

# Internet Addiction and Phone Dependence: Measurements, Influencing factors, and Effects

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**Abstract.** The article begins with a definition and assessment of phone dependence and Internet addiction. After going into detail about the causes of these addictions, the article goes into detail about the effects of phone dependence from both a mental and physical standpoint. The damage to the headache and eye issues are really common for long-term phone users. Moreover, even though the use of phones does good to mental health problems, especially social anxiety issues, phone dependence will get harder to reduce, which will cause other problems. The end of this review concludes with two research directions on phone reliance: how to lessen phone dependence and how to lessen the headache and social anxiety effects brought on by phones while maintaining the positive critical contribution of phones to humans.

**Keywords:** Internet addiction, phone dependence, measurements, mental health.

## 1. Introduction

Today, the telephone is the most commonly used mobile device for Internet access, and the use of *fs* is no longer used only for communication purposes but extends to the use of Internet access. And for this reason, contemporary society is known as the “smartphone society” [1], characterized by the fact that 93% of the population has access to a personal smartphone. South Korea, China, and other Asian countries have carried out several significant research and treatment projects. Because of the serious damage that the phone dependence has made to human especially to minors, the South Korean government listed it into the serious public health issues, and soem South Korean scholars have begun to conduct extensive research on the individuals in the wake of compulsive Internet use in Internet bars and a game-related murder. Due to the huge rise in adolescent Internet use in China over the past ten years, China has also expressed serious worry about the issue. Around 10 million Chinese youths fit the diagnostic criteria for Internet addiction, according to a national report from 2007. To address cases of Internet addiction, the Chinese government has since 2008 formally established hospital psychiatric units and Internet addiction treatment facilities.

As is well-known that phone dependence and Internet addiction are harmful to the body and that people of all ages who are dependent on phones want to change, but the extent of scientists’ efforts to study has been limited by the policies of various countries, news reports, and observations of life. Starting with the causes and specific effects of phone dependence, as well as the harm to many components of the human body, is important in order to find a solution to the problem of addiction. In order to prepare materials for subsequent experiments aimed at reducing phone dependence, the purpose of this article is to summarize the factors that lead to Internet addiction and phone dependence, as well as the standardized table for calculating phone dependence. It also analyzes the effects of phone dependence on various aspects of the human body and mind.

## 2. Method

Based on the keywords such as “phone dependence,” “internet addiction,” “factors,” and “impact.” The author first searched and filtered on the website web of science and then searched and analyzed on Google Scholar afterward. The articles were analyzed based on the following criteria: (1) the articles were published after 2000; (2) the subjects had specific criteria to measure the characteristics of phone dependence; (3) the subjects were between 12-24 years old; (4) the experiments in the

articles had rigorous experimental planning and strong data support, including specific testing criteria to illustrate the changes in the participants.

### 3. Literature Review

#### 3.1 Factors Affect Phone Dependence and Internet Addiction

According to the experiment's findings by Martinez-Sánchez et al., [2] young individuals who are more likely to dependent on smartphones fit the following profile: (1) The results showed that women were three times more likely than men to become dependent on their phones; (2) Individuals who frequently or always used their cellphones for amusement did so three times as frequently as those who never did so; (3) The group that used their phones for more than 6 hours per day was more likely to be dependent on their phones than the group that used their phones for 1-6 hours per day; (4) People who frequently or always experience issues because they use their phones to access social media (8.5 times higher than those who responded that they never had such problems).

In the TMD scale experiment, tolerance was the most significant cause of phone dependence, followed by a lack of self-control oneself, and the last influencing factor was abstinence. The experimenters found an inextricable link between these three influences. Abstinence was highly correlated with tolerance, and lack of control was weaker but close to half while tolerance showed a moderate to high correlation with lack of control positively [3]. Choliz discovered a similar connections pattern: there are positive correlations between tolerance and abstinence and lack of control, as well as between abstinence and lack of control, which shows strong evidence to the TMD scale experiment [4].

The use of smartphones has been the subject of extensive research over the past ten years, and some empirical data suggests that excessive and unrestrained smartphone use may be linked to a number of issues. Problematic smartphone use (PSU) may show psychological and social issues associated with phone dependence and find out the relation with the duration of phone usage [5]. Another study associated with it has shown that university students aged 19 years old and above are at less risky in getting the phone dependence than high school students who are below 18 [6].

#### 3.2 Measurements of Internet Addiction

Internet addiction may not be commanded as an example of addiction. Historically, some psychologists have defined addiction as persistent, uncontrollable actions that contain substances that participate [7]. However, as the Internet age has advanced and phones have been more widely used, an increasing number of contemporary psychologists have classified this uncontrollable behavior as Internet addiction.

As the definition mentioned in the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders), [13] some levels that influence daily life will be called phone dependence and internet addiction, and that is the standard for dependence becoming an addiction problem [8]. As well as a wide range of experimental criteria has evolved to gauge Internet addiction, such as problematic Internet use (PIU), Phone Dependence Questionnaire (MPDQ), and Internet Addiction Disorder (IAD).

Internet Addiction and Phone Dependence correlation were examined in a study [9]. 1,072 pupils in Hong Kong were from three primary and three middle schools, 63% male, and 37% female, participated in the study. Correlational analyses for Internet addiction and phone dependence were conducted by the researchers. Confirmatory factor analyses revealed that the IAT triggers were similar in both the child and adolescent samples, and ROC analyses revealed that participants had comparable high IAT and MPDQ scores. The results of the correlation analysis and the analyses of phone dependence and Internet addiction among the participants were ultimately obtained through statistical analysis after analyzing the four variables. This experiment also included a quantitative analysis of Internet addiction and phone dependence.

The Phone Problem Use Scale (MPPUS) is another widely used one [10]. The MPPUS is a one-factor test that which includes 27 items, and questions about tolerance and avoidance issues. Each

item is evaluated with a 10-point scale, which can be more intense rather than just yes/no replies. The MPPUS is a helpful tool for determining global scores of phone addiction and has been widely used in various studies [11]. The Problem Phone Use Questionnaire (PMPUQ) is another multidimensional measure that has been independently validated [5]. The PMPUQ consist of 30 items which measures four distinct characteristics of dangerous phone using issues, and each item is rated on a Likert scale of 1 to 4. The PMPUQ measures the following structure. (1) risky use, which is seen as life-threatening use scenarios like using a phone while driving; (2) prohibited use, which is defined as using a high-intensity phone in a theater; (3) dependence symptoms, which are based on characteristics of addictive behavior; and (4) financial issues, based on the degree to which phone use actually causes financial issues (which is also a measure of unfavorable events in daily life).

### 3.3 Negative Impact of Phone on Mental Health

In order to ascertain the connection between phone addiction and depression among Taiwanese college students, Chen conducted a study [14]. The project investigated the connection between phone usage, phone addiction, and social capital before examining the link between phone use, phone addiction, and academic achievement. With 166 respondents, 71% of whom were between the ages of 20 and 23 and 55% were female. The experimenters conducted an online survey. The 166 participants in this experiment were all in possession of or previously owned their own phones. 77.5% of pupils have been using their phones for longer than three years. The findings revealed no conclusive link between sample-level depression and phone addiction. However, they felt that regular phone use had a negative impact on their academic performance and learning. Heavy phone users indicated that their connections with friends and family were improved as a result of phone engagement. Light phone users, on the other hand, stated that their connections with family and friends and their academic performance and learning were less adversely affected by phone use. Extreme phone users, on the other hand, claimed that using their phones had a beneficial effect on both their social and academic pursuits.

During a study on phone dependence and the causes of ringing anxiety in medical students, it was discovered that students used their phones more frequently at night and late at night, and in vibrate or silent mode [16]. However, the study's findings also revealed that students with ringing anxiety were more likely to use their phones in locations where phone use was prohibited. Although the majority of the participants were used to sending messages, their conversation time was not very long. Phone addiction had more or less negative effects on the participants' life, such as worry, loss of sleep, and poor academic performance. In the event of a phone signal outage, they also reported experiencing high levels of stress. According to these results, phone dependence is not rare among college students, and this sample showed a high prevalence of phone ownership (all but one student had one or more phones).

According to Davis' cognitive-behavioral theory, social anxiety is the distal element in Internet addiction, while some maladaptive cognitions driven by rumination are the proximal variables [17]. In other words, social anxiety may cause teenagers to regurgitate, which could result in a dependency on phones. However, it was discovered in the study by Kong et al. that the proximal component (social anxiety) influenced phone dependence (Internet addiction) via the distal factor (social anxiety) (rumination). Therefore, in addition to the direct prediction of whether trial participants would become dependent on their phones, proximal factor regurgitation can also predict social anxiety, a required prerequisite for internet addiction. Teenagers with social anxiety may also continually check information about themselves on their phones as a kind of comfort, which can assist relieve anxiety but can lead to a dependence on mobile devices [15]. Adolescents with a clear self-concept tend to be more confident, experience fewer issues like social anxiety and have good psychological regulation to lessen the impact of the outside world on them when they are going through a crucial period of self-value formation and development. Conversely, adolescents with low self-concept are more aware of their flaws and consequently have low self-esteem about how they perceive themselves

[18]. Thus, the moderating influence of self-concept clarity is limited while using phones to treat anxiety symptoms, which may lead to more severe social anxiety and phone reliance.

Phone reliance is not only linked to a bad mood but also contains a substantial positive correlation between phone dependency with social anxiety. The results of this test reveal that teenagers with higher scores of social anxiety are more likely to be phone dependent [16]. Teenagers who suffer from severe social anxiety may find it difficult to communicate in person and may experience other interpersonal problems as a result. Due to the anonymity of online socialization and the pressure it puts on kids to express themselves, socially anxious teenagers are more likely to struggle with improving their real-life interpersonal settings. They might, however, increasingly rely on their phones and use them for social networking or other online activities.

Moreover, according to Yücens' study, there is a significant association between social phobia avoidance and online addiction, indicating that social anxiety may play a part in internet addiction as a behavior [15]. The creators of the experiment hypothesize that mental health issues may be at the root of Internet addiction and contribute to its onset or exacerbate its symptoms. Contrarily, the connection between social anxiety and Internet addiction raises the possibility that Internet addicts create a virtual world to protect themselves from the risks or difficulties of the real world by using the Internet to escape their bad emotions.

### **3.4 Effect of Phone on Physical Health**

In the previous section on extreme phone dependence, there are cases of phone use in life-threatening situations, such as while driving. So for this type of people with extreme phone dependence, the use of phones in dangerous situations can pose a threat to life and may cause physical harm.

In addition to this type of situation where phone dependence is a direct threat to life, phone dependence can also have a number of different degrees of impact on life and health. Overusing phones may cause physical health damage, such as headaches, earaches, heat sensations, fatigue, and musculoskeletal symptoms. However, there is still some controversy as to whether excessive phone use can produce tumors [12]. In the study by Söderqvist, F. et al., the majority of participants reported having access to a phone, and use of that device increased with age; more than half of the teenagers that around 15 years old and most of 19-year-olds reported being everyday phone users, and it was discovered that girls typically used their phones more frequently than boys. The researchers discovered a clear positive correlation between watching television and the likelihood of using a phone after controlling for age and gender. After completing of a questionnaire that monitored the participants' physical health, it was discovered that exhaustion, stress, headaches, anxiety, poor focus, and sleep difficulties were some of the most often reported health issues. The trial's findings also revealed that frequent phone users were more likely than infrequent users to experience health issues and report being in worse physical shape. As a result, using a phone excessively can lead to physical difficulties such as weariness and headaches, and as Internet use and phone use become more compulsive, health issues may worsen.

In the study by Acharya et al., headaches were unsurprisingly discovered to be the most prevalent symptom of phone dependence [21]. Between the ages of 7 and 23, 50/50 male and female adolescents from urban and rural areas were randomly chosen for the study. Virtually all of the participants had their own phones and used them almost continuously throughout the investigation. Following the participants, it was discovered that uncontrollable irritation was the second most prevalent symptom, with more than 51% of the participants saying that they had experienced or were currently having headaches. With more than 31% of participants expressing symptoms of eye strain, physical pain such as neck aches, eye diseases like dry eyes, and digital thumb was shown to be frequent in the experiment on the physical health consequences.

## 4. Implications

In addition to giving people with social anxiety a platform to express themselves, the invention of phones has dramatically improved and simplified daily life. However, because of their benefits, many people rely heavily on their phones and the Internet, particularly teenagers and young children who are less self-reliant. For more study: firstly, psychologists and educators can undertake additional research on how to increase children's self-control and self-perception through daily behavioral discipline in addition to the national laws forbidding children from using independence and youth models offered by each program. Secondly, because Internet addiction and phone dependence can both worsen phone dependence while also having a positive impact on social anxiety, in-depth research can be done to increase the advantages of social platforms for reducing social anxiety and lessen the negative effects of phone dependence on daily life. Thirdly, although the development of modern civilization has tremendously benefited from the use of phones and the Internet, prolonged phone use has harmed on many people's health. However, it is impossible to overlook the numerous health issues that prolonged phone use has brought. Therefore, it is important to consider what level of phone use has the least negative effects on the human body, and strategies for preventing diseases linked to it.

## 5. Conclusion

Studies have indicated that women are more likely than males to have longer lengths of phone use and phone dependent features. Gender, age, length of phone use, and frequency of social software use are all factors that contribute to phone dependence and Internet addiction. Based on the manifestation of the triggers of phone dependence, psychologists developed numerous forms and studies to ascertain the participants' phone dependence. They standardized the analysis on the participants' self-control, social anxiety, and phone usage. Analysis of the effects of phone reliance on the human body can be done from the perspectives of both mental and physical health. The research findings show that using phones also has a positive effect on social anxiety, and the use of the virtual space created by the Internet allows people with social anxiety to be less stressed. Among them, the symptoms of social anxiety are particularly obvious in mental health problems and socialization with others. It should not be understated that more than half of the population experienced headaches and irritation, and more than 30% suffered eye and vision issues as a result of their physical illnesses. Physical activity can address the issues with physical health brought on by phone use. On the one hand, exercise can improve physical health and lessen the damage done by using a phone. Indirect solutions to the impact of phones can be found by first addressing the issue of dependence.

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