

## REVIEW

# Screen: Subject of all Information Technology Addiction

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## Abstract

The dizzying speed of the change in technology affects the human life in the same movement. Studies which investigate these effects and the increase in that rate become slow and insufficient against the speed of the technology. Although it is not yet considered as an addiction in DSM, it is widely accepted by field researchers that excessive and uncontrolled use of information technologies can cause addiction on individuals. The current study which was conducted by the compilation method includes determining the subtypes of screen addiction as a very up to date and controversial topic, revealing and classifying the underlying reasons of these subtypes and screen addiction in general with the method of compilation. For this purpose, 84 studies which were conducted in Turkey and abroad were examined. As a result of the examination, screen addiction was thought to be divided into subtypes such as internet addiction (gambling, shopping, sexuality, general), media addiction (traditional media, social media), digital game addiction (online, offline, single-player, multiplayer, depending on the type), addiction of technological tools (computers, smartphones, television, tablet, VR and so on.). Consequently, dynamics which are common in these subtypes and cause addiction alone or in combination are digital interaction, virtual environment and screen that transport all these dynamics.

**Key words:** Technology, screen, addiction, effect

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## Introduction

In 21. Century's "Information Age", human being is in an intense and personal interaction with technology in general and information technology specifically unlike the "Agriculture" and "Industry" ages (Yalçın, 2003; Tonta & Küçük, 2005). It is an undeniable fact that information technologies as computer, television, telephone, tablet entered into many aspects of human life such as transportation, communication, education, health; affected, changed and made human life easier in biological, psychological and social aspects. However, research investigating the implications of digital technology in the lives of individuals is inadequate to capture the speed of technological change. Previous research on radio and television gave way to studies on computer and then after smartphones

(Pagani et al., 2010; Sussman & Moran, 2013; Domoff et al., 2017; Cha & Seo, 2018). Today, due to the development in information technology it is possible to have high-level interaction connecting to the internet, create, share or engage in a virtual environment, consume high-level imagery stimulus, and there are many different technological tools from a fridge as the simplest of kitchen appliances to the transportation or virtual reality or augmented reality glasses and so they are still developed. The main factor in the use and presentation of all these tools described is the "screen". Mobile technological tools, in which individuals are getting more intertwined, affect every moment of individuals as in the case of phubbing (Karadağ et al., 2016).

Screen refers to the technology that shows all kinds of virtual images being in interaction. Today, screen sometimes offers a unidirectional interaction and sometimes a bi-directional interaction between individual's own reality and virtual facilities that are offered by technology such as televisions, computers, phones, tablets, projectors, virtual reality and augmented reality. Black and white single-channel television, which was entered into human life, is now across the individual at home, in the pocket at the outside, on the table at work, so it is always everywhere in life. Screen has become an indispensable part of the life and used excessively and uncontrolled with negligent and allowing attitudes of families especially at younger ages (Brindova et al., 2014). At this point, attitudes of parents on using screen affect children at a damaging rate (Rideout & Hamel, 2006). Former minister of health Tim Loughton estimated that a child would spend a whole year with screen until 7 years old in United Kingdom (Woolcock, 2014).

Several researches related to technology indicates the power of the screen (Essig, 2012). While screen technology offers a wide range of facilities such as entertainment, education, socialization, it exposes individuals a lot of patterns, colored texts, animations and exaggerated graphics which are intense stimuli to the eye. It is not possible to consume all these stimuli without developing a mindset based on them. This new way of thinking is screen thinking style, which is moving, shifting, superficial and temporary (Güneş, 2010). Eyes are less cropped and more contracted to provide more concentration when exposed to intense stimuli, differently from its normal function. As a result of this, "computer vision syndrome" may occur (Portello, 2013). It was indicated that humans are sensitive especially to the blue light (short

wavelength) emitted from the screens of technological devices (LED); it affects the biological rhythms, sleep and cognitive performance levels (Cajochen et al., 2011) and causes obesity affecting the speed of metabolism and insulin resistance (Cheung et al., 2016). Screen, with these kinds of characteristics, is one of the reasons causing to addiction the device used (Roberts, 2014). It has also been found that screen size may be related to addiction, which supports this argument (Wibirama & Nugroho, 2017).

Excessive screen use was found to be associated with the delays in cognitive, language, academic and psychosocial developments in terms of age; obesity, sleep disorders, differentiation in body image, aggressive and violent behavior along with the decrease in the physical activity; depression, anxiety, loneliness, compulsion, suicidal tendency, attention deficit and hyperactivity along with digital games (Lowry, 2002; Whang et al., 2003; Vandewater, 2004; Yoo et al., 2004; Thompson & Christakis, 2005; Kim et al., 2006; Schmidt, 2009; Tomopoulos et al., 2010; Pagani, 2010; Linebarger & Vaala., 2010; Lemmens, 2011; Madran Demirtaş & Çakılı Ferligül, 2014; Maras et al., 2015; Mohaç, 2015; Vandembosch & Eggermont, 2016). In the light of these findings American Academy of Pediatrics (AAP) considered the research related to digital media and digital games as screen use and recommended not to use screen until two years old and then limited and controlled use in terms of age (Reid Chassiakos, 2016). It is, in fact, remarkable to see this information in the literature on various platforms with the aim of raising awareness. Nevertheless, persistence in the use of the screen among children at full speed may make adults think that they do not know how to manage the situation with children or what to replace with screen.

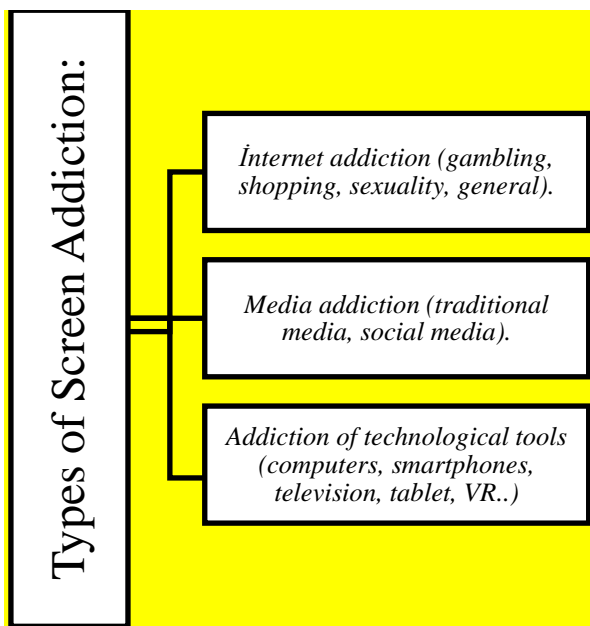
### **Information Screen Addiction and Subtypes**

In this section, types of technology addictions reached via the screen, which the individual establishes a "symbiotic" relationship and perceives it as natural and invisible, are explained.

### **Theoretical Background**

Intensive communication with information technologies in the modern world improves human capabilities while it causes behavioral addiction with biological, psychological and social aspects at the same time at intensive and long-term use. Although addictions have been known as the use of cigarettes, alcohol and substances; behavioral or operational addictions such as exercise, gambling,

sex, shopping have also been identified (Griffiths, 1996; Demetrovics & Griffiths, 2012). Research shows that when individuals generally repeat behaviors, repetition triggers biochemical processes in the body that have the potential to cause addiction and creates particular effects of reward (Alavi et al., 2012). Young (1998) stated that the basic dynamics of addiction are not the internet itself, but the forms of use provided by the internet. Forms of using screen and Internet together is considered significant for identifying the type of addiction and the treatment (Ögel, 2016). Literature on screen addictions classifies the main addictive dynamics as following: Digital interaction and virtual environment through the screen. Excessive and uncontrolled consumption of both separately or together may cause addiction. In this context, although research are carried out on technology addiction, internet addiction, social media addiction, digital game addiction, computer addiction, smartphone addiction; screen addiction is the subject and includes all of them (Griffiths, 1996; Young, 1998; Shapira et al., 2003; Kuss, 2011; Kwon et al., 2013). Screen addiction subtypes are shown on the Scheme 1.



Scheme 1: Types of Screen Addiction:

**Internet Addiction**

Bill Gates defined internet as “information highway” connecting via screen in 1999 and it is regarded as the “active ingredient” of technology addictions (Savcı & Aysan, 2017). Number of internet users is estimated as 4,156,932,140 all over the world, and 56 million in Turkey (Internet World Stats, 2017). Number of internet users increase in parallel as the days spent on the internet increase. An average internet user spends approximately 6 hour a day online while this is about 7 hours in Turkey (We Are Social, 2018). Long-term and intense use of internet leads to addiction. It was firstly used as internet addiction in the literature but researchers also named Internet addiction as internet dependency, problematic internet use, pathological internet use, excessive internet use, internet abuse, internet addiction disorder, cyberaddiction (Young, 1996; Kaltiala-Heino et al., 2004; Young, 2004; Young & Case, 2004; Vaugeois, 2006; Tvedt, 2007; Weinstein & Lejoyeux, 2010). Different concepts were used because of the different opinions about the cause of problem (Dinçer, 2016a). Internet addiction and diagnostic criteria were firstly defined by Goldberg in 1996 to criticize the DSM system (Şenormancı et al., 2010). Young developed the first measuring tool “Internet Addiction Test” by specifying the criteria for Internet addiction (Kutlu et al., 2016). According to Young, diagnostic criteria for Internet addiction are 1) excessive mental activities (obsessive status, attributing importance), 2) increasing need to use (tolerance), 3) failed attempts to control, reduce or completely quit (relapse), 4) feelings of anxiety, collapse (depression) or anger in case of reduction or complete cessation (withdrawal), 5) being online on the internet more than the planned time (uncontrolled use), 6) having problems with family, school, work and friends due to excessive use of the internet, jeopardising or losing an opportunity of education or career (abuse, problem), 7) lying others about the amount of time spent on the internet (conflict), 8) using internet to escape from the problems or get away from the negative feelings (changing feelings). Having at least five of the eight criteria within 6 months is regarded as Internet addiction (Young, 1998). Based on these criteria Davis divided Internet addiction into two subgroups as General Pathological Internet Use (GPIU) and Specific Pathological Internet Use (SPIU). While GPIU is excessive use without a specific purpose, SPIU excessive interne use for a specific purpose such as gambling, sex, internet shopping (Dinç, 2016b).

Young (2000) also classified five general subtypes of Internet addiction according to most frequent online types. These are 1) Cyber-sex addiction, 2) Cyber-relationship addiction, 3) Net compulsions (virtual gambling, shopping or transactions), 4) Information overload (compulsive internet surfing or database searches) and 5) Computer addiction.

Digital interaction, ultimately, resulting from an unnatural communication with the Internet in terms of the receiver and channel of the information may cause addiction on individuals. Lack of communication skills and poor quality of communication in real life increases the need for communication even further, and the individual uses the opportunities provided by the Internet in a problematic way to meet this need of communication and establish meaningful relationships. The individual who establishes this poor-quality communication, experiences the “internet paradox” (Kraut, Kiesler, Boneva, Cummings, Helgson & Crawford, 2002). Similarly, several research about the internet indicated that the conditions which cause excessive and uncontrolled internet use is caused by lack of social support and inadequate communication skills (Mesch, 2001; Ceyhan, 2011; Savcı & Aysan, 2017). In some studies, individuals were found to have no lack of communication skills, on the contrary, individuals use the internet to increase social support in real life and use their communication skills to communicate with more people (Savcı & Aysan, 2016). However, people may experience the internet paradox due to the unnatural and poor-quality structure of digital interaction.

### Media Addiction

Considering that internet is mostly used for social media, social media addiction comes first in SPIU. Including television media which has limited interaction, beside “active ingredient” internet, as “digital media”, “electronical media” and “screen media”, research exploring abuse and addiction of media showed that it is quite important especially for youth in the context of identity and intimacy development and they are mostly affected group by the harmful effects (Baer et al., 2012; Michikyan & Suarez-Orozco, 2016; Reid Chassiakos, 2016; Domoff et al. 2017; Görmez & Örengül, 2017). It was reported that excessive TV watching causes delay in cognitive, academic, psychosocial and language development, obesity with decrease in physical activity, being exposed to cyber bullying according to used social media types and using habits and change in body image due to appearance

oriented media (Lowry, 2002; Vandewater, 2004; Schmidt, 2009; Tomopoulos et al., 2010; Linebarger & Vaala, 2010; Pagani, 2010; Vandebosch & Eggermont, 2016; Aslan et al., 2017). In the light of these findings, American Academy of Pediatrics suggested families to limit the digital media in terms of age groups (Reid Chassiakos, 2016).

The concept of “Fear of Missing Out” explains that digital interaction gradually increases the need for communication and shows signs of deprivation as individuals constantly having anxiety to learn what others are doing as a result of being rewarded with interaction in social networks (Gökler et al., 2015; Przybylski et al., 2013; Hato, 2013). In addition, while media addiction theory reveals the need of society and the individual for mass communication tools; it reveals perception, emotion and behaviour changes and addiction formation of individual on interaction basis, whether it is active as in social media and online games or passive as in television. According to the media addiction theory, people living in masses need information to make any kind of decisions, they establish social relations with the people whom they acquire information, however, people who have difficulty in face-to-face communication and building social relationships due to class differences in social structures and personal differences, get addicted on the media to find a type of social role that they can use to build social relationships and to get information they can use to make decisions (Işık, 2009).

### Digital Game Addiction

Digital games, which are fun, independent from the real world and used via screen, are another purpose of consuming technology (Garris R. et al., 2002). Digital games can be played online or offline via technological tools such as computer, console, smart phones or virtual reality and cause addictions in problematic using situations (Griffiths & Davies 2005; Young, 2009; Irmak Yalçın A. & Erdoğan S., 2016). American Psychiatric Association included digital game addiction as Internet Gaming Disorder in the third research appendix of Diagnostic and Statistical Manual in 2013. Digital game addiction was found to be associated with aggression, obesity, loneliness, depression, suicidal tendencies, compulsion, attention deficit and hyperactivity (Whang et al., 2003; Yoo et al., 2004; Kim et al., 2006; Lemmens, 2011; Madran Demirtaş & Çakılçı Ferligül, 2014; Mohaç, 2015).

According to Yee (2007), there are three components that cause game addiction. These are

“success”, “social compliance” and “diving into game”. The desire to compete with other players in the success component and the desire for socialization, connecting relationships and taking part in teamwork in the social component may occur as a result of digital interaction and can be damaging for real life. Diving into play component is related to the virtual environment. Virtual environment is intriguing, unlimited, free, artificial and anonymous. With all these features, it is open to being explored, idealized, personalized and allows to get away from the facts. For these reasons, it has a supportive structure for the addiction. Recently, human beings have begun to isolate themselves from reality and started to attribute special meanings to the virtual world in every opportunity with the development of mobile technological tools (Karadağ, 2016).

Online and offline digital games give individuals profiles to interact, manage and express themselves regularly. Considering the connection with digital games, these digital profiles form a virtual self (Gosling et al., 2011). Profiles created in virtual environment can be formed according to idealized self instead of real self. Virtual environment allows the ideal self to be actualized in an easy way (Monago et al., 2008). In this case, the virtual self can take over the real identity and affect thoughts, emotions and personality not only online but also offline. On the other hand, there are also studies showing that the virtual self is not idealized but only an exaggerated expression of the real self (Back et al., 2010).

Moreover, studies on virtual bullying, which is frequently seen in digital games, showed that lack of empathy and emotion is one of the reasons for bullying (Topçu, 2008; İnelöz-Türkileri Uçanok, 2013). Feelings are shallow and empathy is limited in the unlimited and free world of virtual environment. Therefore, studies indicating that virtual environment leads individuals to violence is remarkable (Madran Demirtaş & Çakılcı Ferligül, 2014).

### Conclusion

This study aimed to determine the subtypes of screen addiction and classify it finding out the underlying reasons. Dynamics and underlying reasons of screen addiction classified as Internet addiction (gambling, shopping, sex, general), media addiction (traditional media, social media), digital gaming addiction (online, offline, single-player, multiplayer, depending on the type), technological tools addiction (computers, smart phones,

television, tablet, VR, etc.) are found to be important for the explanations of addiction and the diagnosis and treatment of individuals with addiction.

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