

How does using interactive electronic affect psychological well-being? An empirical investigation

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Abstract. A large amount of study has been conducted on the harmful effects of excess digital gadget use on newborns and adults. The goal of this study was to investigate the relationship between adult usage of interacting electronic devices (which include laptops, cell phones, and electronic tablets) and (i) levels of depressive disorders, stress, anxiety, and feeling isolated, as well as (ii) the quality of communication between individuals. Three characteristics of interactive devices use were studied: the IAT (Internet Addiction Test) grade and the number of hours devoted to both professional and personal activities per day. The study included 265 adult volunteers who filled out an online survey to offer data on Mental and interpersonal relationship grades., as well as values for three forms of interactive electronics usage. The study's findings confirmed the hypothesis that higher IAT scores among participants were strongly associated with higher degrees of anxiousness, stress, isolation as well as lower relationship quality. There was no significant association found between psychological health, relationship quality, and the number of hours spent each day using interactive gadgets for business or enjoyment. The paper discusses the ramifications of interactive electronics.

1 Introduction

Recent research has extensively explored the potential negative psychological impacts on children and adolescents resulting from excessive use of contemporary electronic devices. These devices, such as computers, smartphones, and digital tablets, share common features characterized by a combination of audio, video, and computational elements. In this study, interactive electronic devices (IED) encompass various modern gadgets like computers, smartphones, and digital tablets. Adolescents extensively utilize the Internet and social media platforms for communication, socializing, academic tasks, and learning purposes [1]. According to the American Academy of Pediatrics, a significant majority of teenagers, around 75%, possess cell phones, predominantly employing them for staying connected with peers. Among these teens, 88% utilize their phones for texting friends, while over 71% utilize multiple social media platforms to maintain social connections. Despite the evident advantages of using interactive electronic devices (IED), research has uncovered potential drawbacks. For instance, increased usage of interactive electronics among 6th graders has been associated with poorer face-to-face social skills compared to peers with lower electronic usage [3]. Furthermore, teenagers who spend a lot of time of social media networks and perceive disapproval from other adolescents on these platforms frequently feel anxiety and despair, also numbers. known as "Facebook Depressive disorders," which can lead to social

exclusion [4]. Reported studies also point to a link between using Facebook and decreased psychological well-being [5].

Furthermore, researchers have used functional imaging techniques such as MRI and PET to explore the brain processes behind Internet addiction. Nuclear imaging data suggest a link between dependence on the internet and cerebral dopaminergic systems [6]. Dopamine is a neurotransmitter in the brain that controls movement, learning, attention, and emotions. Adolescent Internet addiction is connected with high peripheral blood dopamine levels. Adults, like children and teenagers, may face side effects from excessive use of interactive electronics. Adults are awake for an average of 16 to 18 hours per day, with approximately 11 of those hours spent on interactive gadgets [8]. Adults utilize social media and the World Wide Web for both their personal and professional lives. Personal use includes a variety of tasks such as playing games, video watching, research, video chat, music listening, messaging, newspaper reading, shopping, dating, reading for pleasure, and interacting with others. This list is extensive and will continue to expand as technology advances and improves. The range of non-work-related online activities will grow as technology advances. The increased efficiency in doing personal duties using technological devices on an everyday basis is clear. Overuse of smartphones among adults, on the other hand, has been related to a number of negative consequences, including decreased work productivity, lower health, decreased communication and social

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abilities, difficulties maintaining intimate relationships, and a decline in real-life social connections. [9, 10]. Furthermore, studies have found that the mere presence of a cell phone during partner interactions might impair emotions of affection, trust, and empathy [17]. Adults' excessive use of interactive electronic gadgets (IED) has become an important issue, with a wide range of negative consequences. Excessive use of interacting gadgets (IEDs) in adults has been associated to a number of negative outcomes, including sleep disruptions, higher stress levels, and worsened mental health, including depression [18, 19]. A freshly coined phrase, "digital". The study looked at the quality of relationships with suppliers, children, companions, and coworkers. It examined two hypotheses. The first hypothesis proposed that individuals' increased use of interacting electronic devices (IED), as evaluated by total hours utilized each day on average, is associated with poorer emotional health and quality of relationships. The second hypothesis stated that adults' higher use of interacting technological devices, as determined by the World Wide Web Dependence Test (IAT), is connected with poorer mental health and interpersonal relationships. In this study, internet usage was broadened to encompass a number of non-work-related tasks that made use of technology that is interactive. Computers, smartphones, and digital tablets were classified as interactive electronics. Because of the variety and engaging nature of these devices, interactive electronic usage has the potential to become addictive. The study aimed to determine how individuals' usage of interactive devices relates to (1) clinically specified measures of mental health and (2) the level of quality of their relationships with others. It sought to assess the connection between previously established levels of dynamic technology usage during leisure time and (1) one's own perceptions of anxiety, depression, overall anxiety, and feelings of isolation as well as (2) perceived quality of close connections with others.

2 Method

Research design of the study is descriptive in nature. Simple random sampling technique was used to collect the data. Questionnaire was shared through google form. The study included 265 adult volunteers who completed a survey via the internet to provide data on mental and interpersonal connection scores, and the values for all three indicators of interactive electronics use.

3 Results

The study found a substantial association ($p < .001$) between IAT score and mental health and relationship quality. However, there is not enough data to suggest a link between the quantity of time spent using interactive devices per day and both mental health or relationship quality. The computed sample association between interacting gadgets usage and psychological health, as well as relationships with others quality, is shown in Table 1, together with the related p-values from the student t-test.

Table 1. Correlation Analysis

Correlation Values	IAT score (n=168)	Work hrs (n=191)	Non-work hrs (n=193)
Depression	0.43 ($p < .001$)	0.00	0.15
Anxiety	0.38 ($p < .001$)	0.09	0.12
Stress	0.33 ($p < .001$)	0.07	0.08

The use of quadratic regression evaluation was also performed to investigate the association between IAT grade and psychological wellness, as well as relationships with others quality. The results revealed no evidence of a nonlinear relationship or a threshold effect. Specifically, there is no indication that a critical threshold of IAT score must be exceeded before Mental health and interpersonal relationships are negatively affected.

Table 2. Association between IAT score and psychological/social ratings

	Females	Males
Depression	.45	.45
Anxiety	.47	.24
Stress	.30	.33
Loneliness	.31	.51
RelationshipQuality	.35	.50

Furthermore, the study investigated if the association between IAT score and mental health, as well as the quality of relationships, differed by gender. Linear regression analyses were performed separately on female ($n = 116$) and male ($n = 52$) subjects. There was a strong association between IAT score and psychological/social ratings for female participants (see Table 2). For male participants, however, there were significant relationships between IAT score and stress, depressive disorders, isolation, and quality of relationships scores.

The study's drawbacks included an inadequate sample size and a sampling process. While the participants' ages varied, there was an unfavorable proportion of those aged 40 to 49. In addition, the female to male participant ratio was 5 to 2. The majority of participants had relatively low Internet Dependency Test (IAT) scores, indicating high levels of psychological well-being and relationship quality. These sampling difficulties may restrict the findings' generalizability, which might be addressed in future research by recruiting from a wider and more diverse group. Furthermore, the study's list of interactive electronic devices (IED) only contained a limited number of devices. The study focused on smartphones, computers, and tablets as types of interactive electronic devices (IED), excluding other forms of electronic usage such as TV-based video games.

It is crucial to emphasize that the study results cannot be used to infer causation because many factors that were not investigated or controlled for during the correlation and regression analyses may have an impact on psychological health and relationship quality. The study did not take into account aspects other than excessive IED usage that could affect psychological wellness and relationship quality, such as physical health, economic status, ancestral history, and genetic background. Furthermore, the research did not account for the possibility that chronic IED use is a consequence instead of a cause of mental and marital issues. To explore cause-and-effect correlations, a multiple-variate regression technique with a wide range of parameters influencing mental wellness and relational relationships would be necessary.

4 Conclusion

The rise of internet addiction presents a significant public health concern. Our findings contribute to a growing body of research indicating that not only the Internet Addiction Test (IAT) score, but also general usage of interactive electronic devices (IED), is associated with psychological well-being and quality of interpersonal relationships. Given the pervasive nature of IEDs in everyday life, it is imperative to raise awareness and implement targeted interventions to mitigate potential negative impacts.

In the absence of a standardized metric for assessing overall IED use, we utilized the IAT score as a proxy measure in this study. There is a need for the development of a comprehensive metric that encompasses all aspects of IED usage.

Furthermore, our study emphasizes the significance of conducting additional research into the association between IED use and psychological health, as well as the quality of relationships with larger and more varied participant samples.

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