Gender Differences in Online Behavior: Exploring the Moderating Effect on Loneliness and Cyberslacking among University Students

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Abstract. Academic demands are capable of creating pressure, prompting students to find diversion through smartphone use and internet browsing. Unproductive internet use during learning is termed cyberslacking, a behavior known to be associated with loneliness. Therefore, this research aimed to explore the moderating role of gender in the relationship between loneliness and cyberslacking among university students. Using a quantitative correlational method, the investigation collected demographic data and adopted two scales, including the UCLA-3 Loneliness Scale and Cyberslacking Scale. Participants, comprising 226 students aged 18 to 25 years, were subjected to both descriptive and moderation analysis using Jamovi. The results showed that there was a significant influence of loneliness on cyberslacking, with gender identified as a moderator in such relationship. Recognizing gender differences in online behavior was crucial for enhancing the effectiveness of university policies and intervention strategies.

Keywords: Cyberslacking, gender, loneliness, university students

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Introduction

University students are facing significant challenges in balancing their demanding academic responsibilities and meeting high expectations for academic performance (Deng et al., 2022). These responsibilities consist of attending lectures, completing assignments, preparing for exams, and participating in various projects. Therefore, students often have limited opportunities for relaxation and socializing (Gao, 2023; Senter, 2023).

Students experience social pressures from various sources, including family, peers, and society (Barbayannis et al., 2022; Jiang et al., 2022; Yuhuan et al., 2022). The expectation of academic excellence can induce anxiety and insecurity, causing students to prioritize academics over personal needs and enjoyable activities (Hanfesa et al., 2020; Zheng et al., 2023). Therefore, this focus on academic achievement contributes to added stress among students (Mofatteh, 2021).

The pressures encountered by students often lead to seeking refuge in the digital world through smartphone applications or internet (Gu & Mao, 2023; Liu et al., 2022). Although internet use and smartphone applications offer several benefits (Baroni et al., 2023; Rouvinen et al., 2021), excessive use during lectures can pose problems for students (Apuke & Iyendo, 2018; Rouvinen et al., 2021).

Cyberslacking, previously examined as a form of counterproductive behavior in the workplace, has now permeated the educational context. Initially defined as the use of email and internet for personal purposes during work hours, this behavior is now recognized within higher education contexts (Blanchard & Henle, 2008; Yaşar & Yurdugül, 2013). Cyberslacking is characterized by active engagement in non-academic online activities during work or study periods, such as sending unrelated emails, accessing social media, online shopping, playing games, and watching videos (Akbulut et al., 2016).

Cyberslacking has a significant influence on academic productivity and student well-being (Krishna & Agrawal, 2023). Students who heavily indulge in such behavior tend to divert attention from prioritized academic tasks, wasting time on less beneficial online activities. The high prevalence of cyberslacking is associated with lower academic performance in classrooms (Wu et al., 2018).

Unproductive online activities, including browsing social media or playing games, tend to create a significant imbalance in time allocation (Metin-Orta & Demirtepe-Saygılı, 2023). Therefore, such activities divert students' attention from academic pursuits, which comprise studying, conducting research, and actively participating in academic activities. This diversion can increase stress levels and anxiety among students (Li & Liu, 2022), potentially reducing their sense of life's meaning.

The effect of cyberslacking on academic productivity is evident in diminished academic success and increased procrastination (Durak, 2020). Diminished academic success can have long-term consequences, hindering the career development of students. Cyberslacking is one of the negative cycles, where students escaping academic pressure through online activities, worsen academic stress, resulting in psychological issues (Demirtepe-Saygılı & Metin-Orta, 2021).

As cyberslacking gains attention in research, identifying the factors that influence this behavior becomes increasingly important. The factors include stress levels, self-control, negative coping, psychosocial perceptions, attitudes, and learning strategies (Li et al., 2021; Li & Liu, 2022; Yılmaz & Yurdugül, 2018; Zhou et al., 2021). Additionally, loneliness serves as a recognized factor shaping individual inclinations toward internet use.

Previous reviews showed the role of loneliness in triggering cyberslacking (Çolak & Çetin, 2021; Sabrina & Rachmatan, 2023; Yang et al., 2023). Students experiencing high levels of loneliness are prone to excessive internet and social media use (Meckovsky et al., 2023), suggesting loneliness to be a significant predictor of cyberslacking.

Gender differences serve as a significant factor shaping the relationship between loneliness and cyberslacking. Previous reviews showed substantial distinctions between males and females in responding to loneliness and its impact on online behavior (Wallinheimo & Evans, 2022). However, some research found no gender differences in loneliness (Maes et al., 2019), indicating a potential variability. Nicolaisen and Thorsen (2024) reported that females experienced greater levels of loneliness, while Kim and Lee (2022) suggested males had higher levels of loneliness. These discrepancies show the complexity of the relationship between gender, loneliness, and cyberslacking, necessitating further investigations.

Further investigations are required to deepen the understanding of gender's moderating role in the relationship between loneliness and cyberslacking, particularly among university students. Although previous reviews have separately explained the relationship between loneliness, cyberslacking, and gender, this analysis uniquely integrates all the factors to examine gender's moderating role. By considering gender as a significant contextual variable, there is an advanced understanding of how social identities intersect with psychological processes to influence online behavior. This research aims to examine gender's role as a moderator that may strengthen or weaken the relationship between loneliness and cyberslacking. It contributes to the literature on cyberslacking and loneliness by examining gender's moderating role, adding nuance to the knowledge of how individual differences, such as gender, interact with psychological factors to shape online behavior. Investigating gender differences in cyberslacking behavior contributes to the understanding of gender dynamics in digital environments. Moreover, recognizing and addressing such differences in online behavior can foster gender equality and inclusivity in academic settings and beyond.

Methods

This research adopted a quantitative correlational method to investigate the relationship between loneliness and cyberslacking, with a specific focus on the moderating role of gender. It aimed to provide deeper insights into how gender influenced the interaction between loneliness and cyberslacking (Hair et al., 2021). Participants were selected based on active student status using convenience sampling, a non-probability sampling method that allowed for easy accessibility of elements (Elfil & Negida, 2019).

The research instruments included demographic data, a cyberslacking scale, and a loneliness scale. Demographic data covered basic information such as age, gender, and semester level of participants. Cyberslacking scale assessed the level of unproductive online activities during learning sessions, while loneliness scale measured perceived loneliness.

Cyberslacking scale, initially developed by Akbulut et al. (2016) and adapted into Bahasa Indonesian by Simanjuntak et al. (2019), showed good internal consistency (Cronbach's alpha of .871). The scale consisted of 24 statements prefaced with the instruction "During lectures, I engaged in the following activities." Sample statements included "I like interesting posts" and "I visit online shopping sites," with response options ranging from 1 (Never) to 5 (Always).

Loneliness was evaluated using the UCLA Loneliness Scale Version 3 (UCLA-3), developed by Russell (Pontinen & Swails, 2018). UCLA-3 was a 20-item self-report inventory assessing subjective feelings of loneliness on a four-point Likert-type scale. It had high reliability, with internal consistency ranging from .89 to .94 and a test-retest reliability of .73 over a one-year period (Russell, 1996). Sample questions included "How often do you feel close to others?" and "How often do you feel left out?" with response alternatives of "never," "rarely," "sometimes," and "always."

In this research, data were collected using an online form distributed through social media to target students' population. Data analysis included descriptive analysis, assumption testing, and moderation analysis, all performed using Jamovi, a user-friendly statistical software that did not require coding expertise. Additional analysis was conducted using an independent sample t-test to examine gender differences in loneliness and cyberslacking.

Results and Discussion
Results
Based on the data collected, a total of 226 participants were included in this research. The demographic summary presented in table 1 showed a significant dominance of female participants (59.73%) compared to males (40.26%). The majority of participants or approximately 66.81% fell in the age range of 21 to 23 years.

The descriptive analysis presented in table 2 provided insights into the main research variables. In terms of cyberslacking, male students reported a higher mean score (M = 82.1) compared to female counterparts (M = 75.9). This suggested that, on average, male students engaged more in non-academic online activities during study. The median scores for cyberslacking were relatively similar for both genders, indicating a balanced distribution of responses. The standard deviation (SD) for females (SD = 14.6) and males (SD = 14.1) students suggested moderate variability in cyberslacking scores in each gender group. Regarding loneliness, male students had a higher mean score (M = 52.9) compared to female counterparts (M = 42.6), suggesting that, on average, male students reported experiencing higher levels of loneliness. The median scores for loneliness also showed this trend, with male students reporting a higher median loneliness score (55.0) compared to female counterparts (43.0). The standard deviation for loneliness scores was relatively similar across gender, with slightly higher variability observed among female students (SD = 10.3) compared to male students (SD = 10.0).

Table 1
Demographic data (N = 226)

Demographic variable	n	%
Gender		
Females	135	59.73
Males	91	40.26
Age		
18 - 20	64	28.32
21 - 23	151	66.81
24 - 25	11	4.86

Table 2
Descriptive Analysis

	Gender	N	Mean	Median	SD	Min	Max
Cyber-slacking	Female	135	75.9	77.0	14.6	27	119
	Male	91	82.1	81.0	14.1	31	114
Loneli-ness	Female	135	42.6	43.0	10.3	24	68
	Male	91	52.9	55.0	10.0	26	68

Table 3
Moderation Estimates

	Estimate	SE	Z	p
Loneliness	.248	.082	3.02	.003
Gender	4.378	1.896	2.31	.021
Loneliness ✳ gender	-.387	.184	-2.10	.036

The results of the assumption tests showed that the data followed a normal distribution, as evidenced by the p-value of .305. Additionally, there was no indication of multicollinearity among the predictor variables, as evidenced by a VIF of 1.25 (VIF < 10) and a Tolerance of .801 (p > .01).

After confirming the fulfillment of assumption tests, the next step included conducting a moderation analysis to address the research objectives. Table 3 presented the moderation estimates for examining the influence of loneliness, gender, and their interaction on cyberslacking behavior among university students. The estimate for loneliness indicated a positive relationship (B = .248, SE = .082, Z = 3.02, p = .003) with cyberslacking, suggesting that higher levels of loneliness were associated with increased engagement in non-academic online activities during study or work time. Additionally, the estimate for gender showed a significant effect (B = 4.378, SE = 1.896, Z = 2.31, p = .021) on cyberslacking, suggesting that male students had higher levels of the behavior than females. The results indicated the importance of considering gender differences in online behavior among university students.

Table 4
Independent Samples T-Test

	Statistic	df	P	Effect Size
Loneliness	-7.47	224	< .001	Cohen's d	-1.013
Cyberslacking	-3.15	224	0.002	Cohen's d	-0.428

The interaction between loneliness and gender (Loneliness ✶ Gender) showed a significant moderating effect (B = -.387, SE = .184, Z = -2.10, p = .036) on the relationship between loneliness and cyberslacking. This indicated that gender influenced the strength of the relationship between the two variables. Specifically, the negative coefficient suggested that the positive relationship between loneliness and cyberslacking was weaker for male students compared to their female counterparts.

Table 4 provided the results of the independent samples t-tests conducted to examine differences in loneliness and cyberslacking between two groups of university students. For loneliness, the t-test showed a significant result (t = -7.47, df = 224, p < .001), suggesting a difference in loneliness scores between the two groups. The effect size, as measured by Cohen's d, was large (d = -1.013), indicating a substantial difference in loneliness levels between the groups. Similarly, for cyberslacking, the independent samples t-test produced a significant result (t = -3.15, df = 224, p = .002), indicating a difference in cyberslacking behavior between the two groups of students. The effect size was smaller, but still moderate (d = -.428), indicating a noticeable difference in cyberslacking tendencies between the groups.

Discussion

The analysis showed a positive impact of loneliness on cyberslacking, supporting the notion that heightened loneliness levels corresponded to increased cyberslacking tendencies. The results were in line with previous reviews indicating a positive relationship between loneliness and unproductive internet use (Meckovsky et al., 2023).

Meckovsky et al. (2023) observed that students experiencing elevated loneliness levels tended to intensify their internet use. Similarly, Reissmann and Lange (2021) found that lonely students often engaged in pathological internet use as a means of compensating for social needs (Reissmann & Lange, 2023). The results were in line with this research, indicating a consistent impact of loneliness on online behavior among students. This suggested that individuals experiencing higher levels of loneliness tended to engage in excessive internet use.

When individuals experienced profound loneliness, they were inclined to resort to cyberslacking. Lonely students might turn to distraction or relief from feelings of social isolation, with loneliness often linked to the need for social interaction (Özdemir, 2008). Internet and social media platforms offer avenues for virtual connection, potentially alleviating feelings of loneliness (Zhang et al., 2018). According to compensatory internet use theory, individuals experiencing loneliness might turn to internet as a coping mechanism (Musetti et al., 2020). Loneliness can propel students to pursue social interaction online, even when it covered less productive activities. Research showed that online platforms offer social experiences without requiring physical presence, particularly appealing to lonely individuals (Bonsaksen et al., 2023).

Previous investigations have expressed loneliness as a catalyst for individuals to find solace in online world, often leading to cyberslacking behavior (Çolak & Çetin, 2021; Sabrina & Rachmatan, 2023; Yang et al., 2023). Therefore, university policies and interventions were required to consider loneliness to be a crucial factor influencing behavior regarding non-educational digital technology usage. University could prioritize creating supportive communities and social networks to mitigate feelings of loneliness among students. By organizing events, clubs, or support groups aimed at fostering meaningful connections, university could provide students with opportunities to build relationships and combat loneliness.

The results showed that gender significantly moderated the influence of loneliness on cyberslacking. This suggested that the relationship between loneliness and cyberslacking differed between males and females, implying the importance of gender-related factors in shaping online behavior among students. Previous investigations showed the role of gender as a moderator in the relationship between psychological factors and online behavior. For instance, Ma (2022) found that males and females had different patterns of interaction in online environment, with males leaning more toward recreational satisfaction and females toward interpersonal communication and social satisfaction (Ma, 2022). The results contextualized this analysis, indicating that gender-based online preferences and behaviors could moderate how loneliness affected cyberslacking.

Weiser (2000) reported the influence of gender on internet usage motivation (Weiser, 2000), suggesting that females might use internet to fulfill social and relational needs, while males were more engaged in individualistic online activities. In this research, the gender-based differences in internet usage motivation might moderate the relationship between loneliness and cyberslacking.

The observed gender differences could be attributed to the cultural norms in Indonesia, where distinct expectations existed for males and females. Cultural factors indicating males independence and masculinity might shape preferences for online behavior (Ahmadi, 2022). Therefore, men were more inclined to engage in individualistic online activities or use them to cope with loneliness, supporting the gender norms.

The results showed significant gender differences in loneliness, with male students reporting higher loneliness scores compared to females. This was in line with previous investigations indicating that males tended to experience higher levels of loneliness than females (Fujimori et al., 2017; Nazzal et al., 2020). Males and females expressed and addressed loneliness differently (Nazzal et al., 2020), with females finding social connections through online platforms, while males might resort to avoidance-oriented online activities.

Opportunities for further development in this research relied on the focused application on students, aimed at providing in-depth insights into the subject matter. Although the investigation concentrated on students, it offered valuable perspectives that could guide future reviews in understanding online behavior. The results might not fully encapsulate the intricacies of online behavior across diverse age groups and backgrounds. Therefore, future reviews could explore broader demographic ranges to enrich the understanding of the topic.

The implications of discovering that gender played a moderating role in the relationship between loneliness and cyberslacking showed the necessity for a deeper understanding of how males and females engaged in online interactions. University policies and intervention strategies stood to gain enhanced effectiveness by acknowledging gender differences in online conduct.

The integration of insights from this research into students' welfare policies and online learning methods became a consideration for university. Tailoring prevention and intervention strategies to address the influence of loneliness on online behavior was essential.

This research established the foundation for a more comprehensive investigation into the dynamics of loneliness, gender, and online conduct. Future reviews were required to examine additional factors influencing such relationship. For instance, research could explore the role of cultural differences in shaping how loneliness manifested in online behavior across various demographics. Examining the impact of personality traits, such as introversion or extraversion, on the relationship between loneliness, gender, and online conduct could provide further insights. Furthermore,

longitudinal investigations tracking changes in online behavior in response to interventions targeting loneliness and gender-specific coping mechanisms would offer valuable data for understanding the long-term dynamics of this relationship.

Conclusion

In conclusion, the research showed a direct relationship between loneliness and cyberslacking among students. Gender had a significant influence on cyberslacking levels and also moderated the relationship between loneliness and cyberslacking. This indicated differing responses between males and female students to loneliness in the context of online behavior.

A significant limitation of the research was the restriction in generalizing results to a broader population due to its focus on students. Therefore, it was essential to consider that the results might not fully capture online behavior across diverse age groups or backgrounds.

The implications of the investigation were profound, particularly in developing policies and intervention strategies in university. Understanding that gender moderated the relationship between loneliness and cyberslacking provided a foundation for more focused and personalized methods to support student well-being. Collaboration with experts in the fields of psychology and education could offer valuable insights and guidance in designing and using online or offline learning interventions.

Future reviews were required to discuss how males and females use different coping strategies, particularly in the context of academic stress and loneliness. Investigating whether there were gender-specific patterns in finding social connection or engaging in online activities as a form of distraction would provide valuable insights..

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