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Fear of negative evaluation mediates and core self-evaluation moderates the relationship between social comparison orientation and social network addiction

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Mental health problems among college students have become a pressing public health concern, with increasing evidence that excessive social media use exacerbates risks of anxiety, depression, and behavioral addictions. In the digital era, social comparison has intensified through online interactions, heightening students' sensitivity to peer evaluation and contributing to maladaptive outcomes such as social network addiction. To address this issue, the present study examined the relationship between social comparison orientation and social network addiction among Chinese college students, focusing on the mediating role of fear of negative evaluation and the moderating role of core self-evaluations. A questionnaire survey was conducted among 2,437 students from five universities in Huai'an City, Jiangsu Province, using validated scales for social comparison orientation, social network addiction, fear of negative evaluation, and core self-evaluation. Results revealed that social comparison orientation was positively associated with fear of negative evaluation and social network addiction, whereas core self-evaluations were negatively associated with these variables. Fear of negative evaluation mediated the effect of social comparison orientation on social network addiction, and core self-evaluations moderated both the direct and indirect effects. These findings underscore the importance of strengthening positive self-evaluations to buffer against the detrimental effects of excessive social comparison, offering practical implications for interventions aimed at promoting healthier social media use and protecting student mental health in the context of global public health challenges.

Keywords Social comparison orientation, Social network addiction, Fear of negative evaluation, Core self-evaluations, College students

With the rapid development of the internet, the continuous innovation of internet social forms, and the rise of platforms such as WeChat Moments, QQ Spaces, Zhihu, and TikTok, interactive social interactions through social networking sites (such as liking, commenting, and sharing) have become increasingly popular. The 53rd China internet Development Status Statistical Report indicates that the usage scale of Chinese netizens in social applications such as online video, instant messaging, short videos, and live streaming exceeds 800 million, with an average weekly internet usage time of 26.10 h per person[1]. Compared with workers and elderly individuals, college students have more free time, greater proficiency in using smartphones, and greater acceptance of new things, which may lead to more frequent and prolonged internet social interactions. The user stickiness of social networking sites is relatively high[2], and if long-term, high-frequency use of social networking sites is not controlled, it is very likely to evolve into social network addiction[3]. Social network addiction refers to an individual's inability to control the compulsive use of social networking sites[4]. Previous empirical studies have

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shown that the reasonable use of social networking sites can effectively enhance individuals' connections with others[5], but social network addiction is not aimed at satisfying individuals' normal social needs. Instead, it is a difficult-to-control compulsive behaviour[6], which not only increases the risk of psychological problems such as depression, anxiety, and loneliness[7] but also leads to physical discomfort symptoms such as insomnia, which threatens individuals' physical and mental health. Therefore, to help young college students develop good habits of using social networking sites and improve their physical and mental health, deeply exploring the underlying mechanisms behind college students' social network addiction is highly practical.

Social comparison orientation and social network addiction

Social comparison orientation (SCO) refers to an individual's personality tendency to be sensitive to others' relevant information compared with others[8]. Research has shown that social comparison orientation is a motive for individuals' social network addiction[5]. Social comparison theory suggests that when self-evaluations lack objective information, people use others as reference standards for social comparison to obtain self-evaluations[9]. Social comparison is not only a common social psychological phenomenon but also an interpersonal influence atmosphere[10], which means that everyone is involved in the vortex of comparison with the people around them. The university is a critical period for individual development[11]. Before officially entering society, relatively familiar classmates and roommates are more likely to become reference objects for individuals to obtain self-evaluations through social comparison, thus forming a potential atmosphere of comparison. In addition, the social comparison assimilation effect may lead to mutual influence among classmates and roommates[12], causing individuals to excessively use social networking sites and eventually develop social network addiction (SNA). A study on Chinese adolescents revealed that individual behaviour (frequency, duration, preferences, etc.) can affect close peers, leading some peers to increase their investment (time, energy, money, etc.), which eventually evolves into addictive behaviour[13]. Marengo et al. also reported in Italian student groups that the relationship atmosphere in real and online social interactions (acceptance, exclusion, etc.) is one of the important reasons for individuals' addiction to social networks[14]. Therefore, this study proposes Hypothesis 1: Social comparison orientation positively predicts college students' social network addiction.

The mediating role of fear of negative evaluation

To better prevent and intervene in social network addiction in college students, it is necessary to further explore the mediating variables and their mechanisms between social comparison orientation and social network addiction. Research has shown a significant positive relationship between fear of negative evaluation (FNE) and social network addiction[15]. Fear of negative evaluation refers to an individual's anticipation and concern about negative evaluations from others, as well as sensitivity to negative evaluations in social settings[16]. In short, fear of negative evaluation is a common social anxiety symptom characterized by worry about receiving negative evaluations from others and the resulting anxiety. Hungarian scholars Zsido et al. reported that fear of negative evaluation can lead to cognitive distortions, affecting individuals' self-evaluations and self-esteem levels[17], and low self-evaluations and self-esteem are risk factors for social network addiction[18]. Another empirical study of Chinese college students revealed that using social networking sites eliminates the need for face-to-face communication, reducing the risk of receiving negative evaluations and negative feedback, leading individuals with fear of negative evaluation to frequently use social networking sites as a substitute for real social settings, eventually resulting in social network addiction[19]. This suggests that individuals with higher levels of fear of negative evaluation are more prone to developing social network addiction. Additionally, Yang et al. reported that social comparison orientation is an important factor influencing individuals' levels of fear of negative evaluation[20,21]. People engage in social comparison to evaluate themselves[5], and individuals with a high social comparison orientation may frequently engage in self-evaluation, increasing their sensitivity to others' evaluations and leading to social anxiety, which is a key characteristic of individuals with a fear of negative evaluation[16]. Numerous empirical studies have shown that fear of negative evaluation plays a mediating role between social comparison and problematic social media use[22], as well as between social anxiety and mobile phone addiction[15]. Therefore, this study proposes Hypothesis 2: Fear of negative evaluation plays a mediating role between social comparison orientation and social network addiction.

The moderating role of core self-evaluation

Core self-evaluation (CSE) refers to the most basic evaluation and estimation that individuals hold about their own abilities and worth[23]. Core self-evaluations not only influence self-evaluations in specific domains[24] but are also closely related to individuals' subjective well-being, life satisfaction, social anxiety, depression, and academic behavior[24,25]. Individuals with lower core self-evaluations tend to have vague self-positioning, and when they perform poorly, their reactions are more negative[26], which can lead to fear of negative evaluation over time. Additionally, people tend to maintain a good image in social activities to avoid negative evaluations[27], but individuals with lower core self-evaluations are prone to forming negative self-schemia in their minds[28], which can have negative impacts on subsequent emotional experiences and behaviours (such as avoidance, withdrawal, and addiction). Currently, numerous studies have shown that core self-evaluations are important protective factors[25,29], but self-verification theory suggests that people actively seek information that is consistent with their self-concept, thereby expressing emotions and behaviours that align with their self-concept[30]. If individuals have negative self-evaluations, they tend to interpret neutral information more negatively[24,31]. Thus, the impact of core self-evaluations on individuals' psychology is complex, as it can fully mobilize psychological resources to help individuals actively cope with problems[29,32], but it can also lead to the production of negative emotions or maladaptive behaviours due to negative cognition[28], exhibiting a "double-edged sword" effect. Drawing on Conservation of Resources Theory[33], high CSE individuals can mobilize psychological resources to buffer stress and prevent maladaptive emotional spirals triggered by social comparison. Similarly, Social Cognitive Theory[34]

emphasizes that self-efficacy, as the core self-evaluation, plays a crucial role in regulating emotional arousal and behavior under the influence of assessment stress. Empirical evidence also shows that core self-evaluation moderates emotional reactivity to social threats and reduces the impact of social anxiety[35,36]. These theoretical and empirical findings suggest that core self-evaluation can attenuate both the cognitive (FNE) and behavioral (SNA) consequences of social comparison orientation.Conversely, individuals with low CSE may interpret neutral feedback more negatively[31,37], intensifying fear of evaluation and increasing reliance on social network addiction as a compensatory mechanism. This dynamic implies a double-edged moderating role for core self-evaluation: it can either buffer or amplify the influence of social comparison orientation and FNE depending on one's self-evaluative orientation. Therefore, what kind of moderating role does core self-evaluation play in the relationship between social comparison orientation and social network addiction? On the basis of previous research, this study proposes Hypothesis 3: Core self-evaluations play a moderating role in the relationship between social comparison orientation and fear of negative evaluation; Hypothesis 4: Core self-evaluations play a moderating role in the relationship between social comparison orientation and social network addiction; Hypothesis 5: Core self-evaluations play a moderating role in the relationship between fear of negative evaluation and social network addiction.

In summary, the present study aims to construct a moderated mediation model to explore how core self-evaluation moderates both the direct and indirect pathways linking social comparison orientation, fear of negative evaluation, and social network addiction among college students. Integrating fear of negative evaluation and core self-evaluation within a unified analytical framework provides a more comprehensive understanding of the self-evaluative mechanisms underlying SNS addiction. While prior research has often examined single mediation[22] or moderation models[5], this study simultaneously incorporates emotional (FNE) and personality (CSE) dimensions, thereby extending the I-PACE model[38] and contributing to social comparison theory by elucidating how affective and self-regulatory processes jointly shape online behavioral outcomes. This integrated approach offers both theoretical advancement and practical implications for reducing social media addiction through interventions that strengthen positive self-evaluation and emotional regulation capacities. The hypothesized model is illustrated in Fig. 1.

Methods

Participants

In May 2024, a convenience sampling method was used to select college students from five universities in Huai'an, Jiangsu Province, China. A total of 2,899 questionnaires were distributed, and 2,437 valid questionnaires were obtained after excluding invalid questionnaires based on three screening questions, resulting in an effective response rate of 84.06%. The sample included 957 males (39.27%), 1,480 females (60.73%), 1,794 vocational college students (73.62%), and 643 undergraduate students (26.38%). In terms of long-term family residence, 1,402 were from urban areas (57.53%), and 1,035 were from rural areas (42.47%). There were 588 only children (24.13%) and 1,849 non-only children (75.87%). The age range of all participants was 17–21 years ($M = 19.20$, $SD = 0.83$).

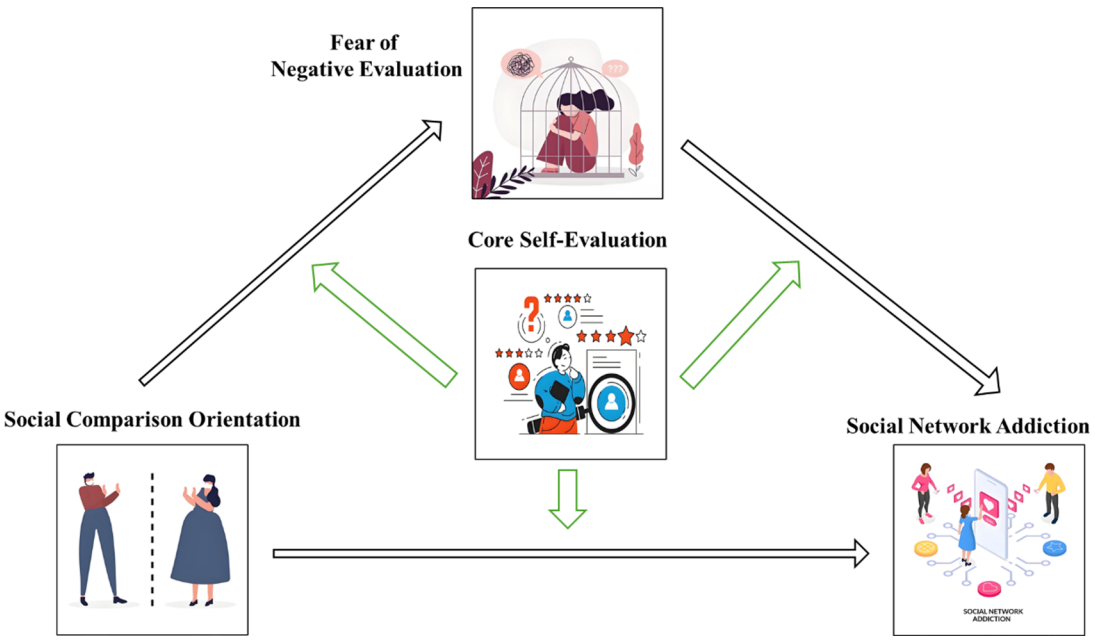

Fig. 1. Conceptual model to be tested.

Instruments

Social comparison orientation

The Social Comparison Orientation Scale, developed by Gibbons and Buunk[8] and translated and revised by Wang et al.[39] in Chinese, includes two dimensions: conceptual social comparison (items 1, 2, 3, 4, 5, 6, and 11) and ability social comparison (items 7, 8, 9, and 10), with a total of 11 items (e.g., "I often compare what I have achieved in life with others" and "If I want to know more about something, I will try to determine what others think about it"). The scale uses a 5-point Likert scale ranging from "1" (strongly disagree) to "5" (strongly agree), with no reverse-scored items. The total score represents the level of social comparison orientation among college students, with higher scores indicating a greater tendency. In this study, the Cronbach's α coefficient for this scale was 0.816.

Social network addiction

The Social network addiction Scale, developed by Koc and Gulyagci[4] and revised by Chen et al.[2] in Chinese, consists of 8 items (e.g., "Even when I can't use these social media, I still want to know what's happening on them"). The scale uses a 5-point Likert scale ranging from "1" (completely disagree) to "5" (completely agree), with no reverse-scored items. Higher average scores indicate a higher level of social network addiction among college students. In this study, the Cronbach's α coefficient for the social network addiction scale was 0.922.

Fear of negative evaluation

The Fear of Negative Evaluation Scale, developed by Leary[16], consists of 12 items (e.g., "Even though I know others' opinions are not important, I still worry about how they perceive me"). The scale uses a 5-point Likert scale ranging from "1" (completely disagree) to "5" (completely agree), with reverse-scored items of 2, 4, 7, and 10. After the scores of the reverse-scored items are reversed, the total score represents the level of fear of negative evaluation among college students, with higher scores indicating a greater level of fear. In this study, the Cronbach's α coefficient for this scale was 0.863.

Core self-evaluation

The Core Self-Evaluation Scale, developed by Judge et al.[23] and revised by Du et al.[40] in Chinese, consists of 10 items (e.g., "I am capable of dealing with most of my problems"). The scale uses a 5-point Likert scale ranging from "1" (completely disagree) to "5" (completely agree), with reverse-scored items of 2, 3, 5, 7, 8, and 10. After the scores of the reverse-scored items are reversed, the average score represents the level of core self-evaluation among college students, with higher scores indicating a higher level of core self-evaluation. In this study, the Cronbach's α coefficient for this scale was 0.843.

Statistical methods

Data analysis was conducted via SPSS 27.0 statistical software and the PROCESS 4.0 plugin. The original data of the main variables were standardized. Harman's single-factor test was used to examine common method bias. Pearson's product-moment correlation was used to explore the relationships between the main variables. The PROCESS 4.0 plugin's Model 4 and Model 59 were used to test the mediating and moderating effects.

Data collection procedures and quality assurance

After obtaining approval from the management departments of the participating universities, we employed a convenience sampling strategy and selected 65 classes ($N = 2{,}899$) from five universities. To enhance the quality of data collection and minimize potential methodological bias, several measures were implemented. Prior to formal testing, all researchers received two rounds of standardized training to ensure procedural consistency. The survey was administered in a centralized manner, with participants assembled in designated classrooms. Informed consent was obtained from all participants, and the examiner read standardized instructions aloud to reduce procedural variation. Participants were explicitly informed of their right to withdraw at any time. To protect confidentiality and reduce common method bias, responses were collected anonymously, and no personally identifiable information was recorded.

All questionnaires were completed in paper-and-pencil format. After collection, three trained researchers independently entered the data and conducted cross-checks to ensure accuracy and consistency. The final dataset was established only after discrepancies were resolved through verification. This study was reviewed and approved by the Academic Ethics Committee of Huaiyin Normal University (approval number: HNU202402201643, February 20, 2024).

Results

Common method bias

This study used a self-report questionnaire to collect data, which may have resulted in a certain degree of common method bias[41]. The Harman single-factor test results revealed that a total of 8 factors with eigenvalues greater than 1 were extracted, and the first factor explained 28.76% of the variance, which is less than the 40% standard[42]. Therefore, this study does not have significant common method bias.

Descriptive statistics and correlation analysis

The descriptive statistics and correlation analysis results of this study are shown in Table 1. There was a significant positive correlation between social comparison orientation and social network addiction ($r = 0.485$, $p < 0.001$), a significant positive correlation between social comparison orientation and fear of negative evaluation ($r = 0.532$, $p < 0.001$), and a significant positive correlation between social network addiction and fear of negative evaluation ($r = 0.370$, $p < 0.001$). There was a significant negative correlation between college students' core self-evaluations

Variables	M ± SD	1	2	3	4
1 SCO	2.916 ± 0.652	—			
2 SNA	2.227 ± 0.902	0.485***	—		
3 FNE	3.013 ± 0.761	0.532***	0.370***	—	
4 CSE	3.370 ± 0.696	− 0.328***	− 0.309***	− 0.561***	—

Table 1. Mean, standard deviation, correlation analysis results ($N = 2437$). ***$p < 0.001$, the SCO stands for Social Comparison Orientation, the SNA stands for Social Network Addiction, the FNE stands for Fear of Negative Evaluation, the SCO stands for Core Self-Evaluation.

Regression		Indicators			Coefficient significance		
Dependent variable	Independent variable	*R*	R^2	*F*	*β*	*SE*	*t*
SNA	SCO	0.523	0.274	183.184***	0.479	0.018	27.223***
	Gender				0.302	0.036	8.377***
	Education				0.055	0.040	1.376
	Place of Origin				0.207	0.036	5.797***
	Only Child				0.105	0.042	2.516*
FNE	SCO	0.545	0.297	205.642***	0.523	0.017	30.211***
	Gender				0.177	0.035	4.997***
	Education				0.007	0.039	0.196
	Place of Origin				0.169	0.035	4.791***
	Only Child				− 0.121	0.041	−2.943**
SNA	SCO	0.535	0.286	162.203***	0.410	0.021	20.025***
	FNE				0.132	0.020	6.472***
	Gender				0.278	0.036	7.751***
	Education				0.054	0.040	1.361
	Place of Origin				0.185	0.036	5.193***
	Only Child				0.121	0.041	2.918**

Table 2. The regression equation of the mediating role of fear of negative evaluation. *$p<0.05$, **$p<0.01$, ***$p<0.001$, the SCO stands for Social Comparison Orientation, the SNA stands for Social Network Addiction, the FNE stands for Fear of Negative Evaluation, the SCO stands for Core Self-Evaluation.

and social comparison orientation (r = -0.328, $p < 0.001$), social network addiction (r = -0.309, $p < 0.001$), and fear of negative evaluation (r = -0.561, $p < 0.001$). T tests revealed significant differences in social comparison orientation, social network addiction, fear of negative evaluation, and core self-evaluation across genders, educational levels, places of origin, and whether they were only children. Therefore, this study included gender, educational level, place of origin, and whether they were only children as control variables in subsequent analyses.

Mediating role of fear of negative evaluation

The mediating role of fear of negative evaluation between college students' social comparison orientation and social network addiction was tested via Model 4 of the SPSS macro program PROCESS. The results revealed that social comparison orientation significantly positively predicted social network addiction ($\beta = 0.479$, $p < 0.001$) and that social comparison orientation significantly positively predicted fear of negative evaluation ($\beta = 0.523$, $p < 0.001$). When social comparison orientation and fear of negative evaluation were used together to predict social network addiction, fear of negative evaluation had a significant predictive effect on social network addiction ($\beta = 0.132$, $p < 0.001$), and the predictive effect of social comparison orientation on social network addiction remained significant ($\beta = 0.410$, $p < 0.001$). The mediating effect value was 0.07, and the bootstrap 95% confidence interval was [0.046, 0.094], indicating that the mediating effect accounted for 14.64% of the total effect.The detailed results are shown in Table 2.

Moderating role of core self-evaluation

The moderating role of core self-evaluations was tested via Model 59 of the SPSS macro program. The detailed results are shown in Table 3. When fear of negative evaluation was the outcome variable, college students' social comparison orientation significantly positively predicted fear of negative evaluation ($\beta = 0.380$, $p < 0.001$),

Regression		Indicators			Coefficient significance				
Dependent variable	Independent variable	*R*	R^2	*F*	*β*	*SE*	*t*	*LLCI*	*ULCI*
FNE	SCO	0.684	0.468	305.175***	0.380	0.016	23.909***	0.349	0.411
	CSE				−0.428	0.016	−27.026***	−0.459	−0.397
	SCO*CSE				0.092	0.013	7.173***	0.067	0.118
	Gender				0.067	0.031	2.159*	0.006	0.128
	Education				−0.025	0.034	−0.741	−0.093	0.042
	Place of Origin				0.108	0.031	3.511***	0.048	0.168
	Only Child				−0.119	0.036	−3.343**	−0.189	−0.049
SNA	SCO	0.547	0.300	115.415***	0.393	0.02	19.221**	0.353	0.434
	FNE				0.077	0.023	3.295**	0.031	0.122
	CSE				−0.110	0.021	−5.283***	−0.150	−0.069
	SCO*CSE				−0.040	0.017	−2.362*	−0.074	−0.007
	FNE*CSE				0.078	0.018	4.348***	0.043	0.113
	Gender				0.265	0.036	7.416***	0.195	0.335
	Education				0.055	0.039	1.403	−0.022	0.133
	Place of Origin				0.168	0.036	4.728***	0.098	0.237
	Only Child				0.122	0.041	2.966**	0.041	0.203

Table 3. The moderating effect regression equation of core self-evaluation. $^{*}p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$, the SCO stands for Social Comparison Orientation, the SNA stands for Social Network Addiction, the FNE stands for Fear of Negative Evaluation, the SCO stands for Core Self-Evaluation.

and core self-evaluation significantly negatively predicted fear of negative evaluation (β = -0.428, $p<0.001$). The interaction term between social comparison orientation and core self-evaluations significantly positively predicted fear of negative evaluation ($\beta=0.092$, $p<0.001$). The bootstrap 95% confidence intervals for these effects were [0.348, 0.412], [-0.460, -0.395], and [0.069, 0.115], respectively, all not 0, indicating that core self-evaluations play a moderating role in the relationship between social comparison orientation and fear of negative evaluation.

The results revealed that when social network addiction was the outcome variable, college students' social comparison orientation significantly positively predicted social network addiction ($\beta=0.393$, $p<0.001$), fear of negative evaluation significantly positively predicted social network addiction ($\beta=0.077$, $p=0.001<0.01$), and core self-evaluations significantly negatively predicted social network addiction (β = -0.110, $p<0.001$). The interaction term between social comparison orientation and core self-evaluations significantly negatively predicted social network addiction (β = -0.040, $p=0.018<0.05$), and the interaction term between fear of negative evaluation and core self-evaluations significantly positively predicted social network addiction ($\beta=0.078$, $p<0.001$). The bootstrap 95% confidence intervals for these effects were [0.352, 0.438], [0.027, 0.128], [-0.153, -0.064], [-0.080, -0.002], and [0.037, 0.119], respectively, all not containing 0, indicating that core self-evaluations play a moderating role in the relationship between social comparison orientation and social network addiction, as well as between fear of negative evaluation and social network addiction.

To further explain the substantive effects of the interaction between core self-evaluations and fear of negative evaluation, as well as the interaction between core self-evaluations and social comparison orientation, the participants were divided into high core self-evaluations and low core self-evaluations groups on the basis of the mean plus or minus one standard deviation of the core self-evaluations for simple slope analysis. As shown in Fig. 2, at a low level of core self-evaluation, social comparison orientation had a significant predictive effect on fear of negative evaluation ($B_{simple}=0.288$, $t=13.649$, $p<0.001$). However, at a high level of core self-evaluation, the predictive effect of social comparison orientation on fear of negative evaluation was significantly greater ($B_{simple}=0.473$, $t=23.857$, $p<0.001$).

As shown in Fig. 3, at a low level of core self-evaluation, college students' social comparison orientation had a significant predictive effect on social network addiction ($B_{simple}=0.433$, $t=19.682$, $p<0.001$). However, at a high level of core self-evaluation, the predictive effect of social comparison orientation on social network addiction was significantly reduced ($B_{simple}=0.353$, $t=16.045$, $p<0.001$). As indicated by Fig. 4, at a low level of core self-evaluation, fear of negative evaluation did not have a significant predictive effect on social network addiction (B_{simple} = -0.001, t = -0.038, $p=0.970>0.05$). However, at a high level of core self-evaluation, fear of negative evaluation had a significant predictive effect on social network addiction ($B_{simple}=0.155$, $t=5.962$, $p<0.001$).

Discussion

Social comparison orientation and social network addiction

This study explored the impact of social comparison orientation on social network addiction, providing empirical support for the relationship between the two. College students' social comparison orientation can significantly positively predict social network addiction, which is consistent with previous research findings[21,22], thus confirming Hypothesis 1. The compensatory internet use theory suggests that when individuals encounter challenges or threats in real life, they will seek self-compensation and satisfaction through the virtual

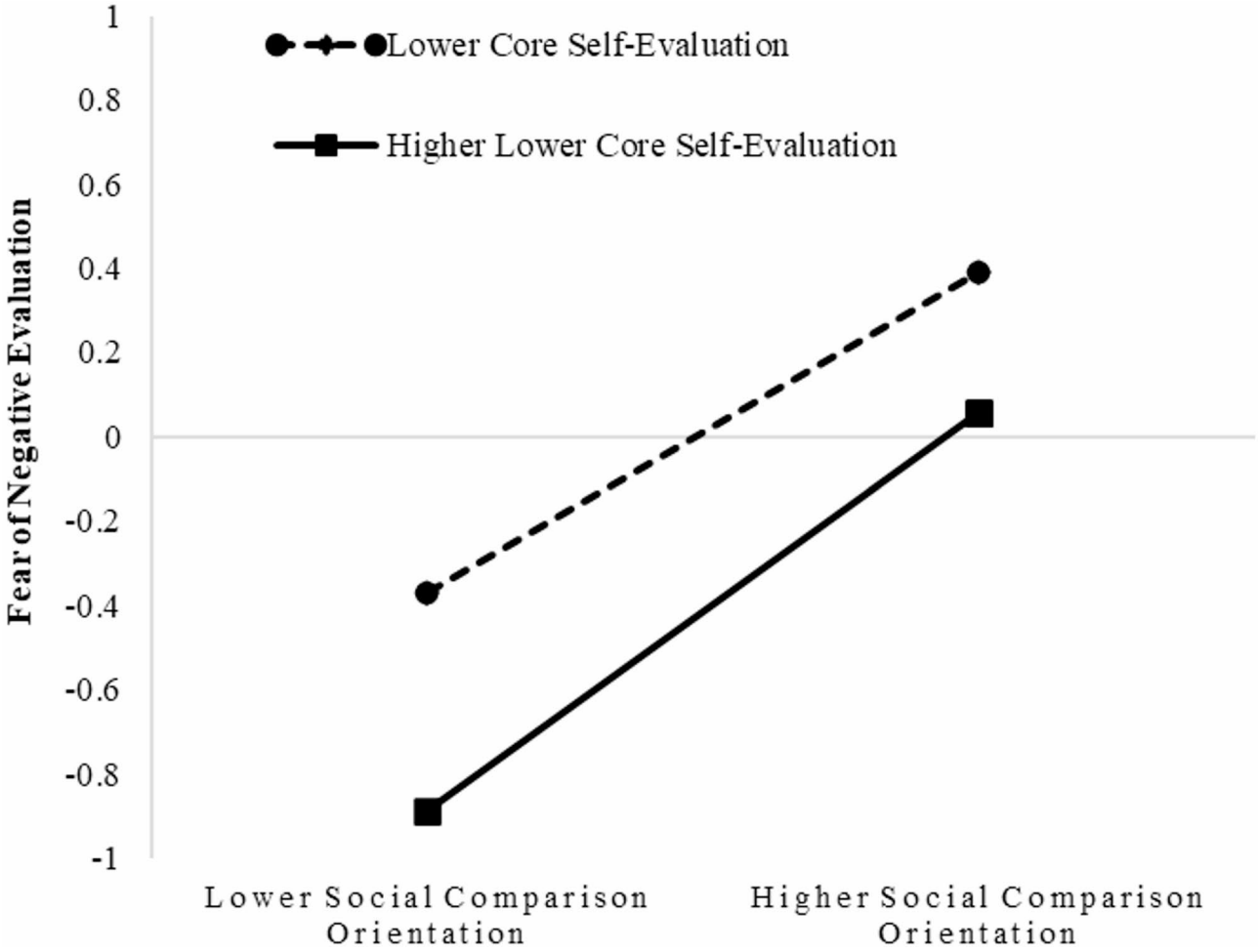

Fig. 2. Moderating role of core self-evaluation in the relationship between social comparison orientation and fear of negative evaluation.

environment created by the internet[43]. Individuals with a high social comparison orientation, when comparing themselves to others who are more successful, may experience psychological threats and a sense of unmet need[10] and are more likely to seek comfort and satisfaction through the internet, leading to excessive use of social networking sites. In addition, individuals with a high social comparison orientation are more sensitive and concerned about information[8], and information acquisition is one of the important motivations for using social networking sites[21]. Individuals with a high social comparison orientation need a large amount of information to complete social comparisons and form self-evaluations, so they spend much of their time browsing or collecting information on social networking sites, gradually becoming addicted to social networking use, and eventually leading to social network addiction.

Mediating role of fear of negative evaluation

This study also explained the mediating mechanism by which social comparison orientation affects social network addiction, revealing the mediating role of fear of negative evaluation, which is consistent with previous research findings[15,22], thus confirming Hypothesis 2. The I-PACE model suggests that the development of addictive behaviours is the result of interactions between susceptibility variables, such as individual traits, emotional responses, and cognitive responses[38]. The personality trait of social comparison orientation can trigger negative emotional experiences and distorted cognition in individuals, leading to social network addiction. The psychological evolutionary model also suggests that fear of negative evaluation is a capability to avoid threats and ensure personal safety[44]. Individuals with a high social comparison orientation are more likely to experience the dual threat of upwards social comparison and fear of negative evaluation, leading to long-term cognitive dissonance[15] and ultimately resulting in addictive behaviours. The social comparison orientation reinforces individuals' fear of negative evaluation and combined with the characteristics of social networking sites, such as ease of operation, timely feedback, and strong entertainment value[19], is more likely to activate pathological compensation mechanisms[43], leading to individuals' social network addiction.

Fig. 3. Moderating role of core self-evaluation between social comparison orientation and social network addiction.

Moderating role of core self-evaluation

In addition, this study revealed that core self-evaluations not only moderate the relationship between social comparison orientation and social network addiction but also moderate the first and second half paths of the mediating effect of fear of negative evaluation. Specifically, core self-evaluations are important protective factors against individuals' maladaptive behaviours[25,29]. Compared with college students with higher levels of core self-evaluations, those with lower levels are more likely to experience fear of negative evaluation and social network addiction after social comparison orientation is activated and are also more likely to develop social network addiction after experiencing fear of negative evaluation, further validating the protective-reactive model and the risk buffering hypothesis[45,46]. This is because core self-evaluations, as positive psychological resources for individuals' physical and mental development[24,25], can help college students build objective and reasonable self-cognition and positively accept themselves[32]. Therefore, when faced with negative information, stress, or threats, individuals with higher levels of core self-evaluations still believe in their abilities, accept their shortcomings, and alleviate their fear of negative evaluations from others. Individuals with higher levels of core self-evaluations usually have better social skills[26], better relationships in real-life social interactions, and are more likely to mobilize resources to actively cope with interpersonal conflicts rather than seek compensation in online social environments.

Beyond its general protective role, the moderation analysis yielded an unexpected pattern that challenges the traditional buffering view of core self-evaluations. Contrary to initial expectations, the moderating analysis revealed a counterintuitive but theoretically intriguing pattern: the predictive effect of social comparison orientation on fear of negative evaluation was stronger among individuals with higher core self-evaluations (B_{simple} = 0.473) than those with lower core self-evaluations (B_{simple} = 0.288). This finding contradicts a simple "protective" view of core self-evaluations and indicates a more complex mechanism. Individuals with high core self-evaluations typically hold positive self-views and strong self-efficacy; however, such self-concept may also be fragile when confronted with upward social comparison[47]. According to self-discrepancy theory[48], discrepancies between the actual self and the ideal self evoke negative affect. High CSE individuals often set higher standards for themselves, and when they perceive others as outperforming them, their self-consistency

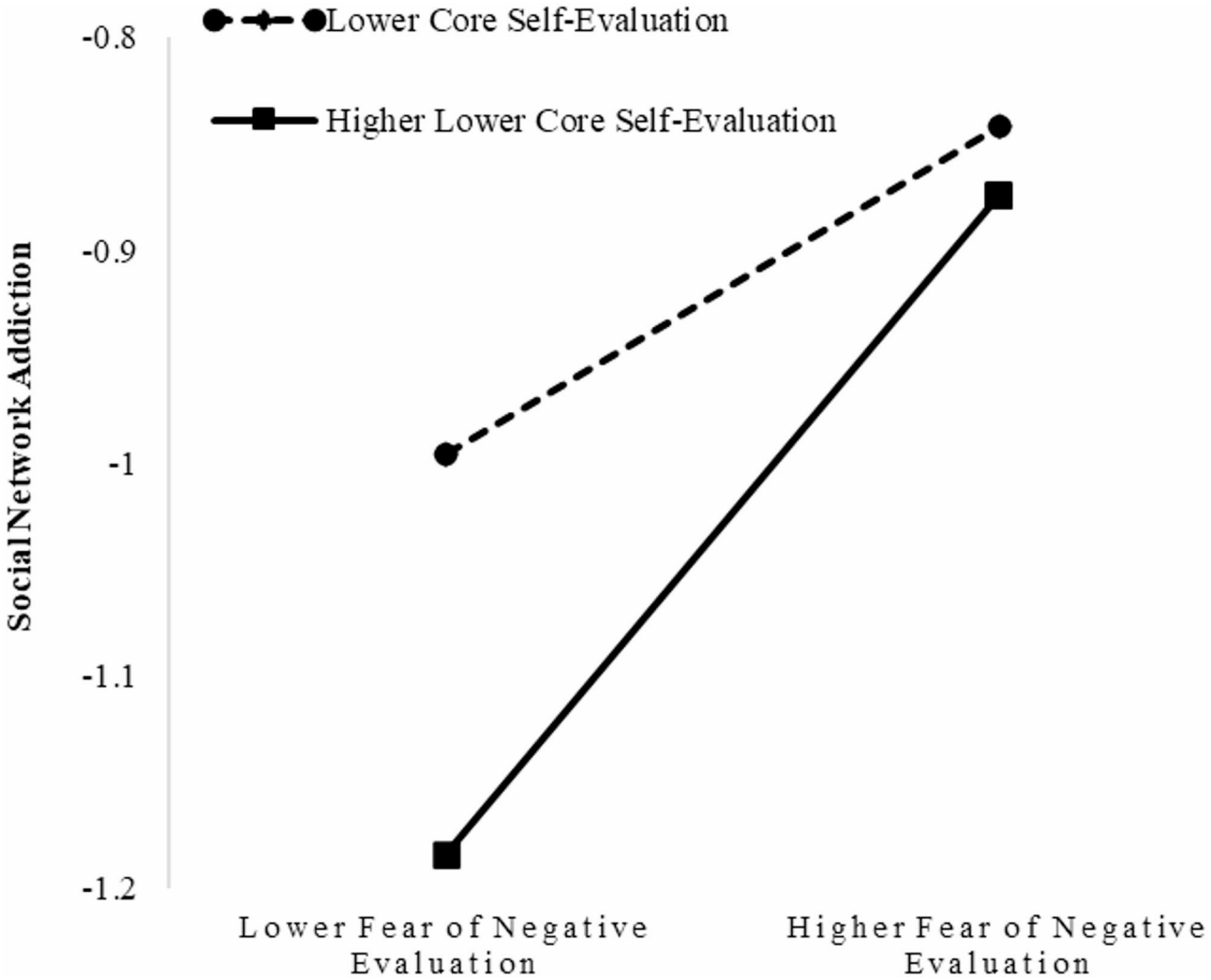

Fig. 4. Moderating role of core self-evaluation between fear of negative evaluation and social network addiction.

motivation intensifies emotional tension. This can heighten fear of negative evaluation, as these individuals strive to maintain their valued self-image and fear any evaluation that contradicts it. Moreover, individuals with high CSE often demonstrate strong achievement motivation and social investment[49]. When exposed to upward social comparison, such individuals may experience heightened self-relevant threat because their motivation to maintain a superior self-image amplifies the salience of potential evaluation, thereby intensifying fear of negative evaluation. Therefore, rather than being uniformly protective, core self-evaluations demonstrates a dual role: it buffers negative effects under moderate comparison but exacerbates evaluation anxiety when personal standards are threatened-a pattern consistent with the "double-edged sword" perspective[28]. It has revealed the complex regulatory mechanism of the core self-evaluation, opening up a new theoretical perspective and reminding us to adhere to the principle of moderation when formulating intervention measures.

Alternative theoretical pathways

While the present model conceptualizes social comparison orientation as an antecedent of social network addiction, alternative causal pathways may also exist. It is plausible that excessive engagement in social networking sites reinforces individuals' comparison tendencies over time. Social network addiction often exposes users to idealized and selectively curated social content, thereby intensifying upward comparisons and heightening comparison orientation[50]. Moreover, reciprocal dynamics may occur between fear of negative evaluation and social network addiction: individuals experiencing heightened evaluation anxiety may seek reassurance or validation through online interactions, whereas frequent social network addiction engagement can, in turn, amplify sensitivity to social feedback and evaluative threat. Such cyclical processes could create a self-perpetuating loop between social comparison, evaluative fear, and online dependence. Future research could employ longitudinal or cross-lagged panel designs to examine these bidirectional and dynamic mechanisms, thereby providing a more comprehensive understanding of the interplay between cognitive, affective, and behavioral components of social network addiction.

Cultural context and cross-cultural implications

The present findings should be understood within the collectivistic cultural milieu of Chinese university students, where interpersonal harmony, interdependence, and face-saving constitute fundamental cultural values[51,52]. In such a context, fear of negative evaluation extends beyond an individual's internalized anxiety to encompass broader concerns about maintaining collective image and relational obligations. Specifically, the collectivist emphasis on preserving "face"[53] and fulfilling interpersonal expectations heightens individuals' sensitivity to others' judgments, rendering fear of negative evaluation a socially contingent emotion rooted in relational interdependence rather than personal inadequacy. The strong orientation toward social interdependence typical of collectivist cultures may therefore amplify the emotional impact of upward social comparison and public evaluation. When individuals perceive that their behavior or performance could threaten group harmony or collective reputation, anxiety surrounding potential negative evaluation becomes especially salient.

By contrast, individuals embedded in individualistic cultural contexts-such as many Western societies-tend to construct self-worth primarily through personal achievement, autonomy, and self-consistency[54]. In these contexts, social comparison processes are often internalized, and distress following upward comparison stems predominantly from discrepancies between the actual self and the ideal self rather than concerns about relational harmony. Consequently, fear of negative evaluation in individualistic cultures may emerge from unmet internalized standards or performance ideals rather than from the social expectation of mutual adjustment.

Taken together, these distinctions highlight the culturally grounded nature of the mechanisms identified in this study. The paradoxical moderating role of core self-evaluation-protective under moderate comparison yet anxiety-enhancing when self-standards are threatened-may manifest differently across sociocultural settings. In collectivist contexts, where external evaluation and interdependence are salient, high CSE individuals might experience stronger evaluative anxiety when upward comparison implies social disapproval or face loss. Conversely, in individualistic contexts, the same individuals may experience evaluation-related distress primarily due to self-discrepancy or unfulfilled personal ideals. Future cross-cultural investigations are thus needed to determine whether the observed mechanisms are culturally specific or reflect universal psychological processes, thereby situating the current findings within the broader discourse of cross-cultural psychology.

Limitations

This study has several limitations that need to be further validated in the future. First, owing to the timing of the questionnaire distribution near graduation, the sample of this study included only students from vocational (first and second years) and undergraduate (first, second, and third years) programs, excluding graduating students, which may have affected the generalizability of the research results. Second, although this study constructed a hypothetical model on the basis of previous theoretical research, the use of cross-sectional research may not be able to establish a clear causal relationship between variables over time. Future research can use longitudinal studies to test the conclusions of this study further. Third, this study used a self-report questionnaire to collect data, which may have had methodological effects. In the future, experimental methods can be used to collect data on variables such as social comparison orientation and fear of negative evaluation, which can not only validate each other but also make the data more multisource and objective.

Data availability

We communicated with the managers of our college, and they agreed to allow us to upload the data. However, some information related to the privacy of the research subjects had been removed from the data. We have prepared the anonymized dataset and have uploaded it as supplementary material to the submission system. If any researchers need our data, please contact our corresponding author. After obtaining the consent of our college's management, we will assist them in using the data we have uploaded.

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Author contributions

Wei Feng: Conceptualization, data collection, methodology, data chart production, writing original draft, writing reviews, and editing. Man-Yu Zhang: Conceptualization, writing of the original draft, writing of the reviews, and editing. Yu-Bo Bu: Conceptualization, data collection, methodology, writing of reviews. Chang-Le Wang: Data collection, model diagram drawing, formal analysis, writing of reviews.

Competing interests

The authors declare no competing interests.

Ethical approval

Our research was approved by the Academic Ethics Committee of Huaiyin Normal University on February 20, 2024 (approval number: HNU202402201643).

Additional information

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