

A Review of Social Media Use, Depressive Symptoms, and Underlying Psychological Mechanisms in University Students

Xiaoxiao Hu

*Faculty of Health, York University, North York, Canada
hux15194@gmail.com*

Abstract. As social media has become an integral part of university students' daily lives, its impact on mental health has attracted increasing attention. Against this background, this paper reviews existing research on social media use and depressive symptoms, focusing on overall associations, variations across types of use, and the psychological mechanisms involved. Previous studies have generally indicated that the relationship between social media use and depression is complex rather than simply causal. More specifically, problematic, passive, and addictive forms of use are more strongly associated with psychological risks than general or functional use. At the mechanism level, FoMO and upward social comparison may serve as initial triggers by fostering feelings of inadequacy and negative self-perceptions, which may then be reinforced by envy and rumination, further prolonging negative emotions. Meanwhile, loneliness and limited social support may exacerbate depressive symptoms. Consequently, the impact of social media on university students' mental health is shaped by usage duration, usage patterns, and the psychological processes involved.

Keywords: Social Networking Sites, Depressive Symptoms, Problematic Social Media Use, FoMO, Social Comparison

1. Introduction

Among university students, social media is no longer merely a tool for entertainment. Instead, it has also become an important means of maintaining interpersonal relationships, accessing information, expressing oneself, and relieving stress. At the same time, university students are at a critical stage of life characterised by academic pressure, social adjustment, identity formation, and future planning, making their mental health particularly sensitive to external influences. Existing research has found that among young adults, higher frequency and duration of social media use are associated with higher levels of depressive symptoms [1]. However, explaining depression solely in terms of duration of use is insufficient, as individuals differ in their usage patterns, motivations, and the content they encounter on these platforms. Compared with general social media use, problematic social media use is more consistently associated with depressive symptoms, further suggesting that usage patterns may be more critical than duration of use [2]. Besides, quasi-experimental studies on the proliferation of Facebook on US university campuses have also found that the introduction of social media onto campuses has had a negative impact on students' mental health, and may influence

depression and anxiety through adverse social comparison [3]. Therefore, this paper examines the relationship between social media use and depressive symptoms among university students, with a focus on underlying psychological mechanisms and future intervention directions.

2. Basic concepts and links between social media use and depression

2.1. The measurement and general relationship

In previous studies, social media use has typically been measured through indicators such as duration, frequency, number of platforms, and intensity of use. Among young adults, Lin et al. linked social media use to depression risk [1]. However, if duration of use is considered alone, it is easy to form an oversimplified assumption that greater social media use inevitably can lead to higher levels of depressive symptoms. In fact, the same amount of social media use can have different psychological effects depending on usage patterns.

For social and academic purposes, some students use social media to maintain friendships, join course groups, access campus information, and seek emotional support. This kind of functional use is not necessarily negative, and may even provide support. In contrast, passive use often involves repeatedly browsing others' posts, which may increase social comparison and feelings of inadequacy. Therefore, discussions of social media use and depressive symptoms should consider usage patterns rather than focusing solely on screen time, distinguishing between general, functional, and passive forms of use.

2.2. Problematic use and stronger associations

Beyond duration of use, problematic social media use may better account for depressive symptoms. Shensa et al. found that problematic social media use was significantly associated with higher levels of depressive symptoms among young adults, and this association was independent of time spent on social media [2]. This shows that the question is not only "how long to use," but also whether it is difficult for students to control their usage behavior.

In university students, problematic social media use may be manifested through behaviors such as repeatedly checking notifications during class, spending extended periods watching short videos before sleep, using social media as a means of escaping negative emotions, or experiencing anxiety due to a lack of replies and likes. These behaviors may form a behavioral pattern in which compulsive checking and passive scrolling affect sleep, concentration, and offline interactions, further increasing loneliness and depressive mood. Therefore, problematic social media use better explains depressive symptoms than screen time alone because it reflects the psychological effects of different usage patterns.

3. Psychological mechanisms linking social media and depression

3.1. FoMo and upward social comparison

Both FoMO and upward social comparison help to explain how social media influences university students' emotions, although their underlying mechanisms differ. Among these mechanisms, upward social comparison represents an evaluative cognitive process in which students compare themselves with others after viewing idealised aspects of their lives, such as academic achievements, physical appearance, or social relationships, potentially leading to feelings of inadequacy. In contrast, FoMO reflects concerns about social exclusion or missing important experiences, arising from the

perception that others are engaging in meaningful or enjoyable activities without them. Thus, social comparison primarily involves perceptions of others being superior, whereas FoMO is associated with the fear of being excluded or left behind.

This triggering process is particularly likely to occur in social media environments, where posts are often selectively presented and idealised. Based on data from 736 university students, Facebook use did not directly predict depression; specifically, the correlation between frequency of use and depression was not significant, $r(727) = .01$, $p > .70$. However, when Facebook use elicited envy, it was associated with higher levels of depressive symptoms [4]. This suggests that the critical factor is not simply the amount of content viewed, but whether the content triggers social comparison and envy. Supporting this view, a study of 311 young Italian adults (mean age = 23.5 years) found positive associations between depression, FoMO, online FoMO, and social media addiction [5]. Overall, these findings suggest a process in which students first encounter idealised online images, engage in upward comparison, and subsequently experience FoMO and self-doubt.

3.2. Rumination and cycles of negative emotion

Through persistent negative reflection, rumination maintains negative emotions. More specifically, it refers to repeatedly focusing on negative thoughts or experiences, such as concerns about social rejection, personal inadequacy, or unfavorable comparisons with others. This repetitive thinking can transform temporary feelings of unease into persistent emotional distress. Among university students, this cycle may be particularly common due to academic pressure, unstable interpersonal relationships, and fluctuations in self-esteem.

This process can be divided into three stages. First, students encounter posts about others' parties, travels, successful work placements, or romantic relationships, which may lead to social comparison or FoMO. Then, even after leaving social media, students may continue to dwell on this content and compare it with their own lives. Finally, to relieve anxiety or loneliness, students may return to social media for comfort, while new posts may trigger further comparisons. Supporting this process, a study involving 296 university students found that FoMO and rumination were significantly associated with the severity of problematic Facebook use, with both factors mediating the relationship between social anxiety and problematic Facebook use [6]. These findings suggest that social media use is not merely a temporary emotional stimulus but a cyclical process involving comparison, rumination, continued use, and further comparison. Through this cycle, social media exposure may trigger repeated negative thoughts and prolong depressive moods.

3.3. Loneliness and perceived social support

In addition to personal cognitive and emotional mechanisms, perceived social support links social media use with depressive symptoms. When faced with loneliness or stress, students may increasingly seek connection through online interactions. In such situations, social media may act a compensatory function by providing social connection, access to others' updates, and temporary relief from negative emotions. However, online interactions are often brief, superficial, and fragmented, and cannot fully replace the emotional support, companionship, and security provided by face-to-face relationships.

Further evidence from Chinese university students demonstrates that perceived social support and loneliness mediate the link between problematic social media use and depressive symptoms. The total indirect effect was 0.143, with a 95% CI of [0.133, 0.156] [7]. These findings suggest that perceived social support plays a key role in linking problematic social media use and depressive

symptoms. Furthermore, a subsequent group counselling intervention reduced depressive symptoms, suggesting that strengthening interpersonal support and communication skills in real-life contexts may help reduce these negative outcomes [7]. Although online interaction may offer short-term companionship, it cannot replace perceived social support or meaningful offline relationships. This may create a cycle in which loneliness increases reliance on social media, while excessive online engagement reduces opportunities for real-life interaction and contributes to worsening depressive symptoms. Thus, the relationship between social media use and depression should be considered alongside students' perceived availability and quality of social support.

4. Limitations and factors shaping social media and depression

4.1. Mixed effects and uncertain evidence

As for social media use and depression, it cannot be simply said that social media must be harmful. Instead, different patterns of use may lead to different outcomes. Functional use, such as contacting friends, joining course groups, obtaining information, or seeking emotional support, may provide benefits. In contrast, ordinary entertainment and chatting may have relatively neutral effects. The main risks are associated with problematic use, addictive use, and passive browsing.

This distinction is supported by empirical evidence. For example, a systematic review and meta-analysis by Shannon et al. indicates that problematic social media use is associated with mental health outcomes, including depression, anxiety, and stress [8]. However, many existing studies adopt cross-sectional designs, which can identify associations but cannot establish causal relationships. Therefore, the evidence suggests that social media use is not universally harmful; rather, certain patterns of use are more strongly associated with depressive symptoms.

4.2. Platform and student context differences

Inconsistent findings across studies may partly reflect differences in student contexts. Specifically, these differences include baseline mental health, academic pressure, family expectations, personality characteristics, and levels of social support, which may shape students' responses to social media experiences. For example, students with stronger tendencies toward social comparison may be more vulnerable to negative psychological effects when viewing idealised online content [9].

Moreover, platform characteristics may also contribute to variations in research findings. Different platforms encourage different patterns of engagement. Instagram and TikTok, which emphasize visual content and algorithmic recommendations, may increase passive scrolling and appearance-based comparison. Facebook research has often focused on surveillance use and envy arising from viewing others' activities. By contrast, WeChat is linked to existing social networks, where Moments sharing may involve social expectations and pressure.

In addition, differences in measurement methods may also contribute to variations in reported associations. Many studies rely on self-report questionnaires, which may lead to inaccurate estimates of usage time or difficulties in evaluating depressive symptoms. In contrast, longitudinal designs provide a clearer view of changes over time by tracking patterns of problematic social media use and depressive symptoms among university students [10].

4.3. Future directions and practical implications

Future research should distinguish more clearly between active, passive, functional, problematic, and addictive patterns of social media use, rather than focusing on duration of use alone [9]. To address this issue, greater use of longitudinal designs, experimental approaches, and digital trace data may help clarify temporal relationships and capture actual usage behaviours [10].

In practice, universities should not simply encourage students to reduce mobile phone use; instead, they should help students understand how passive scrolling, upward social comparison, and FoMO influence emotional well-being via digital literacy courses and mental health education. Additionally, campus counselling services could incorporate social media use-related questions when assessing depressive symptoms, sleep problems, and academic stress. At the individual level, individual actions may include reducing screen exposure before bedtime, disabling unnecessary notifications, limiting unintentional short-video browsing, and further strengthening offline social interactions rather than completely avoiding social media.

5. Conclusion

In general, social media use is associated with depressive symptoms among university students, but this relationship should not be interpreted as a simple causal effect. Usage patterns appear to be more influential than usage duration. This difference is reflected in different types of use: functional use may support relationship maintenance, information access, and emotional support, while problematic use, passive browsing, and addictive use are more strongly linked to psychological risks. These effects may be explained by several psychological processes. Upward social comparison and FoMO may increase comparison pressure and feelings of exclusion, while envy and rumination may prolong negative emotions. Meanwhile, loneliness and limited social support may further intensify depressive symptoms.

Several limitations should also be acknowledged. First, this paper is a review study and does not provide new empirical data. Second, many existing studies rely on cross-sectional designs and self-report questionnaires, making causal relationships difficult to establish. Third, differences across platforms, cultural contexts, and student populations require further investigation. Future research should apply longitudinal designs, experimental approaches, and digital trace data while examining more specific patterns of social media use. In practice, universities can support students through mental health education and digital literacy programmes that address passive scrolling and excessive social comparison, while also strengthening meaningful offline social support.

References

- [1] Lin, L. Y., Sidani, J. E., Shensa, A., Radovic, A., Miller, E., Colditz, J. B., Hoffman, B. L., Giles, L. M., & Primack, B. A. (2016). Association between social media use and depression among U.S. young adults. *Depression and Anxiety*, 33(4), 323–331. <https://doi.org/10.1002/da.22466>
- [2] Shensa, A., Escobar-Viera, C. G., Sidani, J. E., Bowman, N. D., Marshal, M. P., & Primack, B. A. (2017). Problematic social media use and depressive symptoms among U.S. young adults: A nationally-representative study. *Social Science & Medicine*, 182, 150–157. <https://doi.org/10.1016/j.socscimed.2017.03.061>
- [3] Braghieri, L., Levy, R., & Makarin, A. (2022). Social media and mental health. *American Economic Review*, 112(11), 3660–3693. <https://doi.org/10.1257/aer.20211218>
- [4] Tandoc, E. C., Ferrucci, P., & Duffy, M. (2015). Facebook use, envy, and depression among college students: Is Facebooking depressing? *Computers in Human Behavior*, 43, 139–146. <https://doi.org/10.1016/j.chb.2014.10.053>
- [5] Sommantico, M., Ramaglia, F., & Lacatena, M. (2023). Relationships between depression, fear of missing out and social media addiction: The mediating role of self-esteem. *Healthcare*, 11(12), 1667.

<https://doi.org/10.3390/healthcare11121667>

- [6] Dempsey, A. E., O'Brien, K. D., Tiamiyu, M. F., & Elhai, J. D. (2019). Fear of missing out FoMO and rumination mediate relations between social anxiety and problematic Facebook use. *Addictive Behaviors Reports*, 9, 100150. <https://doi.org/10.1016/j.abrep.2018.100150>
- [7] Chen, Y., Liu, X., Chiu, D. T., Li, Y., Mi, B., Zhang, Y., & Yan, H. (2022). Problematic social media use and depressive outcomes among college students in China: Observational and experimental findings. *International Journal of Environmental Research and Public Health*, 19(9), 4937. <https://doi.org/10.3390/ijerph19094937>
- [8] Shannon, H., Bush, K., Villeneuve, P. J., Helleman, K. G. C., & Guimond, S. (2022). Problematic social media use in adolescents and young adults: Systematic review and meta-analysis. *JMIR Mental Health*, 9(4), e33450. <https://doi.org/10.2196/33450>
- [9] Wang, J. L., Wang, H. Z., Gaskin, J., & Hawk, S. (2017). The mediating roles of upward social comparison and self-esteem and the moderating role of social comparison orientation in the association between social networking site usage and subjective well-being. *Frontiers in Psychology*, 8, 771. <https://doi.org/10.3389/fpsyg.2017.00771>
- [10] Luo, Y., Liang, L., Zhou, H., Qi, X., Xu, J., & Meng, H. (2025). The impact of social media addiction on depression among university students in Wuhan, China: A longitudinal study. *BMC Public Health*, 25, 2279. <https://doi.org/10.1186/s12889-025-23443-3>