regression and mediation analysis. Social anxiety was specified as the principal dependent variable, peer rejection and friendship quality were entered as predictor variables, and negative self-evaluation was specified as the mediator. The mediation model therefore tested whether greater peer rejection was associated with greater negative self-evaluation and, in turn, higher social anxiety, and whether

higher friendship quality was associated with lower negative self-evaluation and consequently lower social anxiety.

The mediation analysis was performed using PROCESS Model 4, with peer rejection and friendship quality included simultaneously as predictors so that the unique contribution of each interpersonal variable could be estimated while statistically controlling for the other. Negative self-evaluation was entered as the mediating variable and social anxiety as the outcome variable. Age and gender were entered as covariates to reduce the possibility that the hypothesized relationships reflected basic developmental or demographic differences. Unstandardized regression coefficients, standard errors, *t* values, probability values, and 95% confidence intervals were reported for the direct regression paths. The total effects of peer rejection and friendship quality on social anxiety, their direct effects after adjustment for negative self-evaluation, and their indirect effects through negative self-evaluation were estimated separately. Indirect effects were evaluated using nonparametric bootstrapping with 5,000 resamples because bootstrapped confidence intervals do not require the sampling distribution of the indirect effect to be normally distributed. An indirect effect was considered statistically significant when its 95% bootstrap confidence interval did not include zero. The proportion of variance in negative self-evaluation and social anxiety explained by the models was evaluated using the coefficient of determination (R^2). Statistical tests were two-tailed, and the significance level was set at $p < .05$. This analytical strategy permitted simultaneous evaluation of the direct associations of peer rejection and friendship quality with social anxiety and the extent to which these associations operated indirectly through adolescents' negative evaluations of themselves.

Table 1

Descriptive Statistics, Internal Consistency, and Correlations Among the Study Variables (N = 368)

Variable	Possible/Observed Range	M	SD	Cronbach's α	McDonald's ω	1	2	3	4
1. Peer rejection	-2.14–2.73	0.02	0.93	—	—	—			
2. Friendship quality	1.65–4.90	3.62	0.61	.91	.92	-.31***	—		
3. Negative self-evaluation	1.18–4.72	2.74	0.63	.89	.90	.39***	-.43***	—	
4. Social anxiety	21–82	46.82	12.74	.93	.93	.42***	-.38***	.61***	—

As shown in Table 1, all principal study variables demonstrated sufficient variability, and the self-report instruments exhibited high internal consistency. Cronbach's alpha coefficients ranged from .89 for negative self-evaluation to .93 for social anxiety, while McDonald's omega coefficients ranged from .90 to .93, indicating

3. Findings and Results

A total of 368 adolescents were included in the final statistical analyses. Participants ranged in age from 13 to 18 years, with a mean age of 15.46 years ($SD = 1.42$). Of the participants, 192 (52.17%) were girls and 176 (47.83%) were boys. With respect to school grade, 65 adolescents (17.66%) were enrolled in Grade 8, 78 (21.20%) in Grade 9, 80 (21.74%) in Grade 10, 76 (20.65%) in Grade 11, and 69 (18.75%) in Grade 12. Regarding family structure, 275 participants (74.73%) reported living in two-parent households, 68 (18.48%) lived in single-parent households, and 25 (6.79%) reported other family arrangements, including living with extended family members or guardians. Based on participants' reports of parental education, occupational status, and perceived household financial circumstances, 54 adolescents (14.67%) were categorized as having a relatively low socioeconomic background, 253 (68.75%) as having a middle socioeconomic background, and 61 (16.58%) as having a relatively high socioeconomic background. Preliminary examination of the demographic variables indicated that the sample represented adolescents across all targeted secondary-school grades and included sufficient variability in age and family background for the planned analyses. No statistically meaningful association was found between missing questionnaire responses and age, gender, or school grade among the initially recruited participants, suggesting that exclusion of incomplete cases was unlikely to introduce substantial systematic bias into the final analytic sample.

satisfactory to excellent reliability of the measures in the present sample. The correlational findings were consistent with the hypothesized directions. Peer rejection had a statistically significant negative association with friendship quality ($r = -.31$, $p < .001$), indicating that adolescents who received more peer-rejection nominations tended to perceive

the quality of their close friendships as poorer. Peer rejection was positively associated with negative self-evaluation ($r = .39$, $p < .001$) and social anxiety ($r = .42$, $p < .001$), suggesting that greater rejection by peers was accompanied by more unfavorable self-evaluations and higher levels of social anxiety. Friendship quality demonstrated significant negative relationships with both negative self-evaluation ($r = -.43$, $p < .001$) and social anxiety ($r = -.38$, $p < .001$). Thus, adolescents who perceived their close friendships as more supportive, validating, intimate, and reliable tended to report fewer negative evaluations of themselves and lower social

anxiety. The strongest bivariate relationship was observed between negative self-evaluation and social anxiety ($r = .61$, $p < .001$), representing a large positive association. This finding indicated that adolescents characterized by stronger self-critical and unfavorable evaluations of themselves were substantially more likely to experience fear of negative evaluation, social avoidance, and distress in interpersonal situations. The magnitude and direction of these correlations provided preliminary empirical support for testing negative self-evaluation as a mediator of the associations between peer relationships and adolescent social anxiety.

Table 2

Multiple Regression Analysis Predicting Negative Self-Evaluation from Peer Rejection and Friendship Quality (N = 368)

Predictor	B	SE	β	t	p	95% CI for B	Tolerance	VIF
Constant	3.01	0.33	—	9.12	<.001	[2.36, 3.66]	—	—
Peer rejection	0.20	0.03	.30	6.52	<.001	[0.14, 0.26]	.87	1.15
Friendship quality	-0.36	0.05	-.35	-7.49	<.001	[-0.45, -0.27]	.86	1.16
Age	0.04	0.02	.08	1.80	.073	[-0.00, 0.08]	.97	1.03
Gender	0.09	0.05	.07	1.68	.094	[-0.02, 0.20]	.98	1.02

Table 2 presents the results of the multiple regression model in which negative self-evaluation was predicted from peer rejection and friendship quality while controlling for age and gender. The overall regression model was statistically significant, $F(4, 363) = 36.00$, $p < .001$, with a multiple correlation coefficient of $R = .533$. The predictors jointly explained 28.40% of the variance in negative self-evaluation, with an adjusted R^2 of .276, indicating that peer relationship experiences accounted for a substantial proportion of individual differences in adolescents' negative self-appraisals even after demographic characteristics were taken into account. Peer rejection emerged as a significant positive predictor of negative self-evaluation ($B = 0.20$, $SE = 0.03$, $\beta = .30$, $t = 6.52$, $p < .001$, 95% CI [0.14, 0.26]). Specifically, for every one-unit increase in the classroom-standardized peer-rejection score, negative self-evaluation increased by approximately 0.20 units when friendship quality, age, and gender were held constant. Friendship quality was also a significant predictor but operated in the

opposite direction ($B = -0.36$, $SE = 0.05$, $\beta = -.35$, $t = -7.49$, $p < .001$, 95% CI [-0.45, -0.27]). Therefore, a one-unit increase in perceived friendship quality corresponded to an estimated 0.36-unit reduction in negative self-evaluation after adjustment for the other variables. Comparison of the standardized coefficients showed that friendship quality had a slightly stronger unique association with negative self-evaluation than peer rejection. Neither age ($B = 0.04$, $p = .073$) nor gender ($B = 0.09$, $p = .094$) reached statistical significance, indicating that the relationships of peer rejection and friendship quality with negative self-evaluation were not attributable primarily to age or gender differences. Furthermore, tolerance values ranged from .86 to .98 and VIF values ranged from 1.02 to 1.16, providing no evidence of problematic multicollinearity. These findings supported the first component of the proposed mediation mechanism because both independent variables significantly predicted the hypothesized mediator.

Table 3

Hierarchical Regression Analysis Predicting Social Anxiety (N = 368)

Model and Predictor	B	SE	β	t	p	95% CI for B
Model 1						
Constant	64.37	7.01	—	9.18	<.001	[50.59, 78.15]
Peer rejection	4.59	0.57	.34	8.05	<.001	[3.47, 5.71]
Friendship quality	-5.85	0.86	-.28	-6.80	<.001	[-7.54, -4.16]

Age	0.31	0.29	.03	1.07	.284	[-0.26, 0.88]
Gender	1.47	0.99	.06	1.48	.139	[-0.48, 3.42]
Model 2						
Constant	36.18	6.60	—	5.48	<.001	[23.20, 49.16]
Peer rejection	2.72	0.52	.20	5.23	<.001	[1.70, 3.74]
Friendship quality	-2.48	0.79	-.12	-3.14	.002	[-4.03, -0.93]
Negative self-evaluation	9.36	0.78	.46	12.00	<.001	[7.83, 10.89]
Age	-0.03	0.26	-.003	-0.12	.904	[-0.54, 0.48]
Gender	0.63	0.89	.02	0.71	.479	[-1.12, 2.38]

Note. Model 1: $R = .522$, $R^2 = .273$, adjusted $R^2 = .265$, $F(4, 363) = 34.08$, $p < .001$. Model 2: $R = .679$, $R^2 = .461$, adjusted $R^2 = .454$, $F(5, 362) = 61.92$, $p < .001$. Change statistics from Model 1 to Model 2: $\Delta R^2 = .188$, $F\text{-change}(1, 362) = 126.09$, $p < .001$. Gender was coded 0 = boy and 1 = girl.

The tested mediation model indicated that both parental psychological control and self-compassion were significantly associated with emotion dysregulation and that emotion dysregulation was, in turn, strongly associated with aggression. The path from parental psychological control to emotion dysregulation was positive and statistically significant, indicating that adolescents exposed to higher levels of guilt induction, emotional manipulation, invalidation, and other psychologically controlling parenting practices reported more severe difficulties in understanding and managing emotional responses. Conversely, the path from self-compassion to emotion dysregulation was negative and statistically significant, showing that adolescents who responded to personal distress with greater self-kindness, mindfulness, and recognition of shared human

imperfection exhibited fewer emotion-regulation difficulties. Emotion dysregulation demonstrated a strong positive path to aggression after both parental psychological control and self-compassion were controlled. At the same time, the direct paths from parental psychological control and self-compassion to aggression remained significant but were substantially reduced in magnitude compared with their corresponding total effects. The pattern represented in the model therefore supported partial rather than complete mediation, indicating that emotion dysregulation constituted an important psychological mechanism through which both adverse parenting experiences and personal self-compassion were associated with aggressive tendencies among Nigerian adolescents.

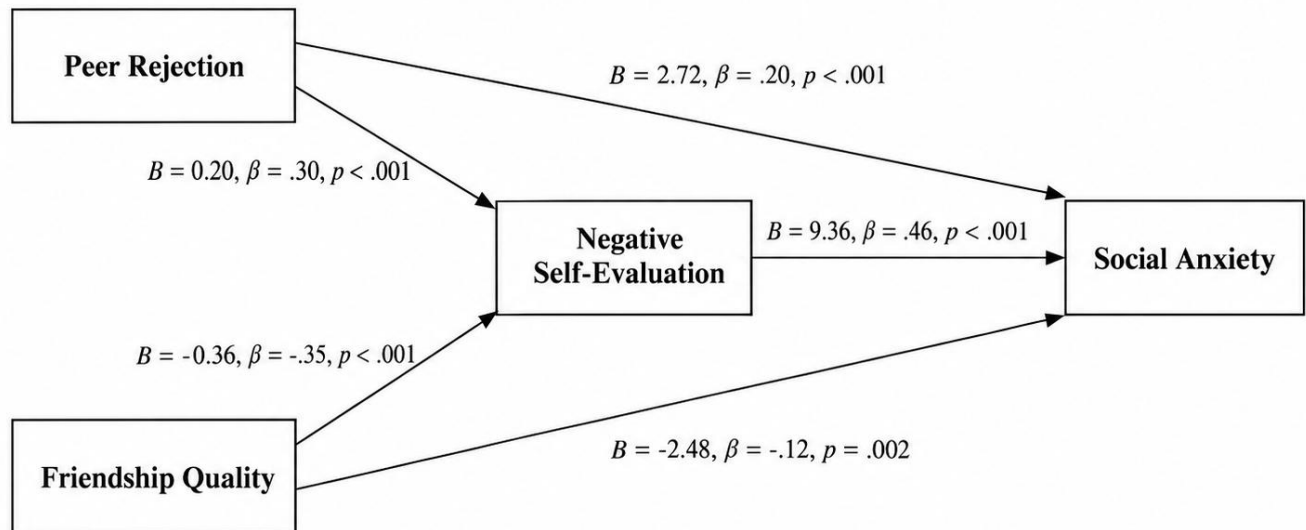
Table 4

Bootstrap Analysis of the Direct, Indirect, and Total Effects of Peer Rejection and Friendship Quality on Social Anxiety Through Negative Self-Evaluation (N = 368)

Predictor and Effect	Effect	SE/Boot SE	95% CI/Bootstrap CI	Standardized Effect	Proportion Mediated
Peer rejection					
Total effect	4.59	0.57	[3.47, 5.71]	.34	—
Direct effect	2.72	0.52	[1.70, 3.74]	.20	—
Indirect effect through negative self-evaluation	1.87	0.35	[1.23, 2.60]	.14	40.74%
Friendship quality					
Total effect	-5.85	0.86	[-7.54, -4.16]	-.28	—
Direct effect	-2.48	0.79	[-4.03, -0.93]	-.12	—
Indirect effect through negative self-evaluation	-3.37	0.57	[-4.57, -2.35]	-.16	57.61%

Figure 1

Mediating Role of Negative Self-Evaluation in the Relationships of Peer Rejection and Friendship Quality with Social Anxiety Among Adolescents



The mediation analysis presented in Table 4 confirmed that negative self-evaluation significantly mediated the associations of both peer rejection and friendship quality with social anxiety. The total effect of peer rejection on social anxiety was positive and statistically significant ($B = 4.59$, $SE = 0.57$, 95% CI [3.47, 5.71]). When negative self-evaluation was included as the mediator, the direct effect remained significant but was reduced to $B = 2.72$ ($SE = 0.52$, 95% CI [1.70, 3.74]). The estimated indirect effect of peer rejection on social anxiety through negative self-evaluation was $B = 1.87$, with a bootstrap standard error of 0.35 and a 95% bootstrap confidence interval ranging from 1.23 to 2.60. Because this confidence interval did not contain zero, the indirect effect was statistically significant. Approximately 40.74% of the total association between peer rejection and social anxiety was transmitted through negative self-evaluation. Thus, adolescents who experienced greater rejection by their peers tended to evaluate themselves more negatively, and this heightened negative self-evaluation was subsequently associated with greater social anxiety. At the same time, the persistence of a significant direct effect indicated that peer rejection was also associated with social anxiety through mechanisms other than negative self-evaluation. A comparable but inverse mediation pattern was observed for friendship quality. The total effect of friendship quality on social anxiety was $B = -5.85$ ($SE = 0.86$, 95% CI [-7.54, -4.16]), while its direct effect after negative self-evaluation was entered into the model was

reduced to $B = -2.48$ ($SE = 0.79$, 95% CI [-4.03, -0.93]). The indirect effect through negative self-evaluation was $B = -3.37$, Boot $SE = 0.57$, 95% bootstrap CI [-4.57, -2.35], confirming a statistically significant mediation effect. Approximately 57.61% of the total relationship between friendship quality and social anxiety was accounted for by negative self-evaluation. In other words, higher-quality friendships were associated with less negative self-evaluation, which in turn was associated with lower social anxiety. The indirect pathway constituted more than half of the overall association between friendship quality and social anxiety, suggesting that adolescents' self-evaluative processes represented a particularly important mechanism through which supportive friendships were associated with reduced social anxiety.

The pattern depicted in Figure 1 summarizes the final mediation model. Peer rejection demonstrated a significant positive association with negative self-evaluation ($B = 0.20$, $\beta = .30$, $p < .001$), whereas friendship quality demonstrated a significant negative association with negative self-evaluation ($B = -0.36$, $\beta = -.35$, $p < .001$). Negative self-evaluation, in turn, had a strong positive association with social anxiety after peer rejection, friendship quality, age, and gender were statistically controlled ($B = 9.36$, $\beta = .46$, $p < .001$). The direct path from peer rejection to social anxiety remained positive and significant ($B = 2.72$, $\beta = .20$, $p < .001$), and the direct path from friendship quality to social anxiety remained negative and significant ($B = -2.48$, $\beta = -.12$, $p = .002$).

.12, $p = .002$). Consequently, the final model supported partial mediation for both predictor variables. The significant positive indirect pathway from peer rejection through negative self-evaluation indicated that rejection experiences were associated with increased social anxiety partly because they corresponded with more negative self-perceptions. Conversely, the significant negative indirect pathway from friendship quality through negative self-evaluation indicated that supportive and high-quality friendships were associated with lower social anxiety partly because they corresponded with less negative self-evaluation. Taken together, the complete model explained 46.10% of the variance in adolescent social anxiety, demonstrating that interpersonal peer experiences and intrapersonal self-evaluative processes jointly accounted for a substantial proportion of variation in social anxiety within the present sample. Overall, the findings supported the proposed conceptual model and indicated that negative self-evaluation represented an important psychological pathway connecting adolescents' peer relationship experiences with their level of social anxiety.

4. Discussion

The present study examined the relationships of peer rejection and friendship quality with social anxiety among adolescents and tested whether negative self-evaluation mediated these associations. The findings supported the proposed conceptual model. Peer rejection was positively associated with both negative self-evaluation and social anxiety, whereas friendship quality was negatively associated with both variables. Negative self-evaluation showed the strongest bivariate relationship with social anxiety and emerged as the strongest predictor of social anxiety in the final regression model. Moreover, the inclusion of negative self-evaluation substantially increased the explained variance in social anxiety, and both indirect pathways were statistically significant. Negative self-evaluation partially mediated the positive relationship between peer rejection and social anxiety and also partially mediated the negative relationship between friendship quality and social anxiety. Taken together, these results indicate that adolescents' interpersonal experiences are related to social anxiety not only directly but also through the way adolescents evaluate themselves in response to their social environments.

The positive association between peer rejection and social anxiety was consistent with theoretical expectations and

with previous research emphasizing the psychological consequences of adverse peer experiences. Adolescence is a developmental period in which social belonging, peer acceptance, and interpersonal evaluation become increasingly salient, and negative peer experiences may therefore carry greater emotional significance than they do in earlier developmental periods (Uzun, 2021; Vertel et al., 2024). The present finding suggests that adolescents who are more frequently rejected or avoided by peers may come to view social interactions as threatening and anticipate that future interpersonal encounters will result in criticism, exclusion, or embarrassment. Such expectations can promote heightened self-monitoring, avoidance, inhibition, and fear of negative evaluation, which are central characteristics of social anxiety. This interpretation is compatible with evidence showing that relational victimization is associated with psychosocial maladjustment among adolescents (Vera et al., 2023) and with broader findings indicating that childhood and adolescent peer victimization may have significant consequences for later psychological functioning (Martínez et al., 2022). Research on bullying likewise identifies peer adversity as an important risk factor for internalizing problems, highlighting the psychological cost of repeated negative social experiences (Kiing et al., 2025).

The present findings also align with research emphasizing rejection sensitivity as an important psychological vulnerability. Adolescents who experience repeated exclusion may become increasingly attentive to ambiguous signs of rejection and may interpret neutral social events as evidence of likely disapproval. Such a pattern could intensify social anxiety even when actual rejection is not occurring. Previous evidence has shown that rejection sensitivity is associated with psychological well-being and that self-esteem may modify the impact of rejection-related experiences (Zülfiqar et al., 2023). Concerns about rejection have also been documented among adolescents facing chronic health-related challenges, where self-esteem and social support appear relevant to the intensity of rejection concerns (Shani, 2023). In the present study, the direct effect of peer rejection on social anxiety remained statistically significant even after negative self-evaluation was included in the model, indicating partial rather than complete mediation. This suggests that rejection may influence social anxiety through multiple pathways. In addition to negative self-evaluation, possible mechanisms may include heightened threat monitoring, reduced perceived social

competence, expectations of humiliation, weakened trust in peers, and avoidance of interpersonal situations.

The negative association between friendship quality and social anxiety was also consistent with previous evidence. Adolescents who reported more supportive, trusting, and satisfying friendships tended to report lower levels of social anxiety. High-quality friendships may provide emotional reassurance, opportunities for self-disclosure, validation of personal experiences, and repeated evidence that the adolescent is valued by another person. These experiences can reduce uncertainty in social interactions and may buffer the effects of broader interpersonal stressors. A systematic review has shown that friendship quality is positively associated with subjective well-being among adolescents (Alsarrani et al., 2022), while broader reviews of personal relationships indicate that supportive interpersonal ties are closely related to mental and physical health in young people (Kanth, 2022). The developmental significance of friendship is also embedded within broader attachment and relational processes, as parental attachment and peer relationships have been shown to be meaningfully connected during adolescence (Delgado et al., 2022). The present results therefore extend this literature by showing that friendship quality is associated specifically with social anxiety and that this association operates partly through self-evaluative processes.

The protective role of friendship quality can also be understood in terms of relational security and social competence. Supportive friendships may create interpersonal environments in which adolescents can practice communication, resolve conflict, receive feedback, and experience acceptance without excessive fear of negative judgment. These repeated experiences may gradually strengthen confidence in social interactions and reduce the expectation that interpersonal encounters will lead to rejection. The significance of friendship dynamics is supported by research showing that dominance within friendships is associated with self-esteem and internalizing symptoms (Schacter et al., 2023). This suggests that the quality and balance of close peer relationships may be as important as the mere presence of friends. Similarly, differential susceptibility to friendship quality has been observed, with need for approval influencing the extent to which adolescents benefit from or are harmed by friendship experiences (Clapham et al., 2025). The present findings are compatible with this perspective because they indicate that friendship quality may shape social anxiety through internal beliefs about the self.

The significant negative association between friendship quality and negative self-evaluation provides additional support for this interpretation. Adolescents who perceived their close friendships as more supportive reported fewer negative evaluations of themselves. This finding is consistent with evidence linking friendship quality to self-esteem and emotional intelligence (Ye, 2022). Close friendships may provide adolescents with interpersonal feedback that counters self-critical beliefs and strengthens the perception that they are socially worthy, likable, and capable of maintaining meaningful relationships. Conversely, low-quality friendships may fail to provide this corrective feedback or may reinforce insecurity through conflict, instability, betrayal, or lack of emotional support. In this way, friendship quality may shape social anxiety partly through its influence on how adolescents understand their own interpersonal value.

The strongest association observed in the study was between negative self-evaluation and social anxiety. In the final regression model, negative self-evaluation was the most powerful predictor of social anxiety, even after controlling for peer rejection, friendship quality, age, and gender. This finding supports cognitive perspectives emphasizing that social anxiety is closely related to unfavorable beliefs about the self. Adolescents who view themselves as inadequate, unlikable, socially incompetent, or deficient may interpret social situations as opportunities for these perceived shortcomings to be exposed. As a consequence, they may anticipate criticism or embarrassment even in relatively neutral interactions. Such self-evaluative processes can intensify self-focused attention, reduce spontaneous behavior, and increase avoidance. The finding is consistent with research showing that self-esteem mediates associations between family functioning and anxiety symptomatology in adolescents (Farmakopoulou et al., 2024). It also aligns with evidence that self-esteem plays an important role in pathways linking interpersonal beliefs with social anxiety symptoms (Saiding et al., 2025). Together, these studies support the broader proposition that self-evaluative processes are central mechanisms connecting social contexts with anxiety-related outcomes.

The mediating role of negative self-evaluation in the relationship between peer rejection and social anxiety was one of the most important findings of the study. Approximately 40.74% of the total association between peer rejection and social anxiety was explained through negative self-evaluation. This suggests that peer rejection may

become psychologically harmful in part because adolescents internalize rejection as information about themselves. Rather than interpreting rejection as situational or temporary, some adolescents may conclude that they are inherently unlikeable, socially deficient, or unworthy of acceptance. These beliefs may subsequently heighten anxiety in future social situations. This interpretation is consistent with research demonstrating that self-esteem can moderate or mediate the effects of adverse interpersonal experiences (Park et al., 2026; Zülfiqar et al., 2023). It is also consistent with evidence that barriers to belonging are connected to self-awareness and confidence within peer contexts (Alsayed, 2025). The present findings therefore suggest that the psychological meaning assigned to rejection may be as important as the rejection experience itself.

The mediation pathway from friendship quality to social anxiety through negative self-evaluation was even more pronounced, with approximately 57.61% of the total association explained through the mediator. This indicates that a substantial proportion of the protective association of high-quality friendship with social anxiety may operate through a more favorable evaluation of the self. Supportive friendships can offer adolescents direct evidence that they are accepted, valued, and capable of sustaining meaningful social bonds. This may reduce self-criticism and weaken beliefs of interpersonal inadequacy, thereby decreasing the likelihood of perceiving social situations as threatening. This result is compatible with findings showing that peer support can contribute to psychological adjustment in adolescents facing challenging life circumstances (Rosenberg et al., 2024). It is also consistent with evidence that friendship quality is associated with subjective well-being (Alsarrani et al., 2022) and that self-esteem is involved in the psychological consequences of peer-related experiences (Schacter et al., 2023; Ye, 2022). The relatively large proportion mediated suggests that interventions targeting self-evaluation may be particularly useful for adolescents whose social anxiety is associated with difficulties in close friendships.

The findings should also be considered within the broader social environment in which contemporary adolescents interact. Peer relationships are no longer confined to face-to-face contexts, as social media and digital communication increasingly extend opportunities for both social support and social evaluation. Online environments may intensify comparison, visibility, exclusion, and sensitivity to interpersonal feedback (Nesi et al., 2023). Digital stress has also been shown to have longitudinal relationships with

adolescents' self-concept clarity, indicating that online experiences may affect how young people understand and evaluate themselves over time (Dodan & Negru-Subtirica, 2025). Similarly, cyberbullying may undermine friendship processes and psychological well-being, with self-esteem playing a mediating role (Park et al., 2026). These findings suggest that the mechanisms observed in the present study may also operate across digital contexts, where peer rejection and friendship quality may have both offline and online expressions.

The present results are additionally compatible with broader evidence showing that social participation and interpersonal connectedness are central to adolescent psychological health. Participation in structured social activities, including sports, may improve mental health and social outcomes by enhancing belonging, competence, and supportive interaction (Wade et al., 2026). Conversely, social isolation and related constructs have been associated with problematic school attendance and broader adjustment difficulties (Accogli, 2026). These patterns suggest that interpersonal integration is important not only for immediate emotional comfort but also for adolescents' engagement with educational and developmental contexts. The current findings contribute to this literature by identifying negative self-evaluation as a possible mechanism through which peer experiences become linked to social anxiety.

The absence of significant effects for age and gender in the final models is also noteworthy. Although developmental and gender differences are often reported in adolescent internalizing symptoms, the present findings suggest that peer rejection, friendship quality, and negative self-evaluation were more directly related to social anxiety than the demographic variables examined. This does not imply that age and gender are irrelevant, but rather that the interpersonal and cognitive processes identified in the model may operate across a relatively broad range of adolescents. Previous research has shown that the relationships among self-esteem, social anxiety, and interpersonal beliefs can vary across gender or contextual conditions (Saiding et al., 2025), while other studies emphasize the importance of individual differences in susceptibility to relational experiences (Clapham et al., 2025). Therefore, the non-significant demographic effects observed here should be interpreted cautiously and may indicate that more complex moderating processes deserve examination.

The results may also be understood within a broader vulnerability framework in which social experiences interact with self-related cognitions to influence psychological

adjustment. Adolescents who face visible health conditions, developmental differences, or other sources of social vulnerability may be particularly sensitive to evaluation by peers. Research on acne has documented substantial psychological and psychosocial consequences related to appearance concerns and quality of life (Wianti et al., 2024), while studies of adolescents with visual impairments similarly emphasize the role of social participation and well-being (Chiracu & Buică-Belciu, 2023). Research involving adolescents with anorexia nervosa also demonstrates that symptom severity is shaped by multiple personal and social factors (Thibault et al., 2023). Such findings reinforce the broader conclusion that adolescent social anxiety is unlikely to arise from a single source; rather, it may reflect the interaction of interpersonal experiences, self-perceptions, and contextual vulnerabilities.

5. Conclusion

The current findings have implications for understanding behavioral forms of maladjustment. Social anxiety and negative self-perception have been implicated in problematic digital gaming, where self-esteem and self-concealment contribute to complex mediated pathways (Yayla et al., 2025). Similarly, social avoidance and peer relationships have been shown to mediate associations between self-esteem and problematic mobile phone use (Shen et al., 2023). These findings suggest that negative self-evaluation and social anxiety may not only represent emotional outcomes but may also contribute to maladaptive coping strategies in which adolescents withdraw from challenging interpersonal environments and seek alternative forms of engagement. Therefore, identifying and addressing negative self-evaluative patterns may have benefits extending beyond the reduction of social anxiety itself.

6. Limitations & Suggestions

Several limitations should be considered when interpreting the findings. First, the cross-sectional design does not permit causal conclusions regarding the direction of associations among peer rejection, friendship quality, negative self-evaluation, and social anxiety. Although the mediation model was theoretically specified, alternative reciprocal pathways are possible; for example, socially anxious adolescents may behave in ways that increase the likelihood of peer rejection or reduce friendship quality. Second, most variables were assessed through self-report, which may introduce shared-method variance, response

bias, or socially desirable responding, although peer rejection was assessed sociometrically. Third, the sample was drawn from secondary schools in Ontario, Canada, which may limit generalizability to adolescents in other cultural, socioeconomic, educational, or geographic settings. Fourth, the study focused on global friendship quality and did not distinguish between different friendship dimensions such as intimacy, conflict, companionship, or betrayal. Finally, potentially relevant variables such as family functioning, temperament, bullying experiences, social media use, attachment style, and clinical history were not included in the model.

Future research should employ longitudinal and prospective designs to clarify the temporal ordering of peer rejection, friendship quality, negative self-evaluation, and social anxiety and to determine whether these relationships are reciprocal across development. Multi-informant designs incorporating adolescent, parent, teacher, and peer reports would reduce reliance on self-report and permit a more comprehensive assessment of interpersonal functioning. Future studies could also examine whether the mediation model differs according to gender, age, socioeconomic status, cultural background, neurodevelopmental characteristics, or level of rejection sensitivity. Distinguishing specific dimensions of friendship quality may help determine which components are most protective against negative self-evaluation and social anxiety. It would also be useful to investigate online peer rejection, cyberbullying, social comparison, and digital friendship quality alongside face-to-face relationships. Experimental and intervention studies could further test whether improving self-evaluation or strengthening friendship skills produces measurable reductions in social anxiety.

From a practical perspective, the findings suggest that prevention and intervention programs for adolescent social anxiety should address both interpersonal experiences and self-evaluative processes. School psychologists, counselors, teachers, and mental health professionals should assess peer rejection, friendship difficulties, and patterns of harsh self-judgment when working with socially anxious adolescents. Programs that strengthen friendship skills, communication, conflict resolution, and peer inclusion may reduce social vulnerability, while cognitive and self-compassion-based strategies may help adolescents challenge global negative conclusions about themselves following rejection. Schools can also implement peer-support systems, cooperative learning activities, anti-exclusion policies, and structured opportunities for positive social participation. Interventions

are likely to be most effective when they do not focus solely on anxiety symptoms but also improve the quality of adolescents' social environments and help them develop a more balanced and adaptive evaluation of themselves.

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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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