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Fear of missing out and psychological well-being: Examining the dual pathways of problematic social media use and digital burnout

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ABSTRACT

The present study examined how fear of missing out (FoMO) relates to psychological well-being in a collectivist context through a sequential moderated mediation framework. Grounded in self-determination theory, the study assessed whether FoMO related to well-being indirectly via problematic social media use (PSMU) and digital burnout (emotional exhaustion), and whether free time management (FTM; goal-setting and evaluation) moderated these associations. Cross-sectional data were collected from 570 sports science undergraduates in Türkiye. Results indicated that (i) FoMO was positively associated with PSMU, (ii) PSMU was positively associated with digital burnout, and (iii) digital burnout was negatively associated with well-being. This resulted in a sequential indirect association from FoMO to well-being via PSMU and digital burnout. Results also indicated that FoMO was indirectly associated with lower psychological well-being via higher PSMU and digital burnout. However, when these indirect associations were accounted for, FoMO showed a small positive direct association with well-being, a suppressor-like pattern consistent with socially oriented motivation in collectivist settings. FTM moderated several paths, buffering some associations while strengthening others, indicating conditional indirect associations. These findings nuance deficit-only views of FoMO and its socially-oriented aspects within collectivist settings and suggest that integrating digital literacy with time-management training may further support student well-being.

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Fear of missing out; problematic social media use; digital burnout; psychological well-being; free time management

Introduction

In today's digital society, individuals' leisure time management, psychological well-being, and interactions with the online world have become increasingly important. Social media use has become a significant activity influencing various aspects of individuals' lives, shaping their communication patterns, social interactions, and psychological well-being.

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However, this constant connectivity has also given rise to digital stressors such as fear of missing out (FoMO), problematic social media use (PSMU), and digital burnout (DBO), which can negatively impact individuals' mental and emotional states.

PSMU is a behavioral pattern of uncontrolled and intensive social media use that undermines users' psychological health and daily functioning (Chen et al., 2025; Kuss & Griffiths, 2017). This maladaptive engagement often co-occurs with FoMO and DBO, reinforcing compulsive online behaviors and heightening vulnerability to emotional exhaustion (Elhai et al., 2020; Liu & Ma, 2020a). Empirical evidence also shows that PSMU is negatively associated with psychological well-being (Feng et al., 2025), suggesting its central role in the broader spectrum of digital stressors. The significance of the present study lies in addressing how digital stressors – particularly FoMO, PSMU, and DBO – interact sequentially to shape psychological well-being, and how these mechanisms are moderated by free time management (FTM) within a collectivist cultural context.

Przybylski et al. (2013) define FoMO as '*a pervasive apprehension that others might be having rewarding experiences from which one is absent*' (p. 1841). It has been found that smartphone users frequently and unconsciously check the information on their devices due to the influence of FoMO, leading to information overload behaviors (Wang et al., 2017). FoMO can be a risk factor that triggers PSMU tendencies by intensifying individuals' need for social approval (Tandon et al., 2021). This pattern has been associated with heightened susceptibility to DBO symptoms, including mental fatigue and emotional exhaustion, which are negatively associated with psychological well-being (Kumpikaitė-Valiūnienė et al., 2021; Sheng et al., 2023). Moreover, FoMO is often reinforced by collectivist cultural dynamics emphasizing social approval and group belonging, potentially amplifying these associations (Abbasi et al., 2015).

Although previous studies have examined relationships among FoMO, PSMU, and DBO, research investigating the sequential associations of these variables with psychological well-being (PWB) and the potential moderating role of free time management (FTM) within an integrated model remains limited (Elhai et al., 2021; Hou et al., 2024). In particular, there is insufficient evidence regarding how FTM may relate to the associations between digital stress factors and PWB in collectivist cultural settings (Young et al., 2024). This gap underscores the need for research from both theoretical and applied perspectives.

The conceptual framework of the present study draws on self-regulation theory (Baumeister et al., 2007) and conservation of resources theory (Hobfoll, 1989). Self-regulation theory proposes that the depletion of limited self-control resources due to PSMU may be associated with an increased likelihood of DBO. In contrast, conservation of resources theory suggests that FTM may help preserve psychological well-being by mitigating the depletion of such resources. This theoretical perspective offers a holistic lens through which to examine the associations among FoMO, PSMU, DBO, and psychological well-being. Türkiye's collectivist context further indicates that social comparison and group-oriented dynamics may intensify these patterns.

The present study contributes to the literature in a number of different ways by: (i) presenting an integrated model clarifying the sequential associations among FoMO, PSMU, DBO, and psychological well-being; (ii) testing the moderating role of FTM and proposing a novel conceptual framework for understanding the regulation of digital

stress factors; (iii) providing empirical evidence on the psychological correlates of digitalization within a collectivist cultural context; (iv) strengthening the conceptual integration between self-regulation theory and conservation of resources theory; and (v) offering practical recommendations for developing digital detox and psychological resilience programs designed to support individuals' psychological well-being in the digital age.

The relationship between FoMO and psychological well-being

As aforementioned, FoMO refers to a psychosocial tendency characterized by individuals' apprehension about missing out on social developments (Przybylski et al., 2013). Research has consistently associated high levels of FoMO with negative mental health outcomes. From the perspective of self-regulation theory, the constant vigilance and social comparison driven by FoMO can deplete cognitive resources, leading to increased anxiety and reduced life satisfaction (Baumeister et al.,). Recent longitudinal work has confirmed a bidirectional relationship, where FoMO predicts decreases in psychological well-being over time, and lower psychological well-being, which in turn, can exacerbate FoMO (Li et al., 2024). This cyclical process underscores FoMO's role as a significant risk factor for diminished psychological well-being among young adults. Therefore, it was hypothesized that FoMO would be negatively associated with psychological well-being (H_1).

The sequential mediating roles of problematic social media use and digital burnout

The negative impact of FoMO on well-being is often not direct but occurs through a chain of maladaptive behaviors and their consequences. The present study proposes a sequential mediation pathway where FoMO leads to PSMU, which leads to DBO, ultimately reducing psychological wellbeing.

FoMO and problematic social media use

The association between FoMO and PSMU is well-established. FoMO creates a compulsive urge to stay connected, which can escalate into addictive patterns of social media use (Tandon et al., 2021). Recent research confirms that FoMO is a primary antecedent of PSMU, acting as a key psychological vulnerability (Giancola et al., 2025). Individuals high in FoMO use social media to alleviate their anxiety, reinforcing a cycle of dependency that is characteristic of PSMU. Therefore, it was hypothesized that FoMO would be positively associated with PSMU (H_2).

Problematic social media use and digital burnout

PSMU, characterized by excessive and uncontrolled use, is a significant drain on cognitive and emotional resources. This constant digital engagement leads to information overload and emotional exhaustion, core components of digital burnout (Sheng et al., 2023). The pressure to be constantly available and responsive on social media can deplete self-regulatory capacity, accelerating the onset of burnout symptoms (da Silva et al., 2024). Therefore, it was hypothesized that PSMU would be positively associated with DBO (H_3).

Digital burnout and psychological wellbeing

Digital burnout, a state of emotional, mental, and physical exhaustion caused by prolonged digital stress, is inherently detrimental to psychological well-being (Salmela-Aro et al., 2016). It diminishes life satisfaction, reduces positive affect, and impairs daily functioning. Recent studies in digital workplace environments have confirmed that digital burnout is a significant negative predictor of mental well-being (Li et al., 2025). Therefore, it was predicted that (i) DBO would be negatively associated with psychological well-being (H_4), (ii) PSMU would mediate the relationship between FoMO and DBO (H_5), and (iii) DBO would mediate the relationship between PSMU and psychological well-being (H_6).

The moderating role of free time management

Free time management (FTM) refers to the capacity of individuals to structure their leisure time through planned and meaningful activities, which may serve as a protective process variable in the relationship between compulsive digital behaviors and psychological well-being (Wang, 2019). From the conservation of resources theory perspective, FTM can be seen as a personal resource that helps individuals protect and replenish their cognitive and emotional energy (Hobfoll, 1989). Implementing recovery-supportive strategies, such as engaging in planned leisure activities, may lead to weaker or less direct associations between the processes that deplete resources (e.g. stress or fatigue) and adverse outcomes (e.g. decreased performance or well-being). These strategies could help individuals more effectively replenish their resources, thereby buffering the potential adverse effects of resource depletion. This idea is supported by research, such as the study by Sonnentag and Fritz (2007), which suggested that such activities can be critical in maintaining overall health and resilience.

Similarly, self-regulation theory highlights that the capacity for self-control is finite and may be depleted through constant digital engagement and social comparison (Baumeister et al., 2007). FTM has been conceptualized as supporting renewal of self-regulatory resources, which may correspond to reductions in the relationship between compulsive social media use and DBO (Gao & Shao, 2024; Sonnentag & Pundt, 2016). Wang (2019) reported that meaningful leisure activities are associated with less pronounced relationships between social media use frequency and psychological stress. Argan et al. (2024) observed that structured leisure activities may correspond to reductions in the association between FoMO and social media use. Kara et al. (2023) suggested that regular participation in leisure activities may correspond to less pronounced relationships between PSMU and DBO. Finally, Terzi et al. (2024) found that FTM was associated with reductions in the relationship between stress-related experiences and psychological well-being.

However, some studies have reported contradictory findings, suggesting that this moderating function may differ based on individuals' levels of technology-related compulsivity. For instance, Gezgin et al. (2021) indicated that FTM may serve as a protective factor against addiction risk but also noted that this function may vary depending on addiction severity. These findings suggest that the positive associations between FoMO, PSMU, and DBO may be less pronounced among individuals with higher levels of FTM. In Türkiye's collectivist context, group-

Table 1. Summary of the study hypotheses.

Order	Hypothesis
H_1	Fear of missing out will be negatively associated with psychological well-being.
H_2	Fear of missing out will be positively associated with problematic social media use.
H_3	Problematic social media use will be positively associated with digital burnout.
H_4	Digital burnout will be negatively associated with psychological well-being.
H_5	Problematic social media use will mediate the relationship between fear of missing out and digital burnout.
H_6	Digital burnout will mediate the relationship between problematic social media use and psychological well-being.
H_7	Higher free time management will diminish the positive association between fear of missing out and problematic social media use.
H_8	Higher free time management will diminish the positive association between problematic social media use and digital burnout.
H_9	Higher free time management will buffer the negative association between digital burnout and psychological well-being.

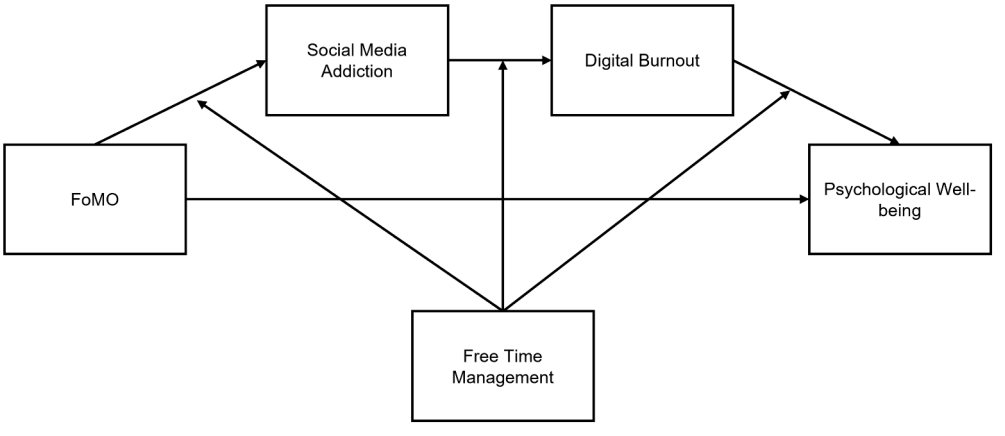


Figure 1. The research model.

oriented leisure activities may support these regulatory processes by reinforcing social bonds. Therefore, it was expected that FTM would moderate these relationships. More specifically, it was hypothesized that (i) higher FTM would diminish the positive association between FoMO and PSMU (H_7), (ii) higher FTM would diminish the positive association between PSMU and DBO (H_8), and (iii) higher FTM would buffer the negative association between DBO and psychological well-being (H_9).

The present study

While previous studies have examined individual associations between these variables, an integrated model testing these pathways sequentially, moderated by FTM, within a collectivist cultural context, represents a significant gap in the literature. The present study addressed this gap by examining a sequential moderated mediation model. The study explored the process through which FoMO impacts psychological well-being via the sequential mediators of PSMU and DBO, and how

FTM moderates these pathways. This allows for a more nuanced understanding of not just if these variables are related, but how and when these relationships are stronger or weaker. Table 1 provides a summary of the nine hypotheses and Figure 1 shows the research model.

Method

This study employed a cross-sectional and explanatory design to examine theoretically grounded associations among the variables. A serial conditional process model was specified, in which FoMO, PSMU, DBO, and PWB were linked in sequence (FoMO → PSMU → DBO → PWB). The moderating role of FTM was tested on theoretically relevant paths (FoMO→DBO, DBO→PWB, and FoMO→PWB), and the PSMU→PWB interaction was also examined.

Ethics

The study received approval from the first author's university's Social and Human Sciences Research Ethics Committee (Protocol code: 26) on 24 March 2025. Participants gave written informed consent and were informed that their participation was voluntary, with the option to decline or withdraw at any time.

Participants and procedure

Participants were recruited from undergraduate students enrolled in the Faculty of Sports Sciences at a public university for several reasons. One key reason for selecting this group is their pronounced engagement with social media and their heightened tendency to seek social approval (Li et al., 2022; Liu & Ma, 2020b). Their competitive academic environment and active involvement in group-oriented activities create conditions where processes such as FoMO, PSMU, and DBO can be observed more intensively.

Sports science students represent an appropriate sample for this research due to their high levels of social media engagement and group-oriented social contexts (Wang et al., 2024). Compared to the broader university student population, their competitive orientation and emphasis on team cohesion may intensify the associations between PSMU and DBO (Zhong et al., 2025). Therefore, the findings offer important insights that highlight contextual differences when contrasted with other young adult university populations.

Moreover, these students maintain active social networks, and the level of satisfaction derived from these relationships constitutes an essential aspect of their lives. Consequently, sports science students represent a suitable sample for examining the associations between social media use and psychological well-being. Conducting the study within this population and drawing comparisons with existing research facilitates a richer understanding of the complex interplay among FoMO, PSMU, and psychological well-being (Bacaksız et al., 2023; Brailovskaia & Margraf, 2024; de Hesselle & Montag, 2024; Eitan & Gazit, 2024; Hayran & Anik, 2021; Ng & Fam, 2024; Roberts & David, 2020; Savitri, 2019; Shane-Simpson & Bakken, 2024; Tufan et al., 2024; Tufan et al., 2025). Therefore, the results have the potential to inform targeted support strategies for managing digital stress factors.

The authors administered a paper-based survey in a public university's classrooms to gather data. Data were collected via surveys given to students during the course, with collection happening at the end of the course. The total student population at the time of data collection was 3824. During the data collection phase, 927 students were enrolled in the course. Surveys were completed by 598 students who opted to participate in the research. However, 28 participants did not pass the attention checks, leading to the exclusion of their data. The final sample included 570 participants, resulting in a response rate of 64%. Of these, 54% were female and 46% were male. The average age was 20.54 years (SD = 0.49), ranging from 17 to 42 years. Regarding study year, 39.6% were in their first year, 32.6% in their second year, 20.4% in their third year, and 7.4% in their fourth year. Regarding daily social media use, 4.2% of used it for less than one hour, 45.8% for 1–3 hours, 38.6% for 4–6 hours, and 11.4% for more than six hours. *Instagram* was the most widely used social media platform (70.7%), followed by *X* (11.4%), *WhatsApp* (7.5%), *TikTok* (7.2%), *LinkedIn* (0.4%), *Facebook* (0%), and other platforms (2.8%). Finally, 62.8% of participants reported that their internet access was sufficient to support daily academic and social activities, and 37.2% said it was not.

Measures

The Fear of Missing Out Scale (FoMOS: Przybylski et al., 2013; Turkish version: Gokler et al., 2016): was used to assess FoMO. The scale includes 10 items (e.g. '*I am continuously online to not miss out on anything*') rated on a five-point scale (1 = *strongly disagree*, 5 = *strongly agree*). Total scores range from 10 to 50, with higher scores indicating greater FoMO. In the present study, the FoMOS demonstrated excellent internal consistency (α = .95)

The Social Media Addiction Scale (SMAS: (developed in Turkish by Şahin and Yağcı [2017]) was used to assess PSMU. The scale includes 20 items and two sub-dimensions: virtual tolerance (11 items) and virtual communication (nine items). Items (e.g. '*I stay on social media longer than I planned*') are rated on a five-point scale (1 = *not at all*, 5 = *very much*). Total scores range from 20 to 100, with higher scores indicating greater PSMU. In the present study, the internal consistency of the SMAS was very good (α = .91 for virtual tolerance, α = .88 for virtual communication, and α = .93 for the total scale).

The Digital Burnout Scale (DBS: (developed in Turkish by Erten and Özdemir [2020]) was used to assess DBO. The scale includes 24 items and three sub-dimensions: digital aging (12 items), digital deprivation (six items), and emotional exhaustion (six items). Only the emotional exhaustion subscale was used in the present study. Items (e.g. '*I feel worthless when I use digital devices excessively*') are rated on a five-point scale (1 = *totally disagree*, 5 = *totally agree*). Total scores on the subscale range from 6 to 30. with higher scores indicating greater emotional exhaustion. In the present study, the internal consistency of the subscale was excellent (α = .94). As aforementioned, only the 'emotional exhaustion' subscale was used, consistent with literature identifying emotional exhaustion as the core component of burnout and most directly associated with decrements in psychological well-being (Edú-Valsania et al., 2022).

The Free Time Management Scale (FTMS: Wang et al., 2011; Turkish version: Akgül & Karaküçük, 2015) was used to assess FTM. The scale includes 15 items and four sub-dimensions: goal setting and evaluation (six items), technique (three items), values (three

items), and scheduling (three items). Only the goal settings and evaluation subscale was used in the present study. Items (e.g. *'I set priorities for my free time'*) are rated on a five-point scale (1 = *totally disagree*, 5 = *totally agree*). Total scores on the subscale range from 6 to 30 with higher scores indicating better free time management. In the present study, the internal consistency of the subscale was very good (α = .87). For the FTMS, the 'goal-setting and evaluation subscale' was selected because it captures the most cognitive and proactive aspect of time management (Zyoud, 2023), theoretically countering the reactive and often mindless engagement characteristic of PSMU.

The Psychological Well-Being Scale (PWBS: Diener et al., 2009, 2010; Turkish version: Telef, 2013) was used to assess psychological well-being. The scale includes eight items (e.g. *'I lead a purposeful and meaningful life'*) are rated on a seven-point scale (1 = totally disagree, 5 = totally agree). Total scores range from 8 to 56, with higher scores indicating greater psychological well-being. In the present study, the internal consistency of the PWBS was very good (α = .89).

In addition to the main constructs, the present study also collected data regarding participants' sociodemographic characteristics and social media use patterns using a set of self-report items developed by the researchers. Sociodemographic variables included age, gender, and year of academic study. Social media use was measured through three items: (i) the average daily duration of social media use (categorized as: less than 1 hour, 1–3 hours, 4–6 hours, more than 6 hours); (ii) the most frequently used social media platform (e.g. *Instagram, WhatsApp, TikTok, X, LinkedIn, Facebook*); and (iii) perceived sufficiency of their current internet access for academic and social activities (1 = not sufficient, 2 = sufficient). These items were used as control variables in the moderation analysis.

Data analysis

Analytic procedure

The research models were fitted within a structural equation modeling (SEM)/conditional-process framework (often referenced as *Model 59* for moderation of multiple paths), adapted here to a serial two-mediator specification (FoMO → PSMU → DBO → PWB) consistent with the hypotheses. Predictors in interaction terms were mean-centered, and bias-corrected bootstrap confidence intervals were reported. All models included controls for gender, age, grade, most-used platform, session duration, and internet access. Because all constructs were self-reported, a common latent factor (CLF) was added to the measurement model. Model fit did not meaningfully improve (e.g. ΔCFI < .01), and substantive loadings were unchanged, indicating that common-method bias was unlikely to threaten validity.

Measurement model validity and reliability

The scale items were checked for normal distribution, with skewness values from −1.025 to 0.213 and kurtosis values from −1.512 to 0.970, all within the acceptable range (Sposito et al., 1983). To assess the convergent and discriminant validity of the measurement model, confirmatory factor analysis (CFA) was performed. The CFA results showed that factor loadings for all items ranged from 0.60 to 0.85. Table 2 displays the Average Variance Extracted (AVE), Composite Reliability (CR), Cronbach's alpha, and

Table 2. Convergent and discriminant validity ($N = 570$).

Scale	CR	AVE	MSV	Cronbach's alpha
Fear of Missing Out Scale	0.955	0.530	0.314	0.95
Social Media Addiction Scale	0.870	0.681	0.233	0.93
Digital Burnout Scale (Emotional Exhaustion subscale)	0.871	0.530	0.314	0.94
Free Time Management Scale (Goal Setting and Evaluation subscale)	0.873	0.536	0.147	0.87
Psychological Well-Being Scale	0.897	0.523	0.147	0.89

Note. CR: Composite reliability, AVE: Average variance extracted, MSV: Maximum shared variance.

Maximum Shared Variance (MSV). The AVE values for all variables were well above the threshold of 0.50, indicating satisfactory convergent validity.

According to the criterion by Fornell and Larcker (1981), each construct's AVE must be higher than its correlations with other constructs. This was confirmed because AVE values exceeded MSV and the heterotrait-monotrait ratio ranged from 0.083 to 0.470 (Henseler et al., 2015) providing evidence of discriminant validity. The CR and Cronbach's alpha coefficients surpassed 0.70, demonstrating the reliability of the scales. The CFA indicated a good fit of the measurement model to the data: $\chi^2(1163) = 2622.815$, $\chi^2/df = 2.255$, CFI = 0.913, SRMR = 0.052, RMSEA = 0.047, $P_{close} = 0.982$ (Hu & Bentler, 1999).

Results

Correlational analysis

Table 3 shows the study variables' means, standard deviations, and correlations. FoMO had a significant positive association with PSMU and DBO, and a negative association with FTM. However, FoMO was not significantly associated with psychological well-being. PSMU was significantly positively associated with DBO, and negatively associated with FTM and psychological well-being. DBO was significantly negatively associated with both FTM and psychological well-being. FTM was significantly positively associated with psychological well-being. Among these variables, only the psychological well-being mean score was above the midpoint, while DBO had the lowest mean value.

Regression analysis

All regressions correspond to a serial (FoMO → PSMU → DBO → PWB) conditional process, and effects were interpreted as associations within this sequence. The hierarchical regression models tested the moderated mediation hypotheses, and are summarized in Table 4. In the first model, the regression predicting the mediator PSMU was significant ($R^2 = .38$, $F[9.560] = 38.68$, $p < .001$). FoMO was a significant positive

Table 3. Means, standard deviations, and correlations ($N = 570$).

Variables	M	SD	1	2	3	4	5
1. Fear of missing out	2.99	1.11	—				
2. Problematic social media use	2.56	0.74	0.52**	—			
3. Digital burnout	2.22	0.78	0.45**	0.62**	—		
4. Free time management	2.63	0.70	−0.09*	−0.19**	−0.29**	—	
5. Psychological well-being	5.13	1.19	0.05	−0.22**	−0.36**	0.42**	—

Note. Two-tailed tests. **$p < .01$.

Table 4. Regression results for the moderated mediation model predicting psychological well-being ($n = 570$).

Variables	PSMU b (SE)	DBO b (SE)	PWB b (SE)
Control variables			
Constant	−0.62** (0.23)	−0.31 (0.25)	5.43*** (0.39)
Gender	−0.07 (0.05)	−0.09 (0.05)	0.05 (0.08)
Age	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)
Grade	0.06* (0.02)	0.08* (0.03)	−0.02 (0.04)
Most used social media platforms	−0.01 (0.02)	0.01 (0.02)	−0.03 (0.03)
Session duration on social media	0.24*** (0.03)	0.10*** (0.03)	0.04 (0.06)
Sufficient internet access	0.15** (0.05)	0.13** (0.05)	−0.13 (0.09)
Independent variable			
Fear of missing out (FoMO)	0.29*** (0.02)	0.27*** (0.03)	0.29*** (0.05)
Mediators			
Problematic social media use (PSMU)	—	—	−0.19* (0.08)
Digital burnout (DBO)	—	—	−0.47*** (0.07)
Moderator			
Free time management (FTM)	−0.10** (0.04)	−0.25*** (0.04)	0.55*** (0.06)
Interaction terms			
FoMO × FTM	−0.04 (0.03)	0.08* (0.03)	−0.13 (0.07)
PSMU × FTM	—	—	−0.18 (0.10)
DBO × FTM	—	—	0.25** (0.09)
Model statistics			
R^2	0.38	0.30	0.26
F	38.68***	26.62***	20.08***

Note. Coefficients are unstandardized (b) with standard errors in parentheses. FoMO = fear of missing out; PSMU = problematic social media use; DBO = digital burnout (emotional exhaustion); PWB = psychological well-being; FTM = free time management. Analyses controlled for gender, age, grade, most used social media platforms, session duration on social media, and sufficient internet access for academic and social activities.
*$p < .05$, **$p < .01$, ***$p < .001$.

predictor of PSMU ($\beta = .29$, $p < .001$). However, the interaction term between FoMO and FTM did not significantly affect PSMU ($p = .212$). This indicated that FTM did not moderate the effect of FoMO on PSMU.

In the second model, the regression predicting the other mediator, DBO, was also significant ($R^2 = .30$, $F[9,560] = 26.62$, $p < .001$). FoMO was also a significant positive predictor of DBO ($\beta = .27$, $p < .001$). The full model predicting the main dependent variable, psychological well-being, was also statistically significant, $R^2 = .32$, $F(13,556) = 20.08$, $p < .001$. After controlling for the mediators and interaction effects, FoMO had a significant positive direct effect on psychological well-being ($\beta = .29$, $p < .001$). This finding indicated a suppressor effect, where the inclusion of the mediators (PSMU and DBO) uncovered a positive relationship between FoMO and PWB that was previously hidden. Both PSMU ($\beta = -.19$, $p = .018$) and DBO ($\beta = -.47$, $p < .001$) were significant negative predictors of psychological well-being.

Moderating effect: The interaction term between FoMO and FTM significantly 2022 positively affected DBO ($\beta = .08$, $p = .018$). Figure 2 indicates that individuals with poor FTM experienced more digital exhaustion due to FoMO than those with good FTM skills.

The interaction term between PSMU and FTM did not have a statistically significant effect on psychological well-being ($p = .079$). In contrast, the interaction term between DBO and FTM positively affected psychological well-being ($\beta = .25$, $p = .009$). To facilitate interpretation of the moderating effect between DBO and FTM, the interaction graph (Figure 3) was plotted by estimating the simple slopes of DBO at one standard

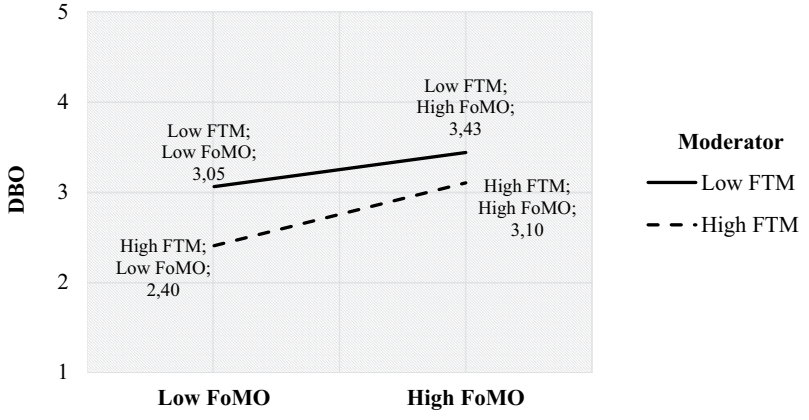


Figure 2. The moderating role of free time management (FTM) in the relationship between fear of missing out (FoMO) and digital burnout (DBO). The graph shows that the positive relationship between FoMO and DBO is stronger for individuals with high FTM (+1 SD) compared to those with low FTM (-1 SD).

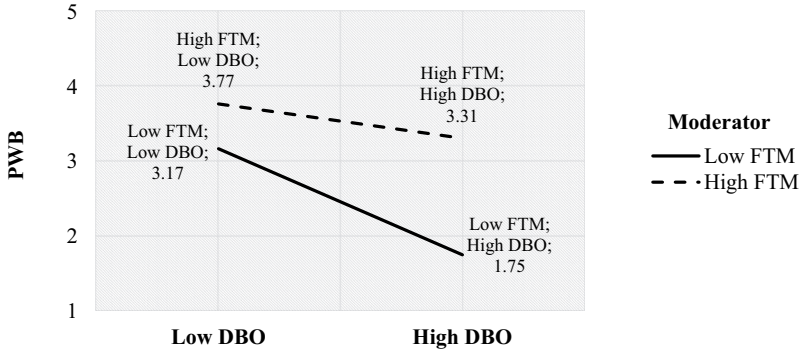


Figure 3. The moderating role of free time management (FTM) in the relationship between digital burnout (DBO) and psychological well-being. The graph shows that the negative relationship between digital burnout and psychological well-being is stronger for individuals with low FTM (-1 SD) and weaker (buffered) for those with high FTM (+1 SD).

deviation above (0.70) and below (−0.70) the mean of the FTM. This showed that the adverse effect of DBO on psychological well-being was worse among individuals who could not manage their free time compared to those who could.

Conditional indirect effects: Table 5 displays the conditional indirect effects of FoMO on psychological well-being at low (mean − 1 SD), mean, and high (mean +1 SD) levels of FTM. The indirect effect of FoMO on psychological well-being through PSMU was significant and negative at the mean (effect = −.057, 95% CI [−.105, −.011]) and high (effect = −.086, 95% CI [−.148, −.033]) levels of FTM. However, this effect was not significant at the low level of FTM (the confidence interval contains zero). This finding, when considered alongside the non-significant interaction term (PSMU x FTM) from the regression analysis, suggests that the moderating role of FTM in this pathway was weak.

Table 5. Conditional direct and indirect effects of FoMO on psychological well-being at values of free time management ($N = 570$).

Effect type	Moderator (FTM)	Effect	SE	*t*	95% CI
Direct effect	Low	0.38	0.06	5.71	[0.25, 0.52]
	Mean	0.29	0.04	6.52	[0.20, 0.38]
	High	0.20	0.06	3.13	[0.07, 0.32]
Indirect effect via PSMU	Low	−0.02	0.03	—	[−0.09, 0.04]
	Mean	−0.05	0.02	—	[−0.10, −0.01]
	High	−0.08	0.02	—	[−0.14, −0.03]
Indirect effect via DBO	Low	−0.13	0.03	—	[−0.21, −0.07]
	Mean	−0.12	0.02	—	[−0.17, −0.08]
	High	−0.09	0.03	—	[−0.16, −0.04]

Note. Bootstrap sample size = 5000. Confidence intervals were based on bias-corrected percentile bootstrap estimates. FoMO = Fear of missing out; PSMU = problematic social media use; DBO = digital burnout; FTM = free time management. Moderator values represent the mean and ±1 SD.

The indirect effect of FoMO on psychological well-being through DBO was significant and negative at all three levels (low, mean, and high) of FTM. An examination of the effect's magnitude showed that the negative indirect effect of FoMO on psychological well-being was strongest at low levels of FTM (effect = −.138) and weakened as the level of FTM increased (effect = −.099). This confirmed that FTM significantly moderated the pathway through which FOMO negatively impacted psychological well-being via DBO.

Discussion

The present study examined a serial conditional process examining FoMO, PSMU, DBO, and PWB among university students living in a collectivist country. The results suggested indirect associations from FoMO to lower PWB through higher PSMU and subsequent DBO, alongside a small positive direct association once (suppressor-like) mediators were included. The process was sequential rather than parallel, and FTM appeared to moderate key paths, with the DBO–PWB association weaker at higher FTM. These results refine deficit-only views of FoMO while remaining consistent with a cross-sectional design.

The direct and indirect effects of FoMO on well-being

Consistent with prior research (e.g. Przybylski et al., 2013; Tandon et al., 2021), FoMO was positively associated with PSMU and DBO, and negatively predicted psychological well-being. However, the most theoretically noteworthy result was the positive direct association between FoMO and psychological well-being, shown through a suppressor effect (i.e. when a variable masks the true association between two constructs due to statistical suppression; MacKinnon et al., 2000). This interpretation aligns with self-determination theory, which posits a fundamental human need for relatedness (Ryan & Deci, 2017). In cultures that emphasize collectivism and prioritize group harmony (Abbasi et al., 2015), the desire to stay connected – which is central to FoMO – can act as a safeguard for well-being, as long as it does not develop into the harmful behaviors (Chua & Koestner, 2008) associated with PSMU and DBO. While this interpretation is compelling, it should be considered cautiously pending further research.

This challenges the monolithically negative view of FoMO and suggests it may also represent a motivational driver to maintain social connections. When the

associations with PSMU and DBO were controlled for, FoMO's motivation for social connectedness – based on Türkiye's collectivist focus on group belonging (Abbasi et al., 2015) – is associated with positive affect. For instance, sports science students' engagement in group-based social media platforms (e.g. *WhatsApp* groups for team coordination or sports events) may foster a sense of belonging, aligning with findings that FoMO is associated with social engagement in collectivist contexts (Elhai et al., 2021; Reer et al., 2019; Servidio et al., 2024). As argued earlier in the paper, and supported by recent research (Y.-Y. Li et al., 2024), this suggests FoMO also contains a motivational component to fulfill the need for relatedness.

The sequential mediating chain of problematic social media ise and digital burnout

The present stidy's findings supported the hypothesized sequential pathway: FoMO contributed to PSMU (Giancola et al., 2025), which in turn led to DBO (da Silva et al., 2024), ultimately diminishing psychological wellbeing (Li et al., 2025). This chain highlights the process by which a psychological vulnerability (FoMO) translates into a maladaptive behavior (PSMU) and culminates in a state of exhaustion (DBO) with serious consequences for mental health.

The inconsistent moderating role of free time management

A key observation concerned the moderated pathways. As hypothesized, FTM significantly moderated the indirect association between FoMO and PWB through DBO, with conditional patterns (i.e. variations in mediation coefficients across different levels of a moderator; Hayes, 2013). However, higher FTM unexpectedly strengthened the association between FoMO and DBO. While seemingly counterintuitive, this pattern may reflect a 'cost of control' phenomenon. Individuals with high FTM might structure their FoMO-driven online activities so efficiently that they engage more intensely and purposefully, leading to a faster depletion of self-control resources and accelerating burnout (Baumeister et al.,).

This interpretation aligns with moderation studies suggesting that personal resources, under conditions of high demand, can sometimes lead to paradoxical outcomes by enabling individuals to push themselves closer to exhaustion before disengaging (Kong et al., 2024). For example, their competitive nature and rigorous scheduling, which are common in sports science programs, may lead to intense social media use to stay connected with peers, therefore increasing exhaustion. Conversely, FTM buffered the negative association between DBO and psychological well-being. This aligns with conservation of resources theory (Hobfoll, 1989) because effective time management enables students to prioritize restorative offline activities, such as group sports or team-building events, which are highly valued in Türkiye's collectivist culture (Sestino & Nasta, 2025)

In contrast, FTM did not significantly moderate the indirect pathway through PSMU. Although FoMO was strongly associated with PSMU, which was negatively associated with psychological well-being, the compulsive nature of addiction may be less responsive

to time management strategies (Şahin & Yağcı, 2017). This underscores the distinction between burnout and addiction, with the former being more amenable to structured time management.

Theoretical implications

The present study advances the digital well-being literature in several ways. First, by employing a sequential moderated mediation model (PROCESS Model 59), it offers a detailed perspective on how FoMO is associated with psychological well-being through PSMU and DBO, while clarifying how these pathways vary depending on FTM. This model is rarely applied in digital well-being research, particularly in collectivist cultural contexts, making the present study a novel contribution. Second, the findings highlight the dual nature of FTM, showing that a resource can be associated with both risk and protective functions depending on the psychological process stage, challenging simplistic models of resource benefits. Third, identifying a positive direct association between FoMO and psychological well-being encourages a nuanced conceptualization, distinguishing motivational aspects of FoMO from its behavioral consequences. These contributions strengthen the integration of self-regulation (Baumeister et al.,) and conservation of resources frameworks (Hobfoll, 1989), particularly in collectivist settings where group dynamics amplify digital stress factors.

Practical implications

The findings suggest that interventions targeting DBO should prioritize structured free-time activities, particularly group-based formats that align with Türkiye's collectivist cultural norms. Digital detox programs tailored for sports science students could leverage their team-oriented culture to promote offline engagement through competitive sports or student club activities. Beyond individual-level strategies, the present study's findings have institutional and policy implications. Universities can play a crucial role in fostering digital well-being by: (i) introducing first-year student orientation programs that include modules on healthy digital habits, focusing on intentional social media use and recognizing the signs of burnout and addiction, (ii) encouraging university wellness centers to develop proactive campaigns and utilizing confidential screening tools to identify students at risk for PSMU and DBO, as well as facilitating peer-support groups that encourage balanced lifestyles, and (iii) encouraging faculties to review course structures to mitigate unnecessary digital stressors (e.g. promoting offline collaborative work to reduce constant online demands).

Limitations and future directions

The present study's cross-sectional design limits inferences about causality, necessitating longitudinal studies to explore the temporal dynamics of these relationships. Self-reported measures may introduce social desirability bias, although statistical checks indicated minimal impact. The sample, limited to sports science students at a single Turkish university, enhances context-specific insights but may constrain generalizability. More specifically, this group's disciplined, competitive, and highly

team-oriented nature likely influences their time management habits and reasons for using social media in ways that might not reflect the broader university population or young adults outside of academic settings. Their natural focus on group cohesion could strengthen both the positive (social connectedness) and negative (burnout from constant comparison) aspects of FoMO. As a result, the unexpected positive association between FoMO and well-being might be more noticeable in such a close-knit, collectivist subgroup. It should also be noted that selection of single subscales for DBO and FTM may have limited the scope of how they are operationalized. While this approach enhances theoretical alignment, it narrows construct coverage, and future research may benefit from administering the full psychometric scales.

Several avenues for future research to address these limitations and build upon the present study's findings can be proposed. Longitudinal studies are needed to track these relationships and establish causality (e.g. Li et al., 2024). Experimental designs could test the efficacy of the FTM and digital literacy interventions proposed in the aforementioned practical implications. Future studies should incorporate objective data, such as screen-time logs from smartphones, alongside qualitative methods such as interviews to provide a richer, more nuanced understanding of digital behaviors. Replicating this model in diverse student populations and in non-student samples is crucial to test the generalizability of the findings beyond the specific competitive and team-oriented context of sports science students. The model could be expanded to examine other theoretically relevant moderators, such as self-esteem, perceived social support, or personality traits, which may further explain individual differences in vulnerability to digital stressors.

Conclusion

The present study highlighted that the association between FoMO and psychological well-being is complex and largely indirect, mediated sequentially by PSMU and DBO. FTM's dual role – associated with greater vulnerability to burnout in some instances and better coping in others – underscores the need for nuanced, skill-based approaches to address the challenges of digital life, particularly in collectivist environments.

Authors contributions

Kemal Köksal: Conceptualization; Methodology; Writing – Review & Editing; Supervision; Investigation; Software.
Cenk Tufan: Conceptualization; Investigation; Writing – Original Draft; Data Curation; Supervision; Resources.
Mark D. Griffiths: Conceptualization; Methodology; Writing-Review & Editing; Supervision.
Zeynep Ayça Terzioglu: Conceptualization; Methodology; Writing-Review & Editing; Investigation.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Consent to participate

All the authors of this paper agree with the content and give their explicit consent to submit it.

Consent for publication

All the participants consented to submit findings for publication.

Data availability statement

The data that support the findings of the present study are available from the first author upon reasonable request.

Ethics statement

The authors obtained ethics approval from the Antalya Bilim University Social Sciences Ethics Committee (approval number: 2025/26).

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