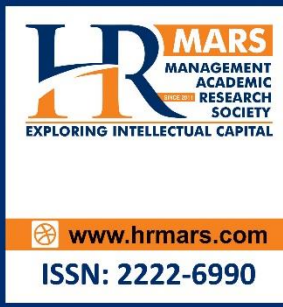




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Psychological Predictors of Mobile Phone Use and Addiction among Youths

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Abstract

This paper aims to provide a review on the psychological characteristic that indicates the mobile phone usage behavior and mobile phone addiction. There were identified psychological characteristics such as social extraversion, anxiety and low self-esteem have a positively associated with mobile phone usage. For many young adolescents' mobile phones are prerequisites, but these devices can adversely bring the impact to the mental health and quality of life? Rapid mobile technological advancement provides an excellent range of features and enhanced portability that increases the prevalence of mobile phone use, particularly among youths. A vast array of studies has been reported that cell phone addiction will have adverse effects on physical and mental health social adaptation, for instance poor performance in academic, interactive problems, health issue, stress, anxiety, and even loose hope and commit suicide. Hence, this paper emphasizes the necessity of proper use of technology and provides direction to the technology-savvy youth in particular on how to reap the technology's advantage for their positive growth. This paper presents an integrative conceptual framework, and a detailed summary for each topic. This study identifies three psychological characteristics namely self-esteem, social extraversion and anxiety that derived towards the mobile phone use and will be impact to the long term on mobile phone addiction. An integrative conceptual framework and a detailed summary table are presented in this paper. This paper demonstrates a model on relationship between psychological characteristic, use of mobile phones and mobile phone addiction among youths.

Keywords: Mobile Phone, Addiction, Personality, Loneliness, Social Anxiety, Self-esteem

Introduction

Mobile phone classified as device that used for information searching, communication, entertainment, online transaction and so on (Adams & Paul, 2017). In addition, the mobile phone is seen as an essential means of communication and has become an essential part of the society. It is not unprecedented because the new generations are digitally literate (i.e. citizens of modern age)

and would naturally be easily drawn to any new gadget. On today's world mobile phones became as a basic need to people and no more categorized as luxury items (Fadzil et al., 2019).

The millennials not only used the mobile phone as a communication tool but also as a way of expressing themselves (Ito & Okabe, 2004) and, very specifically, as a means of looking stylish and trendy (Ling, 2001). It been contrasted to earlier generations, or known as early immigrants (i.e. people born before the technological era), that frequently utilized their cell phones for communication purpose or for contact the customers in business (Bianchi & Phillips, 2005).

Development of mobile phone technology has created a valuable range of role and enhanced movability where been expanded the pervasiveness use of mobile phone, particularly among adolescents. Moreover, Adams and Paul (2017) assert the smartphone has appeared as one of the most popular consumer electronic devices among young adults. They also mentioned adolescent customers are increasingly aware of the functions and features of cell phone as opposed to their older peers. Although mobile phones offer great convenience, they can impose adverse effects, trigger dramatic psychological changes and consequences harmful physiological reactions, leading to a condition widely identified as 'cell phone addiction' (Eduardo *et al.*, 2012). It was identified high psychological needs satisfaction is strongly correlated with physical and psychological wellbeing, while low psychological needs can cause physical and psychological issues, including addictive behaviors such as internet addiction and cell phone addiction (Kumcagiz & Gunduz, 2016; Settley, 2020).

Findings of past study revealed youths who were exhibit lower level of psychological security depend on cell phones as a way of getting attached with others also contribute to the mobile phone attachment risk (Kim, 2018). Those results are consistent with the theory of self-determination, a motivational paradigm that explains how individual motivation is produced and then influences the development of humans. Additionally, this study indicates that one social context exists in the presence of long-term psychological needs, the person may have a significant desire to fulfill those expectations in other social contexts, such as the virtual Internet world (Ryan & Deci, 2020). The above implies that satisfaction with psychological wants is not only a part of the social context, but also an internal motivation that triggered people to exhibit externalizing behavior. Hence, it suggests that the fulfillment of psychological needs of youths can satisfy their inner void and solitude by playing computer games, watching videos in online or chatting in online (Sheldon, Abad & Hinsch, 2011).

Moreover, previous studies there were found that usage of mobile phone more than one hour per day would cause the health issues, poor memory and concentration deficit (Sandstrom, Wilen, & Mild, 2001), whereas another study also supported this statements even there have high tendency psychological impacts for those who spend more than seven hours a day in using mobile phone (Fredrik, Michael & Lennart, 2008). Furthermore, Thomee, Harenstam and Hagberg (2011) supported that statement and his study also indicated repeated use of the mobile phone is correlated with depression, sleep problems and physical symptoms. Past studies found obsessive mobile phone use could carry into mental illness (Beranuy *et al.*, 2009, Lee *et al.*, 2014), and over utilization of mobile phones will cause a big problem among adolescents such as loneliness, drug and alcohol use, mental depression and poor performance in academic (Sánchez-Martínez & Otero, 2009). Moreover, Liu and Yoo (2018) asserts the most immediate effect on college students was that the higher degree of cell phone use fascinated the drop in their educational achievements and it can quickly distract students during learning process in classroom (Hambrick & Fenn, 2014). In summary, dependent on the mobile

phone can have a negative effect to the mental illness and social health of an individual also effect on the everyday activities, resulting in encountered to discover mobile phone addiction among university students, as well as identify potential addiction factors.

Empirical research shows dependence to mobile phones have raised over the decades, with past researches primarily focusing on mobile phone addiction influencing factors (Bianchi and Phillips, 2005). Thus, Chen *et al* (2016) stated mobile phone addiction has proven to be an enormously important area and it is related to numerous elements such as psychological characteristics (Hong *et al.*, 2012, Billieux, 2012), loneliness (Bian & Leung, 2015), social networks intensity (Salehan & Negahban, 2013). Moreover, enormous studies demonstrated that youths mobile phone dependency can result to physical and psychological problems, including sleep problems, suicide, depression, anxiety and poor well-being (Lemola et al., 2015; Volkmer & Lerner, 2019). Hence, it is important to determine the major factors that derived to the mobile phone addiction.

The objective of this paper is to review and analyze the psychological antecedents of mobile phone use and addiction. The worldwide mobile phone addiction issues are growing at an alarming pace. Such issues need immediate addressing. Therefore, this paper will attempt to identify the connection of psychological characteristic and intention of mobile phone use. Via the specific information on the psychological characteristics, use of mobile phones, and mobile phone addiction, it can assist the policy makers in concrete strategies to further buttress the mobile phone usage among youth in characteristics, use of mobile phones and mobile phone addiction.

The paper is organized into four main parts. First, consequences of mobile phone addiction, second pattern of mobile phone use, third part mobile phone addiction and mobile phone usage behavior and last part were discussed about psychological antecedents of mobile phone use.

Literature Review

Mobile Phone Addiction and Consequences

Past studies showed addictive cell phone use may lead to significant problems in students' sleep habits (Van den Bulck, 2003). Furthermore, as stated by Liu et al., (2018) mobile phone dependency has become a worldwide concern due to its rapid growth in usage and its negative impacts. This is in line with Kamibeppu and Sugiura (2005), who mentioned students tend to engage in emails and texts and feel anxious even during the night when they are supposed to sleep because they have not received replies from friends. Apparently, the addictive condition leads students remain awake all nights, thereby impeding their daily activities. In addition, Beranuy (2009) studies also stated psychological distress, sleep disorder (Liu *et al.*, 2017), and less academic achievements can result from mobile phone addiction (Samaha & Hawi, 2016). Hence, for many young adults, cell phones are absolutely essential, but these devices can adversely affect their mental health and wellbeing. Even though the mobile phone usage driven to better access to information, improved accessibility and many conveniences but still brought many threats because of improper use of smartphones (Adams & Paul, 2017).

Generally, there have two ways to identify the mobile phone addiction. First, ascertain whether certain amount of frequency of mobile phone usage is higher than limit that set. Second, evaluate the frequent use of mobile phones has a detrimental effect on physical, psychological and mental health. If the person meets both criteria, the user with a mobile phone addiction can be identified (Jiang & Bai, 2014). A possible cell phone user is characterized by more than four hours per

day. Even though mobile phones are useful for humans, their detrimental effect is becoming more apparent. University students with mobile phone dependency have poor ability to monitor (Wang et al., 2016). They could allocate a lot of time "interacting" with the mobile phone, reducing the time required to perform the duties of their everyday lives. According to Çagan *et al* (2014), the greater the intensity of cell phone addiction, the more likely the academic performance of university students would decrease. Thus, the mobile phone addiction can be classified as secretive disease that's affecting many phone users. This is in line with Kim, Milne and Bahl (2018), who mentioned it is essential to give an attention in understanding the disregard behavior which result in negative and psychological experiences in health and impact the quality of life.

Pattern of Mobile Phone Use

Researchers noticed adolescent cell phone users continue to demonstrate sufficient monthly spending. Mobile phones are designed multiple features that allow its young users to communicate and for entertainment. Recent study demonstrated text messaging to be the common feature used by young users (Nurvitadi, 2003; Madell & Muncer, 2004). Youths made text messaging a necessity due to the service was fast, inexpensive and easy (Grinter & Eldrige, 2001). Eldrige and Grinter (2001), projected adolescents would use text messaging to schedule time for talking, changing plans that already made, and talking or chattering. This is in line with Lie (2004), statement that text messaging patterns it has a substantial peak among youths significantly between the ages of 16 and 24. In Nurvitadhi (2003), studies of teenage cell phone use in Japan and the USA, found that a large proportion (69.53%) of Japanese adolescents have chosen to use the text messaging service. Whereas American youths (35.5%) preferred cell phone game applications. More MP3 (MPEG-1 Audio Layer 3) features of cell phones were also found to be used by Japanese adolescents (40.21%) compared with other features. In his study on female youths and young adult men, Ling (2001) found that female youths sent more text messages compared to adult men. He also noted that there are transition period periods in mobile phone usage patterns among youths. While the youths in the early 20s, text messaging was to ever be phased out by voice calling.

In line with Ling's results, Lie (2004) identified some trend exists among young adults in mobile voice telephony. A research analyzing cell phone usage habits among high school students found similar results (Madell & Muncer, 2004). A majority (91.9%) of a total of 1340 students send text messages (89.4%) and receiving phone calls (80%) using their mobile phones. The findings appear to indicate a slightly greater preference for conventional call functions among younger samples than for the SMS system.

Other than that, there was having a positive indication of mobile phone usage behavior. Some researchers seen mobile phone have significant relationship in make the relationship stronger where believed mobile phone constructed to let family members and peers communicate. Past studies show rather than friends' youths also contact their family members. It's really important for youths to be able to reach parents easily and vice versa (Australian Psychological Society, 2004), because it allows them to feeling secure and associated with important people in their lives. Rather than that, this is really play a vital role in emergency time. Generally speaking, cell phones help establish family relationships by preserving clear communication and reducing human interaction (Wale & Gillard, 1994). Adolescents and their families can connect at all times and in all locations without much difficulty via mobile phone. Both youths and their families may be in close contact with each other. They both addressed contacting friends frequently to talk, exchange stories and gossip. Thereby the

mobile phone provides a chance to establish and preserve their connection with people. Consequently, mobile phone gives us an opportunity to establish and sustain human relationships.

Mobile Phone Addiction and Mobile Phone Usage Behavior

In past study, Choliz (2010); Gao *et al.*, (2018) mentioned mobile phone addiction is referred to as mobile phone dependency (Choliz, 2010, Gao *et al.*, 2018), or problematic use of mobile phone (Liu *et al.*, 2017). While the evidence of cell phone addiction is still under debate for being a kind of mental addictions (Billieux *et al.*, 2015), many scholars tend to view it as a behavioral addiction. Thus, Niemsz, Griffiths and Banyard (2005); Yen *et al.*, (2009), defined typical addictive behaviors such as cognitive salience, loss of control, mood change, tolerance, withdrawal, conflict and relapse as mobile phone addictions. Medical norm for cell phone dependency is expressly reinterpreted who identified and treated certain dependence habits for example drug consumptions and gambling requirements outlined in the updated fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (Billieux *et al.*, 2015).

Mobile phone use is a part of interactive technology such as internet, and it is anticipated to have similar impact. This research explores the purposes that higher mobile phone usage will result in increased addiction to the mobile phone and associated problems. Past studies have viewed the total of received calls and messages as the main contribution to the mobile phone addiction (Billieux *et al.*, 2008). Nowadays, received calls and numbers of sending messages were used to examine the mobile phone usage behavior among individuals (Billieux *et al.*, 2007). Nevertheless, it is clear that both factors not correlate on the addiction towards mobile phone (Walsh *et al.*, 2011) and therefore the present research has accentuated on necessity to include research on connection with mobile phone use and mobile phone addiction in order to explain the mediation process mobile use.

In order to identify the problematic sensation of mobile phone utilization Billieux, *et al* (2015), suggested a model involving three distinct mechanisms for developing problematic mobile phone use. The excessively affirmation pathway focuses on personality traits such as low self-esteem, emotional instability, anxiety, and unstable attachments which can cause the individual to use mobile phones excessively as a way to try and receive reassurance from others.

Addiction to the mobile phone would have difficulty in emotional understanding which can lead to more interpersonal issues. Those people who more dependent on mobile phones or any other media, are more like to hide their feelings and cover up them. The theory of compensatory Internet use also suggests that negative life circumstances might rise a motivation to go online to alleviate negative feelings (Kardefelt-Winther, 2014b). When the motivation to go online is focused on an unsatisfied need for real life and the use of the Internet helps relieve the real-life problem, then a person may express a greater desire to spend more time online, that could lead to undesirable results (Kardefelt-Winther, 2014a).

Methodology

This paper is a review paper and there were employed an extensive critical multidisciplinary literature review to identify articles that related to the topic. The period of reviewing those related articles is 20 years which is from year 2000 to year 2020. Based on those articles a model is developed as a result (Figure 1).

Psychological Antecedents of Mobile Phone Use

This part summarizes the antecedents of psychological characteristics that affect mobile phone usage that analyzed and interpreted in the previous studies. There are mainly three psychological antecedents that significantly contributed to the mobile phone usage behavior namely, *self-esteem, anxiety and extroversion*.

Self-esteem

Self-esteem is usually characterized as sense of worth being an individual (Rosenberg, 1979). A multitude number of findings exhibit the low self-esteem mostly as predictive factor in mobile phone dependency (Kim & Koh, 2018). Some studies have proposed that the impact of self-esteem on mobile phone addiction can be addressed over certain mediating variables (Walsh *et al.*, 2008).

Scholars showed more attentions in exploring the self-esteem level among youths and their effect on use of mobile phone. It is believed individuals with high self-esteem are thought very less use mobile phone to communicate compared to low self-esteem individuals. This is in line with Soh, Chew and Ang (2018), who mentioned positive social connections could provide more social support for youths, and increase their self-esteem and even reduce addictive behavior. Researchers have also indicated that supportive peer relationship between youths are a major preventative measure against dell phone addiction (Badenes-Ribera *et al.*, 2019; Bae, 2015; Wang *et al.*, 2019). It was believed that low self-esteem users used the mobile use the mobile phone for encouragement and support purposes and not only for social networking.

Notice that prior work has emphasized the stance of self-esteem in associated and the use of cell phones. Initially, low self-esteem individuals choose nonverbal contact such as messaging rather than face to face contact. The low self-esteem is a powerful indicator of problematic behaviors (Billieux, 2012). Nonetheless, low self-esteem is correlated with greater problem-sensitive use of cell phones, albeit inconsistent, with small to medium size effects and, above all, with explicit measures (De-Sola Gutiérrez, Rodríguez de Fonseca, & Rubio, 2016). Additionally, no analysis has so far specifically examined the connections within self-esteem and risky mobile phone usage, which would be tragic, because mobile phone use was frequently observed while driving among people with high driving confidence (Struckman-Johnson *et al.*, 2015) and high education levels (Márquez *et al.*, 2015). Thus, this finding makes the presence of low self-esteem among individuals and mobile phone usage behavior. Admittedly, low self-esteem is related to the addictive use of the mobile phone, but self-esteem is presumable to play a various part in relation to hazardous utilization, for instant, with greater rate of dangerous driving.

As the mobile phone offers channel of communication to connect with everyone, self-esteem may impinge their mobile phone use behavior where might be seen that low self-esteem people are found to be regular caller and engaging in sending more text message (Bianchi & Philips, 2005). Previous research by Billieux (2012), also asserts that it was commonly interpreted as a anticipating effect of self-esteem on mobile phone addiction that people with low self-esteem typically experienced problems in real-world social relationships, thus also requiring protection in affective relationships, whereas indirect mobile phone contact fulfilled their needs (e.g., text messaging fulfilled the need for protection and reimburse for the need for security; Bianchi and Phillips, 2005). Hence people with low self-esteem can use the mobile phone excessively. Therefore, the aim of this paper is to explore the relationship between self-esteem and mobile phone usage behavior.

That view coordinate with research indicating that high self-esteem is correlated with aggression or risky behaviors. For instance, individuals with high self-esteem tend to be aware that they will win a war, and are thus more likely to participate in it (Baumeister, Smart, & Boden, 1996). The aim of the present study, given the literature highlighted above, was to reveal the relationship between explicit and implicit self-esteem and use of mobile phone, on the other, hazardous use of mobile phones. It is proposed, on the basis of the above discussion:

P1. Low self-esteem significantly associated with mobile phone usage behavior

Anxiety

Depression and anxiety also have to do with excessive use of mobile phones (Elhai *et al.*, 2016; Lee *et al.*, 2014). On the other hand, Ryan and Xenos (2011), asserts based on the observational reviews past studies shown that regular access to Facebook and social networking site would reduce face to face communication and socializing, and would contribute to shyness and solitude, even some research showed email, conversation through online and messaging habits are correlated with depressive symptoms (Thomee *et al.*, 2007).

There were remarkable negative correlation was indicated between attachment anxiety and self-esteem (Li & Kato, 2006), and shy people were also expected to possess lower self-esteem (Zhao, Feng & Wang, 2012). Therefore, lack of confidence to communicate with other people can be correlated positively with anxiety about attachment. Numerous studies have been demonstrated that attachment anxiety could be used to anticipate social anxiety (Li & Kato, 2006), and that social anxiety may further intensify mobile phone addiction (Darcin *et al.*, 2016, Whiteside & Lynam, 2001). It also supported by Hawi and Samaha (2017), where stated use of mobile phone has been correlated with negative emotions such as depression, tension and anxiety, and empathy (Lachmann *et al.*, 2018). Those earlier data revealed that anxiety about attachment is significantly correlated with behavior and addition in mobile phone use.

According to Aderka, Weisman, Shahar and Gilboa-Schechtman (2009), anxiety defined as individuals' unpleasant mental reactions, for instance worry, anxiousness and social isolation. Based on past study the result shown that tension would significantly indicate the mobile phone addiction (Gao *et al.*, 2017). This statement supported by Cheng and Hong (2017), who mentioned the greater level stress among individuals will trigger to positive association in mobile phone addiction. Jeon and Jang (2014) stated that mobile phone use could relieve anxiety about interpersonal tension and unforeseeable prospects. Kong *et al.*, (2020) proposed that social networking would minimize social anxiety through anonymity, desynchronization and textual communication.

Moreover David (2001), stated in cognitive behavioral theory that some psychopathological causes like social anxiety in internet users might cause because of Internet addiction. Thereby, this research establishes the connection between anxiety and mobile phone use that could help explain the association between anxiety and use of mobile phone and introduce mobile phone addiction intervention and prevention.

Hence, adolescents with social anxiety typically find mobile phones as a replacement for weak interactions with others in the real-life circumstances. Hong, Chiu, and Huang (2012) argued anxiety was a significant indicator of mobile phone use. Billieueux *et al* (2015) also indicated that anxiety may be a risk factor for the creation of problem cell phone usage via this path.

In linking anxiety and mobile phone usage behavior this paper concentrates towards frequent use of mobile phone. Generally, anxious people frequently use mobile phone for sending messages.

People with high anxiety always rely on mobile phones as an effective substitute for direct communication due to their sensitivity to interpersonal relationships and lack of face to face communication skills (Tan *et al.*, 2016). Accordingly, in the light of the conflicting findings, this analysis will proceed on the assumption that the actions of anxiety and mobile phone usage will be substantially correlated:

P2. Social anxiety significantly associated with adolescents' mobile phone usage

Extroversion

Extraverts are characterized as jovial, sociable and enthusiastic. This type of people has high tendency to socialize. They are enthusiastic and are looking for new chances and anticipation (McElroy *et al.*, 2007). In occupations with a social dimension, suchlike management and marketing extraverted personalities are especially high performers (Barrick & Mount, 1991).

In further, Kristof-Brown, Barrick and Kay Stevens (2005) also asserts extraversion is significantly related with productivity in a team-based environment with better leadership abilities. People who are high in extraversion are inherently prone to think for their appearance and other behavioral social effects, and therefore are more likely to shape expectations to behave on the basis of their impressions of significant others' views. Rogers (1983), described that one of the most dominant factors for individuals to take an innovation decision is their desire to gain a social status. Devaraj *et al.* (2008) found that extraversion positively influenced the relationship between social norms and technology-using actions so that the relationship for individuals with higher extraversion is greater. This statement supported by Ehrenberg *et al.*, (2008) noticed extraverted individuals were spending more time in typing texts. Thus, people with high level of social extroversion would tend to use phone more frequently.

Extroversion demonstrates risk factors such as sensation seeking, extroversion and depends on appreciation as risk factors for developing inappropriate or risky use of mobile phones. The users desire to establish and retain engagements will drive individuals on this road to battle to disengage from the social aspects of mobile phones like text messages, email, and social networking websites.

Law and Manner (2011) mentioned, the extraverts more likely to have own smartphone as they prefer to engage with other people all the time. Extraverts' peoples are sociable, outgoing and have a deep desire to connect with everyone. Subsequently, the extraverts will be texting other to stay connect with them. Bianchi and Phillips (2005), mentioned that the extraverts use mobile technology for self-stimulating rather than socializing purposes.

Apart from that, Chittaranjan, Blom and Gatica-Perez (2013) asserts, extraverted, neurotic, and no conscientious individuals were reported to spent a lot of by engaging with people through sending or receiving messages, and introvert individuals prefer to be alone and they spent more time alone by adjusting the wallpapers in mobile phone or setting the ring tone. This, it is showed there have a strong implication between extroversion and mobile phone usage. Subsequently, this paper will examine the relationship in between extroversion and mobile phone usage behavior. Thus, along with the above description, it is suggested that:

P3. There is a strong relationship between extroversion and mobile phone usage behavior

The following Figure 1 is presented based on past research. This model would help to explore the psychological characteristics to identify the mobile phone usage behavior and mobile phone addiction. Findings, that analyzed and discussed the antecedents which repercussion the

adolescents' mobile phone communication pattern. Rather than discussed about psychological characteristics this paper also highlights about the consequences of mobile phone addiction. This paper may recommend many future research pathways to identify the main psychological factors that tribute to the mobile phone usage behavior and mobile phone addiction.

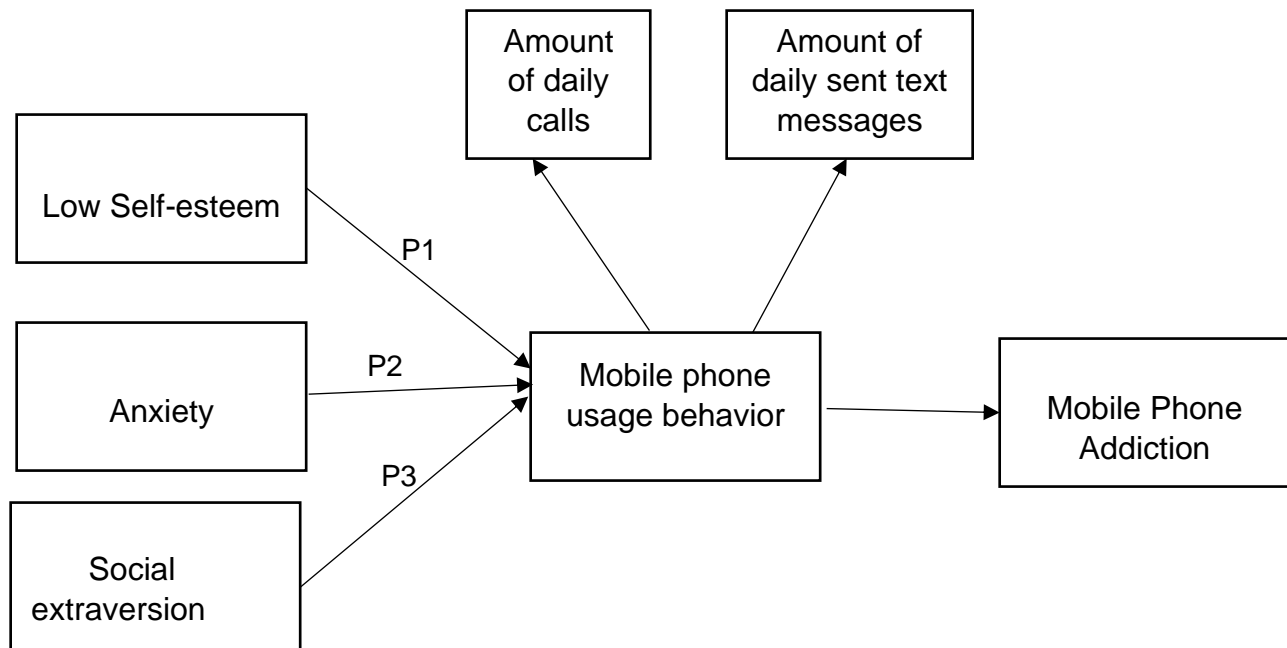


Figure 1: Conceptual model of psychological characteristics, mobile phone usage behavior and mobile phone addiction based on past studies

Conclusion

Based on above discussion the paper showed there have a positive association between low self-esteem, anxiety, social extraversion and mobile phone usage behavior. Therefore, this paper might be useful to educators, and most importantly for university students in understanding about the impact of psychological characteristic and level of mobile phone usage behavior and the implications of its disproportionate use. Hence, the educators should play the vital role in strengthening the interpersonal relationship building techniques and self-control training among the who showing negative traits, and in planning of study time and endorsing them to achieve their life goals.

Findings in this paper might be useful for different type of groups, such as parents, educators, policy makers, researchers and most importantly for university students. Students at universities will understand about the level of mobile phone usage behavior and the implications of its disproportionate use. Parents and those who are responsibility on youth would find out that the experience of this paper has strengthened their knowledge and the ability addition to providing clear guidelines for mobile communication activities for individuals. For the authority parties such as government and policy makers this study could be useful in planning programs for young technology users. In a nutshell, this paper can emphasize the necessity of proper use of technology and provide direction to the technology-savvy youths in particular on how to reap the technology's advantage for their positive growth.

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