



# Parenting styles and suicidal ideation among Chinese college students: The mediating role of perceived social support

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## ABSTRACT

**Objective:** This study aims to explore the relationship between parenting styles and suicidal ideation among college students, with a focus on the mediating role of perceived social support.

**Methods:** A total of 608 college students completed the Self-Rating Idea of Suicide Scale, the short-form Egna Minnen av Barndoms Uppfostran (EMBU) for Chinese, and the Perceived Social Support Scale. This study conducted correlation analysis using SPSS 29.0 and performed mediation effect analysis using structural equation modeling in AMOS 26.0.

**Results:** (1) Significant correlations were found among suicidal ideation, parenting styles, and perceived social support; (2) Parental emotional warmth was significantly and negatively associated with suicidal ideation ( $r = -0.34, p < 0.001$ ), while both parental rejection ( $r = 0.32, p < 0.001$ ) and overprotection ( $r = 0.28, p < 0.001$ ) were significantly and positively associated with suicidal ideation; (3) Perceived social support partially mediated the relationship between positive parenting styles and suicidal ideation (effect size =  $-0.23$ , 95 % CI =  $[-0.31, -0.17]$ ) as well as the relationship between negative parenting styles and suicidal ideation (effect size =  $0.05$ , 95 % CI =  $[0.01, 0.10]$ ).

**Conclusion:** Positive parenting styles are associated with higher levels of perceived social support and lower likelihood of suicidal ideation among college students. These findings extend the applicability of parenting style theory and the internal working model of attachment theory to extreme behavioral ideation.

## 1. Introduction

In recent years, society and higher education institutions have increasingly focused on the mental health of university students. Suicidal behavior, among other mental health concerns, has emerged as a critical area for university intervention. In China, suicide ranks as the leading cause of non-natural deaths among college students, accounting for 47.2 % of such cases (Yang & Li, 2015). Suicidal ideation, defined as the thought or desire to end one's life, is considered a precursor to suicidal behavior, developing either over time or suddenly in response to specific situations (Devries, 1968; Lewinsohn et al., 1996). Recognized as a fundamental psychological process leading to suicidal behavior, suicidal ideation is also a key predictor for identifying at-risk individuals (Bonner & Rich, 1987). Early detection and intervention for those experiencing suicidal thoughts are thus essential measures to prevent

suicide (Harmer et al., 2020).

Research indicates that childhood environments are significant factors influencing suicidal ideation (Bunting et al., 2023). Within this context, family environment has drawn growing attention as a critical determinant of suicidal thoughts (Estévez-García et al., 2023). Family systems theory posits that the family functions as an integrated system governed by specific interactional patterns, which play a crucial role in shaping children's development (Bowen, 1966; Kerr & Bowen, 2009). Parenting style, a central component of the family environment, includes parents' attitudes, beliefs, and behavioral tendencies in child-rearing, which remain relatively stable and emerge in daily interactions with their children (Arrindell et al., 1999).

In the context of Chinese culture, Jiang et al. (2010) identified three primary parenting styles: emotional warmth, rejection, and overprotection. Emotional warmth involves parents demonstrating

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encouragement, praise, and care, which helps children feel valued and supported. Rejection encompasses strict discipline, frequent criticism, and punishment, often leading children to feel embarrassed or unworthy. Overprotection is characterized by excessive parental interference in children's decisions, resulting in a perceived lack of autonomy.

While numerous studies have examined the relationship between parenting styles and suicidal ideation, findings have been inconsistent. For example, Wang et al. (2010) found that positive parenting, characterized by emotional warmth and understanding, was a significant protective factor against suicidal ideation, while overprotection showed no significant association. In contrast, Zhao et al. (2011) reported the opposite, identifying overprotection as a risk factor for suicidal ideation, whereas emotional warmth had no significant protective effect. These mixed results underscore the need for further investigation into the complex relationship between parenting styles and suicidal ideation. Parenting styles remain important in the lives of emerging adults in contemporary society (Jensen et al., 2024). As college students navigate the critical and turbulent phase of early adulthood, positive parenting approaches characterized by warmth, support, and involvement can help them cope with various life challenges, reduce mental health risks, and enhance positive adaptation outcomes (Jensen et al., 2024). Consequently, parenting styles can impact suicidal tendencies well into adult life, highlighting the importance of this topic for understanding suicidal ideation among university students (Parra et al., 2019).

Parenting styles significantly shape various aspects of children's development and play an irreplaceable role in their personal growth (Dewi & Sumarni, 2023). Students raised in nurturing, warm, and supportive family environments are more likely to achieve higher levels of psychological well-being (Ding et al., 2022; Francis et al., 2021). They also tend to develop positive psychological traits such as trust, agreeableness, and openness to experience (Tehrani et al., 2024), along with enhanced self-efficacy and psychological resilience (Shahsavari et al., 2021; Shengyao et al., 2024). According to the buffering hypothesis proposed by Johnson et al. (2011), these positive psychological factors play a crucial role in reducing the risk of suicide by providing emotional and cognitive resources to cope with adversity.

In contrast, students subjected to neglect, rejection, or overprotective parenting are more prone to self-doubt, depression and withdrawal (Ping et al., 2023). When encountering difficulties, they may experience helplessness, insecurity, and a lack of confidence, leading to disappointment about the future (Ding et al., 2023). These negative emotional states can increase the likelihood of developing suicidal ideation.

Therefore, this study proposes Hypothesis 1: Parenting styles are significantly associated with suicidal ideation among university students. Specifically, positive parenting styles (e.g., emotional warmth) are expected to correlate with lower levels of suicidal ideation, whereas negative parenting styles (e.g., rejection and overprotection) are anticipated to be linked to higher levels of suicidal ideation. According to the conceptual model of proximal and distal environmental correlates, the family environment, as a distal factor, influences mental health outcomes indirectly through proximal individual factors (Jin et al., 2011). In other words, individual factors mediate the relationship between family environment and psychological outcomes (Jin et al., 2011). A common proximal factor in this context is perceived social support, which refers to an individual's subjective perception of the support they receive from others (Barrera Jr, 1986). This differs from objective social support, such as material assistance or direct services, by focusing on the emotional experience and expectations of support (Sarason et al., 1991). Zimet et al. (1988) identified three main sources of perceived social support: family, friends, and others (e.g., coworkers, teachers, relatives, and supervisors).

Perceived social support may act as a mediator in the relationship between parenting styles and suicidal ideation among university students. Parenting styles can predict the level of perceived social support experienced by students. Batool and Lewis (2020) argued that positive

parenting styles directly determine the quality of children's friendships and may also indirectly influence their perception of positive friendships by enhancing their emotional intelligence. Furthermore, attachment theory suggests that individuals raised in warm and supportive environments are more likely to develop a secure attachment style (Ainsworth, 1978; Bowlby, 1988; Bretherton, 1992), which tends to persist into adulthood (Bartholomew, 1990). Securely attached individuals perceive themselves as worthy of love and trust and are more likely to feel liked not only by their parents but also by others (Ognibene & Collins, 1998). In their interactions with others, they demonstrate greater conflict resolution skills and maintain higher-quality interpersonal relationships (Saferstein et al., 2005), allowing them to experience greater social support.

Conversely, insecure attachment is more likely to stem from negative parent-child interactions (Bowlby, 1988; Jones et al., 2015). Individuals with insecure attachment tendencies may exhibit either avoidance of intimacy or excessive compliance in close relationships, maintaining excessive emotional distance from others or engaging in excessive self-sacrifice, which results in experiencing lower levels of social support (Hayden et al., 2017). Moreover, negative parenting styles—characterized by rejection or emotional neglect—fail to meet children's emotional needs, leading to weaker social bonds (Yaqoob & Ahsan, 2021). This lack of emotional experience adversely affects their ability to form close friendships with peers and results in a lower perception of peer support (Chen et al., 2022).

Perceived social support also plays a crucial role in mitigating suicidal ideation. Perceived social support can enhance an individual's ability to withstand adversity and overcome challenges (Barrera Jr, 1986). Individuals who perceive more social support are more likely to adopt positive attitudes toward life and experience reduced suicidal ideation (Xiao et al., 2020). In contrast, individuals with low perceived social support may struggle to satisfy their need for social connection, leading them to feel burdensome to others and helpless in the face of difficulties, which increases the risk of suicidal ideation (Xiao et al., 2020). Thus, this study proposes Hypothesis 2: Perceived social support mediates the relationship between parenting styles and suicidal ideation.

While both parenting styles and perceived social support have been shown to influence suicidal ideation to some extent, limited research has examined the interplay between these three factors. Specifically, the impact of parenting styles on perceived social support and how perceived social support, in turn, affects suicidal ideation, remains underexplored.

This study focuses on suicidal ideation among university students by investigating the mechanisms through which parenting styles and perceived social support influence suicidal ideation. The findings can offer theoretical insights into strategies for improving students' mental health and reducing suicidal ideation. Additionally, the study can provide practical guidance for parents to cultivate healthier relationships with their children, enhancing the psychological well-being of young adults. The results may also inform targeted prevention and intervention efforts, helping universities develop more effective measures to mitigate suicidal ideation among students.

## 2. Methods

### 2.1. Participants and procedures

This study was approved by the institution of the first author. The inclusion criteria required participants to be cognitively intact, currently enrolled university students aged 18 or older, who were capable of completing the questionnaire using electronic devices. Individuals with a diagnosed severe mental disorder or cognitive impairment were excluded from the study.

The online survey provided convenient access and efficient distribution, making it a cost-effective and timely method for collecting data

from college students (Yildirim et al., 2024). On the first page of the online survey, participants were explicitly informed about the background, purpose, and other relevant details of the study. Anonymity and confidentiality of the data were clearly stated, and only those who provided informed consent were allowed to proceed with the questionnaire. The survey link was widely disseminated through social media, university forums, and class groups. Participants did not receive any incentives for their participation.

This study employed a convenience sampling method to collect data through an online questionnaire. Responses that were inconsistent, randomly answered, or did not meet the inclusion criteria were screened and excluded. Since all questions in the online questionnaire were designated as mandatory, the collected data contained no missing values. A total of 653 questionnaires were distributed, with 608 valid responses received, yielding an effective response rate of 93.1 %. The sample included 311 male students (51.2 %) and 297 female students (48.8 %), with an average age of  $20.28 \pm 2.05$  years. Among the participants, 540 were undergraduate students (88.88 %), and 68 were postgraduate students (11.2 %). They were from 14 different cities in China, including Beijing, Jinan, Qingdao, Liaocheng, Taian, Zaozhuang, Binzhou, Heze, Shijiazhuang, Hohhot, Nanjing, Suzhou, Guiyang, Guilin. The survey was conducted from October to November 2024.

## 2.2. Measures

### 2.2.1. Self-Rating Idea of Suicide Scale (SIOSS)

Suicidal ideation was assessed using the Self-Rating Idea of Suicide Scale (SIOSS) developed by Xia et al. (2002). This scale consists of 26 items covering four dimensions: hopelessness, optimism, sleep, and concealment. Each item is scored with a binary response (“yes” = 1, “no” = 0), with items 1, 5, 6, 7, 9, 10, 13, 15, 21, and 25 reverse-coded. If the score on the concealment dimension is 4 or higher, the response is considered invalid. The final SIOSS score is calculated by summing the scores from the hopelessness, optimism, and sleep dimensions, with higher scores indicating stronger suicidal ideation (Xia et al., 2002). In this study, the scale demonstrated acceptable internal consistency, with a Cronbach’s  $\alpha$  coefficient of 0.77.

### 2.2.2. Parenting Styles Questionnaire

The Parenting Styles Questionnaire comprises two versions: one for fathers and one for mothers, each containing 21 items, resulting in a total of 42 items (Jiang et al., 2010). Both versions include identical questions that assess three dimensions: parental rejection (e.g., “My father/mother often treats me in a way that makes me feel embarrassed”), parental emotional warmth (e.g., “I feel a warm, caring, and affectionate bond with my father/mother”), and parental overprotection (e.g., “My father/mother always dictates what I should wear or how I should present myself”). As this study focuses on the relationship between parenting, considering both the father and mother as a unified family entity, and children’s suicidal ideation, the two versions of the questionnaire were merged for analysis, following previous research (Liu et al., 2020). The questionnaire utilizes a four-point Likert scale, with response options ranging from “never” to “always,” scored as 1 to 4 points, respectively. Among these items, 15 are reverse-coded (Jiang et al., 2010). The total score of parental overprotection and parental rejection represented the negative parenting style, while the emotional warmth score reflected the positive parenting style (Li, 2018). Higher scores indicated stronger negative or positive parenting. In this study, the Cronbach’s  $\alpha$  coefficient for parental emotional warmth, parental overprotection, and parental rejection was 0.88, 0.81, and 0.93, respectively. The Cronbach’s  $\alpha$  coefficient for the overall questionnaire was 0.85.

### 2.2.3. Perceived Social Support Scale

The Perceived Social Support Scale consists of 12 items and assesses three dimensions: family support (4 items, e.g., “My family provides me

with concrete and practical help”), friend support (4 items, e.g., “My friends share my joys and sorrows”), and other support (4 items, e.g., “There are people in my life (teachers, classmates, and relatives) who care about my emotions”)(Wang et al., 1999). Given that the participants in this study were university students, the dimension of other support was modified to include “teachers, classmates, and relatives” instead of “leaders, relatives, and colleagues,” making it more relevant to the target population and enhancing its reliability (Yan & Zheng, 2006). The scale employs a 7-point Likert scoring system, ranging from “strongly disagree” to “strongly agree,” corresponding to scores of 1 to 7, with no reverse coding. The total score ranges from 12 to 84, with higher scores indicating greater levels of perceived social support. In this study, the Cronbach’s  $\alpha$  coefficient for family support, friend support, and other support was 0.88, 0.92, and 0.90, respectively. The Cronbach’s  $\alpha$  coefficient for the total scale was 0.95.

## 2.3. Data analysis

Data were analyzed using SPSS 29.0 for reliability testing, descriptive statistics, and correlation analysis. The mediation effects were examined using AMOS 26.0. Model fit was evaluated using standard fit indices. A model is considered a good fit when  $CFI \geq 0.95$ ,  $TLI \geq 0.95$ ,  $SRMR \leq 0.08$ , and  $RMSEA \leq 0.06$  (Hu & Bentler, 1999). A review of CFA studies by Jackson et al. (2009) found that these criteria were commonly reported in empirical research.

## 3. Results

### 3.1. Common method bias assessment

To assess common method bias, Harman’s single-factor test was conducted. The first unrotated principal component explained 20.95 % of the variance, with 16 factors having eigenvalues  $>1$ . Therefore, the issue of common method bias in this study was deemed insignificant, allowing for further data analysis.

### 3.2. Correlation analysis among parenting styles, suicidal ideation, and perceived social support

Pearson correlation analysis was performed on parenting styles, suicidal ideation, perceived social support, and demographic variables, with the results displayed in Table 1. Parental emotional warmth showed a positive correlation ( $r = 0.53, p < 0.001$ ) with perceived social support and a negative correlation ( $r = -0.34, p < 0.001$ ) with suicidal ideation. In contrast, both parental overprotection and parental rejection were negatively correlated with perceived social support ( $r = -0.17, p < 0.001$ ;  $r = -0.27, p < 0.001$ ) and positively correlated with suicidal ideation ( $r = 0.28, p < 0.001$ ;  $r = 0.32, p < 0.001$ ).

### 3.3. Mediating role of perceived social support

#### 3.3.1. Analysis of the mediating effect of perceived social support between three parenting styles and suicidal ideation

After standardizing all variables, mediation analysis was conducted using AMOS 26.0 to examine the mediating role of perceived social support. Parental emotional warmth, parental overprotection, and parental rejection were included as independent variables, while suicidal ideation served as the dependent variable. Research has indicated that gender, age, and academic grade level are associated with differences in perceived social support and suicidal ideation (Barnett et al., 2021; Chen & Xiao, 2024; Demaray & Malecki, 2002; Prezza & Giuseppina Pacilli, 2002; Stephenson et al., 2006; Wang et al., 2024). Therefore, gender (0 = male, 1 = female), age, and grade (0 = undergraduate, 1 = graduate) were included as control variables in the model. The model fit was acceptable but not optimal ( $\chi^2/df = 4.09$ ,  $RMSEA = 0.071$ ,  $TLI = 0.930$ ,  $CFI = 0.960$ , and  $SRMR = 0.041$ ) and should be

**Table 1**  
Correlation analysis among parenting styles, suicidal ideation, perceived social support, and demographic variables.

Variables	1	2	3	4	5	6	7	8	9
1. Parental Emotional Warmth (Positive Parenting Style)	1								
2. Parental Overprotection	−0.10*	1							
3. Parental Rejection	−0.28***	0.67***	1						
4. Negative Parenting Style	−0.20***	0.92***	0.90***	1					
5. Suicidal Ideation	−0.34***	0.28***	0.32***	0.32***	1				
6. Perceived Social Support	0.53***	−0.17***	−0.27***	−0.24***	−0.47***	1			
7. Gender	0.10*	−0.15***	−0.18***	−0.18***	−0.03	0.20***	1		
8. Age	0.04	−0.12**	−0.06	−0.10*	−0.07	0.08*	−0.06	1	
9. Grade	0.08	−0.10*	−0.06	−0.09*	−0.07	0.13**	−0.03	0.73***	1

\* Note:  $p < 0.05$ .  
\*\*  $p < 0.01$ .  
\*\*\*  $p < 0.001$ .

interpreted with caution. The structural model is shown in Fig. 1. Results indicated that parental emotional warmth showed a significant path to perceived social support ( $\beta = 0.50, p < 0.001$ ), while perceived social support had a significant negative path to suicidal ideation ( $\beta = -0.46, p < 0.001$ ). Additionally, parental emotional warmth demonstrated a significant negative association with suicidal ideation ( $\beta = -0.13, p < 0.01$ ).

However, no significant direct links were found between parental overprotection and parental rejection with perceived social support and suicidal ideation ( $p > 0.05$ ), apart from the significant association between parental overprotection and suicidal ideation ( $\beta = -0.46, p < 0.001$ ).

Using bias-corrected percentile bootstrap with 5000 resamples, the mediation effect was assessed, revealing that perceived social support partially mediated the relationship between parental emotional warmth and suicidal ideation (95 % CI =  $[-0.31, -0.17]$ ). The mediating effect ( $-0.23$ ) accounted for 66 % of the total effect ( $-0.35$ ).

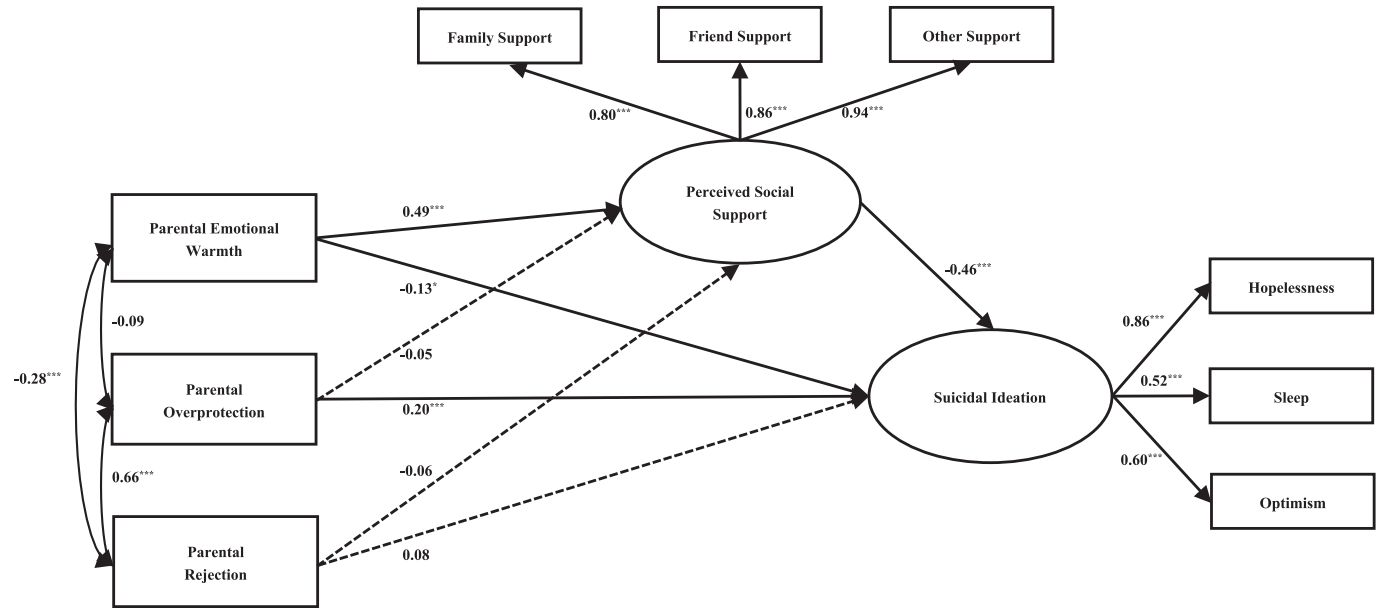
3.3.2. Analysis of the mediating effect of perceived social support between positive/negative parenting styles and suicidal ideation

In Section 3.3.1, only emotional warmth was significantly associated with both perceived social support and suicidal ideation, whereas overprotection and rejection showed no significant associations. Based on this result, we constructed a simplified model in which emotional warmth was treated as a positive parenting style, and overprotection

and rejection were combined as indicators of negative parenting behaviors for further analysis (Li, 2018).

After standardizing all variables, mediation analysis was conducted using AMOS 26.0 to examine the mediating role of perceived social support. Positive and negative parenting styles were included as independent variables, with suicidal ideation as the dependent variable. Gender (0 = male, 1 = female), age, and grade (0 = undergraduate, 1 = graduate) were controlled for in the model. The fit indices for the mediation model indicated an acceptable fit ( $\chi^2/df = 4.69, CFI = 0.954, SRMR = 0.040$ ), although RMSEA (0.078) and TLI (0.920) did not meet the prespecified cutoffs. The structural model is shown in Fig. 2. Results indicated that positive parenting style ( $\beta = 0.49, p < 0.001$ ) and negative parenting style ( $\beta = -0.10, p < 0.05$ ) were significantly associated with perceived social support. Perceived social support, in turn, had a significant negative association with suicidal ideation ( $\beta = -0.46, p < 0.001$ ). Additionally, positive parenting style was inversely related to suicidal ideation ( $\beta = -0.12, p < 0.05$ ). The direct path from negative parenting style to suicidal ideation was statistically significant ( $\beta = 0.26, p < 0.001$ ).

Using bias-corrected percentile bootstrap with 5000 resamples, the mediation effect was assessed, revealing that perceived social support partially mediated the relationship between positive parenting style and suicidal ideation (95 % CI =  $[-0.31, -0.17]$ ). The mediating effect ( $-0.23$ ) accounted for 68 % of the total effect ( $-0.34$ ). Additionally, perceived social support was identified as a mediating variable in the



**Fig. 1.** The mediating role of perceived social support between three parenting styles and suicidal ideation.



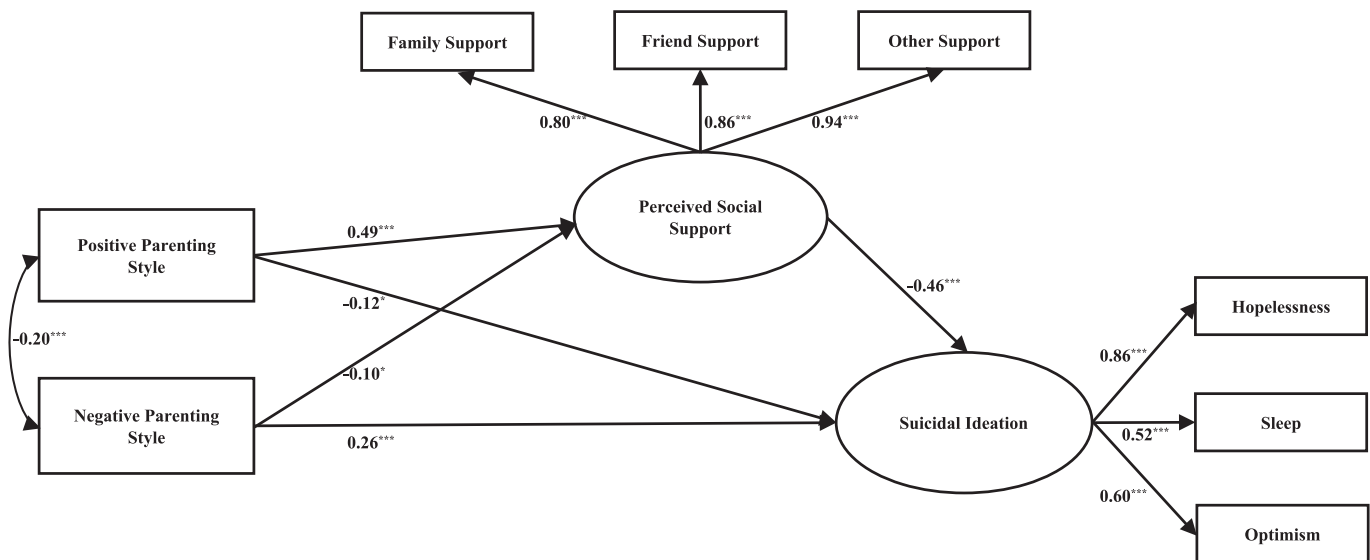


Fig. 2. The mediating role of perceived social support between positive/negative parenting styles and suicidal ideation.

relationship between negative parenting style and suicidal ideation (95 % CI = [0.01, 0.10]). The mediating effect (0.05) accounted for 17 % of the total effect (0.30).

#### 4. Discussion

This study found that parenting styles were significantly associated with suicidal ideation among university students. Specifically, positive parenting—characterized by emotional warmth and lower levels of overprotection and rejection—was linked to lower suicidal ideation. In contrast, negative parenting showed a positive association with suicidal ideation, supporting Hypothesis 1.

These results align with the principles of family systems theory and the internal working model of attachment theory, which emphasize that the quality of family functioning and parent-child relationships plays a crucial role in shaping children's psychological health into adulthood. When families function effectively and parent-child relationships are positive and supportive, children are more likely to experience greater psychological well-being (Miller et al., 1985; Parra et al., 2019), which in turn is associated with fewer suicidal thoughts.

Positive parenting styles have a significant positive impact on the healthy development of university students. Emotional warmth, as a positive parenting approach, provides children with consistent care and support throughout their development (Chen et al., 2017), fostering a stronger sense of security, satisfaction, and self-efficacy (Shahsavari et al., 2021; Yaqoob & Ahsan, 2021). In turn, this strengthens their resilience and adaptability in coping with life's challenges (Morgan et al., 2020) and is associated with a lower risk of suicidal ideation (Xu et al., 2023).

In contrast, negative parenting styles—such as rejection and overprotection—often involve punishment, denial, and control. Such interactions may lead children to reject their self-worth, struggle to express themselves authentically, and increase psychological inflexibility (Lanjekar et al., 2022; Peng et al., 2021; Xu & Yan, 2023). These negative dynamics hinder students' experiences of parental love and support, making it difficult to establish close relationships with their parents (Doinita & Maria, 2015). Consequently, when faced with challenges, these individuals are more likely to feel helpless and hopeless, viewing suicide as a reasonable escape from their suffering, which increases their suicidal ideation (Nunes & Mota, 2017). The results of the mediation analysis indicate that parenting styles not only directly predict suicidal ideation but also indirectly predict it through perceived social support, thereby validating Hypothesis 2. Positive parenting

approaches, such as emotional warmth, serve as a “secure base” for children's development, fostering the formation of secure attachment (Ainsworth, 1978; Bowlby, 1988; Bretherton, 1992). This secure attachment enables children to navigate interpersonal conflicts more effectively and establish high-quality, supportive relationships with others (e.g., teachers, classmates, and relatives) (Saferstein et al., 2005), ultimately enhancing their perception of social support. In challenging situations, perceived social support provides emotional value, reinforcing individuals' feelings of security and confidence when facing difficulties. This support encourages proactive problem-solving and reduces negative emotions, including suicidal ideation (Demir & Sümer, 2023). Conversely, negative parenting styles—such as rejection and overprotection—can lead children to develop negative beliefs about their parents as unreliable or untrustworthy, which may further generalize to other areas of their lives (Bowlby, 1980). Moreover, they tend to exhibit insecure attachment styles, with avoidance being associated with reduced intimate interactions with others (Bowlby, 1988) and lower perceived social support. When confronted with challenges, these individuals are more likely to respond negatively to potential support from others, fostering feelings of despair and helplessness, which are linked to suicidal ideation.

This study also found that perceived social support did not mediate the relationship between parental overprotection or parental rejection and suicidal ideation when these factors were analyzed separately in the structural equation model. One possible explanation is that the strong protective effect of emotional warmth may have overshadowed the individual effects of overprotection and rejection when all dimensions were included simultaneously. However, this does not suggest that these negative parenting behaviors are theoretically unimportant. When combined as an indicator of negative parenting, the mediating effect of perceived social support became significant. Although overprotection and rejection represent distinct parenting dimensions, both fall within the broader category of negative parenting and share similar psychological consequences (Bruysters & Pilkington, 2023). While overprotective and rejecting parenting behaviors represent distinct parenting styles, combining these two dimensions allows for a more comprehensive assessment of their cumulative psychological impact on young adults' mental health compared to considering each dimension in isolation. This approach enables a better understanding of how the combined effect of these two parenting dimensions influences children's ability to access social support and their susceptibility to suicidal ideation. The significant indirect effect observed in this study suggests that considering multiple negative parenting dimensions—regardless of their

specific form—provides a more complete understanding of how parenting influences youth mental health. This approach highlights the cumulative effects of negative parenting dimensions, rather than any individual dimension, and aligns with the findings of Wu et al. (2016), who emphasized that the combined effects of negative parenting dimensions contribute more substantially to children's psychological distress.

A nurturing environment is crucial for reducing suicidal ideation among university students. Given that parenting styles are a significant component of this environment, they warrant careful attention. Encouraging parents to adopt more emotionally warm interactions with their children while reducing negative approaches such as rejection and overprotection can not only directly foster a positive mindset and reduce suicidal ideation but also shape more constructive cognitions and enhance the perception of social support. Ultimately, these changes can contribute to lower suicidal ideation and promote psychological well-being.

## 5. Limitations and further directions

This study identified significant pathways among positive and negative parenting styles, perceived social support, and suicidal ideation, providing a foundation for targeted interventions tailored to distinct parenting patterns. However, the cross-sectional design restricts the ability to establish causal relationships, underscoring the need for future longitudinal research to further validate these findings.

Additionally, this study examines parenting styles of both fathers and mothers as a unified family construct in relation to children's perceived social support and suicidal ideation. However, previous research suggests that paternal and maternal parenting styles may have distinct associations with children's suicidal ideation (Wang et al., 2010). Future studies could separately investigate the relationships between paternal and maternal parenting styles and children's perceived social support and suicidal ideation, allowing for a comparative analysis of potential differences.

Moreover, this study explored the effects of overprotection and rejection as distinct dimensions of negative parenting, contributing to a broader understanding of their impact on college students' mental health. However, future research could benefit from exploring parenting types, which would provide a clearer distinction between different parenting styles. By focusing on how various combinations of parenting behaviors influence college students' mental health, future studies could offer a more nuanced understanding of how these parenting types—rather than individual dimensions—affect outcomes such as suicidal ideation.

Finally, this study was conducted within the Chinese cultural context, where parenting practices and educational values differ from those in Western societies. To enhance the generalizability of these findings, future studies should incorporate cross-cultural comparisons to investigate the mediating role of perceived social support and examine potential cultural variations in the relationship between parenting styles and suicidal ideation.

## CRediT authorship contribution statement

**Renli Wang:** Writing – review & editing, Writing – original draft, Visualization, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Cancan Jin:** Writing – review & editing, Validation, Supervision, Methodology.

## Informed consent

Consent was obtained from all participants included in the study.

## Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the Helsinki Declaration and its later amendments or comparable ethical standards. The study procedures met the criteria for consent as reviewed and approved by the China University of Petroleum (East China) research ethics committee (ethical reference number is 20240919).

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## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Not applicable.

## Data availability

Data will be made available on request.

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