

# Paternal Emotional Bonding and Social Anxiety in Middle School Students: The Mediating Role of Self-Concept

Xuan Chen

Philippine Christian University Center for International Education, Manila, 1004, Philippines

**Abstract:** This study examined the relationship between father-child emotional bonding and social anxiety among junior high school students, focusing on the mediating role of self-concept. A sample of 478 students (grades 7–9) from a middle school in China completed self-report measures of paternal bonding, self-concept, and social anxiety. Results showed that paternal emotional bonding was positively correlated with self-concept ( $r = 0.17, p < 0.01$ ) and negatively correlated with social anxiety ( $r = -0.20, p < 0.01$ ). Self-concept was negatively correlated with social anxiety ( $r = -0.16, p < 0.01$ ). Mediation analysis using bootstrap methods revealed that self-concept partially mediated the relationship between father-child bonding and social anxiety (indirect effect  $\beta = -0.03, 95\% \text{ CI} [-0.07, -0.01]$ ). These findings suggest that a strong father-child emotional bond directly reduces adolescent social anxiety and indirectly alleviates it by enhancing positive self-concept. Demographic differences indicated that females reported higher self-concept than males, only children reported stronger paternal bonding and self-concept than those with siblings, and both paternal bonding and self-concept increased with grade while social anxiety decreased. Implications for family education and school-based interventions are discussed.

**Keywords:** Father-child Bonding; Self-concept; Social Anxiety; Middle School Students; Mediation.

## 1. Introduction

Early adolescence, particularly the middle school years, is a critical period for psychosocial development. During this stage, individuals face rapid physical, cognitive, and emotional changes while navigating increasingly complex social environments. One common psychological challenge is social anxiety, characterized by intense fear of negative evaluation, social avoidance, and distress in interpersonal situations[5]. Persistent social anxiety can impair academic performance, peer relationships, and self-esteem, making it a significant concern for educators and mental health professionals.

Among the many factors influencing adolescent social anxiety, the quality of parent-child relationships—especially emotional bonding with fathers—has received growing attention. Attachment theory[2] posits that a secure emotional bond with primary caregivers provides a “secure base” from which children explore the world, fostering emotional regulation and resilience. Conversely, insecure attachment may increase vulnerability to anxiety. While maternal influences have been extensively studied, the unique role of paternal emotional bonding remains underexplored, particularly in non-Western cultural contexts.

Paternal emotional bonding refers to the warmth, emotional support, trust, and mutual responsiveness between a father and his child. Unlike general parenting styles, it emphasizes the affective quality of the relationship[7]. Research suggests that supportive father-child relationships promote positive self-perceptions and reduce internalizing problems[6]. However, the mechanisms through which paternal bonding influences social anxiety are not fully understood.

Self-concept—an individual’s overall perception and evaluation of their abilities, worth, and identity—may serve as a key mediating mechanism. According to Bandura’s social learning theory [1], modeling and feedback from parents

shape children’s self-efficacy beliefs. A positive self-concept helps adolescents cope with social challenges and reduces fear of negative evaluation. Recent cognitive models of social anxiety emphasize that negative self-schemas are central to the maintenance of anxiety symptoms[11]. Additionally, studies have shown that parental emotional support can enhance self-concept clarity, which in turn buffers against social anxiety [13]. Thus, we propose that paternal emotional bonding enhances adolescents’ self-concept, which in turn lowers social anxiety.

Demographic variables such as gender, grade level, and birth order may moderate these relationships. For example, girls often report higher self-awareness, and only children may receive more concentrated paternal attention[4]. Moreover, cultural context (e.g., Chinese collectivist values) may shape the expression and impact of paternal bonding[3]. A recent longitudinal study (2026) also confirmed that perceived father warmth is significantly associated with adolescent social anxiety symptoms [9].

### 1.1. Hypotheses

H1: Paternal emotional bonding is positively correlated with self-concept.

H2: Paternal emotional bonding is negatively correlated with social anxiety.

H3: Self-concept is negatively correlated with social anxiety.

H4: Self-concept mediates the relationship between paternal emotional bonding and social anxiety.

## 2. Method

### 2.1. Participants

A total of 478 junior high school students (grades 7–9) from a middle school in Fujian, China participated. The sample included 229 males (47.9%) and 249 females (52.1%), with

ages ranging from 12 to 15 years. Grade distribution: 284 seventh graders (59.4%), 138 eighth graders (28.9%), and 56 ninth graders (11.7%). Among participants, 282 (59.0%) were only children, and 196 (41.0%) had siblings.

## 2.2. Measures

Paternal emotional bonding was assessed using the Parental Bonding Instrument (PBI; [8]) adapted for fathers. The scale includes two dimensions: care (12 items, e.g., “My father understands my feelings”) and overprotection (13 items, e.g., “My father makes decisions for me”). Items were rated on a 4-point Likert scale (1 = very unlike, 4 = very like). In this study, Cronbach’s  $\alpha$  for the total scale was 0.64.

Self-concept was measured using the Chinese version of the Tennessee Self-Concept Scale (TSCS; revised by Lin, 1990). It consists of 70 items assessing self-worth, self-image, and ideal self on a 5-point scale (1 = completely disagree, 5 = completely agree). Cronbach’s  $\alpha$  was 0.82.

Social anxiety was assessed with the Social Anxiety Scale for Adolescents (SAS-A; La Greca, 1999; Chinese revision by Zhu, 2008). The 13-item scale includes fear of negative evaluation, social avoidance/distress, and anxiety in unfamiliar situations, rated on a 5-point scale (1 = strongly disagree, 5 = strongly agree). Cronbach’s  $\alpha$  was 0.61.

## 2.3. Procedure

After obtaining institutional and parental consent, students completed the questionnaires in their classrooms during regular school hours. The survey was anonymous, and participation was voluntary. Data collection took approximately 30 minutes.

## 2.4. Data Analysis

Descriptive statistics, independent samples t-tests, one-way ANOVA, Pearson correlations, and regression analyses were performed using SPSS 26.0. Mediation analysis was conducted using the PROCESS macro (Model 4) with 5,000 bootstrap samples to estimate indirect effects and 95% confidence intervals [12]. All statistical tests were two-tailed with a significance level of  $\alpha = 0.05$ .

## 3. Results

### 3.1. Descriptive Statistics and Correlations

Table 1 presents means, standard deviations, and Pearson correlations. Paternal emotional bonding was positively correlated with self-concept ( $r = 0.17$ ,  $p < 0.01$ ) and negatively correlated with social anxiety ( $r = -0.20$ ,  $p < 0.01$ ). Self-concept was negatively correlated with social anxiety ( $r = -0.16$ ,  $p < 0.01$ ). Hypotheses H1–H3 were supported.

**Table 1.** Means, Standard Deviations, and Correlations (N = 478)

Variable	M	SD	1
1. Paternal bonding	2.90	0.30	-
2. Self-concept	2.16	0.68	0.17
3. Social anxiety	2.88	0.51	-0.2

\*\*  $p < 0.01$ .

### 3.2. Demographic Differences

Independent samples t-tests showed that females scored significantly higher than males on overall self-concept ( $t = -2.31$ ,  $p = 0.022$ ). No significant gender differences were found for paternal bonding or social anxiety. Only children reported higher paternal bonding ( $t = -2.27$ ,  $p = 0.024$ ) and

self-concept ( $t = -2.17$ ,  $p = 0.030$ ) than those with siblings. One-way ANOVA revealed significant grade differences: as grade increased, paternal bonding ( $F = 15.35$ ,  $p < 0.01$ ) and self-concept ( $F = 14.32$ ,  $p < 0.01$ ) increased, while social anxiety decreased ( $F = 4.81$ ,  $p < 0.01$ ).

## 3.3. Mediation Analysis

Mediation results are shown in Table 2. After controlling for gender, grade, and birth order, paternal emotional bonding significantly predicted self-concept ( $\beta = 0.32$ ,  $t = 3.12$ ,  $p = 0.002$ ). The total effect of paternal bonding on social anxiety was significant ( $\beta = -0.32$ ,  $t = -4.13$ ,  $p < 0.001$ ). When self-concept was entered as a mediator, the direct effect of paternal bonding on social anxiety remained significant ( $\beta = -0.29$ ,  $t = -4.00$ ,  $p < 0.001$ ), and self-concept negatively predicted social anxiety ( $\beta = -0.09$ ,  $t = -2.63$ ,  $p = 0.009$ ). The indirect effect via self-concept was  $\beta = -0.03$  (95% CI [-0.07, -0.01]). Because the confidence interval did not include zero, the mediation effect was significant. The proportion of the total effect mediated was 8.8%, indicating partial mediation. Hypothesis H4 was supported.

**Table 2.** Mediation Model: Direct, Indirect, and Total Effects

Effect type	$\beta$	Boot SE	95% CI	% of total effect
Direct effect (c')	-0.29	0.07	[-0.43, -0.15]	91.2%
Indirect effect (a <b>x</b> b)	-0.03	0.02	[-0.07, -0.01]	8.8%
Total effect (c)	-0.32	0.08	[-0.47, -0.17]	100%

Note: Bootstrap resampling = 5,000. CI = confidence interval.

## 4. Discussion

This study examined the relationship between paternal emotional bonding and social anxiety in Chinese middle school students, with self-concept as a mediator. The findings support all four hypotheses and contribute to understanding how father-child relationships influence adolescent psychological adjustment.

Consistent with attachment theory [2], paternal emotional bonding directly and negatively predicted social anxiety. Adolescents who perceived their fathers as warm, caring, and emotionally available reported lower levels of social fear and avoidance. This aligns with recent findings that supportive fathering protects against internalizing problems [7]; [6]. Furthermore, a 2026 longitudinal study confirmed that perceived father warmth is significantly associated with adolescent social anxiety symptoms [9]. Our results extend this evidence by specifying the mediating mechanism.

The partial mediation via self-concept provides insight into the underlying mechanism. Paternal bonding appears to foster a positive self-concept—including self-worth and a realistic ideal self—which in turn reduces social anxiety. This supports contemporary cognitive models showing that negative self-schemas maintain social anxiety [11]. When fathers provide emotional support and positive feedback, adolescents internalize a sense of competence and value, making them less vulnerable to perceived negative evaluation by peers. Similar findings were reported by Peng et al. [10], who found that father-child attachment influenced adolescent anxiety through neuroticism and peer attachment. Zhou et al. [13] also demonstrated that self-concept clarity mediates the relationship between parental psychological control and

social anxiety. Our study specifically highlights the beneficial role of positive paternal bonding rather than controlling behaviors.

Demographic differences were meaningful. Higher self-concept in girls may reflect earlier maturation of self-awareness and social comparison processes, consistent with Li and Zhang [4]. Only children reported stronger paternal bonding and self-concept, possibly due to concentrated parental resources and attention. The grade-related increase in self-concept and decrease in social anxiety suggest that developmental maturity and accumulated social experience help adolescents cope more effectively with social stressors [5]. Notably, although only children had higher self-concept, their social anxiety levels did not differ from non-only children, suggesting that the protective effect operates through self-concept rather than directly.

#### 4.1. Limitations and Future Directions

Several limitations should be acknowledged. First, the cross-sectional design precludes causal inferences. Although we proposed a theoretically driven mediation model, bidirectional or reverse causation is possible. Longitudinal studies are needed to establish temporal ordering and test reciprocal relations (e.g., [13]). Second, data were collected from a single school in one Chinese city, limiting generalizability to other regions or cultural contexts. Cross-cultural comparisons (e.g., Western individualistic vs. Eastern collectivistic societies) could reveal how paternal bonding operates differently. Third, reliance on self-report measures may introduce social desirability and same-source bias. Future research should incorporate father reports, peer nominations, or behavioral observations. Fourth, the study focused exclusively on father-child bonding; maternal influences, sibling dynamics, and peer relationships were not examined. Given that recent studies highlight the combined effects of both parents[9], future work should include mother-child bonding as a covariate or comparative variable. Finally, the relatively low internal consistency of the PBI ( $\alpha = 0.64$ ) and SAS-A ( $\alpha = 0.61$ ) in this sample suggests caution; future studies may benefit from using updated scales or item refinement.

#### 4.2. Practical Implications

The findings have several practical implications for family education and school-based mental health promotion. First, family intervention programs should encourage fathers to engage in warm, supportive interactions with their children—not merely as disciplinarians or academic supervisors. Workshops on emotional communication and positive parenting can help fathers express care and reduce overprotective control[3]. Second, schools can implement self-concept enhancement interventions (e.g., strength-based activities, cognitive restructuring, goal-setting exercises) to help students build positive self-perceptions, thereby reducing social anxiety[10]. Third, home-school collaboration should be strengthened: teachers can provide feedback on students' social progress, and parents can reinforce self-confidence at home. Given that only children may have higher self-concept but also face unique pressures, tailored support for non-only children is also needed. Finally, because social anxiety decreases with grade, early intervention in lower grades may be particularly effective.

## 5. Conclusion

In conclusion, paternal emotional bonding directly and indirectly reduces social anxiety among middle school students through the partial mediation of self-concept. Female students report higher self-concept than males, but no gender differences exist in paternal bonding or social anxiety. Only children benefit from stronger paternal bonds and higher self-concept than those with siblings. As grade level increases, paternal bonding and self-concept improve, and social anxiety declines. These findings highlight the importance of involving fathers in adolescent mental health promotion and suggest that strengthening self-concept is a viable intervention target. Future longitudinal and cross-cultural research is needed to further elucidate the causal mechanisms and generalizability of these relationships.

## Abbreviations

PBI = Parental Bonding Instrument; TSCS = Tennessee Self-Concept Scale; SAS-A = Social Anxiety Scale for Adolescents; CI = Confidence Interval.

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