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ARTICLE

Relationship between Psychological Security and Fear of Missing Out among University Students: A Moderated Mediation Model

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ABSTRACT: Background: As the digital age progresses, fear of missing out (FoMO) is becoming increasingly common, and the impact factor of FOMO needs to be further investigated. This study aims to explore the relationship between psychological security (PS) and FoMO by analyzing the mediating role of social networking addiction (SNA) and the moderating role of social self-efficacy (SSE). **Methods:** We collected a sample of 1181 college students (with a mean age of 19.67 ± 1.38 years) from five universities in a province of mainland China through cluster sampling. Data were gathered using the psychological security questionnaire (PSQ), the FoMO scale, the SNA scale, and the perceived social self-efficacy (PSSE) scale. Data analysis employed independent-sample *t*-tests, one-way analysis of variance (ANOVA), Harman's single-factor test, confirmatory factor analysis, and moderated mediation analysis. **Results:** The results of the mediation model and moderated mediation model analyses showed the following key findings: (1) PS is significantly negatively correlated with FoMO; (2) SNA mediates the relationship between PS and FoMO; (3) SSE positively moderates the relationship between PS and FoMO; and (4) SSE also positively moderates the relationship between PS and SNA. **Conclusion:** University students' PS not only directly impacts FoMO but also indirectly influences it through SNA. Additionally, SSE positively moderates both the direct path and the first half of the mediation path, indicating that enhancing students' PS and SSE can help alleviate their SNA and FoMO, promoting their psychological and behavioral well-being.

KEYWORDS: College student; fear of missing out; psychological security; social networking addiction; social self-efficacy

1 Introduction

Although the development of informatization expands the ways for humans to obtain information, it also induces certain psychological problems. In daily life, a considerable number of people are constantly worried about missing out on some positive events and are in a state of anxiety. This state has been termed "Fear of Missing Out (FoMO)" by researchers [1]. In the era of information technology, the phenomenon of FoMO has evolved into a widespread social syndrome [2]. Surveys indicate that more than 80% of individuals have experienced FoMO, with the college student group being particularly affected [3]. With the further popularization of social media, FoMO has become increasingly prevalent. This phenomenon has attracted the attention of researchers. Previous studies have shown that FoMO has a negative effect on individual self-esteem [4], and is positively correlated with social networking addiction (SNA) [5], maladjustment to college

life [6], and depression [7], which seriously harms the physical and mental health of college students [8]. FoMO also has negative effects on students' work, studies, and daily life. Currently, research on FoMO is still in its early stages. Therefore, further exploration of the impact factors and mechanisms of FoMO is crucial for enriching theoretical research and guiding intervention strategies.

1.1 Psychological Security (PS) and Fear of Missing Out (FoMO)

FoMO is essentially a common form of anxiety and is considered a subtype of anxiety disorder [1]. Wortham defines FoMO as a fear of regret, which arises from individuals' general anxiety about missing out on social interactions, novel experiences, or other positive events [9]. According to humanistic psychology, anxiety arises from the inability to satisfy basic psychological needs; when these needs are not met, individuals feel psychological threats, thereby triggering anxiety [10]. Current research on FoMO has focused primarily on the theory of basic psychological needs [11], whereas less attention has been given to the need for psychological security. According to Maslow's hierarchy of needs [12], psychological security (PS) is a fundamental psychological need. Psychologists define it as the anticipation of potential threats or risks to one's physical or psychological well-being, accompanied by a sense of efficacy or inefficacy in managing such threats. This includes an individual's perceived security in interpersonal relationships and their sense of certainty and control when predicting life events [13]. The level of PS significantly influences an individual's mental state and intrinsic motivation [14]. In the current fast-paced environment, with increased academic pressure and fierce competition in the market, college students are more prone to psychological health issues than previous generations are due to a lack of PS [14]. Empirical research has shown that PS can negatively predict anxiety [15], indicating that college students with lower levels of PS are more likely to experience anxiety. Therefore, this study hypothesizes that PS may also have a negative effect on FoMO.

1.2 Mediating Role of Social Networking Addiction (SNA)

SNA refers to the compulsive use of social media despite negative consequences. It is characterized by a strong and continuous desire for and dependence on social networks, accompanied by negative emotions upon cessation of use [16]. The psychological decompensation hypothesis [17] suggests that addictive behaviors serve as a compensatory mechanism when an individual's psychological development is hindered. Shapira et al.'s research [18] indicates that individuals with a lower level of PS in real life may shift their attention to virtual networks and seek, social support and peer relationships online. Due to the anonymity and operability of these networks, individuals may become addicted to social media, leading to addictive behaviors. Research focusing on adolescents has confirmed that PS can influence an individual's possibility of developing SNA [19]. The anonymity and operability of social networks allow for the curation of content, which is often embellished or exaggerated, making it difficult to discern its authenticity. This creates the illusion that others' lives are more exciting, leading to distorted comparisons. As a result, individuals may pay excessive attention to such content, constantly fearing the omission of important information or exciting experiences, thus intensifying their FoMO Empirical studies have shown a significant negative correlation between SNA and FoMO [5,20]. In summary, an individual's level of PS may predispose them to SNA, which in turn leads to the development of FoMO. Therefore, this study hypothesizes that SNA mediates the relationship between PS and FoMO.

1.3 Moderating Role of Social Self-Efficacy (SSE)

Social self-efficacy (SSE) refers to an individual's evaluation of their social ability. Bandura et al. [21] defined it as "the knowledge about social behavior, confidence in one's own abilities, and belief in the positive responses one can receive from interpersonal interactions". Psychologists Smith et al. [22] further defined it as

"an individual's confidence in their ability to establish and maintain interpersonal relationships," emphasizing an individual's initiative and independence in their environment. Bandura et al. [21] also proposed that self-efficacy and anxiety are mutually exclusive. In social contexts, individuals with high SSE believe that they can receive positive responses from interpersonal relationships, and thus, are more likely to initiate contact with others and integrate into the environment, reducing the possibility of excessive use of social networks and experiencing a lower level of FoMO. In contrast, individuals with low SSE may compensate for their lower PS by indulging in social networks, using the anonymity and operability of these platforms to fill the gap in social interactions in real life, thereby, experiencing stronger FoMO. Research targeting university students has confirmed that high SSE can buffer the negative effects of information overload and interpersonal challenges [23]. Therefore, this study hypothesizes that SSE may serve as a moderating variable in the relationships between PS and SNA, as well as between PS and FoMO.

1.4 Hypotheses

By integrating Maslow's hierarchy of needs theory and the psychological decompensation hypothesis, we constructed a moderated mediation model to explore the potential relationship between PS and FoMO among university students (Fig. 1). Based on the relevant theoretical framework, the following hypotheses are proposed:

Hypothesis 1 (H1): PS negatively influences FoMO.

Hypothesis 2 (H2): SNA mediates the relationship between PS and FoMO.

Hypothesis 3 (H3): SSE moderates the relationship between PS and SNA.

Hypothesis 4 (H4): SSE moderates the relationship between PS and FoMO.

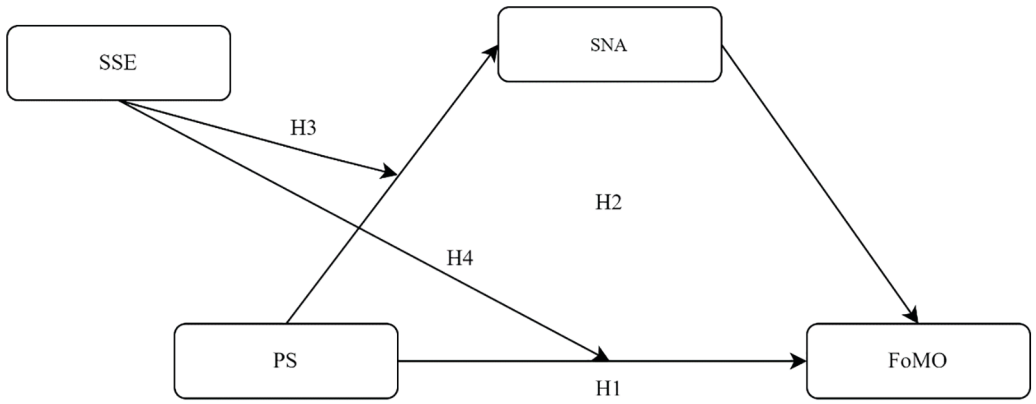

Figure 1: Hypothesized moderating mediation model. Note: PS, psychological security; FoMO, fear of missing out; SNA, Social networking addiction; SSE, Social self-efficacy

2 Methods

2.1 Participants

This study conducted a survey among 1300 Chinese students from five universities in a province of China. Data were collected through the cluster sampling method based on an online questionnaire. This work was approved by Jiangxi University of Chinese Medicine Psychology Institutional Review Board (IRB) (approval number: LL-2023H1010-01). All participants have given informed consent in this study. Informed

consent was obtained from the participants and the class leaders and counselors of the participants' respective classes. After completing the questionnaire, each student received a small monetary incentive. According to Presser et al. [24], the sample size should be at least 10 times the number of questionnaire items. There were 60 questionnaire items in this study, and the required minimum sample size was 600. A total of 1181 participants who met the psychometric requirements were ultimately included.

2.2 Measurements

2.2.1 Psychological Security Questionnaire (PSQ)

The psychological security questionnaire (PSQ) [13] comprises 16 items across two dimensions: interpersonal security and certainty control. All the items are rated on a 1 to 5 Likert scale, where 1 indicates "strongly disagree" and 5 indicates "strongly agree". Higher scores indicate a higher level of PS.

2.2.2 FoMOs

The Chinese revised version [10] of the FoMOs developed by Przybylski [1], comprises 8 items across two dimensions: fear of missing information and fear of missing experiences. Each item is rated on a five-point scale from "strongly disagree" to "strongly agree" (1 to 5), with higher scores indicating a more severe level of FoMO.

2.2.3 Social Networking Addiction Scale (SNAs)

The social networking addiction Scale (SNAs) [16], consists of 18 items across three dimensions: emotional change, compulsivity, and conflict. Each item is rated on a five-point scale from "strongly disagree" to "strongly agree" (1 to 5), with higher scores indicating a greater degree of SNA.

2.2.4 Perceived Social Self-Efficacy Scale (PSSEs)

The Chinese version [25] of the perceived social self-efficacy scale (PSSEs) [22], which consists of 18 items with a unidimensional structure, was used to measure social self-efficacy. Each item is rated on a five-point scale from "not confident at all" to "very confident" (1 to 5), with higher scores indicating a higher level of SSE.

2.2.5 Data Analysis

SPSS 26.0 was used for data management and analysis. Statistical methods included descriptive analysis, correlation analysis, independent-sample *t*-tests, one-way analysis of variance (ANOVA), Harman's single-factor test, confirmatory factor analysis and moderated mediation analysis. A moderated mediation analysis was conducted using the bootstrap method. First, descriptive statistics and Pearson correlations of the variables were calculated. Next, the mediating effect of SNA and the moderating effect of SSE were tested using Models 4 and 8 from the PROCESS macro [26].

3 Results

3.1 Descriptive Statistical Analysis

A total of 1300 university students participated in the survey and completed the questionnaire. After excluding 119 invalid responses, 1181 valid datasets were retained, resulting in a valid response rate of 90.8%. Among the valid responses, 428 were from male students (36.2%), and 753 were from female students (63.8%). In terms of academic year, 318 were freshmen (26.9%), 399 were sophomores (33.8%), 243 were

juniors (20.6%), and 221 were seniors or above (18.7%). The participants' ages ranged from 17 to 24 years (M = 19.67, SD = 1.38).

Independent-sample *t*-tests showed that there was no significant sex difference in the PS or FoMO scores. However, compared with male students, female students had significantly higher SNA scores and significantly lower SSE scores. One-way ANOVA showed that academic year was significantly positively associated with both FoMO and SNA and that the FoMO and SNA scores of higher-year students were significantly higher than those of lower-year students (Table 1).

Table 1: Demographic characteristics and related variables of the samples

Characteristics (N = 1181)	Related variables				
	N (%)	PS (M ± SD)	FoMO (M ± SD)	SNA (M ± SD)	SSE (M ± SD)
Gender					
Male	428 (36.20)	51.22 ± 15.03	21.26 ± 7.48	47.07 ± 15.86	60.36 ± 15.65
Female	753 (63.80)	50.86 ± 11.94	21.97 ± 5.97	50.89 ± 12.77	57.95 ± 12.55
		t = 0.45	t = −1.79	t = −4.52***	t = 2.4**
Grade					
Freshmen	318 (26.90)	51.23 ± 14.46	21.11 ± 7.41	47.17 ± 14.72	60.19 ± 15.13
Sophomores	399 (33.80)	50.06 ± 12.11	22.53 ± 6.35	49.39 ± 13.5	58.03 ± 12.89
Juniors	243 (20.60)	50.98 ± 13.12	21.69 ± 5.74	51.84 ± 13.7	58.16 ± 13.87
Seniors or above	221 (18.70)	52.33 ± 12.9	21.15 ± 6.39	50.48 ± 14.16	59.01 ± 13.21
		F = 1.47	F = 3.53*	F = 5.56**	F = 1.68

Note: M, mean; SD, standard deviation; PS, psychological security; FoMO, fear of missing out; SNA, Social networking addiction; SSE, Social self-efficacy; *p < 0.05, **p < 0.01, ***p < 0.001.

3.2 Test for Common Method Bias

Harman's single-factor test indicated that there were five factors with eigenvalues greater than 1, The first unrotated factor explained 29.03% of the variance (below the critical threshold of 40%), suggesting that there was no severe common method bias in the data.

3.3 Evaluation of the Measurement Model

To assess the reliability of the scales, validation at both the measurement item and the variable levels was conducted. Factor loadings and coefficients were used to evaluate the measurement items. Using confirmatory Factor Analysis to assess the structural validity of the measurement items. As shown in Table 2, all item loadings exceeded the threshold of 0.50 recommended by Hair et al. [27]. The reliability of the variables was assessed using combined reliability (CR) and Cronbach's α. Both the CR and Cronbach's α values were higher than the recommended threshold of 0.70, and the average variance extracted (AVE) values for all the variables exceeded 0.50.

Table 2: Validity of model convergence

Construct	Item	Factor loading	CR	AVE value	Cronbach's α
PS	SQ1	0.723	0.955	0.569	0.940
	SQ2	0.722			
	SQ3	0.805			
	SQ4	0.658			
	SQ5	0.829			
	SQ6	0.837			

(Continued)

Table 2 (continued)

Construct	Item	Factor loading	CR	AVE value	Cronbach's α
	SQ7	0.786			
	SQ8	0.760			
	SQ9	0.654			
	SQ10	0.747			
	SQ11	0.736			
	SQ12	0.733			
	SQ13	0.749			
	SQ14	0.772			
	SQ15	0.762			
	SQ16	0.77			
FoMO	FoMO17	0.809	0.892	0.514	0.830
	FoMO18	0.781			
	FoMO19	0.806			
	FoMO20	0.81			
	FoMO21	0.664			
	FoMO22	0.647			
	FoMO23	0.592			
	FoMO24	0.574			
SNA	SNA25	0.75	0.963	0.594	0.950
	SNA26	0.703			
	SNA27	0.758			
	SNA28	0.837			
	SNA29	0.778			
	SNA30	0.806			
	SNA31	0.821			
	SNA32	0.784			
	SNA33	0.733			
	SNA34	0.793			
	SNA35	0.681			
	SNA36	0.749			
	SNA37	0.771			
	SNA38	0.791			
	SNA39	0.796			
	SNA40	0.739			
	SNA41	0.777			
	SNA42	0.786			
SSE	SSE43	0.763	0.965	0.606	0.950
	SSE44	0.748			
	SSE45	0.784			
	SSE46	0.755			
	SSE47	0.766			

(Continued)

Table 2 (continued)

Construct	Item	Factor loading	CR	AVE value	Cronbach's α
	SSE48	0.77			
	SSE49	0.785			
	SSE50	0.814			
	SSE51	0.767			
	SSE52	0.754			
	SSE53	0.739			
	SSE54	0.778			
	SSE55	0.805			
	SSE56	0.762			
	SSE57	0.837			
	SSE58	0.805			
	SSE59	0.799			
	SSE60	0.78			

Note: CR, combined reliability; AVE, average variance extracted; PS, psychological security; FoMO, fear of missing out; SNA, social networking addiction; SSE, social self-efficacy.

3.4 Model Fit

Confirmatory factor analysis was employed. Several indices were used to evaluate the model fit: the standardized root mean square residual (SRMR), the comparative fit index (CFI), the parsimony goodness-of-fit index (PGFI), and the parsimony normed fit index (PNFI). The predicted values for SRMR, PGFI, PNFI, and CFI were as follows: SRMR = 0.046 (<0.05), PGFI = 0.650 (>0.5), PNFI = 0.797 (>0.5), and CFI = 0.858 (>0.9; close to acceptable but not fully meeting the threshold). In conclusion, the final model fits the data well (Table 3).

Table 3: Model fit summary

Absolute fit indices	Value
SRMR	0.046
PGFI	0.650
PNFI	0.797
CFI	0.858

Note: SRMR, standardized root mean square residual; PGFI, parsimony goodness-of-fit index; PNFI, parsimony normed fit index; CFI, comparative fit index.

3.5 Correlation Analysis

The correlation analysis of the college student sample showed the following significant relationships: a negative correlation between PS and both SNA ($r = -0.20$, $p < 0.001$) and FoMO ($r = -0.26$, $p < 0.001$) and a positive correlation with SSE ($r = 0.50$, $p < 0.001$). SNA was positively correlated with FoMO ($r = 0.31$,

$p < 0.001$) but negatively correlated with SSE ($r = -0.18$, $p < 0.001$). There was no significant correlation between SSE and FoMO ($r = -0.03$, $p > 0.05$) (Table 4).

Table 4: Results of descriptive statistics and correlation analysis

	M	SD	1	2	3	4
PS	50.99	13.14	1			
SNA	49.50	14.09	−0.20***	1		
FoMO	21.72	6.57	−0.26***	0.31***	1	
SSE	58.82	13.80	0.50***	−0.18***	−0.03	1

Note: M, mean; SD, standard deviation; PS, psychological security; FoMO, fear of missing out; SNA, social networking addiction; SSE, social self-efficacy; ***$p < 0.001$.

3.6 Mediating Effect of SNA

After standardizing all the variables in the model, a simple mediation model (Model 4) in Hayes' PROCESS macro [26] was used to test the mediating role of SNA between PS and FoMO, controlling for gender and academic year. The results (Table 5) showed that PS had a significant negative effect on FoMO ($\beta = -0.21$, $t = -7.40$, $p < 0.001$), supporting Hypothesis H1. When the mediator (SNA) was included, the negative effect of PS on FoMO became stronger ($\beta = -0.26$, $t = -9.23$, $p < 0.001$). PS also had a significant negative effect on SNA ($\beta = -0.20$, $t = -7.14$, $p < 0.001$), and SNA had a significant positive effect on FoMO ($\beta = 0.27$, $t = 9.76$, $p < 0.001$). Further bootstrap analysis revealed that the total effect was −0.13 (95% *CI*: −0.16, −0.10), the direct effect was −0.10 (95% *CI*: −0.13, −0.08), and the indirect (mediating) effect was −0.03 (95% *CI*: −0.08, −0.03), accounting for 23.08% of the total effect (Table 6). These findings suggest that PS negatively affects FoMO directly and indirectly through SNA, supporting Hypothesis H2.

Table 5: Test of the mediating effect of social networking addiction

	FoMO			SNA			FoMO		
	β	*t*	SE	*β*	*t*	SE	*β*	*t*	SE
Gender	0.05	1.74	0.38	0.13	4.44***	0.83	0.02	0.54	0.37
Grade	−0.004	−0.03	0.17	0.10	3.61***	0.37	−0.03	−1.05	0.17
PS	−0.26	−9.23***	0.01	−0.20	−7.14***	0.03	−0.21	−7.40***	0.01
SNA							0.27	9.76***	0.01
R^2		0.07			0.07			0.14	
F	$F = 29.56$***			$F = 27.94$***			$F = 47.77$***		

Note: SE, standard error; PS, psychological security; FoMO, fear of missing out; SNA, social networking addiction; SSE, social self-efficacy; ***$p < 0.001$. All variables in the model are standardized before entering the regression model.

Table 6: Decomposition of total effects, direct effects and indirect effects

	Effect	Boot SE	95% Boot CI	Relative proportion
Total effect	−0.13	0.01	−0.16, −0.10	—
Direct effect	−0.10	0.01	−0.13, −0.08	76.92%
Indirect effect	−0.03	0.01	−0.08, −0.03	23.08%

Note: SE, standard error; CI, continuous integration. Same methodology as in Table 5.

3.7 Moderating Effects of Social Self-Efficacy

Controlling for gender and academic year, a moderated mediation analysis was conducted using Model 8 in Hayes' PROCESS macro. This model assumes that both the mediation pathway and the direct effect are moderated, which aligns with the theoretical framework of this study. The analysis employed percentile bootstrapping with 5000 resamples. The results (Table 7) showed that after including the interaction term between PS and SSE, the interaction effect of PS and SSE on SNA ($\beta = -0.01$, $t = -6.43$, $p < 0.001$) and FoMO ($\beta = -0.004$, $t = -6.46$, $p < 0.001$) was significant. This finding indicates that SSE not only moderates the direct effect of PS on FoMO but also plays a moderating role in the mediation pathway via SNA.

Table 7: Test of the moderated mediating effects of social self-efficacy and social networking addiction

	FoMO			SNA		
	β	**SE**	***t***	***β***	**SE**	***t***
PS	0.11	0.04	2.70**	0.40	0.01	4.21***
SSE	0.28	0.03	8.10***	0.355	0.08	4.65***
PS × SSE	−0.004	0.001	−6.46***	−0.01	0.001	−6.43***
Gender	0.27	0.36	0.75	3.18	0.81	3.91***
Grade	−0.12	0.16	−0.73	1.30	0.37	3.55***
SNA	0.12	0.01	9.05***			
R^2		0.19			0.10	
F		$F = 45.33$***			$F = 27.19$***	

Note: SE, standard error; PS, psychological security; FoMO, fear of missing out; SNA, social networking addiction; SSE, social self-efficacy; **$p < 0.01$; ***$p < 0.001$. All variables in the model are standardized before entering the regression model.

Further simple slope analyses (Figs. 2 and 3) revealed that for individuals with low SSE (*M–1SD*), PS had a significant but small negative effect on FoMO (*simple slope* = −0.075, 95% *CI*: −0.111, −0.038). However, for individuals with high SSE (*M* + *1SD*), the negative effect of PS on FoMO was stronger (*simple slope* = −0.19, 95% *CI:* −0.224, −0.157). Additionally, for individuals with low SSE (*M*−1*SD*), the effect of PS on SNA was not significant (*simple slope* = −0.002, 95% *CI*: −0.020, 0.014), while for those with high SSE (*M* + *1SD*), the negative effect of PS on SNA was significant (*simple slope* = −0.032, 95% *CI*: −0.052, −0.018), as shown in Table 8.

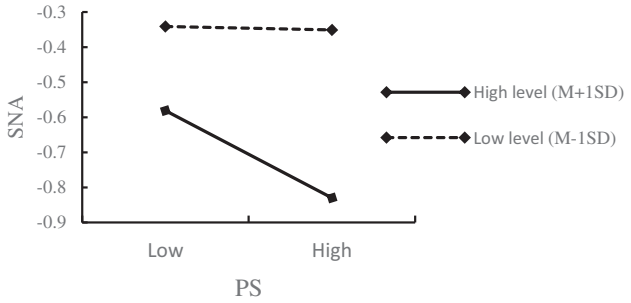

Figure 2: Association between PS and SNA at different levels of SSE

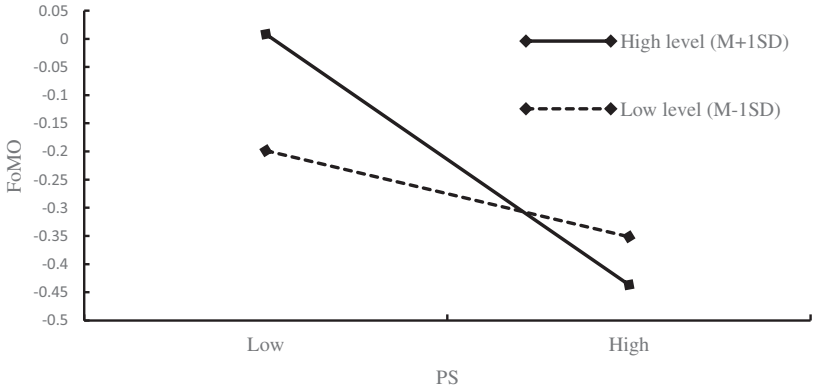

Figure 3: Association between PS and FoMO at different levels of SSE

Table 8: Direct and mediating effects at different levels of social self-efficacy

		Effect	SE	LLCI	ULCI
Direct effect	Low ($M - 1SD$)	−0.075	0.018	−0.111	−0.038
	Mean (M)	−0.133	0.015	−0.163	−0.102
	High ($M + 1SD$)	−0.190	0.017	−0.224	−0.157
Mediating effect	Low ($M - 1SD$)	−0.002	0.008	−0.020	0.014
	Mean (M)	−0.017	0.007	−0.031	−0.005
	High ($M + 1SD$)	−0.032	0.090	−0.152	−0.018

Note: SE, standard error; M, mean, SD, standard deviation; LLCI, lower level of confidence interval; ULCI, upper level of confidence interval.

In conclusion, Hypotheses H3 and H4 are supported, as SSE moderates the direct effect of PS on FoMO and the indirect effect of PS on FoMO via SNA.

4 Discussion

The correlation analysis revealed that female students had significantly higher SNA scores and significantly lower SSE scores than male students, which is consistent with the findings of a previous study [28]. This phenomenon may be related to the expectations of social gender roles. Men are often assigned higher expectations and social evaluations, which are continually reinforced and internalized, leading to greater self-confidence in male individuals. In contrast, societal stereotypes regarding femininity emphasize traits such as beauty, likability, and modesty, while discouraging excessive confidence. This societal conditioning may cause women to lose confidence in themselves, suppress their thoughts, and restrict their behaviors. As a result, women might be more dependent on the virtual and anonymous aspects of social networks, which could explain why their SNA levels are higher than those of men.

Furthermore, upper-year students reported significantly higher FoMO and SNA scores compared to lower-year students. This may be due to the increased academic and employment pressures faced by upper-year students, which heighten their concerns about missing out on important information or experiences that could affect their future prospects. Consequently, upper-year students may experience greater FoMO and demonstrate a stronger reliance on social networks to access beneficial information.

4.1 PS and FoMO

The empirical analysis indicates that PS has a significant negative effect on FoMO. According to Freud's theory [29], when individuals are exposed to stimuli beyond their control or coping ability, their sense of security is threatened, and this threat experience manifests as anxiety. When this sense of threat occurs within a social context, individuals with low PS may feel a lack of control over their social and living environment. As a result, they may worry about missing out on social information or experiences and fear exclusion from peers or society, resulting in an increase in FoMO. In contrast, individuals with high PS tend to have a stronger sense of social agency and control, which reduces their experience of FoMO. Currently, research on the relationship between PS and FoMO remains limited, and few studies have explored this connection in depth. Therefore, the findings of this study contribute new insights into the mechanisms underlying FoMO and provide a novel perspective on its development process.

4.2 Mediating Role of SNA

Further research findings indicated that the SNA partially mediated the relationship between PS and FoMO. PS negatively influences SNA, a finding that is consistent with previous researches [19,30] and provides partial support for the psychological decompensation hypothesis [17]. This theory suggests that when the psychological development of adolescents is blocked, the use of the internet can serve as a compensatory response. The anonymity and informational aspects of social networks, through users' personalized virtual identities, can compensate for individuals' PS needs [18], which aligns with the preferences of individuals with low PS and reinforces their dependency on social networks. Moreover, SNA positively predicts FoMO, which is consistent with the mainstream findings in the current literature [1,31–33], and offers partial support for social cognitive theory in terms of the effects of mass communication media [34], indicating a close link between social network use and FoMO.

The self-presentation and real-time updating features of social networks increase the perceived availability of unknown events. Individuals can learn about exciting activities and experiences that they have not participated in, intensifying the feeling of exclusion [35]. Additionally, the time spent on social networks often displaces other activities, leading to the potential to miss out on real-life events, thereby intensifying anxiety and deepening FoMO. This creates a vicious cycle where individuals return to social networks to keep track of others' social activities. Related studies have confirmed the interactive influence of FoMO and SNA [36,37]. Therefore, the unmet need for security in real-life interactions is compensated within social networks, reinforcing individuals' dependency on social networks and intensifying their FoMO experience.

4.3 Moderating Role of Social Self-Efficacy

Our findings also revealed that SSE moderated the direct effect of PS on FoMO and the mediating role of SNA. The results show that, in the direct pathway, individuals with high SSE experience a significant negative effect of PS on FoMO, whereas for individuals with low SSE, this negative effect is not significant. This finding is consistent with the moderating role of SSE in the mediating effect of SNA. For individuals with high SSE, PS significantly negatively influences SNA, whereas for individuals with low SSE, the negative effect of PS on SNA is relatively weak. Therefore, SSE plays a buffering and enhancing role. Specifically, high SSE buffers the impact of low PS on both SNA and FoMO and also enhances the negative effects of high PS on both SNA and FoMO.

The reason for this may be that individuals with high SSE have superior social skills and social adaptability. These individuals tend to adopt a more proactive and positive attitude in interpersonal and environmental interactions, enabling them to effectively cope with various social situations. As a result, they are less likely to exhibit maladaptive behaviors and negative psychological states when facing social challenges

and pressures. This finding supports previous research [38]. Furthermore, individuals with high SSE are more confident in receiving positive responses in interpersonal and environmental interactions. Therefore, they are less likely to passively follow social relationships in which they have not participated, making them less prone to SNA and FoMO. This finding is also consistent with relevant studies [34]. Therefore, SSE is an important positive factor in moderating individual behaviors and psychological health.

5 Limitations, Future Directions, and Contributions

This study has several limitations that need to be addressed in future research. First, we surveyed only undergraduate students, excluding graduate students (masters and PhD) and middle and high school students. This limitation may affect the perspective and scope of the research. Future studies could expand the sample to include a wider range of age groups and academic levels to gain, a more comprehensive understanding of FoMO. Second, we only analyzed the impact of gender and grade on the findings, with limited examination of demographic information. Future research should incorporate a broader range of demographic variables, such as students' majors and courses, to provide a more comprehensive understanding. Third, the data relied primarily on subjective self-reports, which may introduce bias. Future research could combine self-reports with peer assessments to increase the objectivity of the evaluation. Fourth, we used a cross-sectional design, which cannot provide rigorous causal evidence. Longitudinal research designs are needed to explore the causal relationships between PS and FoMO. Fifth, various psychological factors, such as other unmet psychological needs, loneliness, shyness, and personality traits, may contribute to FoMO. Future studies could control these irrelevant variables to further validate the impact of PS on FoMO and explore the underlying causes of FoMO.

Despite these limitations, our findings provide important insights for both the theoretical development and practical intervention of FoMO. In terms of theoretical significance, the findings support the psychological decompensation hypothesis [17], suggesting that individuals with lower security in real life tend to transfer their attention to virtual networks, which increases the likelihood of addictive behaviors. Moreover, the results align with social cognitive theory in terms of the effects of mass communication media [33], revealing the significant relationship between SNA and FoMO. Additionally, our findings contribute to the research on FoMO by revealing the significant negative relationship between PS and FoMO, as well as the partial mediating role of SNA and the moderating role of SSE, providing theoretical support for this relationship. Finally, this study emphasizes the protective role of SSE, which can help individuals reduce SNA and alleviate the negative effects of FoMO.

From a practical perspective, this study confirms the significant influence of PS on both SNA and FoMO. Therefore, at the individual level, university students should work to improve their self-awareness, actively engage with their social environment, and enhance their PS. At the institutional level, universities should optimize campus environments, strengthen psychological health education, and foster PS among students. Through joint efforts, both individuals and universities can help reduce the impact of SNA and FoMO on students. Additionally, research on the moderating role of SSE suggests that students should focus on developing their social skills, actively participating in social activities, and increasing their social confidence. On the other hand, universities should create more opportunities for real-life interpersonal interactions, offer courses aimed at enhancing interpersonal communication skills, and provide students with the necessary skills to fulfill their psychological needs through face-to-face socializing, thereby mitigating the negative psychological outcomes caused by low PS and reducing maladaptive behaviors.

6 Conclusion

This study investigates the impact of PS on FoMO among Chinese university students, with a particular focus on the mediating role of SNA and the moderating role of SSE. Based on a survey of 1181 students, the findings are as follows: (1) PS negatively influences FoMO; (2) SNA mediates the relationship between PS and FoMO; (3) SSE moderates the relationship between PS and FoMO; and (4) SSE also moderates the relationship between PS and SNA. These findings not only enhance educators' understanding of the factors influencing FoMO and provide insights into effective intervention strategies to prevent FoMO among university students but also suggest that strengthening PS and SSE in students can reduce the levels of SNA and FoMO.

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Availability of Data and Materials: The dataset generated and analyzed during the current study is not publicly available due to the privacy of the subjects involved but is available from the corresponding author upon reasonable request.

Ethics Approval: This work was approved by Jiangxi University of Chinese Medicine Psychology Institutional Review Board (IRB) (approval number: LL-2023H1010-01). All participants have given informed consent in this study.

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References

1. Przybylski AK, Murayama K, DeHaan CR, Gladwell V. Motivational, emotional, and behavioral correlates of fear of missing out. Comput Hum Behav. 2013;29(4):1841–48. doi:10.1016/j.chb.2013.02.014.
2. Milyavskaya M, Saffran M, Hope N, Koestner R. Fear of missing out: prevalence, dynamics, and consequences of experiencing FOMO. Motiv Emot. 2018;42(5):725–37. doi:10.1007/s11031-018-9683-5.
3. Hayran C, Anik L, Gürhan-Canli Z. A threat to loyalty: fear of missing out (FOMO) leads to reluctance to repeat current experiences. PLoS One. 2020;15(4):e0232318. doi:10.1371/journal.pone.0232318.
4. Servidio R, Soraci P, Griffiths MD, Boca S, Demetrovics Z. Fear of missing out and problematic social media use: a serial mediation model of social comparison and self-esteem. Addict Behav Rep. 2024;19(17):100536. doi:10.1016/j.abrep.2024.100536.
5. Yin L, Wang P, Nie J, Guo J, Feng J, Lei L. Social networking sites addiction and FoMO: the mediating role of envy and the moderating role of need to belong. Curr Psychol. 2021;40(8):3879–87. doi:10.1007/s12144-019-00344-4.
6. Alt D. Students' wellbeing, fear of missing out, and social media engagement for leisure in higher education learning environments. Curr Psychol. 2016;37(1):128–38. doi:10.1007/s12144-016-9496-1.
7. Dong Y, Chen M, Wu Z, Zhang Z. COVID-19 psychological pressures, depression and FOMO: the mediating role of online social support and emotional regulation. BMC Psychol. 2024;12(1):116. doi:10.1186/s40359-024-01610-2.
8. Groenestein E, Willemsen L, van Koningsbruggen GM, Ket H, Kerkhof P. The relationship between fear of missing out, digital technology use, and psychological well-being: a scoping review of conceptual and empirical issues. PLoS One. 2024;19(10):e0308643. doi:10.1371/journal.pone.0308643.

9. Wortham J. Feel like a wallflower? Maybe it's your facebook wall. New York, NY, USA: The New York Times; 2011. [cited 2024 Sep 23]. Available from: https://www.nytimes.com/2011/04/10/business/10ping.html.
10. Li Q. The relationship among college students' basic psychological needs, fear of missing out, problematic internet use and emotion reactivity [master's thesis]. Harbin, China: Harbin Normal University; 2019. (In Chinese).
11. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. Am Psychol. 2000;55(1):68–78. doi:10.1037/0003-066X.55.1.68.
12. Maslow AH, Hirsh E, Stein M, Honigmann I. A clinically derived test for measuring psychological security-insecurity. J Gen Psychol. 1945;33(1):21–41. doi:10.1080/00221309.1945.10544493.
13. Cong Z, An L. Preliminary compilation of the sense of perception scale and its reliability and validity test. Chin Ment Health J. 2004;18(2):97–9 (In Chinese).
14. Xin S, Sheng L, Liang X, Liu Y, Chen K. Psychological security in Chinese college students during 2006–2019: the influence of social change on the declining trend. J Affect Disord. 2022;318:70–9. doi:10.1016/j.jad.2022.08.056.
15. Li X, Sun P, Li L. Adult attachment and trait anxiety among Chinese college students: a multiple mediation model. Front Public Health. 2022;10:912128. doi:10.3389/fpubh.2022.912128.
16. Wang X. College students' social network addiction tendency: questionnaire Construction and correlation research [master's thesis]. Chongqing, China: Southwest University; 2016 (In Chinese).
17. Chen Y, Gao Y, Li H, Deng Q, Sun C, Gao F. Shyness and mobile phone dependency among adolescents: a moderated mediation model of basic psychological needs and family cohesion. Child Youth Serv Rev. 2021;130(4):106239. doi:10.1016/j.childyouth.2021.106239.
18. Shapira NA, Goldsmith TD, Keck PE, Khosla UM, McElroy SL. Psychiatric features of individuals with problematic internet use. J Affect Disord. 2000;57(1):267–72. doi:10.1016/S0165-0327(99)00107-X.
19. Jia J, Li D, Li X, Zhou Y, Wang Y, Sun W, et al. Peer victimization and adolescent internet addiction: the mediating role of psychological security and the moderating role of teacher-student relationships. Comput Hum Behav. 2018;85:116–24. doi:10.1016/j.chb.2018.03.042.
20. Li L, Niu Z, Mei S, Griffiths MD. A network analysis approach to the relationship between fear of missing out (FoMO), smartphone addiction, and social networking site use among a sample of Chinese university students. Comput Hum Behav. 2022;128(2):107086. doi:10.1016/j.chb.2021.107086.
21. Bandura A, Pastorelli C, Barbaranelli C, Caprara GV. Self-efficacy pathways to childhood depression. J Pers Soc Psychol. 1999;76(2):258–69. doi:10.1037/0022-3514.76.2.258.
22. Smith HM, Betz NE. Development and validation of a scale of perceived social self-efficacy. J Career Assess. 2000;8(3):283–301. doi:10.1177/106907270000800306.
23. Buser TJ, Buser JK, Kearney A. Justice in the family: the moderating role of social self-efficacy in the relationship between nonsuicidal self-injury and interactional justice from parents. Fam J. 2012;20(2):147–56. doi:10.1177/1066480712441575.
24. Campanelli P. Methods for testing and evaluating survey questionnaires. J R Stat Soc Ser A Stat Soc. 2005;168(3):629–38. doi:10.1111/j.1467-985X.2005.00368_13.x.
25. Fan J, Meng H, Gao X, Lopez FJ, Liu C. Validation of a U.S. adult social self-efficacy inventory in Chinese Populations. Couns Psychol. 2010;38(4):473–96. doi:10.1177/0011000009352514.
26. Hayes AF. PROCESS: a versatile computational tool for observed variable mediation, moderation, and conditional process modeling. New York, NY, USA; 2012. [cited 2024 Sep 23]. Available from: http://www.afhayes.com/public/process2012.pdf.
27. Hair JF, Risher JJ, Sarstedt M, Ringle CM. When to use and how to report the results of PLS-SEM. Eur Bus Rev. 2019;31(1):2–24. doi:10.1108/EBR-11-2018-0203.
28. Hermann KS, Betz NE. Path models of the relationships of instrumentality and expressiveness to social self-efficacy, shyness, and depressive symptoms. Sex Roles. 2004;51(1):55–66. doi:10.1023/B:SERS.0000032309.71973.14.
29. Mayhew J. Freud's theory of personality. In: Mayhew J, Campling J, editors. Psychological change: a practical introduction. London, UK: Macmillan Education; 1997. p. 141–63. doi:10.1007/978-1-349-25377-7_9.
30. Kardefelt-Winther D. The moderating role of psychosocial well-being on the relationship between escapism and excessive online gaming. Comput Hum Behav. 2014;38(1):68–74. doi:10.1016/j.chb.2014.05.020.

31. Niu G, Shi X, Zhang Z, Yang W, Jin S, Sun X. Can smartphone presence affect cognitive function? The moderating role of fear of missing out. Comput Hum Behav. 2022;136(2):107399. doi:10.1016/j.chb.2022.107399.
32. Alt D. College students' academic motivation, media engagement and fear of missing out. Comput Hum Behav. 2015;49(6):111–19. doi:10.1016/j.chb.2015.02.057.
33. Valkenburg PM, Peter J, Walther JB. Media effects: theory and research. Annu Rev Psychol. 2016;67(1):315–38. doi:10.1146/annurev-psych-122414-033608.
34. Deniz M. Fear of missing out (FoMO) mediate relations between social self-efficacy and life satisfaction. Psicol Reflex E Crit Rev Semest Do Dep De Psicol Da UFRGS. 2021;34(1):28–36. doi:10.1186/s41155-021-00193-w.
35. Buglass SL, Binder JF, Betts LR, Underwood JDM. Motivators of online vulnerability: the impact of social network site use and FOMO. Comput Hum Behav. 2017;66:248–55. doi:10.1016/j.chb.2016.09.055.
36. Fioravanti G, Casale S, Benucci SB, Prostamo A, Falone A, Ricca V, et al. Fear of missing out and social networking sites use and abuse: a meta-analysis. Comput Hum Behav. 2021;122(12):106839. doi:10.1016/j.chb.2021.106839.
37. Yin L, Wang P, Li H, Mao N, Hu H, Griffiths MD. Gender differences in the associations between parental phubbing, fear of missing out, and social networking site addiction: a cross-lagged panel study. Technol Soc. 2024;78(2):102668. doi:10.1016/j.techsoc.2024.102668.
38. Santarpia FP, Consiglio C, Borgogni L. On the roots of interpersonal strain at work: the role of burnout and social self-efficacy. Personal Individ Differ. 2024;231:112825. doi:10.1016/j.paid.2024.112825.