

College Students' Addictive Behavior of Smartphone Use in Daily Life

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Abstract

Today, smartphones have become so popular that almost every adolescent in Taiwan has one or more in their hands. There is no doubt that smartphones have brought people great convenience; however, it leads to one serious problem: smartphone addiction which is so scarcely researched but awaits our immediate attention (Goswami & Singh, 2016). The aim of this study is therefore to examine college students' smartphone addictive behavior at a national university of science and technology in central Taiwan. A total of 250 students were recruited from various departments of the university to fill out a questionnaire designed to investigate how the participants used their smartphones in the daily life. It was found that more than half of the students admitted that they felt they were already addicted to smartphones. They reflected that the first thing they often did in the morning was using smartphones (53%, M=3.44) and would keep using even when they got so tired in bed at night (51%, M=3.42). The students even felt apprehension fearing that they could not keep up with others if they did not bring smartphones with them (53%, M=3.51). Many students often indulged in their phones to connect with their virtual community on the Internet (71%, M=3.84). Nonetheless, a good number of students took great advantage of smartphones to deal with emergency (86%, M=4.24), connect with relatives or friends (85%, M=4.13), search for information (71%, M=3.86), read documents (64%, M=3.73), take notes (60%, M=3.57), and self learn (54%, M=3.53). Education officials and lawmakers in Taiwan should be cautious about the serious matter of smartphone addiction to implement proper laws or rules that help to regulate our youngsters' inappropriate use of smartphones in public occasions and educational events.

Keywords: smartphone addiction, college students, addictive behavior, self-control

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I . INTRODUCTION

Nowadays, more and more people possess a smartphone in the world because its price is lower than before with even stronger functions (Rajurkarl & Shirsagar, 2017). However, at the beginning of the mobile phone markets, there were only rich people who could afford one for the purpose of business whereas the only function of a mobile phone at that time was to contact people. After years of development, mobile phones have gradually become popular with various functions. As the usages of smartphones increase rapidly, smartphones become so widespread that almost every youngster in Taiwan has a smartphone now. Smartphone is not only a contact tool but also a gadget for playing games, surfing on the Internet, reading news, and so on. People can search all types of information via smartphone. After smartphones have become a popular gadget, they bring about a common disease, that is, smartphone addiction which is still scarcely researched (Goswami & Singh, 2016).

Despite its convenient use in our life, smartphone does bring serious problems such as smartphone addiction which is significantly impacting our daily life and social behavior. This type of addiction can happen to any person anytime and anywhere. Wherever we go such as in restaurants, on the road, on the buses or in classrooms, we can see people hold smartphones in the hand and look at their phones. According to a recent public survey from Taiwan's National Development Council (2017), the top two age groups who spend the longest time in a day online are the group aged between 18 to 19 (2.9 hours) and the group aged between 20 to 29 (2.8 hours). Hence, this arouses our interest to target college students who are at high risk of smartphone addiction. We wonder whether they are aware when they get addicted to the use of smartphone in their

daily life.

The purpose of this study therefore is to examine the addictive behavior of smartphone use from the daily experiences of college students to see how the use of smartphones affects their lives and how they behave when they become addicted. In short, the following three research questions have guided the direction of this research:

1. Are college students addicted to smartphones?
2. How may the students behave when they are addicted to smartphones?
3. How do the students use smartphones in their daily life?

II. LITERATURE REVIEW

As the use of smartphone has been increasing drastically in recent years, the phenomena of smartphone addiction become quite evident. However, it is still necessary to clarify the concept of addiction and addictive behaviors before assessing the cause and impact of smartphone addiction. According to Carbonell, Guardiola, Beranuy, and Belles (2009), the pathological use of certain information technologies, such as Internet, cell phones, and video games is considered a behavioral addiction that has already aroused great attention from the media. This addiction from the overuse of any modern technologies such as smartphones could cause serious troubles for the majority of people because their conscious or unconscious actions of using the phone could lead to both mental and physical illness. Some psychiatrists assert that smartphone addiction is no different from other types of addiction like drug addiction in that smartphone addiction is found to be a very prevalent non-drug addiction (Goswami & Singh, 2016). Other scholars such as Park (2005) have reported that some users are more dependent on their mobile phones than they themselves are aware of (cited in Chatterjee, 2014). People would keep



their smartphones on and use them all the time when they become addicted (Roos, 2001). According to a recent survey posted by Nurfit (2012), 60% of the teens and 37% of the adults in the U.K. admit that they have become highly addicted to smartphones whereas 51% of adults and 65% of teens would use smartphones while socializing with others.

There are numerous factors causing smartphone usage into addictive behavior while one does not even realize as he or she has become addictive because this type of addiction is usually an unconscious behavior which falls within the realm of abnormal behavior (Hooper, & Zhou, 2007). Unlike drug addiction which is substance addiction, smartphone addiction is one kind of behavioral addiction, that is, as the habit of using a smartphone turns into an obligation, it could be deemed as an addiction (Alavi, Ferdosi, Jannatifard, Eslami, Alaghemandan, & Setare, 2012). In a well-known Taiwanese medical magazine, Chen (2018) argued for three factor that the doctor believed to be the real reasons why some Taiwanese youngsters got addicted to smartphones. Firstly, people who became addicted could not control themselves or refrain from using their phones even after suffering from bad consequences such as insomnia. Secondly, they were prone to use their smartphones much longer than they actually felt. Finally, people with smartphone addiction were often obsessed with online games to the extent that their regular routine became abnormal.

The reasons for using a smartphone are extremely common nowadays and hard to avoid. For instance, a reason often mentioned for owning a smartphone is for emergencies where immediate contact with family members or emergency services is vital (Davie, Panting, & Charlton, 2004). Normally people would deem it for security or safety to own a cell phone because it makes them feel safer (Wilska, 2003). As young people begin using their cell phones

habitually, it becomes part of their lives, and they can no longer live without it. That is, it becomes a necessity of their lives to accompany them everywhere (Aoki & Downes, 2003). According to Jonnes' (2014) survey at Elon University, more than half of the college students surveyed (56.9%) believed they were addicted to instant and constant usage of cell phones for daily communication.

The youngsters today have grown up in such a technologically rich world that they are overly dependent on smartphones to fulfill their social needs and keep connected with their friends or family through social networking web sites such as Twitter, Facebook, and MySpace (Suki, 2013). Smartphones provide users diverse Internet content with multimedia options, and they can download all kinds of applications (apps), which significantly enable their ability to shape up their devices and services (Jung, 2014; Tossell, Kortum, Shepard, Rahmati, & Zhong, 2012; Verkasalo, Lo'pez-Nicola's, Molina-Castillo, & Bouwman, 2010). Jesse (2015) conducted a survey to investigate which apps college students used the most on smartphones and reported that social media (e.g. Twitter, Facebook, Instagram, Pinterest) was the most-used category within which the most popular one was Facebook (83%). Social media apps allowed people to check their social media sites anywhere and anytime instead of having to sit in front of their computer screen (ibid).

Addictive cell phone usage should be considered a public health problem because the dangers associated with excessive usage or addictive behaviors could be extended among common people, including adolescents (Niaz, 2008). The excessive usage of smartphones could bring anxiety to users, which might eventually cause neck and shoulder pain (Iqba, Ahmad, Gillani, Hanif, & Iqbal, 2017). Blair, Gama and Toberman (2015) also suggested there were increasing back and spine problems owing to



the improper postures of the addictive people who used smartphones to text, play games, and watch videos. Their heads, necks, and shoulders underwent the damage from looking down at smartphones too frequently. Park, Kim, J. H., Kim, J. G., Kim, K. H., Kim, N, H., Choi, Lee, and Yim (2015) also found addictive smartphone users tended to use it for long hours to cause pain in the muscles of the shoulder and the neck. Therefore, people should be cautious and try to look at their phones with a neutral spine and to avoid spending too much time hunching over the screens of their smartphones each day.

Thomé, Härenstam, and Hagberg (2011) further examined the mental symptoms such as depression among excessive cell phone users aged twenty to twenty-four and connected high cell phone use with symptoms of depression for both young male and female adults. According to Jonnes' (2014) survey research at Elon University, some college students reflected that smartphone addiction made them need to have their smartphones so that they were able to respond or reach out to people instantly and impulsively. As one survey participant indicated, people could even forget how to interact face-to-face because they had used cell phones as a habit to avoid real interaction. When college students could not access their smartphones, they might develop a phobia due to out of cell phone contact and fall into nomophobic behavior such as not being able to communicate, losing connectedness with others, not being able to access information, and feeling very anxious or uncomfortable (Dasgupta, Bhattacharjee, Dasgupta, Roy, Mukherjee, & Biswas, 2017).

In addition, smartphone overuse could result in sleep problems. Phone usage at night time has been linked to disturbed sleeping patterns by several medical experts and researchers. For instance, Patel (2015) suggested that the usage of cell phone before bedtime could be linked to an increase in sleep

disorders in users. Demirci, Akgönül and Akpınar (2015) also pointed out that bad sleep quality was associated with smartphone overuse because the artificial light of a smartphone could disrupt users' sleeping patterns from sleeping on time. Using smartphones before bed might increase the possibility of insomnia, as well as the amount of time it took for users to fall asleep while decreasing their sleep quality. Falbe, Davison, Franckle, Ganter, Gortmaker, Smith, Land and Taveras (2015) reported that young people, who slept near a smartphone and who had used their phones longer, were more likely to have insufficient rest or sleep because of their temptation to use their phones in the bedtime to text others or play games while their phones might be sounding with alerts throughout the night.

III. METHODOLOGY

3.1. Context

The context of this study was a national university of science and technology in central Taiwan. The investigators recruited participants who had used smartphones in their daily life both on campus and through the Internet from all the four colleges of this university, including the College of Arts and Science, the College of Electrical and Computer Engineering, the College of Engineering, and the College of Management.

3.2. Participants

A questionnaire was distributed to different departments at the national university of science and technology. There were totally 266 responses including 250 valid questionnaires and 16 invalid ones due to the missing information in some items. Therefore, our participants included 250 (145 males and 105 females) college students at the particular university of science and technology. They were from



the College of Arts and Sciences (64 students), the College of Electrical and Computer Engineering (62 students), the College of Engineering (65 students), and the College of Management (59 students).

3.3. Instrument

The data collection method in this study was the same questionnaire in both forms of hard copy and online questionnaire. On the one hand, the questionnaire was distributed near the school gate. On the other hand, an online questionnaire was posted via Google and placed on the school Facebook page for students to fill out the survey.

The questionnaire included two major sections. Section one contained multiple-choice items which requested the basic information of the participants such as their gender, institution, the quantity of smartphones they possessed, and the tendencies of smartphone addiction. Section two of the questionnaire consisted of 30 five-point Likert-scale items. Items 1-11 were related to the more serious

addictive behavior of smart phone use; items 12-21 were regarding with the less serious behavior of addiction to smartphones; items 22-30 were relevant to the ways of smartphone use in the everyday life.

IV. RESULTS & DISCUSSION

Research Question 1: Are college students addicted to smartphones?

Figure 1 shows the results of a Yes-No questionnaire item in which the participants were required to respond whether or not they felt they had smartphone addiction. It was found that more than half of the college students (58%) in this study acknowledged that they had already become addictive to the use of smartphone in their daily life, whereas forty-two percent of the students claimed that they had not. The result was in accordance with that of Nurfit (2012) in which 60% of the teens in the U.K. were found to be highly addicted to smartphones.

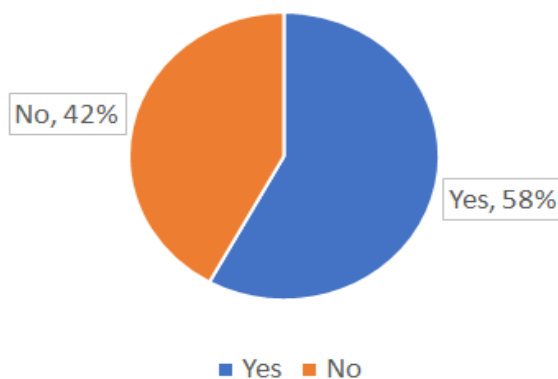


Figure 1: I feel that I have smartphone addiction.

Figure 2 reports the results of another Yes-No questionnaire item in which the participants were required to respond whether or not they considered smartphone addiction a disease. It appeared that almost three fourths of the college students (73%) in this study considered smartphone addiction a disease.

According to previous researches, smartphone addiction could lead to not only physical health problems such as neck and shoulder pain (Iqba, Ahmad, Gillani, Hanif, & Iqbal, 2017) but also mental health problems such as depression (Thomé, Härenstam, & Hagberg, 2011).



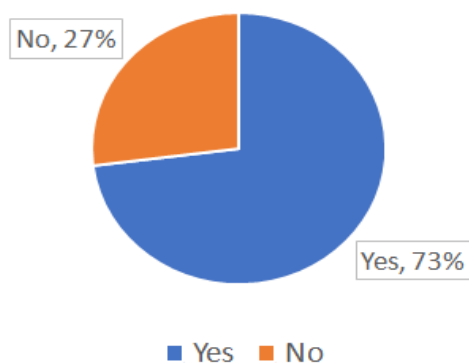


Figure 2: I consider smartphone addiction a disease.

Research Question 2: How may the students behave when they are addicted to smartphones?

In this section, we will examine the addictive behavior of smartphone usage due to lack of ability for self-control or self-regulation (see Chen, 2018) . Table 1 presents the addictive behavior which could affect students’ regular life or mental health more seriously. Fifty-three percent of the students felt apprehension fearing that they could not keep up with others if they did not bring smartphones with them (M=3.51) and admitted the first thing they did in the morning was using smartphones (M=3.44). Fifty-one percent of the participants continued to use their smartphones even when they got so tired in bed before sleeping (M=3.42), or when they were in the middle of things (M=3.35). Nearly half of the participants depended on smartphones to deal with everything or problems in life (48%, M=3.41) and felt quite insecure when the battery was very low (47%, M=3.39). Fifty-four percent of the students desired to use their smartphones secretly after they did not use it for a while (M=3.20) or ever

experienced phantom vibration syndrome from which they would perceive their phones were ringing while actually they were not (M=3.20). Forty percent of the college students even felt that everything was wrong if they did not use smartphone in the spare time (M=3.27). Furthermore, nearly one-third of the students reported that all their family members or friends found they had used smartphones too much (30%, M=3.11). Finally, one fifth of the students did not feel all right when they had not used smartphones for more than two hours (20%, M=2.76). Most of these findings seemed to coincide well with the result of the section above in which around half of the students (58%) in this study admitted that they felt they had already been addicted to the use of smartphones in their daily life.

In tables 1-3, the column of “SA/A” includes the two options of Strongly Agree (5 points) and Agree (4 points), whereas “D/SD” contains other two options of Disagree (2 points), and Strongly Disagree (1 point).

Table 1: More serious addictive behavior of smartphone use

	Questionnaire Item / N=250	SA / A	N	D / SD	Mean
1	Everything seems to go wrong if I do not use my smartphone.	100(40%)	102	48	3.27



2	I depend on smartphone to deal with everything or problems.	121(48%)	86	43	3.41
3	I continue to use my smartphone even when I get so tired in bed.	127(51%)	67	56	3.42
4	The first thing I do in the morning is using my smartphone.	133(53%)	68	49	3.44
5	I feel uneasy like I cannot keep up with others if I don't bring my smartphone.	132(53%)	76	42	3.51
6	All my family or friends consider I use smartphone too much.	76(30%)	115	59	3.11
7	I often desire to use a smartphone in the middle of things.	128(51%)	66	56	3.35
8	I feel like using smartphone secretly if I can't use it for a while.	112(45%)	69	69	3.20
9	I have experienced phantom vibrations syndrome.	113(45%)	62	75	3.20
10	I feel quite insecure when the battery of my smartphone is low.	118(47%)	84	48	3.39
11	I am not all right when I have not used my smartphone over two hours.	51(20%)	95	104	2.76

Notes: SA (strongly agree) = 5 ; A (agree) = 4; N (neutral) = 3; D (disagree) = 2; SD (strongly disagree) = 1

Table 2 looks further into other addictive behavior of smartphone use which could affect the students' mental health less seriously. A lot of participants were found to use smartphones very frequently in order to keep connected with their virtual community on the Internet (71%, M=3.84). Around two thirds of the students suffered from neck pain because of using mobile phones for too long (65%, M=3.68), got distracted during class because of smartphone use (60%, M=3.64), and spent more than three hours on smartphone every day (58%, M=3.57). More than half of the participants often played mobile games to kill time (55%, M=3.45) or even dined while using their phones (51%, M=3.42). One third of the students used smartphones when

gathering with families or friends (36%, M=3.18), lived an irregular life style (32%, M=2.95), and tended to use smartphones to interact with others (27%, M=2.92). Around one fifth of the students were prone to check in on smartphone wherever they went (18%, M=2.60). The results again were in accordance with those of Nurfit (2012) in which 65% of the teens in the U.K. were found to use smartphones when socializing with others. Other researchers also pointed out addictive mobile use could lead to a public health problem such as neck and shoulder pain (Iqba, Ahmad, Gillani, Hanif, & Iqbal, 2017).

Table 2: Less serious addictive behavior of smartphone use

	Questionnaire Item / N=250	SA / A	N	D / SD	Mean
12	I often play mobile games to kill time.	137(55%)	61	52	3.45



13	I have neck pain after using my smartphone for too long.	163(65%)	56	31	3.68
14	Instead of real interactions, I tend to use my smartphone to interact with others.	67(27%)	96	87	2.92
15	My daily routine becomes abnormal due to my frequent use of smartphones.	80(32%)	82	88	2.95
16	I use smartphones very often in order to connect with my virtual community on the net.	178(71%)	56	16	3.84
17	I am prone to check in on my smartphone wherever I go.	44(18%)	94	112	2.60
18	I dine while using a smartphone.	125(51%)	83	39	3.42
19	I often get distracted during class because of using smartphones.	150(60%)	71	29	3.64
20	I often use a smartphone when gathering with family or friends.	91(36%)	107	52	3.18
21	I spend more than three hours on smartphone every day.	145(58%)	67	38	3.57

Notes: SA (strongly agree) = 5; A (agree) = 4; N (neutral) = 3; D (disagree) = 2; SD (strongly disagree) = 1

Research Question 3: How do the students use smartphone in their daily life?

In this section, we will explore how these college students make use of smartphones in their everyday life. As indicated in Table 3, the majority of the students took good advantage of various functions on smartphone for emergency such as GPS (86%, M=4.24) and used their phones to connect with relatives or friends (85%, M=4.13). Seventy-one percent of the students gathered information via smartphone (M=3.86). Around two thirds of the

participants read documents on smartphone before emailing them to others (64%, M=3.73) or took notes on smartphone (60%, M=3.57). About half of the participants used smartphones for self-learning (54% M=3.53) and did shopping via smartphone (51%, M=3.37). Forty-six percent of the students used smartphones to promote their public relationship (M=3.30), whereas thirty-three percent of the students used smartphones to manage their time (M=3.12).

Table 3: College students' daily use of smartphone

Questionnaire Item / N=250		SA / A	N	D / SD	Mean
22	I use my smartphone to promote public relationship.	115(46%)	82	53	3.30
23	I use smartphones to help me manage my time.	83(33%)	98	69	3.12
24	I use smartphones for self-learning.	134(54%)	88	28	3.53
25	I take notes on smartphone.	149(60%)	63	38	3.57
26	I use smartphones to connect with family and friends.	212(85%)	28	10	4.13
27	I take advantage of various functions of smartphones for	215(86%)	29	6	4.24



	emergency, such as GPS.				
28	I read documents on smartphone and email them to others.	159(64%)	67	24	3.73
29	I use a smartphone to search for information.	178(71%)	54	18	3.86
30	I do shopping on smartphone.	127(51%)	64	59	3.37

Notes: SA (strongly agree) = 5; A (agree) = 4; N (neutral) = 3; D (disagree) = 2; SD (strongly disagree) = 1

V. Limitation, Implication and Direction for Further Research

This study involves a small population of college students at a national university of science and technology in central Taiwan. Nevertheless, the present study has provided insight into the smartphone addictive behaviors based on the personal experiences of the college students at this university. It was no surprise to see that more than half of the participants under investigation felt they had already become addicted to the use of smartphones in their daily life. They reflected that the first thing they often did in the morning was using smartphone and would even keep using it as they got so tired in bed at night. A lot of students were found to indulge in their smartphone world to keep connected with their virtual community on the Internet. They felt uneasy like they could not keep up with others if they did not bring their phones with them.

Nonetheless, the majority of the college students took full advantage of their smartphones to deal with emergency, connect with relatives or friends, search for information, read documents, take notes, and study independently. For the college students in this study, the negative effects of smartphones were both physical and psychological. A lot of students were found to develop neck pain because of using smartphones for too long and got distracted during class because of their addictive use. Some students even felt not all right when they had not used their phones for over two hours. Although the technology of smartphones did bring the college students certain

benefits such as convenience and efficiency, overuse of smartphones could possibly cause physical problems like neck pain as well as educational problems like distraction during class. Educators and manufacturers are thus urged to devise effective methods to monitor and restrain the addictive young smartphone users who lack the capabilities of self-regulation or self-control. Government officials and lawmakers in Taiwan should be more cautious about the serious matter of smartphone addiction to implement laws to regulate the inappropriate use of smartphone in public occasions like classes, meetings and speeches. Further studies are recommended to include more in-depth interview data and expand the scope of research to cover all ages of people to explore the impact of smartphones on the everyday life and social behavior of people from every walk of life.

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大學生手機使用成癮行為之研究

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摘 要

現今的社會，智慧型手機盛行的程度，台灣的年輕人幾乎已是人手一機的情況。毫無疑問的，手機帶來了很大的便利，然而它也造成了一個嚴重而有待研究的問題 (Goswami & Singh, 2016) -- 手機成癮。因此，本篇研究的主旨在探索一所位於中台灣之國立科技大學的大學生手機成癮的行為。總共有二百五十位不同科系的同學自由填寫了一份問卷，以了解同學在日常生活中，使用智慧型手機的實際狀況。研究結果顯示：有超過半數的同學表示自己有手機成癮的現象。例如，他們早上起床做的第一件事經常是使用手機 (53%, M=3.44)。而且，即使晚上就寢前十分勞累也會繼續滑手機 (51%, M=3.42)。同學們甚至會感到憂慮，害怕沒帶手機會跟不上別人(53%, M=3.51)。很多同學經常沉浸於手機社群的虛擬世界裡(71%, M=3.84)。儘管如此，許多同學能夠運用手機的功能，處理緊急的狀況(86%, M=4.24)、與親友聯繫(85%, M=4.13)、查詢資訊(71%, M=3.86)、閱讀文件(64%, M=3.73)、筆記重點(60%, M=3.57)、以及自學(54%, M=3.53)。教育部門與立法機關應該提高警覺來重視手機成癮的嚴重議題，進而制定合宜的解決方案，來導正年輕族群在公共場所與教學場合不當使用手機的不良行為。

關鍵字：手機成癮、大學生、成癮行為、自我節制

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