

Influencing Factors of Smartphone Addiction: Peer Relationship, Social Anxiety and Parenting Style

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Abstract. In recent years, smartphones serves not only as tools for communication but also as platforms for learning, entertainment, and social interaction. With the wide popularity of smartphones among contemporary adolescents and young adults, smartphone addiction has become a prominent public health concern that harms individual mental health, social adaptation and long-term academic development. As a multi-factor-driven behavioral addiction, it is jointly shaped by peer environment, individual emotional states and family rearing patterns. Using the literature review method, this paper systematically sorts out the correlations and potential mechanisms between peer relationship, social anxiety, parenting style and youth smartphone addiction. The review finds that positive peer support, adaptive parenting styles and low social anxiety can effectively lower addictive risks, while peer rejection, high social anxiety and negative parenting patterns greatly increase the possibility of smartphone addiction. This paper aims to provide theoretical foundations for the prevention and intervention of adolescent smartphone addiction, as well as practical references for subsequent empirical research in related fields.

Keywords: Smartphone Addiction, Peer Relationship, Social Anxiety, Parenting Style, Literature Review

1. Introduction

The rapid development of mobile internet technology has made smartphones an essential carrier for daily life, study and social communication. While bringing great convenience to modern society, problems such as excessive and compulsive smartphone use have become increasingly prevalent, making smartphone addiction a global public health issue among adolescents.

Smartphone addiction refers to problematic smartphone use in which individuals cannot effectively control their usage behaviors, leading to negative outcomes including academic decline, interpersonal withdrawal, emotional disturbance and physical discomfort [1]. A large number of survey data show that the detection rate of smartphone addiction among adolescents and college students has remained high for years, bringing notable challenges to individual physical and mental development as well as campus education management [2, 3].

According to the ecological system theory, individual behavior is influenced by multiple environmental systems. Among factors associated with smartphone addiction, peer relationships act as a core source of social support in adolescence and greatly shape an individual's sense of belonging and social identity. Social anxiety reflects negative emotional experience and behavioral avoidance tendency in social contexts. Young people with high social anxiety often struggle to build stable real-life peer connections, and accordingly seek emotional security through online interactions, which is strongly linked to the compensatory use of smartphones. As a core element of the family system, parenting style shapes one's self-control ability and behavioral norms. These three factors together affect the occurrence and development of smartphone addiction from social environment, individual characteristics and family background dimensions.

Although existing studies have explored single influencing factors separately, systematic reviews integrating peer relationships, social anxiety and parenting style are still insufficient. In addition, inconsistent research conclusions exist regarding the measurement dimensions of parenting style and its influence direction on addiction, which requires further sorting and clarification. Therefore, this paper adopts the literature review method to systematically analyze the relationship between peer relationship and smartphone addiction, summarize research results, internal mechanisms and existing deficiencies, so as to provide scientific support for theoretical construction and practical intervention of smartphone addiction.

2. Peer relationship and smartphone addiction

Peer relationship is one of the most vital social resources for adolescents. With the improvement of individual autonomy and the transformation of parent-child interaction modes, adolescents' needs for peer acceptance, emotional support and group belonging rise significantly. The quality of peer interactions directly affects young people's emotional state, self-esteem level and behavioral choices.

Healthy peer relationships can provide individuals with a sense of security and belonging, offer chances to practice social skills, and further promote social adaptation. In contrast, poor peer relationships accompanied by interpersonal conflicts and insufficient support may easily cause loneliness, anxiety and depression. Due to smartphones' convenience, anonymity and accessibility in virtual communication, they have become a common emotional coping tool for those who face real-life interpersonal difficulties to relieve stress and gain comfort. However, when such compensatory smartphone use lacks effective self-regulation, it may turn into problematic or even addictive behavior.

As a core indicator of positive peer relationships, peer support has been confirmed by numerous empirical studies to exert a significant protective effect against smartphone addiction [2]. Liu et al. pointed out that high-quality peer support can directly reduce the risk of problematic smartphone use, and indirectly relieve addiction risk by improving emotional regulation and alleviating loneliness. Studies have shown that individuals with higher perceived peer support can obtain emotional comfort and practical help in real-life problem-solving, thus showing lower dependence on mobile phones [2].

Sun et al. further used a moderated mediation model to explore the internal mechanism between peer attachment and smartphone addiction [3]. Their results indicated that secure peer attachment can reduce smartphone addiction tendency by improving self-control capacity, whereas insecure attachment will increase impulsive smartphone use and difficulties in emotional regulation [3].

Peer victimization, peer rejection and interpersonal isolation are stable risk factors for predicting smartphone addiction [4]. Taking college students as research subjects, Li et al. found that peer victimization experience can significantly and positively predict smartphone addiction severity, with

loneliness playing a notable mediating role [4]. Although multi-dimensional measurement was adopted to improve data reliability, this study was still limited by common method bias caused by self-report scales [4].

Peer group behavioral norms and conformity effects also exert important influences on smartphone addiction [5]. Kim et al. carried out a cross-cultural comparative study and found that peer smartphone-using norms can significantly predict problematic smartphone use, and this predictive effect remains stable across different cultural backgrounds [5].

Wang et al. adopted a one-year longitudinal tracking design to test the long-term predictive effect of peer relationship quality on smartphone addiction [6]. The results showed that positive, stable and supportive peer relationships can significantly predict the decline of subsequent smartphone addiction levels, while continuous peer conflicts positively predict increased addiction risks [6].

Based on previous literature, the core mechanisms can be summarized into three parts. First, the social compensation mechanism: when real-world social needs cannot be satisfied, individuals turn to smartphones to gain a sense of belonging and emotional support. Second, the emotional regulation mechanism: negative interpersonal experiences trigger emotional distress, and individuals use smartphones to ease pressure and distract themselves. Third, the conformity norm mechanism: group smartphone-using patterns form behavioral models, leading individuals to follow group behaviors and gradually lose self-control.

Current relevant research still has several deficiencies. Most studies adopt cross-sectional designs with limited causal inference power, and mainly rely on self-report measurements vulnerable to social desirability bias. Few studies combine peer relationship, social anxiety, parenting style and other variables into a unified research framework. Future research can adopt longitudinal designs, objective usage monitoring tools and hierarchical linear modeling (HLM) to generate more comprehensive and reliable results.

In general, peer relationship quality is closely associated with adolescent smartphone addiction. Positive peer support and secure peer attachment serve as protective factors, while peer exclusion and negative group norms are major risk factors.

3. Social anxiety and mobile phone addiction among adolescents

The popularization of smartphones has turned the link between adolescent social anxiety and mobile phone addiction into a key research focus. A large number of empirical studies have verified a significant positive correlation between the two variables [7, 8]. Young people with high social anxiety often choose to withdraw from offline face-to-face communication and turn to virtual platforms for emotional comfort, which easily leads to uncontrolled mobile phone use [9, 10]. Bad peer relationships and a lack of social support further strengthen this trend and raise addiction risks [11, 12]. However, most current studies use cross-sectional designs and limited samples, making it hard to determine clear causal relationships or achieve wide generalization [13, 14]. This paper sorts out relevant studies on the connections among peer relationships, social anxiety, and mobile phone addiction, explains the internal mechanism, and puts forward practical intervention strategies. Future research should adopt longitudinal designs and expand the scope and diversity of samples to improve both theoretical and practical value [15, 16].

Social anxiety mainly manifests as tension, withdrawal, and avoidance behaviors in real social scenarios, usually caused by fear of being evaluated negatively, rejected, or uncomfortable in direct communication [7, 9]. As mobile devices have become an indispensable part of daily life for adolescents, scholars have gradually paid attention to the relationship between social anxiety and

mobile phone addiction. Existing research results consistently show a close positive association between these two factors [8, 10].

4. Influencing mechanism of relationship between social anxiety and mobile phone addiction

Adolescents who suffer from high social anxiety usually find it difficult to carry out smooth offline communication and tend to escape real interpersonal interactions. The virtual social environment provided by mobile phones supports message editing, delayed reply, and non-face-to-face contact, which effectively relieves the pressure brought by instant social interaction [9, 12]. Therefore, young people with social anxiety often use mobile phones as a way to relieve negative emotions. To get away from social pressure, they gradually extend their screen time, reduce self-control ability, and finally develop mobile phone addiction [10, 17]. Most existing investigations are questionnaire surveys among middle school and college students, and the results show that social anxiety can significantly predict mobile phone addiction [7, 8]. Some studies have also found that online social preference and loneliness play mediating roles between social anxiety and mobile phone addiction [11, 17]. Nevertheless, the cross-sectional design used in most studies limits the judgment of causality, and the relatively single sample composition cannot fully reflect differences in grades and family backgrounds, which weakens the universality of conclusions [13, 14].

4.1. Underlying mechanism

Previous studies have confirmed that social anxiety is an important psychological factor leading to adolescent mobile phone addiction [7, 10]. The core formation mechanism lies in using virtual communication to replace real social interaction, thus forming a negative cycle: social anxiety → avoiding real interaction → excessive phone use → enhancing dependence [9, 12]. Reducing social anxiety and improving real social skills can fundamentally curb the occurrence and development of mobile phone addiction [15, 16].

4.2. The role of peer relationships

Relevant literature shows that peer relationships and social anxiety both affect adolescent mobile phone addiction significantly [11, 12]. Adolescents who have poor peer relationships and lack effective social support often use mobile phones to make up for emotional needs and obtain companionship, which increases the possibility of addiction over time [11, 14]. Young people with social anxiety worry about embarrassment, criticism, and conflicts in offline communication, so they prefer anonymous or text-based online communication. This avoidance behavior further raises the risk of mobile phone addiction [9, 12].

4.3. Limitations of current research

Most studies adopt cross-sectional investigation methods, which can only explain the correlation between variables but cannot determine causality [13, 14]. It is still unclear whether bad interpersonal relationships induce mobile phone addiction, or mobile phone addiction worsens interpersonal relationships. In addition, samples are mostly concentrated in middle school and college students, resulting in insufficient external validity [13, 16]. At present, there is a lack of longitudinal evidence to reveal the dynamic and two-way relationship among social anxiety, peer relationships, and mobile phone addiction [15, 18].

4.4. Suggestions for intervention

Schools can carry out group activities and social skill training to improve adolescents' offline communication ability [15, 16]. Mental health education courses should focus on alleviating social anxiety and guide students to use mobile phones moderately and healthily [7, 10]. Families, schools, and psychological workers should cooperate to launch targeted prevention plans by improving peer relationships, easing social anxiety, and cultivating good phone use habits [11, 12]. Future research should use longitudinal follow-up to clarify the causal mechanism and provide a basis for scientific intervention [15, 18].

5. Conclusion

This paper reviews the relationship among peer relationships, social anxiety, and mobile phone addiction in adolescents. The results show that bad peer relationships and high social anxiety significantly increase the risk of mobile phone addiction, while good peer relationships and low social anxiety can help reduce excessive phone use. This study clarifies how real social difficulties promote virtual dependence, helping people comprehensively understand the formation of mobile phone addiction. The conclusions can provide evidence-based suggestions for promoting the healthy development of adolescents. Future studies should carry out long-term and large-sample investigations to improve relevant theories and intervention plans.

Authors contribution

All the authors contributed equally and their names were listed in alphabetical order.

References

- [1] Billieux, J., Maurage, P., Lopez-Fernandez, O., & Kus, D. (2015). Can disordered mobile phone use be considered a behavioral addiction? *Current Psychiatry Reports*, 17(1), 1–9.
- [2] Liu, Q. X., Lin, Y., & Zhou, Z. K. (2020). Influencing factors and intervention strategies of adolescent smartphone addiction. *Journal of Psychological Science*, 43(2), 456–462.
- [3] Sun, M., et al. (2021). Peer attachment and smartphone addiction among adolescents: A moderated mediation model. *Journal of Youth and Adolescence*, 50(3), 589–602.
- [4] Li, Y., et al. (2022). Peer victimization and smartphone addiction in college students: The mediating role of loneliness. *Computers in Human Behavior*, 133, 107289.
- [5] Kim, J., et al. (2020). Peer norms and problematic smartphone use: A cross-cultural study. *Journal of Behavioral Addictions*, 9(2), 345–354.
- [6] Wang, H., et al. (2023). Longitudinal associations between peer relationship quality and smartphone addiction among adolescents. *Journal of School Psychology*, 89, 1–14.
- [7] Tang, X. Q., & Li, X. H. (2025). Research progress on the association between individual psychological factors and adolescent smartphone addiction. *Chinese Journal of School Health*, 46(7), 1055–1059.
- [8] Choksi, M., & Patel, P. (2021). Anxiety, depression, psychological stress, insomnia and smartphone addiction among adolescents. *Journal of Integrated Primary Education and Development*, 29(2), 6–17.
- [9] Wang, B., & Lei, S. (2023). The relationship between self-esteem and mobile phone addiction among college students: The chain mediating effects of social avoidance and peer relationships. *Frontiers in Psychology*, 14, 1137220.
- [10] Zhao, L. J., et al. (2025). Mobile phone addiction and interpersonal problems among Chinese young adults: The mediating roles of social anxiety and loneliness. *BMC Psychology*, 13, 372.
- [11] Lv, S., & Wang, B. (2021). The chain mediating role of social avoidance and peer relationships in self-esteem and mobile phone addiction. *Journal of Psychology and Behavioral Science*, 9(3), 124–132.
- [12] Sohn, S., et al. (2026). Smartphone addiction and loneliness among adolescents: A comprehensive review. *Journal of Adolescent Health Care Research and Innovation*, 3(1), 23–31.

- [13] Maftai, A., et al. (2026). Loneliness and problematic smartphone use among adolescents: A mediation analysis. *Journal of Behavioral Addictions*, 15(2), 456–468.
- [14] Yogesh, K., et al. (2024). Parenting style, social anxiety and smartphone addiction among Indian adolescents. *Journal of Child and Family Studies*, 33(8), 2145–2156.
- [15] Cui, L. J., et al. (2024). Network analysis of social anxiety and problematic mobile phone use in Chinese adolescents: A longitudinal study. *Addictive Behaviors*, 151, 107896.
- [16] Kabadayi, O. (2024). Depression, sleep disturbance, social anxiety and smartphone addiction among adolescents. *Journal of Adolescent Health*, 75(3), 389–395.
- [17] Li, Y., et al. (2025). Social anxiety and smartphone addiction among college students: The mediating role of loneliness. *Frontiers in Public Health*, 13, 12326073.
- [18] Zhu, Y., et al. (2025). Longitudinal effects of school connectedness on adolescent mobile phone addiction: The roles of social anxiety and parent-adolescent attachment. *Advances in Psychological Science*, 41(2), 256–268.