

Study on the Relationship between Online Social Support, Fear of Missing Out, and College Students' Online Learning Engagement

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Abstract: The influence of college students' online social support on their investment in online learning and its mechanism of action are important research topics at present. To analyze the impact of college students' online social support on online learning engagement and to verify the mediating role of fear of missing out (FOMO). Suggestions are proposed based on the research findings. A cluster sampling method was used to randomly select 450 college students from 2 universities in Chengdu, Sichuan Province, as the survey subjects. Questionnaires on online social support, online learning engagement, and fear of missing out were administered. SPSS 24.0 statistical software was used for independent samples t-test, and the Process program was used for testing the moderating effect. The result shows there were significant differences in online social support and fear of missing out scores between female and male college students ($t=-5.31$, $p < 0.001$; $t=-5.79$, $p < 0.001$); Further analysis indicates that fear of missing out played a mediating role in the relationship between college students' online social support and online learning engagement. These findings provide empirical evidence for understanding how online social support affects online learning engagement through fear of missing out, and have reference value for improving the online learning effect of college students.

Keywords: Online Social Support; Online Learning Engagement; Fear of Missing Out.

1. Introduction

With the ceaseless evolution of network technology, online education has witnessed rapid proliferation on a global scale. Especially amidst the surge of public health crises, online learning platforms have efficaciously bridged the educational gap between educators and learners. Despite the myriad conveniences that the scaled-up online teaching paradigms have brought to pedagogical activities, they have also laid bare several prominent issues in

the realm of cyber education: the sense of isolation felt by students during online learning, lackluster classroom participation, meager course completion rates, and feeble autonomous online learning capabilities [1, 2]. The quality of online education has sparked significant scholarly attention, with its effectiveness heavily contingent upon the degree of learner engagement [3, 4]. Engagement in online learning is a positive state exhibited by learners during their online learning activities, encompassing cognitive engagement, affective engagement, and behavioral engagement [5]. Not only can online learning engagement predict the academic trajectories of learners, but it can also serve as a pivotal observational dimension for effectively evaluating the quality of online education [3, 6].

Existing studies both in China and internationally have shown a significant positive correlation between social support and learning engagement [7, 8, 9, 10]. Online social support entails emotional, informational, and material exchanges and interactions between individuals and others in the virtual cyber world, fostering a sense of belonging and identity with the environment and others [11]. However, from the perspective of online learning engagement research, college students' online learning environments are often confined to the spaces of their homes or dormitories, with interpersonal interactions mainly reliant on digital platforms, making it challenging to access real-world social support resources. Therefore, rigorous empirical research urgently needs to be conducted on whether online social support in the online education environment can effectively promote learners' sustained engagement and yield the same efficacy as traditional social support.

Fear of missing out is a novel concept that has garnered researchers' attention with the rise of social networking sites, referring to a prevalent anxiety individuals experience due to the fear of missing out on others' positive experiences,

being a stable individual trait [12]. Individuals with fear of missing out exhibit cognitive characteristics such as a continual desire to know what others are doing and a fear of missing out on others' experiential information [13]. The systematic cognitive understanding of the association mechanisms between fear of missing out and online social support has yet to be established in the current academic field, but empirical studies have confirmed a significant negative association between anxiety levels and traditional social support systems [14, 15]. Based on Self-Determination Theory, meeting basic psychological needs is a crucial motivational factor, and once individuals' needs are fulfilled, they will not engage in compensatory behaviors [16]. Thus, we speculate that online social support may have a negative predictive effect on fear of missing out.

A review of relevant academic literature indicates that current research has only preliminarily revealed the relationship between social support, anxiety, and learning engagement, while the interaction and mechanisms of online social support, fear of missing out, and online learning engagement remain unexplored areas of study. Grounded in Self-Determination Theory, which posits that individuals make autonomous choices regarding their actions based on a thorough understanding of their personal needs and environmental information, this study hypothesizes that fear of missing out mediates the relationship between online social support and online learning engagement.

2. Participants and Methods

2.1 Participants

A cluster random sampling method was employed to select students from two universities in Chengdu, ranging from freshmen to seniors, as the survey subjects. A total of 450 questionnaires were distributed, of which 14 were deemed invalid due to short response times. After excluding the invalid questionnaires, 436 valid responses were obtained, yielding a response rate of 96.9%. The participants' ages ranged from 17 to 23 years, with a mean age of (19.2 ± 1.6) years. Among the respondents, 250 were male and 189 were female. A total of 315 students were from urban areas, while 121 were from rural areas. Additionally, 135 students were only children, and 301 were non-only children. Prior to the survey, participants were informed of the research purpose and, upon consent, proceeded to answer the questions. This study was reviewed and approved by the Ethics Committee of Chengdu

Aeronautic Polytechnic (Approval No. CAPEC20230528).

2.2 Research Tools

2.2.1 Online Social Support Questionnaire

The Online Social Support Questionnaire for College Students, developed by Liang in 2008 [17], was used in this study. The questionnaire contains 23 items, divided into four dimensions: informational support, peer support, emotional support, and instrumental support. A 1-5-point scale was employed, where 1 indicates "strongly disagree" and 5 indicates "strongly agree". A higher score represents a greater level of online social support received by the participant. The Cronbach's α coefficient was 0.93, and the test-retest reliability was 0.87. In this study, the Cronbach's α coefficient of the questionnaire was 0.955, the KMO value of the exploratory factor analysis was 0.943, and Bartlett's test yielded $\chi^2=6878.656$ ($p < 0.001$), indicating good structural validity of the questionnaire.

2.2.2 Fear of Missing Out (FOMO) Questionnaire

The Fear of Missing out Scale, developed by Przybylski et al. in 2013, was utilized. The scale was localized and revised by domestic scholars to create the Chinese version of the FOMO scale [18]. The scale consists of 10 items, using a 1-5-point scale, where 1 means "strongly disagree" and 5 means "strongly agree". Higher scores reflect a higher level of FOMO. The test-retest reliability of the scale was 0.853. In this study, the Cronbach's α coefficient of the questionnaire was 0.885, the KMO value of the exploratory factor analysis was 0.867, and Bartlett's test yielded $\chi^2=1950.392$ ($p < 0.001$), indicating good structural validity of the questionnaire.

2.2.3 Online Learning Engagement Questionnaire

The Online Learning Engagement Questionnaire, developed by Liu in 2023 [19], was used in this research. This questionnaire includes 30 items, divided into five dimensions: behavioral engagement, emotional engagement, cognitive engagement, social engagement, and metacognitive engagement. The 1-5-point scale was used, where higher scores indicate a higher degree of online learning engagement. The Cronbach's α coefficient was 0.964. In this study, the Cronbach's α coefficient was 0.980, the KMO value of the exploratory factor analysis was 0.973, and Bartlett's test yielded

$\chi^2=13165.513$ ($p<0.001$), indicating good structural validity of the questionnaire.

2.3 Survey Methodology

The surveys were distributed to the participants via the Sojump platform. Before answering the questionnaires, participants were presented with prompt messages on the screen, informing them that the purpose of the study was to investigate students' engagement in online learning, and that their information would be used solely for scientific research purposes. Following the collection of the questionnaires, intermediate effect analysis and verification were conducted using SPSS 24.0 and the SPSS plugin Process 4.1 developed by Hayes (2013). Significance tests for the regression coefficients of each variable were carried out using the Bootstrapping method, with 5000 repetitions to obtain robust standard errors for parameter estimates and 95% confidence intervals.

3. Results

3.1 Common Method Bias Test

The Harman's single-factor test was utilized to examine common method bias. Three variables—online social support, fear of missing out, and online learning engagement—were subjected to exploratory factor analysis with unrotated factors. The results revealed that there were 8 factors with eigenvalues greater than 1, collectively explaining 71.379% of the total variance. The variance explained by the first common factor was 38.113%. No factor with an eigenvalue greater than 40% was identified. Hence, it can be inferred that there was no common method variance present, indicating trustworthy relationships among the variables.

3.2 Gender Disparities in Online Social Support, Fear of Missing Out, and Online Learning Engagement among College Students

Independent samples t-tests were conducted with gender as the independent variable and online social support and fear of missing out as dependent

variables.

Table 1 illustrates that female college students scored significantly higher than their male counterparts in online social support ($t=-5.31$, $p<0.001$), and that females exhibited significantly higher levels of fear of missing out than males ($t=-5.79$, $p<0.001$).

Table 1. Gender Disparities in Online Social Support, Fear of Missing Out, and Online Learning Engagement among College Students

Variable	Male	Female	<i>t</i>
	$\bar{x}\pm s$	$\bar{x}\pm s$	
Online Social Support	2.41±0.76	2.64±0.71	-5.31***
Fear of Missing Out	2.57±0.79	2.83±0.71	-5.79***

3.3 The Relationship between Online Social Support and Online Learning Engagement among College Students, and the Mediating Effect of Fear of Missing Out

Hayes' SPSS Model 4 was employed to examine the mediating effect of fear of missing out in the relationship between online social support and online learning engagement. The results are shown in Table 2. Online social support was found to significantly predict online learning engagement ($\beta=0.39$, $t=13.1$, $p<0.01$). After introducing the mediating variable, online social support continued to significantly predict online learning engagement ($\beta=0.38$, $t=6.31$, $p<0.01$). Online social support also significantly predicted fear of missing out ($\beta=0.56$, $t=21.66$, $p<0.01$), and fear of missing out was found to significantly predict online learning engagement ($\beta=0.25$, $t=-8.95$, $p<0.01$).

As shown in Table 3, both the direct effect of online social support on online learning engagement and the mediating effect of fear of missing out have Bootstrap 95% confidence intervals (95% CI) that do not include 0, indicating that online social support not only directly predicts online learning engagement but also predicts it through the mediating role of fear of missing out. The direct effect and the mediating effect account for 88.2% and 11.8% of the total effect, respectively.

Table 2. Mediating Model Test of Fear of Missing out in the Relationship between Online Social Support and Online Learning Engagement

Regression Equation		Fit Indicators			Coefficient Significance		
Outcome Variable	Predictor	R ² Value	ΔR^2 Value	F Value	B Value	<i>t</i> Value	<i>P</i> Value
Online Learning Engagement	Online Social Support	0.13	0.15	170	0.38	6.31	<0.001
Fear of Missing Out	Online Social Support	0.31	0.33	512	0.56	21.66	<0.001
Online Learning Engagement	Online Social Support	0.14	0.13	84	0.35	9.51	<0.001

	Fear of Missing Out				0.86	2.26	<0.05
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Table 3. Decomposition of Total Effect, Direct Effect, and Mediating Effect

Item	Effect Value	Bootstrapped Standard Error	Boot 95%CI		Relative Effect (%)
			Upper Limit	Lower Limit	
Total Effect	0.39	0.30	0.45	0.33	
Direct Effect	0.34	0.36	0.41	0.27	88.2
Mediating Effect of Fear of Missing Out	0.05	0.23	0.09	0.02	11.8

4. Discussion

4.1 Gender Disparities in Online Social Support and Fear of Missing Out

The study findings revealed significant gender differences in online social support and fear of missing out among college students. Female college students scored significantly higher than their male counterparts in online social support, a phenomenon that may be attributed to gender-based communication patterns. Specifically, women tend to engage in nuanced emotional expression and proactive social interactions, which may foster stronger social connections in the digital environment, leading to a heightened perception of support. This gender dynamic aligns with previous research on interpersonal communication styles, suggesting that digital interactions may replicate or even amplify traditional gender-based patterns of seeking social support.

Furthermore, female college students also scored significantly higher than male students in fear of missing out. According to gender role theory, females are encouraged and expected to maintain close social ties, focus on social dynamics, and engage in a variety of social activities [20]. These social expectations may make women more susceptible to feelings of anxiety due to potential social exclusions or information gaps, perceiving these omissions as threats to their relational networks and social status. In contrast, male gender role norms emphasizing autonomy and instrumental achievements may render men more resilient when faced with distress related to fear of missing out, as the impact of interpersonal disconnection on their perceived social competence is relatively minor. This theoretical framework suggests that gendered socialization processes—emphasizing interdependence in relationships and autonomy in emotional independence—may systematically contribute to gender differences in the severity of fear of missing out, with women feeling more vulnerable due to heightened perceptions of social rejection.

4.2 The Mediating Role of Fear of Missing Out in the Relationship between Online Social Support and Online Learning Engagement among College Students

The results of this study indicate that fear of missing out plays a mediating role in the relationship between online social support and online learning engagement among college students. Students who perceive strong online social support tend to experience lower levels of fear of missing out, which in turn facilitates their active engagement in online learning. This finding can be elucidated through self-determination theory[16]. The bolstering of online social support creates a safe and inclusive environment for students, effectively alleviating their anxiety about missing key information or social opportunities. With reduced levels of fear of missing out, the cognitive resources previously depleted by an excessive vigilance to social cues are protected. These preserved cognitive and emotional resources can then be utilized to sustain and enhance self-regulation abilities. With sufficient self-regulation resources, students demonstrate improved behavioral management skills, including heightened focus on online learning tasks and reduced susceptibility to digital distractions. This chain of reactions ultimately leads to increased participation in online learning, as students can allocate more attentional resources to intentional learning behaviors rather than defensively monitoring their social environment.

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