The Influence of Social Media Use Intensity, Self-Esteem and Stress on College Students' Academic Performance

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Abstract: If not properly used, social media can cause some negative effects on college students' life, such as the decline of academic performance. After reviewing relevant literature, we developed a research model and investigated the association among use intensity, self-esteem, stress and academic performance of college students. Using data from a survey of 378 respondents, we completed an empirical study. From the analysis results, we found that both use intensity and stress are negatively associated with academic performance, while self-esteem mainly indirectly and positively affects academic performance through the mediating effect of use intensity. This study deepens the knowledge and understanding of issues related to social media use, and can provide a reference for educators to implement intervention measures.

1   INTRODUCTION

Nowadays, social media has been widely used in college students' education, entertainment, social interaction and other aspects. Studies involving the effects of social media use on college students' academic performance have not reached a unanimous conclusion. Several studies argue that social media is a powerful tool to help college students improve their learning efficiency (Al-Yafi et al., 2018), while others point out that social media can distract college students from learning task (Zhao, 2021). Thus, in order to further explore the relationship between them, more research is necessary.

In terms of influencing factors of social media use and academic performance, some studies point out that self-esteem and stress are important factors that cannot be ignored. If college students have high levels of self-esteem, they are generally able to control the time they spend on social media, are less likely to develop symptoms of addiction, and also obtain better academic performance (Zhao, 2021; Li et al., 2018). When college students are facing greater stress, they may fail to achieve good results in the exam, and may also use social media to relieve their stress or regulate their emotion (Hoffner & Lee, 2015). However, existing studies have mainly analyzed the association among self-esteem, stress, social media use and academic performance separately, which cannot provide a complete and

clear picture of the complex association among them. To address this research gap, a research model was developed to comprehensively demonstrate the network of pathways that link social media use, self-esteem, stress, and academic performance.

2   HYPOTHESIS DEVELOPMENT

2.1   Use Intensity and Academic Performance

Previous studies have examined the influence of college students' social media use on their academic performance, but have not reached consistent conclusions (Al-Yafi et al., 2018). Some researchers point out that the use of social media significantly affects college students' academic performance, suggesting that social media should be used to collect learning information (Ainin er al., 2015). On the contrary, researches show that we should not underestimate the negative impact of college students' social media use on their academic performance. Overuse can distract college students' attention, reduce their learning efficiency, and further worsen their academic performance (Shi et al., 2020). In other words, with the increasing use intensity of social media, college students' academic performance may be negatively affected (Zhao, 2021; Masood et al., 2020). To sum up, social media use

intensity may have negative consequences on college students' academic performance without being explicitly used for academic purposes. Based on this, the hypothesis is put forward:

H1: Social media use intensity negatively affects academic performance of college students.

2.2 Self-Esteem and Use Intensity, Academic Performance

According to the social compensation hypothesis (Steinfield et al., 2008), users with low self-esteem feel more comfortable online than in an offline environment and prefer to make friends on social media. College students with low self-esteem logged on to social media more often, spent more time and were more likely to experience symptoms of addiction than those with high self-esteem (Busalim et al., 2019; Zhao, 2021). In a recent study, Saiphoo et al. (2022) confirmed that self-esteem significantly negatively affects the time users spend on social media, indicating that lower self-esteem could lead to higher level of use intensity.

The hypothesis of "the rich are richer" used by social media indicates that users with higher self-esteem are more incline to use social media in a positive way, and they can benefit more from social media use (Shchebetenko, 2019), such as higher subjective well-being and better academic performance. The importance of high self-esteem is that it provides college students with some protection from negative experiences such as setbacks (Zeigler et al., 2021). Studies have also pointed out that college students with high self-esteem often have clearer learning goals and higher learning motivation, and they can often achieve better academic performance (Li et al., 2018). Therefore, the following two hypotheses are proposed:

H2: Self-esteem negatively affects social media use intensity of college students.

H3: Self-esteem positively affects academic performance of college students.

2.3 Stress and Use Intensity, Academic Performance

College students will feel stressed if they are placed in an environment that demands more than they can handle and causes them to be unable to cope (Zhao, 2021). When young people are in stressful situations, they tend to participate more in social media activities to manage emotions, get support or escape from reality (Brailovskaia et al., 2019). Wolfers et al.

(2021) pointed out that at a specific time-point, more stress than usual is related to further social media use than usual.

Stress negatively affects college students' cognitive ability and learning efficiency, thus worsening their academic performance (Sandra et al., 2013). In addition, students facing greater stress are usually unable to show what they have learned in the exam, so that they cannot achieve better academic performance (Juana et al., 2021). Following these studies, two hypotheses are put forward:

H4: Stress positively affects social media use intensity of college students.

H5: Stress negatively affects academic performance of college students.

3 RESEARCH METHODOLOGY

3.1 Research Model

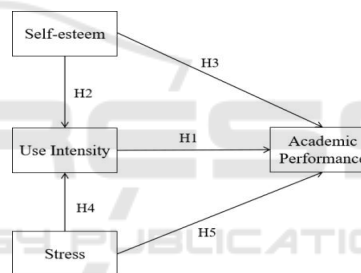A research model was constructed (Figure 1).

Figure 1: Research model.

3.2 Measures

3.2.1 Use Intensity

This study used the Social Media Use Intensity Measurement Scale (Orosz et al., 2016), which contains 13 measurement items. The Cronbach's α is 0.869.

3.2.2 Self-Esteem

In this study, Rosenberg's (1965) Self-Esteem Measurement Scale was used, with 10 measurement items. The Cronbach's α is 0.722.

3.2.3 Stress

In order to assess the stress situation of college students, this study used the Stress Scale (Lovibond and Lovibond, 1995), which has 7 measurement items. The Cronbach's α is 0.821.

3.2.4 Academic Performance

Three measurement items (Nayak, 2018) were used to measure the academic performance of college student. The Cronbach's α is 0.853.

3.3 Data Collection

In November 2021, we conducted a questionnaire survey in a comprehensive university with random sampling method, and obtained 378 valid questionnaires. Table 1 shows the characteristics of valid samples.

Table 1: Sample Demographics (N=378).

Category	Number (%)
Gender	
Male	161(42.6%)
Female	217(57.4%)
Age	
17-25 years	378(100%)
Education level	
Undergraduate	245(64.8%)
Postgraduate	133(35.2%)

4 ANALYSIS

4.1 Measurement Model Assessment

The test results of reliability and validity are shown in Table 2. The Cronbach's α and CR of all variables exceed 0.7, suggesting that the internal consistency and convergent validity of this measurement model are relatively good. In addition, the AVE square root (cells in bold) of each variable is larger than the correlation coefficient between them, indicating that the measurement model has good discriminant validity.

Table 2: Correlations and AVE.

	Cronbach's α	CR	AVE	UI	SE	ST	AP
Use intensity (UI)	0.869	0.886	0.520	**0.721**			
Self-esteem (SE)	0.722	0.710	0.509	-0.124	**0.713**		
Stress (ST)	0.821	0.859	0.532	0.207	-0.448	**0.729**	
Academic performance (AP)	0.853	0.903	0.757	-0.492	0.291	-0.345	**0.870**

4.2 Structural Model Testing

AMOS24.0 software was used to test the structural model. The specific values of relevant indicators are: χ^2/df ratio=2.132, RMSEA=0.038, RMR=0.021, CFI=0.961, AGFI=0.923, IFI=0.941, and TLI=0.928. The results reveal that this is an acceptable model fit,

and the collected data are consistent with the hypothetical model. We continue to calculate the path coefficients, and Table 3 shows the analysis results. From this we know that H1, H2, H4 and H5 are supported, while H3 is not.

Table 3: The SEM analysis results of hypotheses testing.

	β	p-value	SEM result
H1：Use intensity→Academic performance	-0.458***	0.000	Supported
H2：Self-esteem→Use intensity	-0.194*	0.010	Supported
H3：Self-esteem→Academic performance	0.027	0.639	Not supported
H4：Stress→Use intensity	0.182**	0.005	Supported
H5：Stress→Academic performance	-0.242***	0.000	Supported

4.3 Indirect Effect Analysis

To assess the indirect effect, we used the bootstrap analysis. According to the data in Table 4, we found that 95% CI of the two indirect paths did not include zero, which indicated that self-esteem and stress have significant indirect effects on academic performance through the mediating effect of use intensity.

Table 4: Results of indirect effect testing.

	β	t-value	p-value	95% CI		Results
				LL	UL	
Self-esteem →Use intensity → Academic performance	0.089[*]	2.510	0.012	0.031	0.165	Supported
Stress →Use intensity → Academic performance	-0.083[**]	2.730	0.006	-0.146	-0.027	Supported

5 DISCUSSION

In contrast to existing studies, we simultaneously explored the association among self-esteem, stress, social media use, and academic performance in one study. In that sense, this is a novel study that can more clearly describe the relationship between these variables. Our results reveal some important findings.

In this study, use intensity negatively affects academic performance, which has been validated in SEM analysis results. The time of the day is fixed, and spending a lot of time on social media means that college students do not have enough time to spend on study, which leads to the failure to complete the study task on time (Busalim et al., 2019). In other words, the higher the intensity of college students' social media use, the worse their academic performance.

Self-esteem negatively affects use intensity. College students with low self-esteem often replace offline interpersonal communication with online socializing, so they are more inclined to overuse social media (Mehdizadeh, 2010). The results of some studies suggest that self-esteem can directly affect academic performance (Li et al., 2018), but this is not entirely applicable to Chinese college students in our study. However, considering the indirect effect, the results indicate that self-esteem positively affects academic performance through the mediating effect of social media use intensity. College students with high self-esteem can use social media in a reasonable way and have a low level of use intensity (Jang et al., 2018), while students with low use intensity can often achieve good academic performance (Shi et al., 2020). This is to say, college students with high self-esteem are more likely to achieve good academic performance.

In our study, stress positively affects use intensity and negatively affects academic performance of college students, suggesting that the greater the stress perceived by college student users, the higher their use intensity, and the more likely their academic performance will deteriorate. As mentioned by Nabi et al. (2017), using social media is an avenue for college students to cope with stressful environment. When under pressure, college students prefer to log on to social media to relieve stress and regulate their emotions, so in effect stress increases the time they spent on social media (Brailovskaia et al., 2019). Furthermore, college students under greater pressure often fail to achieve good results in the exams (Prato and Yucha, 2013). Earlier studies have hinted that stress may indirectly affect college students' academic performance through social media use (Wang et al., 2020), but no research has yet verified this. Through empirical analysis, our study has confirmed the existence of this relationship, which suggests that stress can indirectly affects academic performance through the mediating effect of use intensity. Like the direct influence coefficient, the indirect influence coefficient is also negative, indicating that there is a close relationship between the stress college students face and the deterioration of their academic performance.

6 CONCLUSION

With the increase of time spent on social media, more and more college students' academic

performance has been negatively affected. This study systematically explored the complex association among use intensity, self-esteem, stress and college students' academic performance. Through theoretical and empirical analysis, the research has obtained some new findings, which can enrich the research literature in this field. In addition, the research conclusion can also provide some references for educators to help college students appropriately use social media. For instance, given the close link between self-esteem, stress and social media use, educators should take effective measures to improve college students' self-esteem and reduce their stress level.

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