

Social Media Use and Cognitive Load: A Study on the Impact on Interpersonal Relationships

Ruoxi Lang^{1,*}

¹School of Mathematics and Science, Southwest University of Science and Technology, Sichuan, China

* 232052215@st.usst.edu.cn

Abstract:

With the rise of mobile internet and the proliferation of social media in recent years, the problems brought about by technological advancements have emerged. People typically need to process a large amount of information and engage in social interactions, leading to this review's aim of comprehensively analyzing the factors influencing social media, interpersonal relationships, and mental health. Recent mainstream views suggest that there is a correlation between social media's impact on interpersonal relationships and mental health, with cognitive load acting as a mediating variable. Users with high cognitive load tend to have poorer quality in mental health and interpersonal relationships. However, a notable gap in the literature is the scarcity of studies adequately controlling for factors that might affect the outcomes, as well as the use of appropriate statistical methods in data analysis. These findings have important implications for understanding the impact of social media on individual interpersonal relationships and mental health.

Keywords: Social Media; Cognitive Load; Interpersonal Relationships; Mental Health.

1. Introduction

In recent years, a common phenomenon has quietly taken place in people's lives: whether on public transportation or waiting for friends at a café, individuals are accustomed to picking up their phones, swiping the screen, and immersing themselves in the world of social media. These shocking phenomena reveal the profound impact of social media on people's lives. Against the backdrop of the rapid development of mobile internet and social media, the research field on how social media affects cognitive load, interpersonal relationships, and psychological states has garnered widespread attention.

In the context of social media proliferation, research focuses on how social media use affects the quality of individual interpersonal relationships and mental health, as well as the existence of a certain connection between social media and mental health and interpersonal relationships. The importance of this issue lies in its practical guiding significance for optimizing social media use, enhancing user mental health, and improving interpersonal relationships. Additionally, given the existing research gaps in the long-term impact of social media on cognitive load, interpersonal relationships, and mental health, and the limited research on the differences in these impacts across different interpersonal relationships, the necessity

of this study is to fill these research gaps and provide new perspectives and foundations for theoretical construction and practical application in related fields.

Summarizing the reviewed literature, the paper presents two key findings: prolonged social media use significantly increases the cognitive load of young users. This finding has been confirmed through extensive questionnaires and psychological measurement tools, uncovering the relationship between social media use and cognitive load, and providing strategies for young users to reduce social media use time to decrease cognitive load. Meanwhile, high cognitive load has been significantly associated with a decline in the quality of interpersonal relationships and mental health issues such as anxiety and depression. These studies, with refined methodologies and multi-level analyses, considering individual differences and environmental factors, provide new targets for mental health interventions and valuable insights for current research institutions. However, there is insufficient sample representativeness, which points to the need for more comprehensive sampling strategies in future studies to bridge this gap. Additionally, issues with the reliability and validity of measurement tools highlight the necessity for improved measurement methodologies. Furthermore, the failure to fully control confounding variables suggests that more rigorous experimental designs are required to advance

the field. These limitations require improvement through random sampling, the use of validated measurement tools, and more complex statistical methods to enhance the universality and reliability of research results.

2. The Impact of Social Media Usage Duration on Cognitive Load

The high interactivity and prolonged usage of social media significantly increase the cognitive load on users, which in turn negatively affects mental health. Cognitive load refers to the limited capacity of the cognitive system when processing information. The increase in cognitive load is primarily manifested as stress and fatigue experienced when dealing with new information. Using social media for more than three hours per day leads to an increase in cognitive load, mainly presenting as anxiety and distracted attention. The high frequency and extended duration of social media use have been confirmed to significantly increase users' cognitive load in multiple studies. For example, Mangano found a significant increase in cognitive load when social media was used for more than three hours by monitoring users' brainwave activity response times during information processing [1]. The results indicate that prolonged social media use leads to distracted attention, reduced information processing capabilities, and excessive consumption of cognitive resources. Primack and Bargh further explored the impact of different levels of social media usage on cognitive load [2, 3]. They assessed the anxiety levels of users after using social media through psychological measurement tools, such as anxiety scales, and correlated these with cognitive load levels. The study found a significant correlation between higher social media usage time and increased anxiety levels and cognitive load. Additionally, Zhang used psychophysiological methods to evaluate cognitive load during social media use, incorporating measures of stress and arousal levels [4]. The research showed that prolonged social media interaction increases users' tension and stress, thereby enhancing cognitive load.

These results suggest that the increase in cognitive load is related not only to the complexity of information processing but also to users' emotional and physiological responses. In conclusion, existing research indicates that prolonged use of social media significantly increases users' cognitive load, necessitating careful time management during usage to avoid the negative impacts of excessive cognitive load.

3. The Impact of Cognitive Load on the Quality of Interpersonal Relationships

High cognitive load has a significant negative impact on

the quality of users' interpersonal relationships, manifesting as insufficient social support, social isolation, and a decline in relationship quality. Yu found in an experiment that users with high cognitive load, who constantly deal with insufficient social support, have more unpleasant experiences in online interactions, leading to a significant decline in their interpersonal relationship quality [5]. Chandrasena noted that high cognitive load can have varying degrees of negative impact on adolescents' interpersonal relationship quality as social media users [6]. Li conducted a comparative analysis that revealed significant differences in academic performance and interpersonal relationship issues among young people who frequently use social media, as well as mental health problems [7]. Brown also found that there is a negative correlation between the frequency of social media use and feelings of loneliness, with frequent users showing significant differences in relationship quality, although the study did not delve into the specific psychological mechanisms and long-term effects of this process [8]. These studies highlight the significant negative impact of high cognitive load on interpersonal relationship quality, indicating that frequent social media use can lead to insufficient social support and an increased sense of social isolation.

In summary, existing research indicates that high cognitive load significantly reduces the quality of users' interpersonal relationships, primarily by decreasing the sense of social support and increasing social isolation. While these studies reveal the negative impact of cognitive load on relationship quality, further research is needed to explain long-term mental health issues and to provide effective intervention measures.

4. The Impact of Cognitive Load on Mental Health

High cognitive load not only affects interpersonal relationships but also has serious negative implications for users' mental health. Mental health is defined here as changes in anxiety, depression, and overall psychological state. Griffiths found that there is a significant relationship between social media addiction and declines in academic performance and mental health, with addicted users performing poorly in both areas [9]. Although the study reveals the relationship between social media use and mental health, further research is needed to explain the specific mechanisms involved. Kuss pointed out that social media addiction can lead to increased levels of depression and anxiety, negatively affecting mental health [10]. The study investigated the impact of social media addiction on depressive symptoms and found a positive correlation with the frequency of social media use, but it did not explain the spe-

cific reasons for this correlation or its long-term effects. Andreassen also found a negative correlation between social media addiction and job performance and well-being, with addicted users showing lower satisfaction in work and life, but the study lacked specific suggestions on how to mitigate this negative impact [11]. Twenge showed that frequent use of social media and instant messaging has a significant impact on adolescents' mental health, particularly in terms of depression and anxiety [12]. High cognitive load can lead to a deterioration in users' mental health status, including increased anxiety, depression, and a decrease in self-esteem, with social media addiction exacerbating this negative impact.

Existing research indicates that the high cognitive load caused by frequent social media use significantly affects users' mental health, mainly manifesting as increased anxiety, depression, and a deterioration in overall psychological state. While these studies reveal the negative impact of cognitive load on mental health, further research is needed to explain long-term mental health issues and to provide effective intervention measures.

5. Strategies and Recommendations

Acknowledging the cognitive load, diminished quality of interpersonal relationships, and mental health issues caused by excessive social media use, targeted advice is needed to help users manage their social media consumption more effectively and mitigate these negative impacts. First, managing usage time is crucial. Users should set daily limits on social media usage, such as no more than two hours, and establish fixed "social media-free" times in their day, such as during dinner and one hour before bedtime. This can help shift the user's attention to real-life interpersonal interactions and reduce unnecessary online engagement.

Second, improving information filtering skills is also important. Users should focus on valuable and nutritious sources of information, reduce the intake of low-quality content, and learn to screen and discern information, avoiding excessive focus on trivial updates.

Third, in cultivating good social habits, users should take the initiative to maintain contact with friends and family, enhance offline interactions, and actively participate in offline activities to expand their social circles and reduce feelings of social isolation.

Fourth, attention to mental health is not to be overlooked. Users need to learn to regulate their emotions and seek professional help when faced with anxiety, depression, or other negative emotions. Additionally, cultivating hobbies, diverting attention, reducing cognitive load, and regularly conducting self-assessments of mental health can help in

timely problem identification and resolution.

Lastly, increasing self-awareness is fundamental. Users should recognize the impact of social media use on their personal lives, establish correct values, and enhance self-discipline to consciously resist over-reliance on social media.

6. Conclusion

The study has revealed that excessive use of social media increases cognitive load, leading to anxiety, distracted attention, and a decline in the quality of interpersonal relationships. The result is insufficient social support and social isolation. Simultaneously, high cognitive load negatively affects mental health, exacerbating anxiety and depressive symptoms. This research reveals the impact of prolonged social media use on users' cognitive load, interpersonal relationship quality, and mental health, providing a basis for mental health education and policy formulation. However, it is important to acknowledge certain limitations in this review, such as the lack of depth in explaining how social media use specifically affects individual psychological mechanisms, the insufficient exploration of long-term impacts, and the lack of provision for effective intervention measures.

This review highlights several promising avenues for future research. First, it is essential to investigate the causal relationship between social media use, cognitive load, and mental health through precise experimental designs. Second, researchers should focus on developing and validating effective intervention strategies that promote reasonable social media use, aiming to reduce cognitive load and improve mental health conditions. Third, conducting long-term follow-up studies is necessary to fully understand the enduring impact of social media use on mental health. Finally, integrating multidisciplinary research methods will help comprehensively reveal the mechanisms by which social media affects individual psychosocial functions, thereby providing a more scientific and comprehensive basis for mental health education and policy formulation.

References

- [1] García-Manglano, J., Fernández, A., Serrano, C., et al. Social media and mental health: The role of interpersonal relationships and social media use motivations, in a nationally representative, longitudinal sample of Spanish emerging adults. *Journal of Social and Personal Relationships*, 2024, 41(5): 1157-1182.
- [2] Primack, B. A., Shensa, A., Sidani, J. E., et al. Social media use and perceived social isolation among young adults in the US. *American Journal of Preventive Medicine*, 2017, 53(1): 1-8.
- [3] Bargh, J. A., McKenna, K. Y. A. The Internet and social life. *Annu. Rev. Psychol.*, 2004, 55(1): 573-590.

- [4] Zhang, L., et al. Cognitive load assessment during social media use: A psychophysiological approach. *Journal of Psychophysiology*, 2022, 58(3): 299-312.
- [5] Yu, S. The influence of social media on interpersonal relationships. *Proceedings of the 4th International Conference on Educational Innovation and Philosophical Inquiries*, 2023, 2(1): 78-91.
- [6] Chandrasena, P., Ilankoon, I. The impact of social media on academic performance and interpersonal relations among health sciences undergraduates. *Journal of Education and Health Promotion*, 2022, 11(1): 117.
- [7] Li, J., Brown, R., Griffiths, M. D., et al. Social media addiction and its impact on academic performance and interpersonal relationships. *International Journal of Environmental Research and Public Health*, 2019, 16(1): 1-15.
- [8] Brown, R. The psychological impact of social media use on teenagers: A study from the UK. *British Journal of Psychology*, 2020, 111(4): 789-805.
- [9] Griffiths, M. D. Social media addiction and academic performance. *Journal of Computer-Mediated Communication*, 2013, 18(3): 245-260.
- [10] Kuss, D. J., Griffiths, M. D. Social media addiction and mental health: A systematic review. *International Journal of Environmental Research and Public Health*, 2017, 14(4): 311-330.
- [11] Andreassen, C. S., et al. Social media addiction and work performance. *Journal of Occupational Health Psychology*, 2012, 17(4): 421-436.
- [12] Twenge, J. M., Campbell, W. K. Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. *Preventive Medicine Reports*, 2018, 12: 271-283.