

# Literature Review on Loneliness and Social Media Models

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**Abstract:** This paper systematically reviews the current research on the relationship between social media use and loneliness in domestic and international contexts. With the rapid development of digital technology, social media has become deeply embedded in modern life, while loneliness as a prevalent negative emotional experience has drawn increasing academic attention. Through comprehensive analysis of empirical studies, meta-analyses and theoretical perspectives, this review examines how different usage patterns (active/passive), psychological mechanisms (FoMO, social comparison, social support), individual differences (age, personality traits) and contextual factors influence this complex relationship. The findings reveal a dual-effect pattern: active and functional use of social media, particularly among elderly populations and in close-tie platforms, can alleviate loneliness by enhancing social connections; whereas passive browsing, excessive use and problematic engagement may exacerbate loneliness, especially among adolescents and individuals with psychological vulnerabilities. The review highlights the importance of nuanced, context-specific approaches in understanding this phenomenon, and provides theoretical foundations for developing targeted interventions to promote healthy social media use and mental well-being in the digital age.

**Keywords:** Social Media Use; Loneliness; Mediating Mechanism; Digital Age; Intervention Strategies

## 1. Introduction

With the rapid development of the digital age, social media has been deeply integrated into all aspects and links of modern social life, and has gradually become an important channel for people to obtain information and maintain social relationships. At the same time, loneliness, as a common negative emotional experience, has

received increasing attention for its causes and effects. The popularity and use of social media have undoubtedly had a complex and far-reaching impact on individuals' experience of loneliness. The academic community has long been discussing the relationship between social media use and loneliness, but the conclusions are not consistent, showing the characteristics of a "double-edged sword" effect: social media appears to both provide opportunities for connection and interaction that may alleviate feelings of loneliness, and to exacerbate them when used excessively or inappropriately. This complexity has prompted researchers to explore its internal mechanisms, regulatory factors, and specific manifestations in different populations and situations.

This literature review aims to systematically organize existing research articles to explore the relationship between social media use and loneliness. Starting from the current status of research in China and around the world, we will analyze the characteristics of different research groups (such as adolescents, the elderly, college students, etc.), and concentrate on discussing about the implication of social media (active/passive), psychological mechanisms (such as dread of missing out, social comparison, social support, social anxiety, attachment style, self-esteem, resilience, etc.) and situational factors (such as epidemic isolation, living environment, family background, etc.) in this relationship. By comparing and integrating existing research, it aims to disclose the complex path of social media's impact on loneliness, provide a theoretical basis for understanding individual mental health in the digital age, and provide practical references for relevant intervention strategies. This review will mainly discuss the results of social data analysis of existing literature. Although some studies use experimental or qualitative methods, the core is still to reveal the relationship between social phenomena and individual psychological states through data.

## 2. Research Status

### 2.1. Current State of Domestic Research

Domestic academic research on the relationship between social media use and loneliness has covered different age groups and multiple influencing mechanisms, and combined with China's unique social media ecology (such as WeChat's acquaintance social attributes). The research methods are diverse, including questionnaire surveys, structural equation models, mediation effect analysis, meta-analysis, etc., aiming to quantify and explain this complex phenomenon from the perspective of social data. For adolescents, studies generally focus on the relationship between the intensity of social media use and loneliness, and introduce psychological variables such as fear of missing out (FoMO). Cheng Peng (2021)<sup>[1]</sup> conducted a survey on adolescents and found that loneliness was significantly positively correlated with the intensity of social media use and fear of missing out. More importantly, the study revealed through mediation effect analysis that loneliness not only directly and positively predicted fear of missing out, but also indirectly affected fear of missing out through the intensity of social media use, indicating that the intensity of social media use played a mediating role between loneliness and fear of missing out. Pi Luyang and Li Xia (2023)<sup>[2]</sup> also found a similar mechanism in college students. Their research showed that there was a correlation between loneliness and problematic mobile social media use, and fear of missing out played a partial mediating role. This suggests that for adolescents, loneliness may prompt them to use social media more frequently, and this use behavior interacts with fear of missing out, which may eventually lead to problematic use. Furthermore, Ding Congying and Men Huihua (2022)<sup>[3]</sup> linked attachment anxiety, loneliness and conflictual use of mobile social media and found that attachment anxiety can positively predict loneliness and conflictual use, and loneliness plays a partial mediating role between attachment anxiety and conflictual use of mobile social media. This suggests that an individual's early attachment style and the resulting anxiety may affect their use of social media by exacerbating loneliness, and even lead to conflictual use. Zhao Xinwei et al. (2024)<sup>[4]</sup> also confirmed that social anxiety can indirectly affect college students' tendency to become

addicted to mobile social media through the mediating effect of loneliness, and the direct effect of social anxiety and the mediating effect of loneliness jointly explain the addictive behavior. Zeng et al. (2024)<sup>[5]</sup> expanded the perspective to childhood experience and found that grandparent care experience was significantly positively correlated with college students' dependent use of social networking sites, anxiety in social behavior, loneliness in social experiences, and that social anxiety and loneliness played a mediating role between grandparent care experience and social networking site addiction. Together, these studies construct an explanatory path from individual internal traits (attachment anxiety, social anxiety), early experiences (grandparental care), psychological state (loneliness), and then to social media behavior (intensity of use, problematic use, addiction), emphasizing the key mediating role of loneliness in connecting the entire process.

Unlike adolescents, research on the elderly focuses more on the positive potential of social media. Yang Shufang and Zhang Pengzhu (2022)<sup>[6]</sup> found that different social media usage patterns had a significant impact on mental health among the elderly in a smart health care community. Functional social media use negatively affected self-esteem, self-esteem negatively predicted upward social comparison and loneliness, and objective social isolation positively predicted loneliness. These studies suggest that for the elderly, social media may be more of a tool to alleviate loneliness by enhancing the use of social support and functional use. Meng Hongxing et al. (2023)<sup>[7]</sup> provided more macro evidence in their meta-analysis of the relationship between online social media use and loneliness in the elderly. They found that online social media use was significantly negatively correlated with loneliness in the elderly, and this relationship was moderated by the measurement indicators, but not affected by gender and cultural background. This strongly supports the view that social media has an overall mitigating effect on loneliness in the elderly and clarifies the inconsistent conclusions in previous studies. Cai Yuting (2024)<sup>[8]</sup> further explored the relationship between the intensity of social media use and loneliness among middle-aged and elderly people and found that there is a U-shaped relationship, that is, moderate use may alleviate

loneliness, but excessive or insufficient use may aggravate it. Social support plays a mediating role in this relationship, and passive use positively regulates this relationship, while active use negatively regulates it. This provides a more sophisticated perspective for understanding the complexity of social media use among the elderly and emphasizes the importance of moderate and active use. These studies collectively show that social media has significant potential for the elderly to promote social connections, gain support, and alleviate loneliness, but its effects are affected by usage methods, platform characteristics, and individual social support status.

In addition to specific age groups, domestic research has also explored the general impact of social media use on loneliness among the general public. Xu Qi and Fu Zhe (2023)<sup>[9]</sup> used a large sample data analysis to find that frequent use of social media has a significant effect on alleviating loneliness by promoting offline interactions and intimacy. However, this effect depends on the way it is used. Normal use alleviates loneliness, while pathological use exacerbates loneliness, and there are class differences. This finding challenges the simple conclusion that social media will inevitably lead to loneliness, and emphasizes the integration of online and offline interactions and the importance of healthy usage habits. Yang Zhuyuan and Hao Chunmei (2022)<sup>[10]</sup> took WeChat as an example and explored in depth the relationship between its use and loneliness. They believe that WeChat is mainly based on social networking among acquaintances, and its online communication does not simply replace offline communication, but rather replicates and strengthens existing relationships, resisting loneliness through active self-disclosure and emotional support. Although social comparison may aggravate loneliness, the study found that as the intensity of WeChat use increases, the loneliness caused by social comparison can be offset by active and targeted communication and the emotional support it brings, and the overall effect tends to alleviate loneliness. This study highlights the key role of platform characteristics (acquaintances vs. weak connections) in the impact of social media on loneliness. Zhang Yuxiang (2024)<sup>[11]</sup> focused on the special group of "empty nest youth", pointing out that they face serious loneliness problems and frequently use social media as a way to

alleviate loneliness and seek emotional support, but the effect is affected by many factors, such as single status, lack of emotional support, and limited social circles. Zhang Jingyan (2024)<sup>[12]</sup> studied "acquaintance + anonymous" social software and found that this type of platform can effectively reduce youth loneliness by promoting self-disclosure and enhancing social capital, providing a new perspective for understanding the impact of new social models on loneliness.

Overall, domestic studies have revealed complex associations between social media use and loneliness in different populations. For adolescents, problematic use driven by negative psychological factors (anxiety, FoMO) is more likely to exacerbate loneliness; for the elderly, social media is more often seen as an effective tool to enhance social support and alleviate loneliness, especially in the case of functional and proactive use. Studies on the general population emphasize the key role of usage patterns (normalization vs. pathologization, active vs. passive) and platform nature (acquaintances vs. weak connections), and propose a U-shaped relationship between usage intensity and loneliness. Through social data analysis, these studies not only quantified the relationship between variables, but also explored the mediating and moderating mechanisms in depth, providing rich empirical evidence for understanding the complexity of social media's impact on loneliness. However, most studies still rely on cross-sectional data and self-reports, with relatively few analyses of actual social behavior data, and causal relationships still require more longitudinal studies and experiments to verify.

## 2.2 Current Status of Foreign Research

International academic research on the relationship between social media use and loneliness is equally extensive and in-depth, with a large number of empirical studies, reviews and meta-analyses emerging, attempting to explain its complexity from different theoretical perspectives.

International and domestic studies have similar conclusions on the overall relationship between social media use and loneliness, but there are also some obvious differences in classification methods and scenario patterns. Hunt et al. (2018)<sup>[13]</sup> conducted a landmark experimental study and found that limiting college students' use of Facebook, Instagram, and Snapchat (10 minutes per platform per day) can significantly

reduce loneliness and depression, providing preliminary experimental evidence for the causal relationship between social media use and loneliness. However, Hall's review (2024)<sup>[14]</sup> believes that social media use is only weakly associated with trait loneliness, has a low degree of explanation for loneliness, and there is no evidence that social media is a direct cause of loneliness. He suggested that social media may be used to promote a short-term sense of belonging, but may not be an effective way to deal with loneliness in the long run. Jütte et al. (2024)<sup>[15]</sup> have done a longitudinal study during the COVID-19 lockdown. They found that the more social media use, the higher the loneliness, calling it the "social media paradox" and arguing that richer digital media (such as video chat) may be more effective in alleviating loneliness. Together, these studies highlight the limitations of simply equating social media use with loneliness and call for a more nuanced, contextualized analysis.

To explain this complexity, researchers have explored different usage patterns and psychological mechanisms. Karsay et al. (2022)<sup>[16]</sup> used a mobile experience sampling method and found that messaging and posting were associated with positive emotions, while browsing was associated with higher loneliness, and FoMO played a moderating role in this. These studies strongly support the view that "usage pattern determines impact". Passive consumption of content (browsing) is more likely to trigger social comparison and FoMO, thereby exacerbating loneliness, while active interaction and communication may enhance the sense of connection. Mao et al. (2023)<sup>[17]</sup> further proposed the "double-edged sword" effect of active social media use: it can positively predict interpersonal relationship satisfaction and then negatively predict loneliness; but at the same time, it also positively predicts online-specific state FoMO, and then positively predicts loneliness through trait FoMO. This model cleverly explains why active use can bring both benefits and harms.

Social support is another key mechanism that has been widely studied. Several studies have shown that social media can alleviate loneliness by promoting social support. For instance, Helm with his team (2022)<sup>[18]</sup> found in their study during the craze that general social media use indirectly predicted higher meaning in life by reducing existential isolation and social isolation,

but indirectly predicted lower meaning in life by increasing emotional loneliness, and these effects were mainly reflected in active use. This suggests that the support provided by social media may have different effects on different types of loneliness (social vs. emotional). However, Liu and Lee (2024)<sup>[19]</sup> found a counterintuitive finding: interaction with social media influencers was associated with higher loneliness through parasocial relationships, sense of belonging, and perceived social support. This may be because although such interactions provide some form of connection and support, their inherent one-way and non-reciprocal nature cannot meet deep social needs, but instead highlights the shortcomings of real-life social interaction. D'Oliveira and Persico (2023)<sup>[20]</sup> found in the workplace context that supportive behavior of colleagues (rather than task interdependence) mediated the relationship between workplace isolation and well-being, suggesting the importance of a supportive environment, which can also be analogized to the social media environment. A randomized controlled trial by Perkins et al. (2023)<sup>[21]</sup> demonstrated how an online songwriting intervention can reduce loneliness and postpartum depression in new mothers by enhancing social connections, providing a positive example of using online platforms to promote an environment that supports social behaviour and help relieve loneliness.

Individual differences and situational characteristics are also considered to be important variables that regulate the impact of social media on loneliness. Age is one of the most prominent factors. Several studies have found that the impact of social media on loneliness varies among different age groups. Wang et al. (2024)<sup>[22]</sup> showed that age regulated the relationship between social media use and loneliness. For the elderly, increased usage time was associated with a significant decrease in loneliness, while for young people, the difference was not obvious. In addition, shyness also plays a moderating role. The more shy people are, the longer they use the social media, and the more lonely they feel. Pop et al. (2022)<sup>[23]</sup> found that among young users, the younger they were, the higher their loneliness and depression scores were, the more time they spent on social media, and there were gender differences.

Other individual traits have also been found to

be associated with social media use and loneliness. Papapanou et al. (2023)<sup>[24]</sup> found a significant positive correlation between social appearance anxiety, social media use, and loneliness, and proposed that there may be a complex vicious cycle of appearance anxiety-social media use-loneliness. Yam et al. (2024)<sup>[25]</sup> found that psychological resilience partially mediated the relationship between loneliness and adolescent social media addiction, suggesting that resilience can buffer the impact of loneliness on addictive behavior. Harp et al. (2023)<sup>[26]</sup> showed that under common adversity (such as the epidemic), the tendency to share positive emotions can buffer the negative emotional bias associated with loneliness, emphasizing the importance of interpersonal emotion regulation, which is related to positive interactions on social media. Yin et al. (2023)<sup>[27]</sup> explored FoMO from a neuroscience perspective and found that loneliness and problematic social networking site use mediated the relationship between brain network topology and FoMO, providing evidence of the neural mechanism by which loneliness affects FoMO and is promoted by social media.

International research is more diverse in methods, including experiments, longitudinal studies, meta-analysis, and cross-cultural comparisons, providing multi-level evidence for understanding the complex relationship between social media and loneliness. The research has explored in depth the role of usage (active/passive, specific activities), psychological mechanisms (FoMO, social comparison, social support, anxiety, resilience), and moderating factors (age, shyness, social comparison tendency, context). In line with domestic research, international research also generally believes that simple time or frequency measurements are not enough to capture the complexity of social media's impact. The key lies in "how to use" and "who to affect". Research during the epidemic has particularly highlighted the importance of situational factors and the dual role that social media may play in special times.

### 3. Key Theoretical Perspectives and Mechanisms of Action

Based on domestic and foreign research, the relationship between social media use and loneliness is not a simple linear correlation, but a complex process mediated and moderated by

multiple factors. Understanding this process requires integrating different theoretical perspectives and deeply analyzing its mechanism of action.

First, the mode of use is a key factor in distinguishing the nature of social media's impact. Many studies have distinguished between active use (such as posting, commenting, private messaging, participating in group chats, and targeted communication) and passive use (such as browsing other people's updates and watching). Studies generally believe that active use is more likely to promote social connection and gain social support, thereby alleviating loneliness<sup>[8]</sup>. For example, WeChat's acquaintance social attributes encourage active communication and emotional support, which is believed to help resist loneliness<sup>[13]</sup>. In contrast, passive use is more likely to trigger negative psychological experiences. Browsing others' carefully constructed "ideal lives" may lead to social comparison, especially upward social comparison, which can lead to inferiority, anxiety, and loneliness. In addition, passive use is also closely related to the fear of missing out (FoMO)<sup>[27]</sup>. Seeing others actively interacting or participating in activities on social media may exacerbate an individual's anxiety about being excluded. This FoMO in turn may drive more passive browsing or problematic use, forming a vicious cycle and exacerbating loneliness. The "double-edged sword" effect of active use proposed by Mao et al. (2023)<sup>[17]</sup> is also partly attributed to the fact that active use may simultaneously bring about interpersonal satisfaction (alleviating loneliness) and state FoMO (increasing loneliness).

Secondly, social support is one of the core mediating mechanisms by which social media affects loneliness. Social media provides individuals with a platform to maintain existing social relationships, expand their social circles, and seek emotional and information support<sup>[7]</sup>. Especially for the elderly or in physical isolation situations, social media has become an important social connection tool, which effectively alleviates loneliness by enhancing the perception and utilization of social support<sup>[8]</sup>. However, the social support provided by social media may differ from offline support, and its quality and depth may not be sufficient to meet the needs of all individuals. Liu and Lee (2024)'s study<sup>[19]</sup> on how interacting with influencers actually increases loneliness may reflect that such

shallow connections cannot replace real, reciprocal social relationships.

Furthermore, individual psychological traits and states significantly moderate or mediate the relationship between social media and loneliness. Negative traits such as social anxiety and attachment anxiety may drive individuals to turn to online social networking, but they may also exacerbate their discomfort with social media or lead to problematic use, affecting mental health through loneliness as a mediating variable<sup>[4]</sup>. Individuals with high shyness tendencies are also more likely to feel lonely when using social media<sup>[22]</sup>. In contrast, psychological resilience is seen as a protective factor that can buffer the impact of loneliness on problematic social media use<sup>[25]</sup>. The ability to share positive emotions is also associated with a tendency toward negative emotions associated with loneliness<sup>[26]</sup>. These findings suggest that the impact of social media on loneliness is not solely determined by the platform or usage behavior, but is more closely related to the individual's own psychological capital and coping mechanisms.

Age is another important moderating variable, which leads to differences in the impact of social media on loneliness at different life stages. Studies generally find that social media may have a more significant effect on alleviating loneliness in the elderly, especially in maintaining existing social connections and obtaining information<sup>[8]</sup>. This may be related to factors such as the reduced offline social opportunities and mobility difficulties of the elderly. Social media provides them with a way to connect without physical limitations. For adolescents and young people, their social needs and usage patterns are more complex. Social media is not only the main social field, but also more likely to be exposed to risk factors such as social comparison and FoMO. Therefore, the relationship is more complex and may show a U-shaped relationship or a negative association<sup>[2]</sup>.

Situational factors, especially social isolation during the COVID-19 pandemic, have significantly altered patterns of social media use and its impact on loneliness. With limited physical contact, social media has become an important alternative social channel. However, research results show that even in this context, excessive or passive use may still exacerbate loneliness and anxiety, while active use or use of richer media forms (such as video chat) may be

more effective in alleviating loneliness<sup>[15]</sup>. This suggests that the role of social media in times of crisis is complex, and its effects depend on how individuals use it and the specific social context in which they are located.

Finally, platform characteristics may also affect the relationship between social media and loneliness. For example, WeChat, as a platform that focuses on social interaction among acquaintances, may focus more on maintaining existing relationships and providing emotional support<sup>[13]</sup>. Platforms such as Instagram and Facebook may contain more public sharing and weak connections, which are more likely to trigger social comparison and FoMO<sup>[10]</sup>. The functions of different platforms (such as short videos and anonymous social networking) may also have unique effects<sup>[12]</sup>. Future research needs to examine the characteristics of different platforms and their impact on user psychology in more detail.

#### 4. Conclusion

In summary, research-based analysis of social media in view of existing literature show that social media use and loneliness have a complex and multidimensional issue relationship. The research conclusion is not a simple positive or negative association, but is moderated and mediated by multiple variables such as usage methods, psychological mechanisms, individual differences, and situational factors. Active and functional use of social media, especially on acquaintance social platforms or for the elderly, may alleviate loneliness by enhancing social support and a sense of connection; while passive browsing, excessive addiction, and negative psychological experiences such as social comparison and the fear of missing out are more likely to aggravate loneliness, especially for adolescents and individuals with specific psychological vulnerabilities. Individual traits such as age, shyness, social anxiety, attachment style, resilience, and external situations such as epidemic isolation significantly regulate the path and degree of social media's impact on loneliness.

Although existing research has made significant progress, there are still limitations such as insufficient causal certainty, rough measurement of usage behavior, and insufficient exploration of mechanisms. Future research should adopt more rigorous longitudinal and experimental designs, combine multi-source data (including

objective behavioral data), refine the measurement of social media usage patterns, deeply analyze complex psychological and social mechanisms, expand the research population and context, and strengthen interdisciplinary cooperation. The ultimate goal is to more fully understand the impact of social media on individual loneliness in the digital age and develop effective intervention strategies to promote healthy social media use and enhance individual psychological well-being.

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