Psychological wellbeing and avoidance strategies as moderators between excessive social media use and academic performance among Indian college students

Antin Mary Siluvai, Hesil Jerda George and Satyanarayana Parayitam

Abstract

Purpose – *This study aims to assess the negative aspect of social media use among college students in India. A conceptual model showing the relationship between excessive social media use (ESMU) and academic performance of college students has been developed and tested. Further, the moderating role of psychological well-being and avoidance strategies were investigated.*

Design/methodology/approach – *A survey instrument was developed, and data was collected from 557 college students from higher educational institutions in southern India. First, the psychometric properties of the measures were tested using the Lisrel software for covariance-based structural equation modeling. Second, the structural model was tested by using PROCESS macros.*

Findings – *The results reveal that ESMU is a precursor to anxiety and academic performance. The findings also indicate that anxiety mediates the relationship between ESMU and academic performance. Psychological well-being and avoidance strategies were significant moderators in the relationship between ESMU and anxiety.*

Originality/value – *The multi-layered conceptual model was developed and tested in the context of a developing country (India) and investigated the effect of ESMU by college students on their academic performance and anxiety. The three-way interaction between psychological well-being (first moderator), avoidance strategies (second moderator) and ESMU influencing academic performance mediated through anxiety is studied in this research. To the best of the authors' knowledge, such a moderated moderated-mediation in connection with social media use is a unique contribution of this study.*

Keywords *Excessive social media use, Academic performance, Anxiety, Psychological well-being, Avoidance, India*

Paper type *Research paper*

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1. Introduction

The technological revolution, followed by the growth of the internet and the availability of mobile devices, has resulted in the rapidly increasing use of social media worldwide (Gong *et al.*, 2020; Nikolinakou and Phua, 2023; Yang *et al.*, 2022). While social media use is quite common among individuals, the use of social media by students in academic settings has received little attention by academic scholars. Though the research on social media influence on academic performance has been sporadic, some notable studies conducted in developing countries (e.g. Pakistan) are worth mentioning (Khaskheli *et al.*, 2022; Raza *et al.*, 2020a; Raza *et al.*, 2020b). While several scholars have overemphasized the positive side of social media use, the perils of social media use among students have been exhaustively studied in several countries: Italy (Boursier *et al.*, 2020), China (Lin *et al.*, 2021),USA (Meshi and Ellithorpe, 2021) and Ireland (Whelan *et al.*, 2022), a relatively small

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number of studies were conducted in the Indian context (Malik *et al.*, 2021; Nayak and Budhwar, 2022; Panda and Jain, 2018; Tandon *et al.*, 2022). These perils are due to excessive use of social media: i.e. using social media than necessary. In a systematic literature review revealed that various domains of social media (time spent, activity, investment and addiction) were significantly related to psychological distress, anxiety and depression (Keles *et al.*, 2020). The objective of this study is to investigate the effect of excessive social media use (ESMU) on academic performance and examine how psychological well-being and avoidance strategies moderate the relationship between ESMU and anxiety.

While the use of social media has positive effects on individuals (e.g. academic performance), excessive or over use of social media may have deleterious consequences. The present study focuses on "excessive use of social media" beyond required optimum level. Therefore, this study aims to bridge the gap by investigating the effect of ESMU on anxiety and students' academic performance, particularly in the context of higher educational institutions in India. It may appear to be an overstatement that research on ESMU by students pursuing undergraduate and degree courses in Indian educational institutions has received scant attention. However, current literature review and meta-analytic studies reveal that studies focusing on students from India is sporadic and scattered (Shin *et al.*, 2022). This research, thus, aims to answer the following research questions (RQs):

RQ1. How ESMU affects anxiety and academic performance among students in higher educational institutions in India?

RQ2. How do avoidance strategies and psychological well-being moderate the relationship between ESMU and anxiety among students in higher educational institutions in India?

The rest of the paper is organized as follows. In Section 2, the hypotheses development is explained. Section 3 is devoted to the methodology and sample, followed by Section 4, which provides results. Section 5 is dedicated to the discussion that includes theoretical contributions, practical implications, suggestions for future research and limitations.

2. Literature review

Earlier researchers reported that individuals' widespread use of social media has both a bright side and a dark side (Ali *et al.*, 2023; Gao *et al.*, 2018; Gong *et al.*, 2020; Lin *et al.*, 2023; Shan *et al.*, 2021; Yang *et al.*, 2022). The bright side is seen in terms of building social capital and psychological well-being (Zhang and Jung, 2022), perceived social support and decreased loneliness (Choi and Noh, 2020; Gerke *et al.*, 2020; Zhang *et al.*, 2021), life satisfaction (Raza *et al.*, 2020a) and happiness (Chae, 2018). The dark side represents the ill effects of use of social media seen in terms of technostress and exhaustion (Homaid, 2022; Loh *et al.*, 2022; Yue *et al.*, 2022), employee mental health (Nayak and Budhwar, 2022), workplace incivility (Tandon *et al.*, 2022), nomophobia (Lin *et al.*, 2021), anxiety (Boursier *et al.*, 2020; Dhir *et al.*, 2018) and information overload (Sasaki *et al.*, 2015). In the middle of the contradictory findings, the research by Oxford Internet Institute led by Przybylski and Vuorre (2023), after analyzing data from over one million Facebook users in 72 countries found that Facebook did not have negative association with the well-being of individuals.

Literature review also reveals that the link between technological advancements and use of smartphones by students, particularly in the context of developing nations such as Pakistan, has been documented by several scholars (Raza *et al.*, 2020a; Raza *et al.*, 2020b; Khaskheli *et al.*, 2022). In one of the recent studies, Raza *et al.* (2020a) found that social networking sites provide social benefit as well as social overload. Social benefit was positively associated with life satisfaction, whereas social overload resulted in decrease in

life satisfaction. In another study conducted on 453 students from a higher educational institution in Pakistan, Raza *et al.* (2020b) found that smartphone usage by students resulted in smartphone addiction, which did not have any negative impact on academic performance. Researchers also documented that during the global pandemic, students have experienced isolation in the online classroom environment (Khaskheli *et al.*, 2022). Thus, several researchers reported that social media is a double-edged sword (Keles *et al.*, 2020), on one hand social media helps individuals getting the social support (O'Keeffe *et al.*, 2011), and increases psychological problems such as depression and stress on the other (Marino *et al.*, 2018; McCrae *et al.*, 2017).

While social media plays a major role in academic achievement of students, it is also important to note that the students encountered psychological stress due to the e-learning environment imposed by the recently held pandemic (Qazi *et al.*, 2022). In the survey of 409 business students in higher educational institutions in a developing country, the researchers found that academic performance largely depends on academic adjustment (Raza *et al.*, 2021). To build social capital, as some researchers pointed out, students use social media networks such as Facebook (Best *et al.*, 2015; Qazi *et al.*, 2023; Raza *et al.*, 2020c). The present study is aimed at investigating the effect of ESMU in the context of a developing nation, India.

2.1 Hypotheses development

2.1.1 Excessive use of social media and performance. The primary independent variable in this study is ESMU by students. Individuals and groups engage in social media to create relationships, exchange viewpoints, share information with others, online chatting and have discussions with peers and friends. However, when individuals engage in social media more than necessary, it is referred to as "excessive use of social media" (ESMU) that has potentially deleterious consequences. A study on 496 college students revealed that cell phone use and texting to communicate with people on social media have resulted in lower grade point averages, i.e. poor academic performance (Lepp *et al.*, 2014). Though, to some extent, social media and networking may be beneficial to students' academic performance, several adverse outcomes such as internet surfing, internet addiction, information overload and problematic social relations, have been identified by the earlier researchers (Boer *et al.*, 2021; Gong *et al.*, 2020; Marttila *et al.*, 2021; Yu *et al.*, 2018) and poor academic performance by students (Ly and Vo, 2018; Raza *et al.*, 2020a; Wang *et al.*, 2020). Based on available empirical evidence, we argue that ESMU adversely affect students' academic performance. We, therefore, offer the following hypothesis:

H1. ESMU is negatively and significantly related to academic performance of college students.

2.1.2 Excessive use of social media and anxiety. Medical researchers contend that anxiety and stress are comorbid conditions, and individuals with high anxiety complain of exhaustion and pain (Sanderson *et al.*, 1990).

Though optimum use of social media is beneficial for individuals in terms of increasing social capital, entertainment and happiness (Zhang and Jung, 2022), there is the possibility that individuals gradually get addicted to it (Homaid, 2022; Yue *et al.*, 2022). The continuous use of social media can result in an increased load of information and several adverse outcomes. ESMU is a stressor contributing to social media fatigue (Boursier *et al.*, 2020; Dhir *et al.*, 2018). Several studies reported that ESMU through mobile phones by college students resulted in depression, anxiety and stress (Ly and Vo, 2018; Lian *et al.*, 2021; Wang *et al.*, 2020). There is a growing evidence that ESMU potentially results in anxiety, depression and mental unease (Amin, 2020; Baccarella *et al.*, 2018; Hou *et al.*, 2019; Meshi *et al.*, 2020; Sheldon *et al.*, 2019). Thus, based on available empirical evidence, we offer the following hypothesis:

H2. ESMU is positively related to anxiety among college students.

2.1.3 Anxiety and academic performance. The relationship between anxiety and academic performance is relatively straightforward and self-explanatory. Individuals who experience high levels of anxiety tend to lose focus on work because they are unable to concentrate (Keles *et al.*, 2020; Li *et al.*, 2015). As anxiety represents a negative affective state, students undergoing stress and anxiety are less likely to perform well (Beranuy *et al.*, 2009; Ho *et al.*, 2023; James *et al.*, 2017; Lin *et al.*, 2023). Thus, based on available empirical evidence and intuitive logic, we offer the following hypothesis:

H3. Anxiety is negatively associated with academic performance of college students.

2.1.4 Anxiety as a mediator. Previous studies have highlighted the direct effects of ESMU on anxiety and performance; this study attempts to make a novel contribution by exploring the mediating role of anxiety. For instance, ESMU is negatively related to academic performance; as hypothesized, it is also essential to investigate the indirect effect of ESMU on academic performance through anxiety. Though the mediation effect of anxiety in ESMU and performance has been under studied, in one of the recent studies conducted in Malaysia, researchers found that physical health mediated the relationship between Facebook addiction and performance (Nikbin *et al.*, 2020). We extend prior research by exploring the indirect effect of ESMU by students through anxiety, which results in lower academic performance. As, to the best of our knowledge, this mediation effect was not examined before; we offer the following exploratory mediation hypothesis:

H4. Anxiety mediates the relationship between ESMU and academic performance of college students.

2.1.5 Psychological well-being as a first moderator. In human psychology, well-being depends on how individuals construct and articulate their personalities so that they function effectively (Choi and Lim, 2016). Some researchers have documented positive association of use of social media and psychological well-being (Lin *et al.*, 2018; Subramanian, 2017), others highlighted the negative association (Dhir *et al.*, 2018; Sheldon *et al.*, 2019).

Psychological well-being concerns an individual's striving to grow to reflect their full potential (Ryff and Keyes, 1995). Therefore, it plays a vital role in alleviating the negative effect of ESMU on anxiety. Past studies highlighted the negative association between internet addiction and psychological well-being (Lin *et al.*, 2023). For example, researchers found that individuals low on psychosocial and psychological well-being are likelier to become addicted to social media (Casale *et al.*, 2015).

While past studies have documented a direct negative relationship between psychological well-being and ESMU (Yue *et al.*, 2022; Zhang *et al.*, 2021), we argue in this research that psychological well-being may alleviate the negative effect of ESMU on anxiety. We contend that psychological well-being may likely interact with ESMU influencing anxiety. This is a critical investigation that may elucidate the process of moderating the influence of psychological well-being on anxiety. The logic stems from the fact that individuals who are conscious of their personal life and advancement are likelier to shy away from ESMU so that their anxiety levels are not high. On the other hand, individuals who are low on psychological well-being are more likely to feel anxiety which may hamper performance. Thus, we offer the following exploratory moderating hypothesis:

H2a. Psychological well-being moderates the relationship between ESMU and anxiety such that lower (higher) levels of psychological well-being will be associated with higher (lower) levels of anxiety.

2.1.6 Avoidance strategies as a second moderator. The avoidance strategies of individuals include avoidance behavior, particularly concerning social networking sites and ESMU (Zhou *et al.*, 2019). Though in the beginning, individuals feel excited to participate in conversations with friends, peers and others through social networking sites, eventually,

they may feel information overload and try to exhibit avoidance behavior (Zhang *et al.*, 2016). Continuous use of social media may eventually result in information overload, and individuals may gradually resort to avoidance strategies. Individuals who are selective in social media use are less likely to feel anxiety because of information overload (Dhir *et al.*, 2018).

In this study, we argue that avoidance strategies will help strengthen the moderating effect of psychological well-being on anxiety. Also called *moderated moderated-mediation*, this study focuses on making a novel contribution by investigating how avoidance (second moderator) moderates the relationship between ESMU and psychological well-being (first moderator) in influencing anxiety. In a recent study conducted on 341 users of WeChat Moments, the researchers found that information irrelevance led to information avoidance and reduced social information overload (Guo *et al.*, 2020). However, while the direct effect of avoidance behavior was examined, the moderating role of avoidance strategies is under studied by earlier researchers. Therefore, we undertake to study the following exploratory three-way interaction hypothesis:

H2b. Avoidance strategies moderate the moderated relationship between ESMU and psychological well-being (first moderator) in influencing anxiety, such that at higher (lower) levels of avoidance, ESMU and higher (lower) levels of psychological well-being result in lower (higher) anxiety.

2.1.7 Gender as a moderator. The researchers on gender suggest that sometimes gender plays a significant role in explaining the relationships between independent and dependent variables. It is documented that there are substantial gender differences in internet addiction (Çınar *et al.*, 2020), where males showed higher levels of addiction than females. Prior literature heavily documented significant gender differences where males show a higher rate of addiction to the internet and ESMU when compared to females (Chou and Hasiao, 2000; Koch and Pratarelli, 2004). In a relatively recent study conducted among 3,380 students (1,995 males and 1,385 females) from a southern University in China, researchers found males exhibited higher scores in anxiety and internet addiction (Shan *et al.*, 2021).

We argue that significant gender differences can be more noticeable in India because the family system is such that female students are under close observation by parents compared to male students. In a cross-cultural epidemiological study, Kuss *et al.* (2014) found that adolescents in Asian countries exhibited higher rates of internet addiction when compared to adolescents in Western countries. Because of cultural impact, it is reasonably expected that there will be significant differences in the outcomes of ESMU and performance. Based on the above, we offer the following hypothesis:

H1a. There will be significant gender differences in the relationship between ESMU and academic performance such that the negative effect on academic performance will be higher for male students when compared to female students.

3. Method

3.1 Sample

This study aims to assess the impact of ESMU by undergraduate and graduate students from colleges in the Kanyakumari district in south India. We prepared a carefully crafted survey instrument and distributed it among the students in several colleges. Since English language was the medium of instruction in these colleges, we used English language in the survey instrument. We gave the students the Web link to the survey and collected data through Google Forms. The data collection was started in mid-March 2023 and completed by mid-April. Since the social distancing was not strictly required, we contacted some students personally and ensured they completed surveys. We explained to the respondents

that the data was collected for academic purposes, to be kept confidential and requested them to be as dispassionate as possible.

We received 557 surveys, and all the surveys were complete. Google Forms does not allow respondents to proceed further without answering any statements. According to Krejcie and Morgan (1970), the minimum required sample size is 384. We did not include any respondent who is not a student. To check the non-response bias, we compared the first 75 respondents with the last 75 and found no statistical differences between these two data groups.

3.2 Demographic profile

The respondents consist of 269 (48.29%) males and 288 (51.71%) females. As far as education is concerned, 75 (13.5%) were pursuing master's (graduate) degree and 482 (86.5%) were pursuing undergraduate courses. About 149 (26.75%) were dual-earner families (both wife and husband work), and 408 (73.5%) women were housemakers. With regard to father's education of the respondents, 32 (5.7%) were in government jobs, 63 (11.3%) were self-employed, 383 (68.8%) were doing low-paid jobs (e.g. servants, construction workers) and 79 (14.2%) were employed in private sector. As far as respondents' mother's occupation is concerned, 13 (2.3%) were self-employed, 68 (12.2%) were working in private sector, 53 (9.5%) were working in low-paid jobs (servants, construction workers), 15 (2.7%) were working in government jobs.

3.3 Measures

All the constructs in this study were on a Likert-type five-point scale ("1"= "strongly disagree"; "5" = "strongly agree"). We adapted the measures of seven constructs from the previous literature. The constructs, indicators and sources were mentioned in Table 1.

4. Analysis and findings

4.2 Descriptive statistics

Table 2 captures the descriptive statistics (means, standard deviations and zero-order correlations). The preliminary analysis of correlations suggests that multicollinearity is not a problem with the data as the correlations between the variables was less than 0.75 (Tsui *et al.*, 1997). The correlations ranged from 0.19 (psychological well-being and performance) to 0.46 (avoidance and performance).

4.3 Measurement model, convergent validity, discriminant validity and confirmatory factor analysis

We used Lisrel software of structural equation modeling to test the measurement model. The results of CFA reveal that five-factor model provides good model fit [$\chi^2 = 582.4$; df = 160; χ^2/df = 3.64; RMSEA = 0.066; RMR = 0.054; standardized RMR = 0.045; CFI = 0.92; GFI = 0.88]. In this study, the reliability coefficient (Cronbach's alphas) were greater than 0.70; composite reliability (CR) for the constructs were greater than 0.70, and average variance extracted (AVE) for all the constructs were well over 0.50, thus vouching for reliability and validity of the constructs (Hair *et al.*, 2019). The square root of AVEs of the constructs exceeded the correlations between the constructs, thus vouching for discriminant validity (Fornell and Larcker, 1981). We performed Harman's one-factor method to assess common method variance and found that a single factor accounted for less than 25% variance, thus suggesting common method variance is not a problem in this study (Podsakoff *et al.*, 2012).

Table 1 CFA [factor loadings, reliability coefficient Cronbach's alpha; composite reliability; average variance extracted estimates]

Constructs and indicators	*Alpha*	*Composite reliability*	*Standardized loadings* (λ_{yi})	*Reliability* (λ^2_{yi})	*Variance* ($Var(\varepsilon_i)$)	*Average variance extracted estimate* $\Sigma(\lambda^2_{yi})/[(\lambda^2_{yi}) + (Var(\varepsilon_i))]$
ESMU (Panda and Jain, 2018)	0.87	0.91				0.73
I feel uneasy once I stop using social app for a certain period of time			0.85	0.73	0.27	
I feel restless and irritable when social app is unavailable			0.90	0.80	0.20	
I feel very elated upon social app usage regardless of the fatigue experienced			0.87	0.76	0.24	
I feel distressed or down once I cease using social app for a certain period of time			0.79	0.62	0.38	
Anxiety (*La Greca and Lopez, 1998*)	0.79	0.83				0.56
I worry about what others say about me			0.71	0.50	0.50	
I worry that others don't like me			0.70	0.49	0.51	
I'm afraid that others will not like me			0.81	0.66	0.34	
I worry about what others think of me			0.76	0.58	0.42	
I feel that others make fun of me (deleted as the factor loading is very low)						
Psychological well-being (Diener *et al.*, 1985)	0.82	0.86				0.60
In most ways, my life is close to my ideal			0.83	0.70	0.30	
The conditions of my life are excellent			0.71	0.51	0.49	
I am satisfied with my life			0.83	0.69	0.31	
So far, I have gotten the important things I want in life, and			0.72	0.52	0.48	
Avoidance (*Cho, 2004; Shin and Lin, 2016*)	0.81	0.82				0.53
My parents put in efforts to wean me off from social media addiction			0.75	0.56	0.44	
My teachers and the institution have given professional help to lead me away from my obsession with social media			0.70	0.49	0.51	
I believe that social media companies should devise ways and means to save the youth from the evil impact of social media			0.74	0.55	0.45	
I scroll down Web pages to avoid some posts I do not like			0.72	0.51	0.49	
Academic performance (Diener *et al.*, 1985)	0.85	0.88				0.65
In most ways my academic performance is close to my ideal			0.85	0.73	0.27	
My academic performance is excellent			0.75	0.56	0.44	
I am satisfied with my academic performance			0.85	0.72	0.28	
So far I got the important things I want in my academic life			0.77	0.59	0.41	

Source: The authors

Table 2 Descriptive statistics: means, standard deviations and correlations

Variables	*Mean*	*SD*	*1*	*2*	*3*	*4*	*5*
1. ESMU	3.41	0.59	*0.85*				
2. Anxiety	3.79	0.88	0.30**	*0.75*			
3. Academic performance	2.97	0.77	−0.32**	−0.38**	*0.81*		
4. Avoidance	3.17	0.85	−0.34**	−0.41**	0.46**	*0.73*	
5. Psychological well-being	3.66	0.77	−0.21**	−0.26**	0.19**	0.24**	*0.77*

Notes: $^{**}p < 0.01$; numbers in italic and in diagonal were square root of average variance extracted (AVE) estimates
Source: The authors

4.4 Testing H1–H3

We used model number 4 of Hayes (2018) PROCESS macros to test *H1–H3* and presented the results in Table 3.

As can be seen in Table 3, the regression coefficient of ESMU on academic performance was negative and significant ($\beta = -0.412$; $p < 0.001$), thus supporting *H1*.

The regression coefficient of ESMU on anxiety was positive and significant ($\beta = 0.447$; $p < 0.001$), thus supporting *H2*. The regression coefficient of anxiety on academic performance was negative and significant ($\beta = -0.263$; $p < 0.001$), thus supporting *H3*.

4.5 Indirect effect (H4)

H4 predicts that anxiety mediates between ESMU and academic performance. The indirect effect of ESMU → anxiety → academic performance ($\beta = -0.1178$; Boot s. $e = 0.0240$), and the bootstrapping results based on 20,000 bootstrap samples in Hayes (2018) PROCESS macros show that 95% confidence intervals (CI) are between −0.1677 and −0.0742. Because zero was not contained in CIs, anxiety mediates the relationship between ESMU and academic performance, thus supporting *H4*. The indirect effect is shown in Table 4.

Table 3 Testing *H1*, *H2* and *H3*

Hypotheses	*Relationship*	*coeff*	*se*	*t*	*p*	*Boot LLCI*	*Boot ULCI*	R^2 *and F values*	*Result*
H1	ESMU → Academic performance	−0.41	0.052	−7.87	0.000	−0.5149	−0.3092	0.10 F(1,555) = 81.94	Supported
H2	ESMU → Anxiety	0.45	0.059	7.46	0.000	0.3297	0.5650	0.09 F(1,555) = 55.75	Supported
H3	Anxiety → Academic performance	−0.26	0.035	−7.43	0.000	−0.3329	−0.1939	0.44 F(2,554) = 61.68	Supported

Source: The authors

Table 4 Indirect effect (*H4*)

		Effect	*se*	*Boot LLCI*	*Boot ULCI*
Indirect effect	ESMU → Anxiety → Academic performance	−0.12	0.024	−0.1677	−0.0742
Partially standardized indirect effect	ESMU → Anxiety → Academic performance	−0.15	0.029	−0.2138	−0.0978
Completely standardized indirect effect	ESMU → Anxiety → Academic performance	−0.09	0.017	−0.1271	−0.0578

Notes: N = 557 Boot LLCI refers to the lower bound bootstrapping confidence intervals. Boot ULCL refers to the upper bound bootstrapping confidence intervals. Number of bootstrapping samples for this bias corrected bootstrapping confidence intervals are 20,000. The level of confidence for all confidence intervals in output was 0.95. We have four decimal digits for bootstrap results because some values may be very close to zero
Source: The authors

4.6 Testing moderation hypotheses (H1a, H2a and H2b)

The results of moderation hypotheses are presented in Table 5.

H1a posits that gender is a moderator in the relationship between ESMU and academic performance. The results of Hayes (2018) Process macros (Model 1) results show that the regression coefficient of the regression coefficient of interaction term of ESMU and gender was significant ($\beta_{\text{ESMU} \times \text{gender}} = -0.278$; $p < 0.001$) thus supporting *H1a*. The interaction plot was mentioned in Figure 1.

As can be seen in Figure 1, the performance of male students significantly falls when compared to females. Further, with the increase in ESMU, the fall in the academic performance for males was stronger than female students. These results render support to the hypothesis that gender is a moderator (*H1a*).

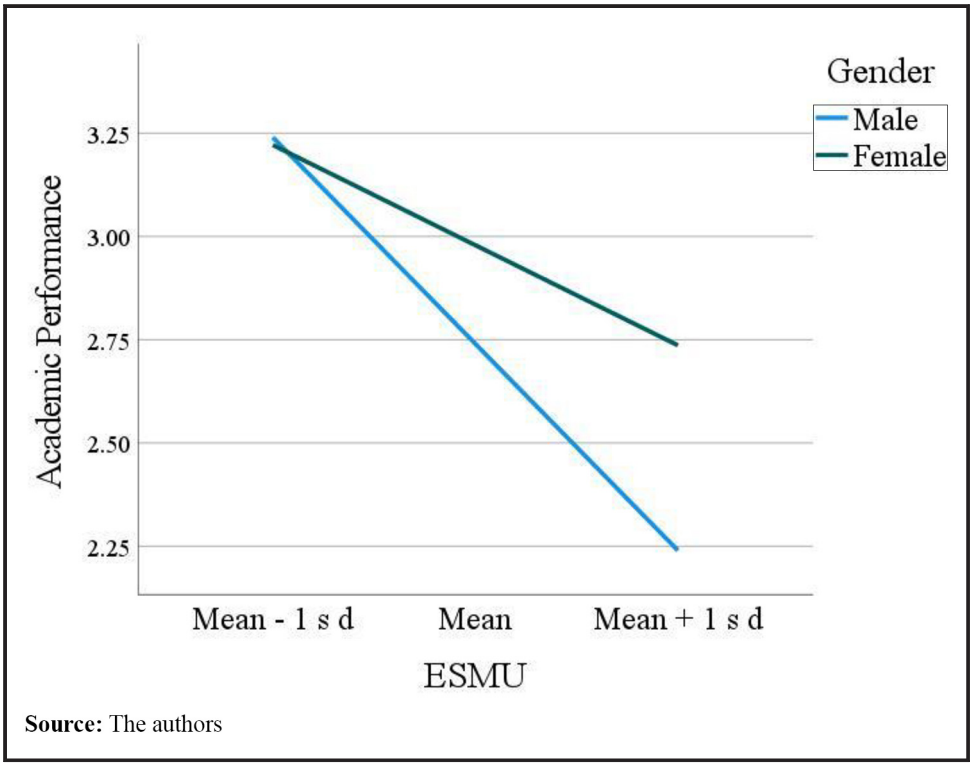
To test *H2a* and *H2b*, we used Hayes (2018) Process macros (Model 11). The first-order moderation hypothesis suggests that psychological well-being moderates the relationship between ESMU and anxiety. The regression coefficient of the multiplicative term (ESMU ×

Table 5 Results of moderation analysis

Hypotheses	*Relationship*	*coeff*	*se*	t	p	*Boot LLCI*	*Boot ULCI*	*Result*
H1a	ESMU × Gender	−0.28	0.035	−7.48	0.000	−0.3329	−0.1939	Supported
H2a	ESMU × Psychological Well-being	−0.72	0.251	−2.86	0.004	−1.2140	−0.2255	Supported
H2b	ESMU × Psychological Well-being × Avoidance	0.15	0.066	2.26	0.023	0.0200	0.2799	Supported

Source: The authors

Figure 1 Gender moderates between ESMU and performance



Source: The authors

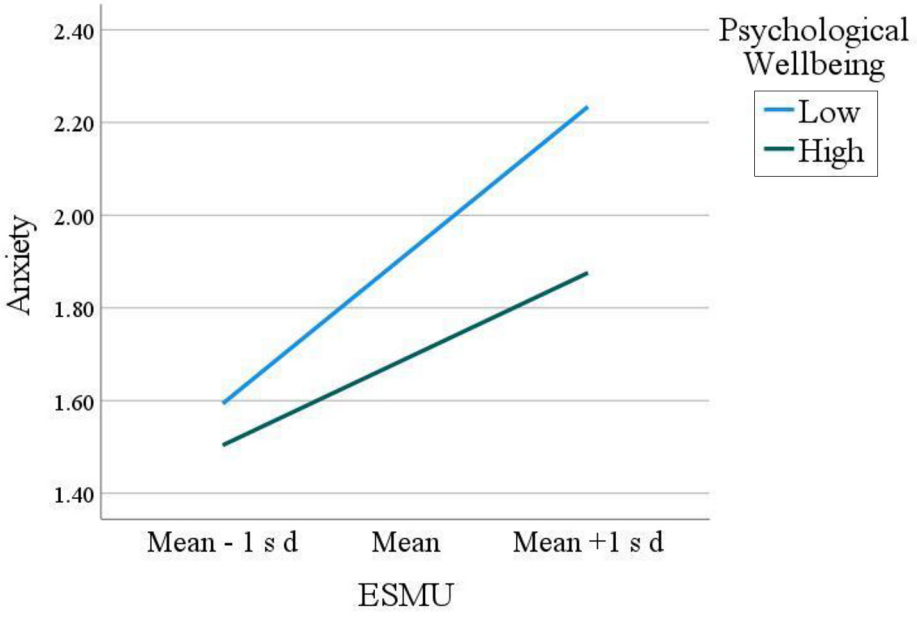
psychological well-being) was significant ($\beta_{\text{ESMU} \times \text{psychological well-being}} = -0.719$; $p < 0.01$), supporting *H2a*. The interaction effect was presented in Figure 2.

As shown in Figure 2, the relationship between ESMU and anxiety is positive, and the relationship was stronger when psychological well-being was low when compared to higher levels of psychological well-being. Further, when ESMU increases from "low" to "high," anxiety was much higher than when psychological well-being low when compared to higher level of psychological well-being. The slopes of curves were different, and the curve was much steeper for lower levels of psychological well-being than for higher levels of psychological well-being, thus rendering support for moderation hypothesis (*H2a*).

H2b posits that avoidance strategies used by students (second moderator) and psychological well-being (second moderator) interact with ESMU to influence anxiety. The regression coefficient of the three-way interaction was significant ($\beta_{\text{ESMU} \times \text{psychological well-being} \times \text{avoidance}} = 0.149$; $p < 0.05$), supporting *H2b*. The three-way interaction plots were shown in Figure 3 (Panel A and Panel B). Panel A shows the moderating effect of psychological well-being between ESMU and anxiety at low levels of avoidance. As can be seen, the lower levels of psychological well-being are associated with higher levels of anxiety when compared to higher levels of psychological well-being. However, when we move to panel B, which shows the moderating effect of psychological well-being between ESMU and anxiety when avoidance is high, we can see that slope of curve decreases (moving from steep to less steep) when psychological well-being is high. A comparison of the two panels vouches for significant three-way interaction effect on anxiety, thus rendering support to *H2b*.

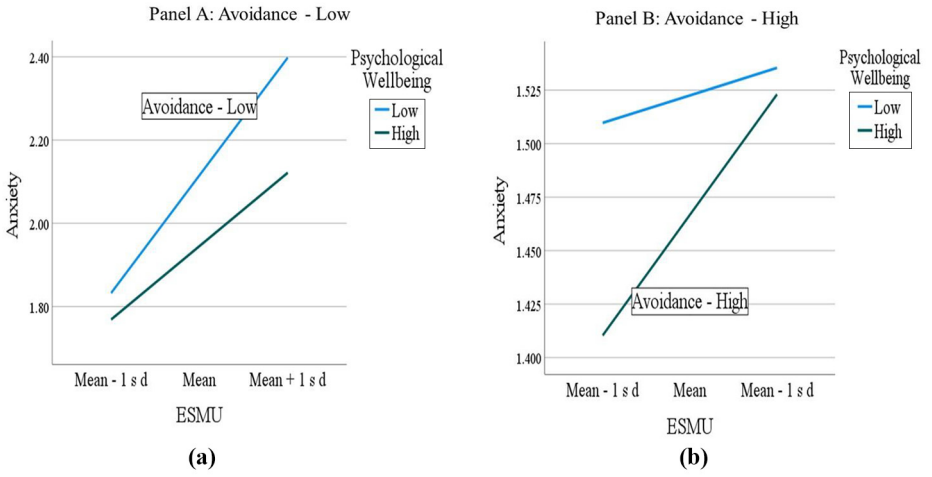
The empirical model was presented in Figure 4.

Figure 2 Psychological well-being as a moderator in the relationship between ESMU and anxiety



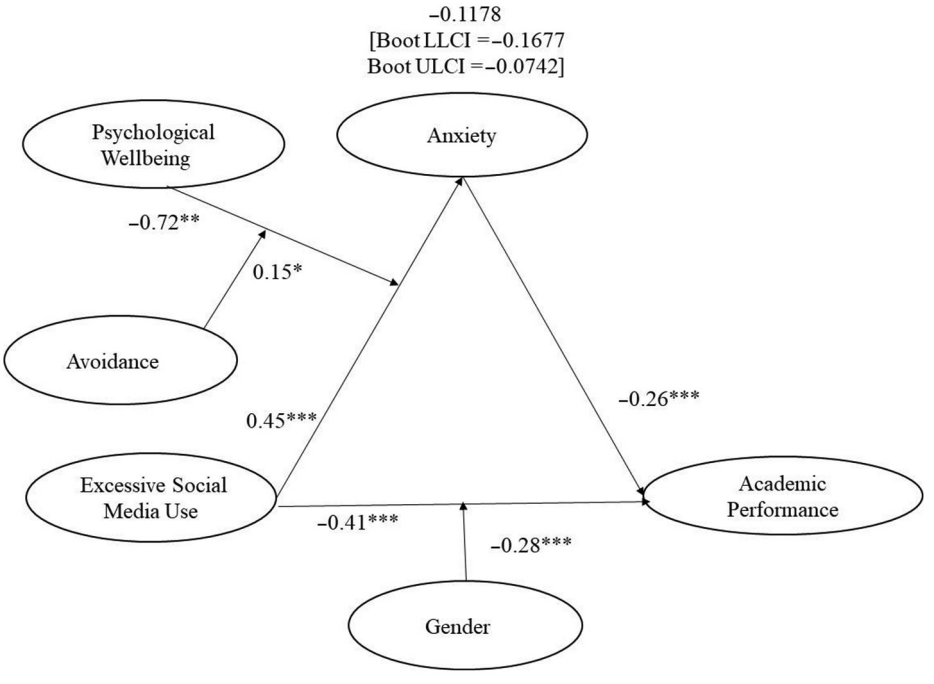
Source: The authors

Figure 3 Panel A: psychological well-being moderates between ESMU and anxiety at low levels of avoidance and Panel B: psychological well-being moderates between ESMU and anxiety at high levels of avoidance



Source: The authors

Figure 4 Empirical model



Notes: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$
Source: The authors

5. Conclusion, implications and future recommendations

5.1 Conclusion

The objective of this study is to investigate the impact of social media on academic performance of students. The results validated the conceptual model developed in this research.

First, the results indicate that social media is negatively associated with the academic performance of students (*H1*); the findings are consistent with the literature (Arikan *et al.*, 2022; Gong *et al.*, 2020). While social media plays a positive role in academic performance, it is understandable that when students are obsessed with social media and engage continuously on nonacademic matters, it is more likely that academic performance will deteriorate. Second, the findings from this study suggest that ESMU has a significant positive impact on the anxiety of college students (*H2*); the results corroborate past studies (Maier *et al.*, 2015; Primack *et al.*, 2017). Third, this study found a significantly negative relationship between anxiety and the academic performance of college students (*H3*). Prior literature documented the negative effect of stress and anxiety on the performance of employees in organizations (James *et al.*, 2017; Lin *et al.*, 2023), and students are no exception to this. Four, this study validated the mediation hypothesis indicating the significant indirect effect of ESMU on academic performance through anxiety (*H4*).

The fifth notable finding of this research is the role of psychological well-being as a moderator in the relationship between ESMU and anxiety (*H2a*). Understandably, when students show interest in their course or even have better teaching, they are more likely to shy away from ESMU. Hence, the level of anxiety will be considerably less. Sixth, the results from this research indicate that avoidance strategies used by students and advice from their parents, teachers, peers and well-wishers will be instrumental in alleviating the negative effect of ESMU on anxiety. The three-way interaction between ESMU, psychological well-being and avoidance, influencing anxiety among college students (*H2b*), shown by this research, is a novel idea that has not been explored. Again, the support for this multi-layered moderation comes from some of the earlier studies in the literature (Dhir *et al.*, 2018; Guo *et al.*, 2020).

In addition to the results, we also investigated whether gender plays a role in influencing ESMU and academic achievement. As hypothesized (*H1a*), we found that gender moderates the relationship such that the negative impact of male ESMU was more profound than use by females. To sum up, the findings from this study validated the conceptual model developed in this research.

5.1 Theoretical and practical implications

The findings from the current research have several implications for administrators in educational institutions and policymakers concerning public health. First, faculty members in academic institutions need to caution the students not to use social media beyond a certain point because the students can eventually get addicted to using mobile phones and other resources to engage in social media conversations. Second, college students need to recognize the adverse consequences (such as lack of time for academic work, lack of focus on academic work, increased anxiety because of fear of missing out, information overload) of use of social media. As overdependence on social media potentially results in depression and anxiety, individuals (and students) are advised to use social media in moderation (i.e. optimal use). The third crucial practical implication is that though this study was conducted on college students, given the importance of psychological well-being and avoidance, it is suggested that business managers focus on improving psychological well-being. Fourth, social media companies need to focus on user experience and satisfaction and avoid posting

information that results in social media fatigue, that may have adverse consequences (Dhir *et al.*, 2018).

5.2 Limitations and future research

The findings from this study should be interpreted in light of some of the following limitations. First, the study focused on a specific country (India) and with one group (college students); hence, generalizability is somewhat questionable. Further, this study found gender differences in the effect of ESMU on academic performance, where male students were significantly and adversely affected compared to female students. The factors contributing to these differences are not investigated in this study, constituting a limitation. Third, considering a highly populated country, a sample size ($N = 557$) may not represent the college student's behavior in the entire region. Fourth, as with any cross-sectional study involving a survey-based method, some methodological problems (such as social desirability bias and common method bias) are inescapable despite adequate statistical testing to check for these biases. Fifth, it is also possible to have a bi-directional effect between ESMU and academic performance, which this study ignores.

This study provides several avenues for future research. First, future researchers may involve more extensive samples and conduct cross-sectional studies with college students from different parts of the country. Second, the conceptual model can be applied to see how the age groups compare to the present study. Third, antecedents of ESMU will be helpful so that college students' administrators, parents and guardians can take preventive steps. Fourth, future studies may involve additional variables (e.g. social media fatigue, trust in social media, compulsive use and fear of missing out) that may affect the relationships conceptualized in the present model. Fifth, future researchers may compare college students from developed countries with students from developing countries and see if the relationship between ESMU and academic performance hold good as we stated in this research.

5.3 Final comments

As social media has emerged as a platform for many individuals and groups (including college students) that brings benefits to the users, on the dark side, some negative consequences are inevitable. This study focused on investigating the "dark side" of use of social media, particularly in the context of a developing country, India. We believe that the conceptual model in this study has created a platform for a deeper comprehensive understanding of the dark side of ESMU by investigating psychological well-being and avoidance strategies as important moderator variables. The research results will benefit academicians, managers, administrators and policymakers interested in increasing performance and maintaining public health. Considering the importance of social media in the present-day digital world, we hope this study offers valuable insights for averting the harmful consequences of use of social media.

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Further reading

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