

The Relationship between College Students' Fear of Missing out and WeChat Addiction: the Mediating Role of Ego-Depletion

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Abstract: *In order to explore the relationship between college students' Fear of Missing Out and WeChat addiction, and focus on studying the mediating role of Ego-depletion in the relationship between the two. This study mainly used the questionnaire survey method and literature search method for research. A total of 931 undergraduate students from four universities in Guangdong Province were surveyed by using the Fear of Missing Out Scale, Ego-depletion Scale, and WeChat Addiction Scale. A total of 892 valid questionnaires were collected (228 boys and 664 girls), and data analysis was analyzed using Pearson's correlation analysis, regression analysis and other methods. The results showed that Fear of Missing Out significantly positively predicted WeChat addiction ($P < 0.001$) and Ego-depletion ($P < 0.001$), and Ego-depletion was significantly positively predicted WeChat addiction ($P < 0.001$). Among them, Ego-depletion played a partial mediating role between Fear of Missing Out and WeChat addiction, with the mediating effect value accounting for 19.804%. This study confirms that College students' WeChat addiction can be affected by Fear of Missing Out and Ego-depletion, which further clarifies the internal psychological mechanism of WeChat addiction, and has certain inspirational significance for the prevention and intervention of college students' WeChat addiction.*

Keywords: *Fear of Missing Out; Ego-Depletion; Wechat Addiction; College Students*

1. Introduction

Under the cultural background of our country, WeChat has become the most popular social networking website application tool for netizens^[1]. WeChat can enhance people's contact and communication, pass boring time, search for information, and have more functions. However, some studies have also found that individuals invest a lot of time using WeChat, and WeChat addiction has occurred, which has brought negative impacts on physical and mental health^[2]. Researchers at home and abroad define WeChat addiction and sort out its characteristics: (1) Over-focus on WeChat uncontrollably and have a strong motivation to use WeChat^[3]; (2) When individuals reduce or stop using WeChat, they will feel uncomfortable and even have symptoms of addiction^[4]; (3) They are extremely sensitive to WeChat relatedness, affecting individuals' mental health and study life^[5-7], and WeChat has become an individual's channel to escape reality problems and vent bad emotions^[3]. WeChat addiction is a type of social media addiction, which has strong dependence^[8] and is more significant in the college student group. Research has found that social media addiction has a negative impact on individuals. For example, the more frequently used Facebook, the worse the academic performance and sleep quality of people^[6]; Weibo addiction will affect college students' academic performance and cause alienation of their psychological processes^[9]; frequent use of social networks such as Weibo will cause people to be addicted to it and reduce real social activities, ignore important matters in real life, and face more risks of privacy leakage^[10]. Excessive use of short video platforms (such as Douyin, Kuaishou, etc.) will reduce people's life satisfaction and happiness, and may even lead to psychological problems such as depression and anxiety^[11]. It can be seen that social media addiction has become a common phenomenon in an information society and has many negative effects on individuals. WeChat is a mainstream social media software. If you become addicted, it will also affect the healthy development of individuals' physical and mental health^[12]. At the university stage, compared with junior high and middle school age groups, the chance of using mobile phones is high, and the possibility of WeChat addiction is also higher. Given that WeChat has a strong attraction to college students and that excessive use of WeChat is very common for college students, it is necessary

to explore the mechanism of the occurrence and effect of college students' WeChat addiction. However, few domestic studies have focused on the psychological mechanism of WeChat addiction among college students. A small number of relevant research abroad have found that individual personality traits can affect WeChat addiction^[13], so the mechanism of WeChat addiction formation needs to be further explored by domestic and foreign scholars.

Fear of Missing Out (FoMO), also known as Anxiety of Missing out, is a diffuse state of anxiety caused by individuals who worry about missing the wonderful experiences shared by others or other important information linked to external information^[14]. Studies have found that FoMO may be the cause of individual social media addiction and can aggravate the formation of social media addiction^[15-16]. As a diffuse anxiety, FoMO is mainly due to worrying about missing out on other people's novel experiences or important information from others, reflecting the individual's psychological needs for belonging, and social media can just meet their psychological needs. When this need cannot be met, there will be a lack of belonging, which may continuously use social media to relieve anxiety and develop into social media addiction. Individuals with high levels of FoMO have stronger motivation to understand others' current situation, and dynamic updates of social media information can meet their psychological needs, so individuals are prone to spending a lot of time and energy on social media software. As a social media software that is widely used and frequently used in today's society, WeChat's audience may also be affected by FoMO, resulting in individual addiction to WeChat. Therefore, the study proposes hypothesis H1: FoMO significantly positively predicts individual WeChat addiction.

The effective theory of self-control resources points out that human self-control is based on limited resources. Individuals will consume their own resources in their self-control activities. Whether they have enough resources determines their level of self-control^[17]. When an individual's resources are insufficient, the individual's control power weakens and he is in a state of powerlessness, that is, Ego-depletion. Research has found that Ego-depletion can easily cause individual problematic behaviors^[18], such as addiction, etc.^[19]. Research has confirmed that FoMO is a manifestation of self-regulation hindered^[17]. FoMO, as a negative emotion, is more likely to consume limited resources and cause high levels of Ego-depletion^[20-21]. It can be seen that missing anxiety can be a risk factor for Ego-depletion. Individuals are prone to experience anxiety during social interactions. If they cannot be relieved well, they may have a negative self-cognition for a long time, resulting in psychological fatigue and even energy exhaustion. Individuals do not have enough energy to adjust their behavior, resulting in Ego-depletion^[22]. In view of this, it can be considered that Ego-depletion plays a mediating effect between FoMO and addictive behavior, so hypothesis H2: Ego-depletion plays a mediating effect between FoMO and WeChat addiction.

To sum up, based on previous research, this study constructs an intermediary model (Figure 1) to explore the mechanism of the effect of FoMO and Ego-depletion on the WeChat addiction phenomenon of college students, provide empirical support for college students' WeChat addiction, and explore the protective factors for preventing WeChat addiction, thereby promoting the healthy and harmonious development of college students.

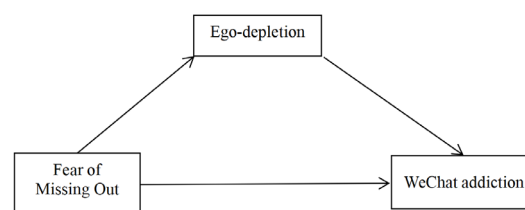


Figure 1: Intermediary Model

2. Objects and Methods

2.1 Research Objects

In October 2022, members of this research team adopted the convenient sampling method and selected 931 subjects from four universities in Guangdong Province to conduct a survey. Before the investigation, the subjects were explained to the subjects that the survey was filled out anonymously, and the collected data were only used for academic research to ensure that the respondents knew the

purpose of this research and the right to informed consent was guaranteed. A total of 931 questionnaires were collected, and the answers were deleted were invalid. Finally, 892 valid questionnaires were valid (recovery rate was 95.81%), including 228 boys and 664 girls, 212 left-behind experiences in rural areas, 680 no left-behind experiences in rural areas, and aged 18-23 years old. This study took gender and whether there was any left-behind experience as demographic variables.

2.2 Research Tools

2.2.1 WeChat Addiction Scale (WAS)

The scale selected in this study is a version adapted based on the Internet addiction scale [4] constructed by Brand (2013). This scale contains 12 questions, and professional translation and calibration operations are carried out during the adaptation process, which conforms to the characteristics of Chinese cultural background and language usage standards, ensuring the reliability and validity of its testing. In terms of scoring mechanism, the scale adopts a 5-point scoring method, from "never" (corresponding to 1 point) to "very common" (corresponding to 5 points). The scale score is positively related to the severity of individual WeChat addictive behavior, that is, The higher the individual's scale score, the more serious the individual's WeChat addiction is. In the reliability analysis of this study, the internal consistency coefficient of the scale reached 0.91, reflecting the good internal consistency of the scale.

2.2.2 Fear of Missing Out Scale (FoMOS)

In this study, a Fear of Missing Out scale carefully compiled by Przybylski et al. [14] was selected. The scale contains 10 questions in total, and the 5-point Likert score method is used in the scoring method, which is specifically from "completely inconsistent" (corresponding to 1 point) to "completely inconsistent" (corresponding to 5 points). The total score of the scale shows a positive correlation with the level of FoMO, that is, the higher the total score, the higher the level of FoMO in the individual. In the evaluation work carried out in this study on the reliability of the scale, the internal consistency coefficient was determined as 0.81.

2.2.3 Self-Regulatory Fatigue Scale

This study uses the Self-Regulatory Fatigue Scale revised by Wang Ligang et al. [23] in China. This scale contains 16 questions, and the scoring is based on a 5-point Likert score system, of which 1 point corresponds to "completely inconsistent" and 5 points corresponds to "completely inconsistent". There is a positive correlation between the total score of the scale and the degree of individual Ego-depletion. The higher the total score, the more significant the degree of individual Ego-depletion. In the evaluation of the reliability of the scale in this study, its internal consistency coefficient was 0.85, showing that the scale has good internal consistency.

2.3 Statistical Methods

In this study, descriptive statistical analysis and related analysis were performed for the acquired data. For the test of mediation effect, the PROCESS macro program developed by Hayes was used. Furthermore, the 95% confidence interval was calculated using the percentile Bootstrap method with deviation correction (5000 repeated samples) for testing. If the P value is <0.05, it indicates that the difference is statistically significant.

3. Result

3.1 Common Method Bias Test (CMBT)

This study is based on a questionnaire survey, and there may be common method deviations. Therefore, Harman's single-factor test method was used for common method deviation test [24]. The unrotated factor analysis results show that the characteristic roots of a total of 7 factors are greater than 1, and the total variation of the first factor is 17.12%, which is far lower than the critical value 40%, indicating that there is no serious problem of common method deviation in the study.

3.2 Descriptive Statistics and Related Analysis Results

Descriptive statistics and correlation analysis were conducted on several variables such as missed

fear, Ego-depletion and WeChat addiction. The results are shown in Table 1. After controlling for gender and whether there is any rural left-behind experience, FoMO was significantly positively correlated with WeChat addiction, Ego-depletion was significantly positively correlated with WeChat addiction, and FoMO was positively correlated with Ego-depletion ($r=0.313-0.357$, $p<0.01$), which is consistent with the study of Ding Qian et al. (2020) [25]

Table 1: Correlation analysis of each variable

Variable	M	SD	1	2	3	4	5
1 (Gender)	-	-	1				
2 (Experience in rural areas)	-	-	0.029	1			
3(FoMO)	2.71	0.52	0.047	-0.003	1		
4(Ego-depletion)	2.73	0.52	0.206**	-0.051	0.313**	1	
5(WeChat addiction)	2.10	0.60	0.106**	-0.084*	0.357**	0.332**	1

(Note: Gender and whether there is any rural left-behind experience are virtual variables, including male = 0, female = 1, rural left-behind experience = 0, no rural left-behind experience = 1, * $P<0.05$, ** $P<0.01$, *** $P<0.001$, the same below.)

3.3 Testing of mediation effect of Ego-depletion

Table 2: Regression analysis of Ego-depletion mediation model

Regression equation		Model interpretation quantity			Effect value and significance		95% confidence interval	
Result variable	Predictive variables	R	R ²	F	β	t	LICI	ULCI
WeChat addiction	Gender	0.378	0.143	49.259***	0.126	2.958**	0.043	0.209
	Experience in rural areas				-0.120	-2.754**	-0.206	-0.035
	FoMO				0.409	11.322***	0.338	0.479
Ego-depletion	Gender	0.371	0.138	47.325***	0.233	6.201***	0.1659	0.306
	Experience in rural areas				-0.067	-1.7785	-0.144	0.007
	FoMO				0.309	9.735***	0.247	0.372
WeChat addiction	Gender	0.434	0.188	51.462***	0.065	1.535	-0.018	0.148
	Experience in rural areas				-0.102	-2.402*	-0.186	-0.019
	FoMO				0.328	8.860***	0.255	0.4002
	Ego-depletion				0.262	7.067***	0.190	0.335

Table 3: Bootstrap analysis of mediation effect test

	Effect value	BootSE	BootLICI	BootLIUI	Effect proportion
Mediation effect	0.081	0.015	0.053	0.112	19.804%
Direct effect	0.328	0.037	0.255	0.400	80.196%
Total effect	0.409	0.036	0.338	0.479	

In this study, PROCESS, a macro program of SPSS statistics software, was used to test the effect of Ego-depletion. It is known from Table 2 that after controlling for gender and whether there is a left-behind experience, FoMO can significantly predict WeChat addiction ($\beta=0.409$, $P<0.001$), that is, FoMO will have a direct impact on individual WeChat addiction; after adding Ego-depletion as the mediating variable, the test was conducted again, and the results showed that FoMO can significantly predict Ego-depletion ($\beta=0.309$, $P<0.001$), Ego-depletion can significantly predict WeChat addiction ($\beta=0.262$, $P<0.001$), and FoMO can still have a significant direct predictive effect on WeChat addiction ($\beta=0.328$, $P<0.001$). From the Bootstrap analysis test in Table 3, it can be seen that the direct effect of FoMO on WeChat addiction is 0.255~0.400, and the confidence interval of 95% of the mediating effect of Ego-depletion is 0.053~0.112, neither of which includes 0. The analysis results show that the direct effect of FoMO on WeChat addiction (0.328) and the mediating effect (0.081) of Ego-depletion (0.409) accounted for 19.804% and 80.196% of the total effect (0.409) respectively. It is verified that hypotheses 1 and 2 of this study, that FoMO can not only directly predict WeChat addiction, but also indirectly predict WeChat addiction through the mediation effect of self-destructive effect.

4. Discussion

4.1 *The relationship between FoMO and WeChat addiction*

Related analysis results show that FoMO significantly positively predicts individual WeChat addiction, that is, individuals with high FoMO, are more likely to develop WeChat addiction behavior. Hypothesis 1 has been verified, and the results are more consistent with previous studies [16, 25-26]. As an instant messaging mobile social software, WeChat has diverse functions and has become an indispensable social software for contemporary college students' daily study and life [27]. Research has found that many college students use WeChat to socialize and post personal news almost every day, and also obtain external information through WeChat [28]. Individuals with high levels of FoMO are always worried that they have missed emergency messages sent by others or developed negative emotions such as anxiety and irritability for other people's wonderful life events [29]. They need to quickly obtain information and understand other people's dynamics through WeChat to alleviate this anxiety and uneasy mood, so they spend a lot of time every day to pay attention to WeChat, and their use of WeChat will cause out-of-control behavior, that is, WeChat addiction. In addition, based on the hierarchy of needs, the need for belonging and love, that is, social needs, are one of the basic needs of individuals [30]. Individuals have the need to seek a sense of belonging for social groups. When the individual's social needs are not met, the individual's sense of belonging will be missing. The FoMO comes from the individual's lack of belonging needs. When an individual cannot view WeChat on a specific occasion, such as exams or class, this expectation continues to know what others are doing, and the feeling of being afraid of missing other people's experience information is blocked, it is easy to create a sense of rejection, resulting in the lack of belonging needs [31]. WeChat is a convenient and fast platform or channel that can be used to obtain basic psychological needs [29]. Therefore, individuals with high FoMO will frequently refresh WeChat messages and WeChat Moments and other out-of-control behaviors to satisfy their own sense of belonging and relieve their current fear and anxiety.

4.2 *The mediating mechanism of Ego-depletion*

FoMO significantly positively predicts Ego-depletion, that is, individuals with high levels of FoMO have higher Ego-depletion, the lower their self-control ability. At the same time, Ego-depletion is significantly positively predicting WeChat addiction. When an individual is at a high level of Ego-depletion, the worse his self-control ability is, the more likely he will lead to WeChat addiction. Hypothesis 2 has been verified. According to the theory of limited self-control, self-control ability depends on the individual's own resources. When an individual performs self-control activities, he needs to consume his own resources. Once the resources are insufficient, his self-control ability will decrease accordingly [16]. FoMO is essentially a type of negative emotions [14, 25, 29]. In order to cope with this missed anxiety, individuals need to mobilize their own resources to regulate anxiety, thereby increasing the consumption of resources [17], and further develop out-of-control behaviors, that is, WeChat addiction may occur. Individuals with high levels of FoMO experience stronger anxiety and fear than individuals with low levels of FoMO. This negative emotion will also cause individuals to feel stressed, especially when individuals cannot view WeChat, it is easier to consume their own resources and thus unable to control their urge to view WeChat. Therefore, individuals with high levels of FoMO are prone to Ego-depletion, and Ego-depletion will make themselves addicted to WeChat, which will then develop into WeChat addiction, which is consistent with previous research conclusions [16].

This study verifies the mediating role of Ego-depletion in the FoMO and WeChat addiction, and provides new ideas for college students' intervention in WeChat addiction. First of all, for students with a high level of FoMO, educators should encourage them to actively communicate face-to-face with others. On the one hand, they can timely grasp important information related to their own practical interests, reduce the occurrence of missed important information because they do not check WeChat messages in time, and ultimately damage their interests, and reduce their addiction to WeChat; on the other hand, face-to-face communication can also enhance friendship between the two parties and maintain harmonious interpersonal relationships with others. Secondly, educators can carry out group psychological counseling activities with the theme of self-control and frustration response to improve the self-control resources of college students, enhance the psychological resilience of college students, and help students with high FoMO to cultivate stronger self-control and frustration response, so that they can be able to deal with difficulties instead of choosing to indulge in online social escaping the

real difficulties, further prevent individuals with high FoMO to experience more Ego-depletion, and thus reduce their use of social software such as WeChat to alleviate negative emotions, reduce their dependence on WeChat, shape students' healthy personality, and create a positive campus environment.

5. Deficiencies and prospects

This study only used the questionnaire method for data collection, and the method is relatively single. In future studies, experimental methods can be combined with experimental methods to further measure the level of individuals' FoMO level through experimental methods. Future researchers can use longitudinal tracking research methods to screen out individuals with high FoMO and carry out group psychological counseling interventions. Through the comparison of pre-test and post-test, the relationship between individual FoMO and WeChat addiction can be further clarified. And we can increase the comparison of addiction to different social media such as Weibo and Douyin, and further clarify the frequency of different social media use by college students, so as to propose more targeted countermeasures.

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