

## ***"I Love My Smartphone": A Review Study of Smartphone Addiction and Related Psychological Risk Factors***

*"Akıllı Telefonumu Seviyorum": Akıllı Telefon Bağımlılığı ve Psikolojik Risk Faktörleri Üzerine Gözden Geçirme*

Meryem Karaaziz<sup>1</sup>, Buse Keskindağ<sup>1</sup>

### **ABSTRACT**

In recent years, smartphones have begun to play an increasingly important role in the lives of many people. Smartphone usage has dramatically increased due to the availability of applications with a variety of purposes, such as internet, telephone, camera/video, and games. While smartphones have made many things easier, they have also brought some difficulties, such as the emergence of smartphone addiction. This review study summarizes the personality traits and psychological risk factors of individuals with smart phone addiction by analyzing their amount of cell phone and internet usage. A survey of the literature suggested that extroverted people are at higher risk of becoming addicted to smartphones than introverted individuals. In addition, people with neurotic personality traits were also found to be at risk for smartphone addiction. Research demonstrating a relationship between narcissist personality disorder and high usage of social networking sites also emphasizes the direct proportion between smartphone addiction and increased risk. Other research has shown a relationship between stress, signs of depression, and anxiety and the increase in frequency of smartphone use.

**Key Words:** Smartphone addiction, psychological risk factors, mobile phone, internet, personality.

### **ÖZET**

Akıllı telefon son yıllarda birçok kişinin hayatında önemli yer kaplamaya başlamıştır. Bu konu bağlamında akıllı telefonların internet, cep telefonu, fotoğraf-video, çeşitli oyun ve uygulamalar içermesi sebebiyle günümüzde kullanımı oldukça artmıştır. Akıllı telefonlar hayatımıza kolaylık sağlarken zorluklarda getirmiştir. Bu durum beraberinde bağımlılık riskini ortaya çıkarmıştır. Bu gözden geçirme çalışmasında akıllı telefon bağımlılığı yaşayan bireylerin kişisel özellikleri, psikolojik risk faktörleri, cep telefonu ve internet kullanımı yaygınlığını inceleyerek bununla ilgili çalışmalar özetlenmiştir. Yapılan tarama sonucunda çoğu araştırmada dışa dönük kişilik özelliğine sahip bireylerin, içe dönük kişilik özelliğine sahip bireylere oranla daha fazla akıllı telefon bağımlılığı riski altında oldukları bildirilmiştir. Aynı zamanda araştırmalar nevroitik kişilik özelliğine sahip bireylerin de akıllı telefon bağımlılığı riski altında olduklarını ortaya koymaktadır. Sosyal paylaşım sitelerini sıklıkla kullanan bireylerle narsisistik kişilik yapılanması arasında ilişki olduğunu ortaya koyan araştırmalar, bu ilişkiyle akıllı telefon bağımlılığının doğru orantılı olarak artma riskinin yüksekliğini de vurgulanmaktadır. Araştırmalar, akıllı telefon kullanımının sıklığının artması ile stres, depresif belirtiler ve kaygının ilişkili olduğunu ortaya koymaktadır.

**Anahtar Kelimeler:** Akıllı telefon bağımlılığı, risk faktörleri, cep telefonu, internet, kişilik özellikleri.

<sup>1</sup> MSc, Psychologist, Near East University, Arts and Science Faculty, Department of Psychology,

Address reprint requests to: Meryem Karaaziz, Near East University, Arts and Science Faculty, Department of Psychology, Lefkoşa - TRNC, Mersin 10- TURKEY

E-mail address: meryem.karaaziz@gmail.com

Phone: +90 (392) 223 64 64

Date of submission: January 8, 2015

Date of acceptance: April 4, 2015

## INTRODUCTION

Mobile phones are not simple devices anymore; they have become sophisticated wireless mobile devices which are commonly known as “smartphones”. It enables people to communicate also reach information and have fun. People have managed their everyday lives with their smartphones which are also widely used all around the world. Lately, there is an increase of studies considering smartphone addiction in psychosocial perspective. However, literature illustrates contradictory findings related to smartphone addiction since the “addiction” is complex by itself. Due to smartphone is technological device which enable people to communicate with others also connect to the internet, it would be worthwhile to analyze smartphone addiction in the context of internet and mobile usage and personality traits of smartphone users. The objective of the current study to review literature and provide empirical consideration into the smartphone addiction by examining the (1) internet use, (2) mobile use and (3) personality traits of users, and psychological risk factors.

## SMARTPHONE USE

Recent study indicated that adoption of smartphones increases dramatically among people. These devices have played a significant role in people’s lives with their complex functionality such as; accessing to social networking sites, immediate communication and sharing instant information through social media platforms (1). Most research suggests smartphones are now essential for daily life because of people’s preference of communication style also many smartphone users find themselves while checking the email messages, alerts and notifications related to social media platform lots of times in a day (1).

Park, Kim, Shon and Shim (2013) conducted a study aimed to investigate individual’s psychological factors that affect their use of smartphones by using the technology acceptance model (TAM) (2). Results has suggested that users showed dependency which may lead addiction

since they comprehend it easy to use also useful as well as learning / experiencing new and advanced functions of smartphones increase people’ communication skills that makes them more dependent on the smartphone. According to DSM V, addiction is usually characterized by loss of control over substance use, continued use despite harm and compulsive use. However, physical dependence is not sufficient for diagnosis of substance dependence (3).

Further, individuals with innovative traits may use smartphones more than others. Additionally, they found individuals with higher (internal) locus of control are more likely to show dependency to smartphone since they believe that they have control over their lives. At this point, dependency must be distinguished from addiction since dependency must be understood as trigger for addiction since it may prevent person to maintain one’s everyday life (4, 5, 6).

Moreover, Chiu (2014) examined the relationships between perceived life stresses, self-efficacy and smartphone addiction among university students in Taiwan. Findings illustrated that family stress, emotional stress, academic stress also interpersonal relationship stress positively predicted smartphone addiction via social self-efficacy (7).

Another study aimed to understand whether taking the smartphones from university students for a short time would trigger anxiety and whether frequency of daily smartphone use would modify consequences. It was demonstrated that moderate and heavy daily smartphone users showed more anxiety than low daily smartphone users although they knew that their device will be back in short time. That is, students who use their smartphones more frequently feel more anxious significantly than those who use it less (1). Smartphone usage might increase because of an easy access to internet devices which are smartphone As it was mentioned before, the most important characteristic of a smartphone is internet which provides connection to any information immediately, therefore, it would be helpful to analyse internet excessive usage in order to understand smartphone addiction in a better way.

## INTERNET USE

International studies provide sufficient evidence saying cyber addiction shows rising tendency rapidly. A research conducted with 1420 online gamers has indicated that cyber addiction varies between 3.6% and 44.5% based on several evaluations and significant risk factors were identified as years of exposure, total time spent online as well as personality traits for a potential cyber addict such as; escaping into videogames rather than experiencing interpersonal conflicts and the process of individuation (separation from group) (8, 9).

Various researches have tried to clarify whether usage of Facebook can contribute to cyber addiction. One of these studies with a sample of 423 students has proven that young users who feel less anxiety in virtual communication than face to face communication are more likely to addict to Facebook besides, some users intend to extend their social relationships however they are isolated from real society because of evolving abusive relationship with Facebook (9).

Further, a research with sample of 265 employees in Japan determined that internet and mobile phone text-messaging is also excessive among adults. Likewise, findings refer 34% of men and 25% of women represent mild internet addiction also, 6.1% of men and 1.8 of women showed pathological usage of the internet. This study also indicates associations between excessive use of internet/mobile phone and depression as well as anxiety which can result as addiction (10).

Another large study with sample of 942 participants in USA conducted in order to identify the media and technology usage and attitudes. Significant correlations have been found between scales that predicted daily media usage and anxiety especially Facebook users showed more positive attitudes also anxieties when the device is absent also had more dependency feelings on technology. Furthermore, male participants were more involved in video gaming and media sharing and more educated participants used more technological devices than less educated people (11).

In comparison with previous research, 3173

Dutch adolescents were investigated in order to understand the relationship between personality traits and the use of different internet applications and 3.7% adolescents were found as addict to internet what is more, the usage of Twitter and social networking sites raised the risk of being addicted to internet with 2.6% and 3.2%. The findings also state that online game players are at higher risk of being addicted to internet by 2.3%. As personality traits, low emotional stability, low agreeableness (aggression – hostility) and openness to experience (creativity, innovation) were found to raise the risk of being addicted to internet (12).

Greater accessibility of social networking sites through smartphone may increase such addiction towards not only internet but also smartphone. 316 Chinese young adults' daily usage of social networking sites was investigated and it was revealed that there was a positive relationship between daily usage of social networking sites through smartphones and addictive tendencies to social networking sites. Especially, those who are students showed more addictive tendencies towards social networking sites, the reason might be related to developing of new online social relationships. Results illustrates that people who had less self-efficacy related to internet usage are more vulnerable and at higher risk of being addicted to the social networking sites as well as impulsive (someone who is impulsive does things without considering the possible conclusions) participants indicated higher addictive tendencies by spending too much time on social networking sites through smartphones (13). Impulsive people are easy to be distracted by external stimuli such as a signal of new message therefore this may be a possible explanation for these findings above. Moreover, literature provides much information related to mobile phone addiction which can be also instructive to explain smartphone addiction.

## MOBILE PHONE USE

A qualitative research has been done with 32 young participants in Australia in order to consider young people's perceptions of mobile

phone use in their lives and findings support that mobile phones have exchanged with some traditional devices such as; diaries, cameras. Especially some of the participants mentioned that mobile phone was part of them; they also defined some behaviour which may be indicator of addictive use including compulsive checking and inappropriate use (14, 15, 16, 17, 18, 19).

Unlike Cheever's et. al. (2014) findings, it has been revealed that most participants would feel disconnected from others rather than feeling distressed when the mobile phone is absent (1). Differences between findings may be arisen from complexity of potential mobile phone addiction. Generally, traditional addiction studies are linked to euphoria with excitement when people engage in the behaviour, however, euphoria resulted from mobile phone usage may be associated with feeling of valued or loved when there is a call or message (17).

Likewise, a large study was conducted with 1581 high school students in Japan analyzing psychological/behavioural symptoms of excessive text-messaging originate in conjunction with self-perception (20). Psychological/behavioural symptoms were raised due to perception of excessive use of mobile phone additionally emotional response was exhibited significantly hence; this comprises an urge to be replied immediately from others. In regard to personality factors and self-perception, perception of excessive use was affected among extroverted people while emotional response was increased among neurotic people. In other words, extroversion may trigger an urge to maintain social relationships through text-message which results excessive use of mobile phone and increased psychological/behavioural symptoms such as hyperactive whereas, excessive text-messaging may also result from neuroticism which involves fear of rejection and may increase psychological/behavioural symptoms such as anxiety (20, 21, 22).

Another research with sample of 404 university students in Spain aimed to investigate associations between maladaptive use of

internet/mobile phone and psychological distress. In contrast with Walsh's et. al. suggestion, problematic users reported as having less self-esteem, more loneliness, depression and anxiety (20). It was interesting that findings also shows that females had more negative results of maladaptive mobile phone use than males; this may be linked to a consequence saying female may use mobile phone in order to maintain social relationships whereas male may use it for entertainment (23). Therefore, smartphone addiction can also be clarified in the context of frequently mobile usage in terms of excessive text-messaging.

Similar to previous study, a research with a sample of female students demonstrated that there is a correlation between mobile phone addiction and psychological characteristics including social extroversion, anxiety and self-esteem (20). Further, there was positive relation between social extroversion and mobile phone usage also, highly anxious people communicate with other people on the phone more frequently because of unstable emotions. In addition, this research stresses that people who had low- self-esteem seem to have higher levels of mobile phone usage which may be result as mobile phone addiction (24).

Moreover, a research with sample of 496 college students in USA states that cell (mobile) phone use was negatively associated to academic performance (GPA) and positively associated to anxiety additionally; GPA was positively linked to subjective well-being (happiness) whereas anxiety was negatively linked to subjective well-being (25). These results support previous literature findings (23).

Since smart phone usage can differ among people, the current study has tried to investigate a smart device which connects to the internet and mobile usage in the context of personality traits and psychological risk factors.

## PSYCHOLOGICAL RISK FACTORS

As it has been noted above, various personality traits and psychological risk factors can be associ-

ated with technological device usage yet literature has limited research related to personality traits in Internet/mobile phone users/smartphone users.

For instance; loneliness is one of the negative emotion people experience in their lives. A study aimed to analyze loneliness of 527 university students in Turkey and their daily mobile phone usage. Results suggest that there was significant relationship between mobile phone usage and loneliness also 17.6% of university students were reported as addicted to mobile phone (26). In comparison with Beranuy's et. al. findings, the loneliness scores of male were reported higher than the scores of female students (23). Mobile phones, especially smart phones enable people to contact with others also reach information at almost everywhere (bus, street, home, school, etc.) which may decrease spending time in real social environment based on face to face interaction consequently excessive usage of mobile phones may cause people to become addicted to it (23, 27, 28, 29, 30, 31).

Similarly, a study which has been done with 650 high school students in Turkey found that there is a significant relationship between loneliness and internet addiction (32). Another research which had 673 high school students in Turkey supported previous study suggesting male participants who used internet excessively tend to show more hostile, anxious, depressed, paranoid and phobic thoughts than others. These results also indicated that frequent internet usage can cause decreased sensitivity in terms of interpersonal relationships (33).

Moreover, a research with sample of 273 university students in Turkey determined that there was a positive relationship between shyness and problematic mobile phone use also there was a positive relationship between loneliness and problematic mobile phone use as a conclusion it has been suggested that levels of shyness and loneliness may increase the problematic mobile phone use (34).

Generally speaking, smart-devices which enable people to use internet especially, smart phones usage have increased significantly in

the last decade. A study aimed to examine the impact of smart-devices on users' mental health. Excessive smart-device usage predicted degree of depression and stress but not anxiety also findings suggest that individuals with more stress are more likely to seek smart devices in order to reduce their stress however, highly smart-device involvement may contribute to depression and stress (34, 35, 36). Similarly, a research was conducted to clarify the association between parental depression and the internet addiction status of their children; results showed that there is a relationship between parental depression and adolescent internet addiction status of adolescents which suggests that parental depression might affect adolescent's internet addiction status due to a reflection of adolescent's own depression therefore, it can be said that parental mental health also have an impact on adolescents' internet addictive behaviours (36, 37, 38, 39)

Besides, a study with a sample of 325 participants in Taiwan purposed to investigate how smart-phone users' characteristics have an impact on their stress levels. Unlike Parks's et. al findings, it has been suggested that people with external locus of control and are more likely to use their smartphones due to less power of self-control (2). Also it has been reported that these people are more materialistic than others because smartphones are significant possessions for them, in addition, smartphone designs known as "touch phones" may influence compulsively usage of the device which relates that females compulsively use their smartphones more than males (39, 40, 41).

Since smartphones enable people to communicate through Facebook and Twitter, it is also important to analyze characteristic of Facebook and Twitter users. Regarding this, a study with separate samples of college students and adults in USA considered narcissism in the usage of Facebook and Twitter which are most popular social networking sites. Interestingly it has been found that narcissism is more powerful predictor for Twitter users than Facebook users in college students as well as in adults (42, 43).

## CONCLUSION AND FUTURE IMPLICATIONS

Nowadays, smart phone usage has increased dramatically which leads potential cause for addiction. Therefore, the current research aimed to examine mobile phone usage and internet usage in order to make links to smart phone addiction since smart phone is a mobile phone with internet. Although literature has limited study related to smart phone addiction, our study has also investigated personality traits of users and psychological risk factors.

Overall, the findings suggest personality traits of excessive mobile and internet users show similarity to smartphone addicts. Even though there are contradictory results, it can be said that most of the research illustrated extroverted and neurotic people showed higher smart phone addictive characteristics additionally narcissism was associated with usage of social networking sites which can be reached through smartphone. Further, most of the study says that people use smart phones excessively in order to manage their stress which is high risk for addiction also depressive symptoms were found related to excessive smart phone usage. The most important limitation of this study is that literature has limited study related to smart phone addiction and psychological risk factors therefore; this review consists of different research results related to excessive mobile and internet usage which may lead smartphone addiction. Yet the current study gives an opportunity to understand and think of unidentified characteristics of smartphone addiction which should encourage other researchers to clarify this topic with future studies.

## KAYNAKLAR

- 1- Cheever A, Rosen LD, Carrier LM, et al. Out of sight is not out of mind: The impact of restricting wireless mobile device use on anxiety levels among low, moderate and high. *Comput Hum Beh* 2014; 37:290-297.
- 2- Park N, Kim YC, Shon HY, et al. Factors influencing smartphone use and dependency in South Korea. *Comput Hum Beh* 2013; 29:1763-1770.
- 3- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders (DSM) – V. Ankara: Hekimler Yayın Birliği, 2013.
- 4- Park N. Adoption and use of computer-based voice over internet protocol phone service: Toward an integrated model. *J Commun* 2010; 60:40-72.
- 5- Santa-Rita E. The effect of computer-assisted student development programs on entering freshmen locus of control orientation. *College Student Journal* 1997; 31:80-83.
- 6- Chak K, Leung L. Shyness and locus of control as predictors of internet addiction and internet use. *Cyber Psychol Behav* 2004; 7:559-570.
- 7- Chiu SI. The relationship between life stress and smartphone addiction on Taiwanese university student: A mediation model of learning self-efficacy and social self-efficacy. *Comput Hum Beh* 2014; 34:49-57.
- 8- Tisseron S. Les cyberaddictions. *Addictologie Clinique*, sous la direction de Eric-Peierre Toubiana. Presses Universitaires de France 2011; 524-562.
- 9- Suissa AJ. Cyber Addictions: Toward a psychosocial perspective. *Addict Behav* 2014; 39: 1914-1918.
- 10- Lu X, Watanabe J, Liu Q, et al. Internet and mobile phone text-messaging dependency: Factor structure and correlation with dysphoric mood among Japanese adults. *Comput Hum Beh* 2011; 27:1702-1709.
- 11- Rosen LD, Whaling K, Carrier LM, et al. The media and technology usage and attitudes scale: an empirical investigation. *Comput Hum Beh* 2013; 29:2501-2511.
- 12- Kuss DJ, Rooij AJ, Shorter GW, et al. Internet addiction in adolescents: Prevalence and risk factors. *Comput Hum Beh* 2013; 29:1987-1996.
- 13- Wu AMS, Cheng VI, Ku L, et al. Psychological risk factors of addiction to social networking sites among Chinese smartphone users. *Journal of Behavioral Addictions* 2013; 2:160-166.
- 14- Walsh SP, White KM, Young RM. Ring, ring, why did I make that call ? Beliefs underlying

- Australian university students' mobile phone use. *Youth Studies Australia* 2006; 25:49-57.
- 16- Walsh SP, White KM. Me, my mobile and I: The role of self and prototypical identity influences in the prediction of mobile phone behaviour. *J Appl Soc Psychol* 2007; 37:2405-2434.
- 17- Walsh SP, White KM, Hyde MK, et al. Dialling and driving: Factors influencing intentions to use a mobile phone while driving. *Accident Anal Prev* 2008; 40: 1893-1900.
- 18- Walsh SP, White KM, Young RM. Over-connected? A qualitative exploration of the relationship between Australian youth and their mobile phones. *J Adolescent* 2008; 31:77-92.
- 19- Walsh SP, White KM, Young RM. Needing to connect: The impact of self and others on young people's involvement with their mobile phone. *Aust J Psychol* 2010; 62: 194-203.
- 20- Walsh SP, White KM, Hyde MK, et al. Keeping in contact touch: The predictors of young Australians' mobile phone involvement. *Comput Hum Beh* 2011; 27:333-342.
- 21- Igarashi T, Motoyoshi T, Takai J, et al. No mobile, no life: Self-perception and text message dependency among Japanese high school students. *Comput Hum Beh* 2008; 23:11-2324.
- 22- Pincus AL, Gurtman MB. The three faces of interpersonal dependency: Structural analyses of self-report dependency measures. *J Pers Soc Psychol* 1995; 69:744-758.
- 23- Young KS. Internet addiction: A new clinical phenomenon and its consequences. *Am Behav Sci* 2004; 48:402-415.
- 24- Beranuy M, Oberst U, Carbonell X, et al. Problematic internet and mobile phone use and clinical symptoms in college students: The role of emotional intelligence. *Comput Hum Beh* 2009; 25:1182-1187.
- 25- Hong FY, Chiu SI, Huang DH, et al. A model of the relationship between psychological characteristics, mobile phone addiction and use of mobile phones by Taiwanese university female students. *Comput Hum Beh* 2012; 28:2152-2159.
- 26- Lepp A, Barkley JE, Karpinski A. The relationship between cell phone use, academic performance, anxiety, and satisfaction with life in college students. *Comput Hum Beh* 2014; 31:343-350.
- 27- Tan Ç, Pamuk M, Donder A. Loneliness and mobile phone. *Procedia and Social Behavioral Sciences* 2013; 103:606-611.
- 28- Floros G, Siomos K, Stogiannidou A, et al. Comorbidity of psychiatric disorders with Internet addiction in a clinical sample: The effect of personality, defence style and psychopathology. *Addict Behav*; 39:1839-1845.
- 29- Butt S, Phillips JG. Personality and self reported mobile phone use. *Comput Hum Beh* 2008; 24:346-360.
- 30- Emelin V, Tkhostov A, Rasskazova E. Excessive use of internet, mobile phones and computers: the role of technology-related changes in needs and psychological boundaries. *Social and Behavioral Sciences* 2013; 86:530-535.
- 31- Lepp A, Li J, Barkley JE, et al. Exploring the relationships between college students' cell phone use personality and leisure. *Comput Hum Beh* 2014; 43:210-219.
- 32- Salehan M, Negahban A. Social networking on smartphones: When mobile phones become addictive. *Comput Hum Beh* 2013; 29:2631-2639.
- 33- Esen E, Siyez, MD. An investigation of psychosocial variables in predicting internet addiction among adolescences. *Türk Psikolojik Danışma ve Rehberlik Dergisi* 2011; 4:127-138.
- 34- Kelleci M, Güler N, Sezer H, Gölbaşı Z. Lise öğrencilerinde internet kullanma süresinin cinsiyet ve psikiyatrik belirtiler ile ilişkisi. *TAF Preventive Medicine Bulletin* 2009; 8:223-230.
- 35- Hsiao MH, Chen LC. Smart phone demand: An empirical study on the relationships between phone handset, internet Access and mobile services. *Tematics and Informatics* 2014; 32:158-168.
- 36- Oztunc M. Analysis of problematic mobile phone use, feeling of shyness and loneliness in accordance with several variables. *Procedia and Social Behavioral Sciences* 2013; 106:456-466.
- 37- Harwood J, Dooley JJ, Scott A, et al. Constantly connected- The effects of smart- devices on mental health.

- Comput Hum Beh 2014; 34:267-272.
- 38- Thomee S, Dellve L, Harenstam A, Hagberg M. Perceived connections between information and communication technology use and mental symptoms among young adults-A qualitative study. BMC Public Health 2010; 10: 66.
- 39- Thomee S, Harenstam A, Hagberg M. Mobile phone use and stres, sleep disturbances, and symptoms of depression among young adults- A prospective cohort study. BMC Public Health 2011; 11.
- 40- Lam LT. Parental mental health and internet addiction in adolescents. Addictive Behaviors 2014; 42:20-23.
- 41- Lee YK, Chang CT, Lin Y, et al. The dark side of smartphone usage: Psychological traits, compulsive behaviour and technostress. Comput Hum Beh 2014; 31:373-383.
- 42- Davenport SW, Bergman SM, Bergman JZ, et al. Twitter versus facebook: Exploring the role of narcissism in the motives and usage of different social media platforms. Comput Hum Beh 2014; 32:212-220.
- 43- Rhodewalt F, Morf CC. Self and interpersonal correlates of the narcissistic personality inventory: A review and new findings. J Res Pers 1995; 29:1-23
- 44- Buss DM, Chiodo LM. Narcissistic acts in everyday life. J Pers 1991; 59:179-215.