



# The mechanism of body appreciation influencing social anxiety in college students: A moderated mediation model

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## ABSTRACT

This study examines the impact of body appreciation on social anxiety among college students, focusing on the mediating role of social suspiciousness and the moderating role of self-congruency in the relationship between body appreciation and social suspiciousness. An analysis of data from 1161 questionnaires reveals that body appreciation is a significant negative predictor of social anxiety among college students. Furthermore, body appreciation indirectly influences social anxiety through social suspiciousness. Additionally, self-congruency significantly moderates the relationship between body appreciation and social suspiciousness. Specifically, a positive perception of one's body—appreciating its uniqueness and functionality, and positively processing and protecting body-related evaluative information—can directly reduce social anxiety. It can also indirectly reduce social anxiety by lowering social suspiciousness in interpersonal settings. Moreover, self-congruency plays a moderating role in the pathway from body appreciation to social suspiciousness. The findings of this study offer new insights into the relationship between body appreciation and social anxiety among college students. By enhancing self-congruency, the negative impact of low body appreciation on social anxiety can be lessened, providing important practical implications for developing effective interventions to address social anxiety in college students.

## 1. Introduction

**Social anxiety** refers to the tendency to experience anxiety in social situations due to concerns about being judged or negatively evaluated by others (Jefferies & Ungar, 2020). It is characterized by individuals setting excessively high standards for their social performance and exhibiting an exaggerated anticipatory response to perceived interpersonal threats (Rapee & Heimberg, 1997). Social anxiety frequently results in the avoidance or withdrawal from social situations, thereby restricting daily interpersonal interactions (Iverach et al., 2017), which, in turn, can negatively impact mental health, academic achievement, and social relationships. According to the “2021–2022 Mental Health Literacy Survey Report” in China, the recognition rate of social anxiety disorder among surveyed adolescents reached 73.8 %, <sup>1</sup>underscoring that social anxiety disorder has become a prevalent psychological concern among this population.

The college years are a critical period for the development of adolescents' interpersonal relationships. During this stage, students are often separated from their families and are immersed in new social

environments, such as dormitories, classrooms, and libraries, where they face heightened and more frequent interpersonal interaction pressures. Excessive concern about whether their behavior aligns with others' expectations may lead to intensified negative self-evaluations and self-doubt, resulting in heightened social anxiety. Therefore, it is crucial to conduct an in-depth exploration of the factors influencing social anxiety among college students and their underlying mechanisms to provide a scientific foundation for developing effective interventions to address social anxiety in this population.

### 1.1. Theoretical framework

According to the cognitive model of social anxiety, the fear of negative evaluation is a central element of social anxiety (Fredrick & Luebbe, 2024; Leigh & Clark, 2018). Physical characteristics often play a critical role in shaping interpersonal interactions, with negative body appreciation identified as a major predictor of social anxiety (Pawijit et al., 2019). Sociocultural theory suggests that self-perception of the body is gradually constructed through social interactions, where

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<sup>1</sup> Blue Book Report | “Mental Health Literacy Survey Report for 2021–2022” ([china.com.cn](http://china.com.cn)).

external evaluations of one's body are considered a fundamental process for developing self-body appreciation (Li & Liu, 2018; Thompson et al., 1999). Thus, frequent negative evaluations from others regarding one's body can lead to negative body appreciation, subsequently triggering social anxiety. Wood-Barcalow et al. (2010) introduced the "protective filter" model of body appreciation, positing that the brain processes external information in a self-protective manner by filtering out negative inputs detrimental to oneself. When individuals perceive or anticipate negative evaluations regarding their own bodies, it results in negative body appreciation, thereby eliciting social anxiety. As a positive psychological trait, body appreciation enables the processing of negative evaluative information through protective cognitive styles and strategies, effectively mitigating levels of social anxiety. Individuals with negative body appreciation perceive discrepancies between their actual and ideal selves, triggering defensive interpretative biases, which subsequently lead to suspiciousness (Bentall, 2019; Bentall et al., 1994). This suspiciousness influences cognitive processes within social contexts, culminating in social anxiety (Linett et al., 2019; Zhao et al., 2023). Conversely, individuals with positive body appreciation maintain positive attitudes towards their physical characteristics, effectively alleviating negative emotions stemming from physical traits. During interactions with others, they display greater confidence. Rogers' self-congruency theory posits that self-congruency functions as a regulatory mechanism that maintains equilibrium between external experiences and the self-concept. When there is a discrepancy between one's actual body perception and others' evaluations, a state of incongruity occurs, resulting in heightened anxiety. Conversely, self-congruency facilitates alignment between these perceptions, thereby reducing social anxiety (Rogers, 2013). Therefore, this study adopts a cognitive perspective and integrates social cultural theory, the "protective filter" model of body appreciation, and self-consistency theory to analyze the triggering factors and underlying psychological mechanisms of social anxiety among college students.

### 1.2. The relationship between body appreciation and social anxiety

**Body image** refers to an individual's subjective and emotionally charged perception and evaluation of their physical appearance (Burychka et al., 2021). When individuals perceive themselves as having a favorable appearance, they tend to be more confident in social interactions, engage in proactive interpersonal behaviors, and, as a result, form more satisfying social relationships. Conversely, individuals who hold negative evaluations of their physical characteristics and experience high levels of dissatisfaction are likely to develop a negative body image (Shi et al., 2020). A negative body image can lead to heightened fear and discomfort in social situations, thereby exacerbating social anxiety (Pawijit et al., 2019). While many studies have established that a negative body image can lead to social anxiety among college students (Brekalo, 2022; Swami et al., 2021), the psychological mechanisms underlying this relationship remain insufficiently explored. Positive body image, or body appreciation, has been demonstrated to significantly enhance psychological well-being and mitigate social anxiety (Linardon et al., 2022; Linardon et al., 2023; Naz et al., 2023). As a core component of positive body image, body appreciation involves cognitive acceptance and appreciation of the uniqueness and functionality of one's body, as well as a positive interpretation and defense of body-related evaluative information (Yang et al., 2023). Existing research has laid a foundation for understanding the relationship between body appreciation and social anxiety; however, it has primarily focused on the negative aspects, exploring how negative body image impacts social anxiety (Brekalo, 2022; Swami et al., 2021), and has largely overlooked the role of positive body appreciation in alleviating social anxiety, along with the underlying psychological mechanisms. Therefore, the present study proposes the following hypothesis:

**Hypothesis 1.** Body appreciation is significantly negatively correlated

with social anxiety.

### 1.3. The mediating role of social suspiciousness

The sociocultural theory of body appreciation emphasizes the role of others' evaluations in the formation of self-concept. Positive feedback on one's appearance from adults or peers during developmental stages can foster body appreciation and serve as a critical foundation for establishing interpersonal trust (Jia et al., 2019; Jin et al., 2017). For instance, an individual might think, "They see me as a sweet person and enjoy being around me." Conversely, repeated negative comments about one's appearance can lead to negative body appreciation, which becomes a key trigger for social suspiciousness or interpersonal distrust in social interactions (e.g., "I know they avoid me because they think I'm overweight"). Researchers argue that this tendency towards social suspiciousness, rooted in negative body appreciation, often originates from early life experiences where family and peers play a critical role in shaping body-related evaluations (Reimann et al., 2017). Social suspiciousness, characterized not only by a lack of trust in others during interpersonal interactions but also by a propensity to perceive and infer hostility from them, has been identified as a pivotal psychological factor contributing to social anxiety (Linett et al., 2019; Zhao et al., 2023; Freeman, 2007). It predisposes individuals to concentrate on the discrepancies between their own physical attributes and idealized body standards, rather than employing protective cognitive strategies for their own physical characteristics. This results in negative evaluations of their own physique, thereby leading to a state of heightened anxiety and unease. Previous studies have found that individuals with high levels of suspiciousness often display impaired self-esteem and self-concept clarity (Kesting & Lincoln, 2013). Moreover, individuals with low self-concept clarity are more likely to compare their body features to the idealized features of others, resulting in body dissatisfaction (Carter & Vartanian, 2022). When individuals are in a state of suspiciousness during social interactions, feelings of shame about their body can result in a sense of rejection from others (Zeng et al., 2024), leading to increased social anxiety. Furthermore, social suspiciousness is closely related to self-concept (Zhao et al., 2023), and body appreciation is a fundamental aspect of self-concept (Chen, 2006). Accurate self-perception regarding one's body can reduce social suspiciousness in interpersonal interactions, thereby alleviating social anxiety. Based on this, the following hypothesis is proposed:

**Hypothesis 2.** Social suspiciousness mediates the relationship between body appreciation and social anxiety, such that body appreciation alleviates social anxiety by reducing the level of social suspiciousness.

### 1.4. The moderating role of self-congruency

However, the proposed mediating effect may vary depending on individual differences in personality traits. While social anxiety is primarily driven by negative body appreciation that activates social suspiciousness in social contexts, thereby elevating social anxiety levels, individuals who are able to mitigate the negative impact of unfavorable body characteristics on the quality of interpersonal interactions—by focusing more on non-physical attributes (e.g., abilities or kindness)—may weaken the effect of negative body appreciation on social suspiciousness and consequently reduce social anxiety. Self-congruency is an important personality trait that reflects an individual's internal consistency and alignment between the self and external experiences, including self-evaluation and the congruence of abilities and emotions (Rogers, 2013). Prior research has demonstrated a significant positive correlation between self-congruency and interpersonal trust among college students (Wang et al., 2008), suggesting that higher levels of self-congruency can significantly predict greater levels of interpersonal trust. Moreover, individuals with high self-congruency are better psychologically adapted to negative feedback from others, effectively managing

anxiety and other negative emotions in new social contexts (Gilboa-Schechtman et al., 2020; Li et al., 2022). In contrast, individuals with low self-congruency are more likely to experience negative emotions and exhibit lower adaptability in interpersonal environments (Ye & Ye, 2020). Body appreciation is also found to be correlated with self-congruency (Gou et al., 2022). During the formation of self-congruency, aligning the balance between the self and experiences can help alleviate social anxiety. Individuals with higher levels of self-congruency, or greater clarity in their body-related self-concept, are more likely to appreciate the uniqueness of their body characteristics. Thus, the following hypothesis is proposed:

**Hypothesis 3.** Self-congruency moderates the mediating relationship between body appreciation, social suspiciousness, and social anxiety, such that higher self-congruency may buffer the effects of social suspiciousness activated by negative body appreciation, thereby alleviating social anxiety.

In sum, this study aims to investigate the roles of social suspiciousness and self-congruency in the relationship between body appreciation and social anxiety among college students. The findings will deepen our understanding of the relationship between body appreciation and social anxiety and provide a scientific basis for developing effective interventions for social anxiety in this population. Fig. 1 presents the hypothesized model in which self-congruency moderates the mediating effect of social suspiciousness on the relationship between body appreciation and social anxiety.

## 2. Method

### 2.1. Participants

Participants were recruited from a normal university in Shaanxi Province using a stratified random sampling method. Students from various majors and classes, ranging from freshmen to juniors, were collectively surveyed. A total of 1250 questionnaires were distributed, with 1161 valid responses obtained (yielding a valid response rate of 92.88 %). Among the valid respondents, 463 were male (39.9 %) and 698 were female (60.1 %); 545 were freshmen (46.9 %), 334 were sophomores (28.8 %), and 282 were juniors (24.3 %). The age range of participants was  $19.7 \pm 1.45$  years.

### 2.2. Measures

#### 2.2.1. Body appreciation scale

Body appreciation was assessed using the Body Appreciation Scale-2 (BAS-2), developed by Tylka and Wood-Barcalow (2015) and adapted into Chinese by Ma et al. (2020). The BAS-2 comprises 10 self-report items rated on a 5-point Likert scale (1 = never, 5 = always), with higher scores reflecting greater acceptance, respect, and satisfaction with one's body, indicating a more positive body appreciation. In this study, the scale demonstrated excellent internal consistency, with a Cronbach's alpha of 0.916. The confirmatory factor analysis indicated a

good fit for the Scale, with  $\chi^2/df = 3.754$ ,  $GFI = 0.964$ ,  $CFI = 0.987$ ,  $RMSEA = 0.049$ ,  $SRMR = 0.021$ .

#### 2.2.2. Social anxiety scale

Social anxiety was measured using the Chinese version of the Social Anxiety Scale, revised by Li et al. (2024). The scale comprises two dimensions—tension and relaxation—and includes 13 self-report items (3 of which are reverse-scored), rated on a 5-point scale (1 = completely disagree, 5 = completely agree). Higher scores indicate greater levels of social anxiety. The scale showed high internal consistency in the current study, with a Cronbach's alpha of 0.916. The confirmatory factor analysis indicated a good fit for the Scale, with  $\chi^2/df = 3.84$ ,  $GFI = 0.918$ ,  $CFI = 0.942$ ,  $RMSEA = 0.072$ ,  $SRMR = 0.055$ .

#### 2.2.3. Social suspiciousness scale

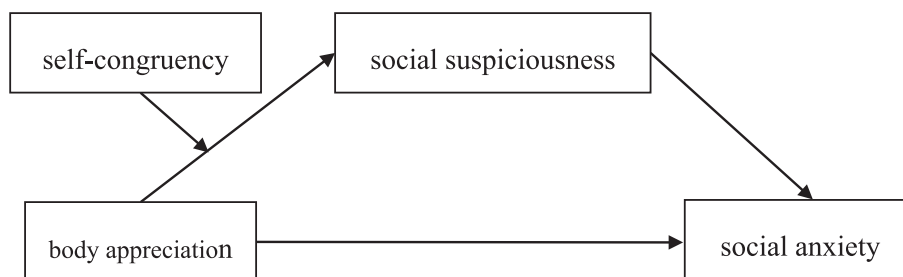
Social suspiciousness was evaluated using the Chinese version of the Social Suspiciousness Scale, developed by Linett et al. (2019) and adapted by Zhao et al. (2023). This unidimensional scale consists of 21 self-report items rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores representing a more negative interpretation of others' behaviors in social contexts and a higher tendency towards hostility. In this study, the Cronbach's alpha was 0.942. The confirmatory factor analysis indicated a good fit for the Scale, with  $\chi^2/df = 3.017$ ,  $GFI = 0.919$ ,  $CFI = 0.948$ ,  $RMSEA = 0.059$ ,  $SRMR = 0.037$ .

#### 2.2.4. College students' self-congruency scale

Self-congruency was assessed using the College Students' Self-Congruency Scale, developed by Wu and Zheng (2011). The scale employs a 5-point Likert rating method, ranging from 1 (completely disagree) to 5 (completely agree). Self-congruency reflects an individual's overall self-evaluation, indicating the coherence of self-concept among college students. The scale contains 5 self-report items, with higher scores reflecting greater levels of self-congruency. In this study, the Cronbach's alpha for the scale was 0.745. The confirmatory factor analysis indicated a good fit for the Scale, with  $\chi^2/df = 3.132$ ,  $GFI = 0.918$ ,  $CFI = 0.934$ ,  $RMSEA = 0.043$ ,  $SRMR = 0.042$ .

### 2.3. Procedure

Data were collected through group administration during evening self-study sessions, with participants drawn from entire classes. The purpose of the study was clearly explained to the participants, emphasizing principles of voluntary participation, anonymity, and truthful responses, with assurances that the data would be used solely for research purposes. All completed questionnaires were collected immediately following administration. Questionnaires that showed extremely short completion times or patterned responses were considered invalid and excluded from the analysis. The valid data were analyzed using SPSS 25.0 and the PROCESS 4.0 macro for SPSS, as developed by Hayes et al., for data processing and hypothesis testing.



**Fig. 1.** Hypothetical model of the mediating role of self-congruency in the relationship between body appreciation, social suspiciousness, and social anxiety among college students.

## 2.4. Common method bias test

Given that data were collected via multiple self-report questionnaires, Harman's single-factor test was conducted to examine the potential presence of common method bias (CMB), following the procedures recommended by Podsakoff et al. The test results revealed that seven factors had eigenvalues  $>1$ , and the first factor accounted for only 28.82 % of the total variance, which is below the critical threshold of 40 %. This indicates that common method bias was not a significant concern in this study.

## 3. Results

### 3.1. Descriptive statistics and correlation analysis

Table 1 presents the means, standard deviations, and Pearson correlation matrix for all measured variables. The correlation analysis revealed significant associations among all four variables ( $p_s < 0.01$ ): (1) the independent variable, body appreciation, was significantly negatively correlated with the dependent variable, social anxiety, and the proposed mediator, social suspiciousness, while being positively correlated with the proposed moderator, self-congruency; (2) the proposed mediator, social suspiciousness, was significantly positively correlated with the dependent variable, social anxiety, and negatively correlated with the proposed moderator, self-congruency; and (3) the proposed moderator, self-congruency, was significantly negatively correlated with the dependent variable, social anxiety. These findings suggest the potential for intrinsic relationships among these four variables, warranting further mediation and moderation analyses.

To evaluate potential demographic differences among the variables, independent samples  $t$ -tests were performed to examine gender differences, while one-way ANOVA ( $F$ -tests) was used to assess differences by academic year. The analysis revealed no significant gender differences in body appreciation ( $t = -1.212, p > 0.05$ ), social suspiciousness ( $t = 0.948, p > 0.05$ ), social anxiety ( $t = 0.965, p > 0.05$ ), or self-congruency ( $t = 1.821, p > 0.05$ ). Similarly, the ANOVA results indicated no significant differences across academic years in body appreciation ( $F = 2.149, p > 0.05$ ), social suspiciousness ( $F = 1.874, p > 0.05$ ), social anxiety ( $F = 1.356, p > 0.05$ ), or self-congruency ( $F = 1.924, p > 0.05$ ). Consequently, demographic factors were not considered in the subsequent analyses of the mediation and moderated mediation models.

### 3.2. Examination of the mediation model

To test the proposed mediation model, all variables were first standardized. Body appreciation served as the independent variable, social anxiety as the dependent variable, and social suspiciousness as the mediator. The analysis employed Hayes's SPSS macro PROCESS Model 4. The tested mediation model is illustrated in Fig. 2, and the results of the regression analysis are detailed in Table 2. The findings are as follows: (1) Body appreciation significantly and negatively predicts social anxiety ( $\beta = -0.271, p < 0.001$ ); (2) When social suspiciousness is incorporated as a mediator, body appreciation significantly and negatively predicts social suspiciousness ( $\beta = -0.398, p < 0.001$ ), which, in turn, significantly and positively predicts social anxiety ( $\beta = 0.386, p <$

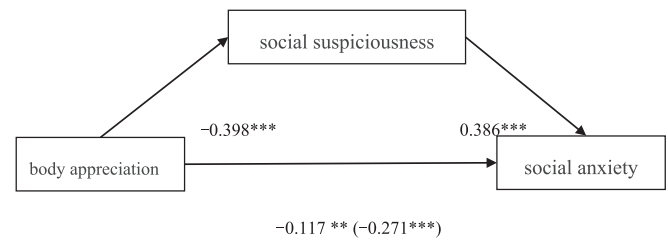


Fig. 2. Schematic diagram of the mediation model among body appreciation, social suspiciousness, and social anxiety.

0.001). Moreover, the negative predictive effect of body appreciation on social anxiety remains significant even when controlling for social suspiciousness ( $\beta = -0.117, p < 0.01$ ). These results suggest that social suspiciousness partially mediates the relationship between body appreciation and social anxiety, indicating that body appreciation influences social anxiety partially through its effect on social suspiciousness.

### 3.3. Testing the moderated mediation model

To examine the moderating effect of self-congruency on the mediation model, Hayes's SPSS macro PROCESS Model 7 was utilized. The results are summarized in Table 3. The interaction term between body appreciation and self-congruency (body appreciation \* self-congruency) was found to significantly predict social suspiciousness ( $\beta = 0.047, t = 2.448, p < 0.001$ ). This finding indicates that self-congruency moderates the relationship between body appreciation and social suspiciousness.

To clarify the nature of the interaction effect between body appreciation and social suspiciousness, we conducted a simple slope analysis by dividing self-congruency into high ( $M + 1 SD$ ) and low ( $M - 1 SD$ ) groups and plotted the simple effects (see Fig. 3). The results indicate that, at low levels of self-congruency, body appreciation significantly negatively predicts social suspiciousness (simple slope =  $-0.419, t = -13.117, p < 0.001$ ). Similarly, at high levels of self-congruency, body appreciation also significantly negatively predicts social suspiciousness (simple slope =  $-0.325, t = -9.382, p < 0.001$ ). Furthermore, the effect of body appreciation on social suspiciousness differs significantly between high and low levels of self-congruency.

In summary, the influence of body appreciation on social anxiety through social suspiciousness, is moderated by self-congruency. For college students with high self-congruency, the indirect effect of body appreciation on social anxiety through social suspiciousness is estimated at an index of  $-0.125$ , with a Bootstrap standard error of  $0.033$  and a 95 % Bootstrap confidence interval of  $[-0.194, -0.063]$ . Conversely, for college students with low self-congruency, the indirect effect is more substantial, with an index of  $-0.162$ , a Bootstrap standard error of  $0.028$ , and a 95 % Bootstrap confidence interval of  $[-0.216, -0.107]$ .

## 4. Discussion

First, this study explored the relationship between body appreciation and social anxiety among college students. The results indicate that body appreciation significantly negatively predicts social anxiety, supporting Hypothesis 1 and aligning with previous research. This finding suggests that negative body appreciation is a major risk factor for social anxiety, whereas positive body appreciation can alleviate it. When college students are dissatisfied with their appearance, they may fear negative evaluations from others in social situations. This persistent worry and shame increase discomfort and anxiety in social contexts (Safarina & Maulayani, 2021; Weingarden et al., 2016). Fear of judgment or rejection may lead students with negative body appreciation to avoid social activities, thereby limiting their social skills development and network expansion, which further exacerbates social anxiety. Prolonged social

Table 1  
Descriptive statistics and correlation analysis results for each variable.

Variable	M	SD	1	2	3	4
1body appreciation	3.710	0.602	1			
2social anxiety	3.231	0.481	-0.271**	1		
3social suspiciousness	2.609	0.459	-0.398**	0.433**	1	
4self-congruency	3.649	0.431	0.165**	-0.241**	-0.187**	1

\*\*  $p < 0.01$ .



**Table 2**  
Test results for the mediating effect of social suspiciousness on body appreciation and social anxiety.

Outcome variable	Predictor variable	$R^2$	$F$	$\beta$	$t$	95%CI
Social suspiciousness	Body appreciation	0.158	218.137***	−0.398	−14.770***	[−0.451, −0.345]
Social anxiety	Body appreciation	0.199	143.892***	−0.117	−4.089**	[−0.174, −0.061]
	Social anxiety			0.386	13.476***	[0.330, 0.443]
Social anxiety (Total effect model)	Body appreciation	0.073	91.857***	−0.271	−9.584***	[−0.327, −0.216]

\*\*  $p < 0.01$ .  
\*\*\*  $p < 0.001$ .

**Table 3**  
Test results of the moderating effect of self-congruency on body appreciation and social suspiciousness.

Outcome variable	Predictor variable	$R^2$	$F$	$\beta$	$t$	95%CI
Social suspiciousness	Body appreciation	0.178	83.396***	−0.372	−13.719***	[−0.425, −0.319]
	Self-congruency			−0.126	−4.649*	[−0.179, −0.073]
	Body appreciation * self-congruency			0.047	2.448***	[0.009, 0.085]

\*  $p < 0.05$ .  
\*\*\*  $p < 0.001$ .



**Fig. 3.** Simple Slope Plot of Self-congruency in the Relationship between Body Appreciation and Social Suspiciousness.

avoidance and anxiety may result in deteriorated social skills, leading to increased embarrassment and discomfort in social settings.

Second, this study found that social suspiciousness partially mediates the relationship between body appreciation and social anxiety, thereby validating [Hypothesis 2](#). Previous research has shown that social suspiciousness is associated not only with self-esteem and interpersonal sensitivity but may also indirectly affect self-concept clarity and emotional regulation ([Zhao et al., 2023](#)). This aligns with our findings. Positive body appreciation can reduce excessive sensitivity and defensive attitudes in social situations and mitigate concerns about others' evaluations of one's appearance ([Tylka & Wood-Barcalow, 2015](#)). Excessive worry may evolve into negative expectations about others' intentions and evaluations, known as social suspiciousness. Individuals may anticipate negative social feedback even if such feedback is unlikely or absent. While moderate suspiciousness can enhance self-protection and vigilance ([Zhang et al., 2023](#)), excessive suspiciousness can lead to strained and unstable interpersonal relationships, hindering effective interactions and cooperation ([Freeman, 2007](#)). Persistent suspiciousness may exacerbate social anxiety, making individuals feel uneasy and

pressured in social situations. Therefore, college students should learn to balance suspiciousness and trust, developing effective social skills and interpersonal capabilities to build healthy and stable relationships.

Third, research on the impact of interpersonal distrust, or social suspiciousness, on social behavior is relatively sparse ([Reimann et al., 2017](#)). This study offers preliminary insights into the relationships among body appreciation, social suspiciousness, and social anxiety, providing a theoretical basis for future research in social interactions and related fields. Additionally, from a cognitive restructuring perspective, this study incorporated the variable of self-congruency to examine its role in the relationship between body appreciation and social anxiety. The results show that self-congruency moderates the relationship between body appreciation and social suspiciousness, thereby validating [Hypothesis 3](#). Individuals with high self-congruency or self-concept clarity are more likely to accept their strengths and weaknesses, including aspects of body image ([Fernández-Bustos et al., 2019](#)). When individuals can accept their physical features without viewing them as the sole standard of self-worth, they are less concerned about others' evaluations of their appearance, reducing sensitivity to social

suspiciousness. This self-acceptance helps mitigate social anxiety stemming from body appreciation issues. Individuals with high self-congruency are likely to exhibit greater confidence in social situations, derived from inner peace and self-acceptance rather than external evaluations. When confident, individuals believe they can effectively handle various social challenges and are less influenced by social suspiciousness. Within the context of individual growth and development, discrepancies between self-perception and lived experience, coupled with internal tensions and disturbances, frequently culminate in a state of “self-disharmony.” This condition not only impedes an individual’s positive self-cognition but also readily engenders emotional distress, complicating the formation of positive body appreciation (Matsushima et al., 2000). To preserve self-consistency, individuals often employ various defensive strategies. While these strategies may mitigate internal conflicts to some extent, they can also create a fertile ground for the emergence of social suspiciousness (Wang, 1994). Consequently, in the realm of mental health education and maintenance, it is imperative to afford heightened attention, support, and protection to such college students, aiding them in establishing a more harmonious self-cognition and fostering their healthy development.

Finally, this study has some limitations. First, the sample consisted primarily of students from a teacher training institution, which may limit the generalizability of the findings to other populations. Future research should include samples from various types of institutions to enhance the applicability of the results. Second, the cross-sectional design of this study does not allow for establishing causal relationships among body appreciation, social anxiety, social suspiciousness, and self-congruency. Longitudinal or experimental studies are needed to better understand how these relationships evolve over time. Third, there is a notable gender imbalance in the sample, and no significant differences were found between genders regarding the four variables. Future research should consider increasing the sample size of male students and exploring gender differences among the variables. Additionally, incorporating variables such as gender and academic year into mediated and moderated models could contribute to the development of multilevel structural models.

## 5. Conclusion

This study reached the following main conclusions: Body appreciation has a direct impact on social anxiety among college students; furthermore, body appreciation indirectly affects social anxiety through the mediation of social suspiciousness. Self-congruency plays a significant moderating role in this process. Specifically, positive body appreciation can reduce social anxiety, while negative body appreciation increases it. Social suspiciousness acts as a mediator in the relationship between body appreciation and social anxiety, with negative body appreciation increasing social suspiciousness, thereby further elevating social anxiety levels. Self-congruency significantly moderates this process; individuals with high self-congruency can effectively mitigate social anxiety triggered by social suspiciousness even in the face of negative body appreciation, whereas individuals with low self-congruency are more susceptible to the effects of negative body appreciation, leading to higher levels of social suspiciousness and social anxiety.

## CRedit authorship contribution statement

**Jinwei Zhu:** Writing – review & editing, Supervision, Resources, Project administration, Methodology, Funding acquisition, Conceptualization, Formal analysis. **Zhenming Jiang:** Writing – review & editing, Validation, Project administration, Methodology, Funding acquisition, Data curation, Conceptualization, Investigation. **Yan Li:** Writing – original draft, Visualization, Validation, Software, Resources, Methodology, Funding acquisition, Conceptualization, Investigation.

## Ethics approval and consent to participate

This study was conducted in accordance with the declaration of Helsinki and approved by the institutional Review Board (IRB) in the Faculty of Education, Shaanxi Xueqian Normal University, China (Approval Number 2024–02). Furthermore, the informed consent was obtained from all participants involved in this study. Data were collected offline, and participants were allowed to voluntarily contribute their information anonymously. We assure you that the data collected will not be shared with anyone and will be kept strictly confidential throughout this study and subsequent analysis.

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## Declaration of competing interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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## Data availability

Data will be made available on request.

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