

The Role of the Internet in Technology Addiction and Strategies for Its Mitigation

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Abstract. This study examines the effects of internet addiction on adolescents, with a focus on psychological and social functioning and the role of family and social support in treatment. Evidence links problematic internet use to social anxiety, social phobia, depressive symptoms, and reduced face-to-face interaction. These difficulties may intensify when excessive reliance on online communication limits offline social contact, while social withdrawal may further increase reliance on online interaction. This creates a reciprocal pattern in which psychological distress and problematic internet use may reinforce each other. Besides, this pattern also has implications for treatment. In particular, family-based interventions have been linked to lower problematic internet use, improved family functioning, and lower depressive symptoms. Social support can complement family-based intervention by promoting face-to-face communication and participation in offline activities. However, differences in the definition and measurement of internet addiction, the predominance of cross-sectional studies, and cultural and individual differences limit comparisons across findings and conclusions about causality. Future research should therefore use longitudinal and experimental designs to clarify these relationships and determine how culture, family, and individual factors affect treatment outcomes. In practice, treatment should address not only internet use but also the psychological and social difficulties associated with it.

Keywords: Internet addiction, adolescents, social anxiety, family support, social interaction

1. Introduction

The Internet is widely used in everyday life for education, work, communication, and entertainment. At the same time, excessive and uncontrolled Internet use can lead to Internet addiction, as individuals may continue using the Internet despite its negative effects on their daily lives and relationships. This can be seen in difficulties controlling time spent online, withdrawal symptoms when Internet access is interrupted, and the use of the Internet as a way to cope with emotional or social difficulties. The development of this problem is not caused by a single factor. Depression, anxiety, social isolation, and difficulties with real-life interaction may make some individuals more likely to rely on the Internet, while the reward system associated with discovering new online content can reinforce repeated use. The accessibility and variety of online content can further increase the amount of time people spend online. Based on these issues, this paper investigates the

development of Internet addiction, its impact on daily life and psychological development, and possible ways to manage it. Through a review of existing literature, it examines the psychological and social factors underlying problematic Internet use, the effect of online rewards and easy access in maintaining repeated use, and the role of family support and offline social interaction in reducing dependence. By integrating these factors, this paper examines the progression from excessive Internet use to addiction and the challenges associated with reducing such behavior.

2. The nature and classification of technology addiction

2.1. The concept and features of technology addiction

Through prolonged and excessive use, individuals may gradually develop dependence on the Internet, digital media, and electronic devices. As this dependence becomes more difficult to control, technology use may begin to interfere with everyday activities and interpersonal relationships. Common features of technology addiction include a strong desire to use technology, difficulty reducing or stopping its use, continued use despite negative consequences, and discomfort when access to technology is interrupted.

These features are consistent with the broader understanding of addiction. In this context, addiction can be understood as a chronic disorder shaped by biological, psychological, social, and environmental factors [1]. From this standpoint, addiction is characterized by an enduring tendency to engage in a behavior with limited self-regulation, even when such engagement produces detrimental outcomes. In the domain of technology use, this tendency may manifest as persistent and excessive engagement with technology-related activities. In particular, individuals may struggle to disengage from these activities and make repeated but unsuccessful efforts to regulate their use. Furthermore, such engagement may become a dominant focus of attention, persisting even when it interferes with everyday obligations and social relationships.

2.2. Internet addiction as a manifestation of technology addiction

Internet addiction may be viewed as a distinct expression of technology addiction, as it is characterized by sustained and poorly regulated involvement in activities facilitated by digital technologies. Unlike substance-related addictions, which involves dependence on a chemical substance, internet addiction is mainly defined by harmful behavioral patterns that result from repeated internet use [2, 3]. In this case, the addictive potential therefore lies not in the device itself, but in the excessive and poorly regulated engagement with activities made accessible through it.

From this view, internet addiction may take several connected behavioral forms. Individuals may spend long periods engaged in online activities that are unrelated to work, study, or basic daily needs [4]. They may also struggle to cut down or stop their internet use, even after repeated efforts, reflecting limited control over their behavior. In addition, online activities may occupy a growing share of their attention and begin to interfere with other duties and daily activities. In more severe cases, prolonged or uncontrolled use can interfere with academic or occupational functioning, interpersonal relationships, and other areas of daily life. Restriction of internet access may further be accompanied by irritability, emotional discomfort, or other withdrawal-like responses, suggesting that continued engagement may serve not only recreational purposes but also a means of regulating negative emotional states [5].

These patterns indicate that internet addiction is a form of technology addiction. More importantly, excessive internet use alone does not indicate addiction. Instead, addiction involves

poor control over internet use and continued use despite negative effects on daily life. Thus, repeated online engagement may develop into a pattern of reduced control, interference with daily responsibilities, and continued use despite adverse outcomes.

3. Major factors influencing the formation of internet addiction

3.1. Psychological vulnerabilities and social influences

The internet addiction commonly occurs to people who have tendencies of depression, or who have anxiety, pressure, or fears regarding social interactions and social isolations [1]. These psychological difficulties may lead individuals to avoid face-to-face interaction and seek social contact through the internet instead. Such avoidance can reinforce reliance on online communication, particularly when offline interactions are associated with fear of rejection, negative judgement, or social discomfort.

In addition, social isolation and limited opportunities for positive interpersonal contact may further increase this reliance. In comparison with offline social interaction, online communication often places fewer demands on appearance, age, and other personal characteristics. This can make online interaction more accessible to individuals who feel insecure or uncomfortable in social situations. For those with existing psychological and social vulnerabilities, the internet may therefore become an easier and more controllable space for social interaction. As reliance on this form of interaction increases, internet use may become more frequent and increasingly difficult to regulate [2, 5].

3.2. Behavioral reinforcement and reward mechanisms

Internet use may be reinforced via reward-related processes that increase motivation to engage with online activities. Chen et al. identified motivational and reward-related processes in internet addiction, suggesting that the appeal of online activities can encourage repeated engagement [6]. When online interaction provides social feedback, entertainment, or access to novel content, users may experience these activities as rewarding. For individuals who already find face-to-face interaction difficult or less satisfying, online interaction may also offer a more controllable and rewarding form of social contact. Repeated exposure to these rewarding experiences can strengthen the tendency to return to the internet, making online engagement increasingly habitual.

This reinforcement may contribute to reduced control over internet use. In particular, novel content and immediate feedback can provide repeated opportunities for reward, which may encourage users to continue seeking similar experiences [6]. Through repeated exposure, this process may strengthen the tendency to engage in the same behavior again. More importantly, pleasure alone does not account for problematic internet use; rather, repeated exposure to rewarding online experiences may encourage continued use even when it disrupts daily functioning. As this pattern becomes established, internet use may shift from voluntary engagement toward a more persistent and difficult-to-regulate behavior.

3.3. Internet accessibility and content features

The characteristics of the internet itself may also contribute to the development of internet addiction. In particular, Chou et al. identified ease of use, availability, and accessibility as features that can promote more frequent internet use [3]. These features are reinforced by the diversity of content available online, which covers areas such as daily life, work, education, entertainment, and social

interaction. As a result, users with different interests and needs can find content that is relevant to them, which may increase the frequency and duration of their online engagement. Moreover, the wide range of available content also reduces the need to leave the online environment to meet different informational or social needs, creating more opportunities for continued internet use.

Meanwhile, personalized content and recommendation systems can further sustain this engagement by presenting users with information that aligns with their interests and previous online activity. These systems may encourage longer and more frequent online engagement by making preferred content easier to access [1]. As this pattern continues, repeated exposure to personalized content may lead to more sustained and problematic use.

4. Adverse effects and interventions for internet addiction

4.1. Daily functioning and behavioral disruption

Internet addiction may impair daily functioning when excessive internet use interferes with everyday activities and responsibilities. In particular, excessive internet use has been associated with difficulties in time management, irregular sleep patterns, disrupted meals, and reduced attention to everyday obligations [7, 8]. Rather than reflecting high levels of internet use alone, these problems indicate a shift in how individuals allocate time and prioritize daily activities. As online engagement becomes more dominant, time available for sleep, study, work, meals, and other routine activities may be reduced.

This disruption can also reinforce problematic patterns of behavior. In turn, difficulty controlling the amount of time spent online may lead individuals to postpone or neglect daily responsibilities, while disrupted routines can make internet use more persistent. In this sense, internet addiction affects daily life not only through the amount of time spent online, but also through the displacement of activities necessary for maintaining normal routines. In practice, these disruptions reflect the broader impact of poorly regulated internet use on daily functioning, particularly in relation to sleep, time management, and everyday responsibilities [7, 8].

4.2. Psychological distress and developmental impairment

Across adolescence, social, emotional, and behavioral patterns undergo substantial development, with potential implications for later functioning. Against this developmental backdrop, the psychological and developmental consequences of internet addiction warrant particular attention. Although internet use is now embedded in education, communication, and everyday activities, excessive and poorly regulated use may displace time devoted to offline activities and face-to-face interaction [8, 9]. Such displacement may be more consequential during adolescence, when physical activity, social interaction, and participation in everyday responsibilities form part of the experiences through which these developmental patterns are established.

At the psychological level, problematic internet use has been associated with greater social anxiety, social phobia, and depressive symptoms [1]. These associations may partly reflect the role of online environments in displacing face-to-face interaction, particularly among individuals who already experience discomfort or anxiety in direct social situations. Reduced opportunities for face-to-face interaction may, in turn, contribute to greater social withdrawal and further reliance on online interaction. Social withdrawal may therefore operate not only as a consequence of problematic internet use but also as a factor that sustains it, creating a reciprocal relationship between psychological distress and problematic internet use. These processes indicate that the consequences

of problematic internet use cannot be understood solely in terms of time spent online, but also involve emotional well-being and social functioning.

4.3. Therapeutic intervention and social support

Given the role of interpersonal and family factors in the development and maintenance of problematic internet use, effective intervention should address not only individual internet-use behaviors but also the social context in which these behaviors occur. This is supported by evidence from Wang et al., who reviewed 18 studies of family-based interventions for internet addiction and found that family-based therapy, either alone or in combination with other approaches, was effective in reducing problematic internet use. The benefits appeared to be related, at least in part, to improved family functioning and reduced depressive symptoms [9]. These findings indicate that family involvement may be beneficial not simply because it allows greater control over internet use, but because it can modify relational conditions that contribute to or sustain problematic use.

Moreover, family support may also facilitate recovery by establishing reasonable boundaries around internet use, encouraging face-to-face communication, and promoting participation in offline activities. Rather than focusing solely on screen-time restriction, these methods address the social and behavioral patterns underlying excessive internet use while fostering offline interaction.

However, family-based support alone may not address the interpersonal difficulties associated with problematic internet use. Internet addiction has been linked to social anxiety and social phobia among university students, suggesting that excessive internet use may coincide with difficulties in face-to-face interaction. When online communication replaces face-to-face contact, reducing internet use alone may not improve social functioning. Thus, interventions should also promote face-to-face communication and participation in offline activities [10]. Family support can help regulate internet use and improve the immediate social environment, while broader social engagement can address difficulties in face-to-face interaction.

5. Conclusion

This review examined the psychological, developmental, and social consequences of internet addiction, with particular attention to adolescents, as well as the role of therapeutic intervention and social support. The findings suggest that problematic internet use is associated not only with psychological distress, like social anxiety, social phobia, and depressive symptoms, but with reduced face-to-face interaction and offline engagement. Family-based interventions may help improve family functioning and reduce problematic internet use, while social support can address interpersonal difficulties and encourage offline interaction. However, the existing literature remains constrained by inconsistent definitions and measures of internet addiction, the predominance of cross-sectional studies, and differences in cultural and individual contexts that may influence internet use and treatment response. Future studies could adopt longitudinal and experimental designs to better establish temporal and causal relationships and examine how culture, family, and individual factors influence treatment outcomes. Thus, these findings could help guide interventions that address not only internet use itself but the psychological, family, and social factors that sustain it.

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