SELF-ESTEEM AND EXTRAVERSION IN PREDICTING

PROBLEMATIC SMARTPHONE USE AMONG

MALAYSIAN EMERGING ADULTS

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APPROVAL FORM

This research paper attached hereto, entitled "Self-esteem and Extraversion in Predicting Problematic Smartphone Use among Malaysian Emerging Adults" prepared and submitted by Edward Lim Heng Yuan, Liew Jia Kang, and Yap Jyh Shen in partial fulfillment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

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Abstract

Emerging adults are said to be the most active group of smartphone users and were found to have high likelihood to engage in problematic use of smartphones. The present study sought to examine the relationship between self-esteem, extraversion and problematic smartphone use, as well as gender differences in problematic smartphone use among emerging adults in Malaysia. In this study, 343 participants were recruited using non-probability method of convenience sampling through online surveys distributed through various social media platforms. The results revealed that both self-esteem and extraversion significantly predicted problematic smartphone use, with self-esteem negatively predicted problematic smartphone use and extraversion positively predicted problematic smartphone use respectively. However, no significant gender difference was observed in problematic smartphone use among the emerging adults. Theoretically, the present study has contributed its new findings to the existing literature, especially in the Malaysian research context which was regarded as limited. In terms of practical contribution, the findings may be useful for mental health professionals and non-governmental authorities in their formulation of related modules and programmes to assist emerging adults who have problematic issues with smartphones. For future studies, it is recommended that qualitative or mixed methods of research to be conducted to further enhance the accuracy and reliability of the findings.

Keywords: problematic smartphone use, extraversion, emerging adults

DECLARATION

We declare that the material contained in this paper is the end result of our own work and that due acknowledgement has been given in the bibliography and references to ALL sources be they printed, electronic or personal.

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Chapter I

Introduction

1.1 Background of Study

Smartphones are now the most important tool for communication used worldwide. Due to the early technology, the functions of phones in the past can only be used for calling and texting. Technology nowadays kept on updating and smartphones today can now support various other functions including sending emails, accessing the Internet, gaming, online gambling, MP3, social networking service (SNS), streaming TV shows, radio, photography, and Geo-localization (Fernandez et al., 2017). Smartphones have become the most popular technology devices among all walks of life.

Although it brings convenience to daily life, excessive use of smartphones will also cause negative consequences. Problematic smartphone use is caused by the characteristics of technology, including can be accessed easily, may be able to escape from daily life, can remain anonymous online, and the frequency of information and messages (Velthoven, Powell, & Powell, 2018). Popular apps such Facebook app are developed in ways that they can make people spend more time on them (Guedes et al., 2016). Those apps make use of intermittent variable rewards; which means that app users can receive variable rewards through their action on apps, which can contribute to addiction. For instance, the intermittent variable rewards can be provided by using phone are notification, message, likes on social media and others (Velthoven et al., 2018). Accessing the internet by using smartphone may increase habitual checking behaviors, which may lead to developing addiction symptoms (Jeong, Kim, Yum, & Hwang, 2016). According to World Health Organization (2015), problematic smartphone use is

considered as public health concerns. The society has to be aware of the issues of problematic smartphone use since it causes negative consequences.

Different genders exhibit problematic smartphone use in different ways. Females are using social networking and academic applications more frequently than males, while males are using more in gaming and adult contents (Carbonell, Chamarro, Oberst, Rodrigo, & Prades, 2018). Past study also found that males tend to use their smartphones in dangerous ways (Billieux, Van der Linden & Rochat, 2008). On the other hand, females tend to have higher —— dependence on their smartphones.

Most of the past studies stated that low self-esteem is closely linked with problematic smartphone use (Bianchi & Phillips, 2005; Billieux, 2012). Billieux (2012) stated that those with lower levels of self-esteem would be more consistent in seek reassurance from other people through their smartphone. According to Baumeister (1997), lower level of self-esteem may cause self-defeating behavior in order to escape self-awareness. Therefore, individuals with lower level of self-esteem may be addicted to their smartphones to escape the situation that they find aversive. According to Billieux (2012), individuals with lower self-esteem will have negative core belief about self. For example, they are most likely to think that they are boring and unlovable and then they will try to seek reassurance through their smartphones from the people online.

Past studies found that extraversion is also closely associated with problematic smartphone use (Bianchi & Phillips, 2005; Billieux, 2012). Bianchi and Phillips (2005) stated that problematic smartphone users are more likely to be extraverts. On the other hand, the desire of extraverted individuals to communicate with others in is higher than others and those individuals tend to be excessive smartphone users to maintain and build new relationships

(Baumeister, 1997). Extraverts would tend to have a large circle of friends and social networks (Bianchi & Phillips, 2005). Therefore, the extraverts might exhibit higher usage of smartphone and inappropriate use of smartphone such as using their smartphone on the plane, while driving and other risky behaviors to maintain or form new relationships.

In this study, the target population understudied are emerging adults. Arnett (2015) explains that emerging adults is a new life stage between adolescents and young adulthood, in which the age range is 18 to 29 years old. Individuals in this stage are neither adolescence nor young adults, but something in between. This life stage is a critical moment of transition for psychological development of individuals, whereby it involves exploration, redefinition, and stabilization of identity (Schimmenti, Passanisi, Gervasi, Manzella, & Fama, 2014). Emerging adulthood has been closely linked with addiction vulnerability (Ciarrochi et al., 2016). The emerging adults are more likely to be involved in excessive use of smartphone due to their easy access to social media, it can be the socialization agent and as a tool for emerging adults to express autonomy, exploration identity, and maintaining or forming relationships (Coyne, Padilla-Walker, & Howard, 2013). According to Arnett (2000), emerging adults are more prone to involve in problematic problem and substance use. Emerging adults are more likely involved in problematic smartphone use. Because of this reason, this study intends to examine the relationship between self-esteem, extraversion, and problematic smartphone use among emerging adults, as well as its gender differences.

1.2 Problem Statement

According to an annual survey conducted by Malaysian Communication Multimedia Commission (2017), it was reported that smartphone users have made up of 75.9% of the population, which is 7.2% higher compared to its previous year 2016, indicating a continuous

increment on the number of smartphone users. More than half (58.9%) of the smartphone users were males, and the remaining 41.1% were females. Among those users, 94.8% of them claimed to have been accessing the internet using their smartphones. In tandem with the high internet usage via smartphones, past research showed that it will lead to habitual checking behavior (Jeong et al., 2016). Thus, the users may experience problematic symptoms, such as being addicted.

In terms of age groups, the statistics further revealed that 45.9% of smartphone users represent young adults who are aged 20 to 34 years old (Malaysian Communication Multimedia Commission, 2017). While all other age groups only made up of 26.4% or fewer, young adults were shown to be the most active group of smartphone users. Hence, it is said that emerging adults, who shared a similar age range with young adults are technology-savvy (Berry & Bass, 2012), and are most likely to further engage in problematic smartphone use as they are more prone to involve in problematic behaviours, hazardous substance use and addicted to video games (Arnett, 2000; Nelson & Padila-Walker, 2013). Thus, emerging adults remain as an interest in exploring problematic smartphone use in the present study.

Although the number of smartphone users in Malaysia is continuously increasing, studies about the topic of problematic smartphone use in Malaysia are limited. The problematic use of smartphones holds the tendency to cause specific issues to the users, such as psychological effects of experiencing poor memory, poor decision-making, anxiety, insomnia, and social effects such as negative impact on relationships (Velthoven et al., 2018). Other physical effects such as repetitive strain injury (RSI), impaired posture, and injury from accidents are also included (AlAbdulwahab, Kachanathu, & AlMotairi, 2017). Those issues affect daily life negatively.

In the literature, the majority of the researches which intend to explore problematic smartphone use among emerging adults were conducted on university students, which could have made the results unrepresentative of the heterogeneity that exists among emerging adults (Coyne et al., 2013). Hence, this study decided to focus on emerging adults so that the findings could accurately represent the said age group.

Past studies found that there is a negative association between problematic smartphone use and self-esteem (Bianchi & Phillips, 2005; Billieux, 2012). Baumeister (1997) stated that low self-esteem may cause self-defeating behavior in order to escape self-awareness. Individuals with lower self-esteem will become addictive to their smartphone because they can remain anonymous online and escape from the situations that they feel fear or aversive. However, other researchers found a different result (Phillips, Butt, & Blaszczynski, 2006; Butt & Phillips, 2008). The result stated that there is an absence of relationship between self-esteem and problematic smartphone use.

In addition, past studies found that extraversion is positively correlated with problematic smartphone use (Bianchi & Phillips, 2005; Billieux, 2012). Extraverted individuals are more likely to be addicted to smartphone use in maintaining and forming relationships (Baumeister, 1997) due to their large circle of friend and social networks (Bianchi & Phillips, 2005) and therefore, might exhibit impropriate use of smartphones such as using it while driving, on plane and other risky behaviors. However, there are other studies that found different results about extraversion and problematic smartphone use. No association or negative association was found on extraversion with problematic smartphone use in recent studies (Hussain, Griffiths, & Sheffield, 2017; Stead & Bibby, 2017). Individuals with lower extraversion tend to be afraid of

face-to-face communication (Mesurado, Mateo, Valencia, & Richaud, 2014). Due to this reason, they only feel comfortable while expressing themselves in technology use.

In terms of gender difference, the past studies too revealed conflicting results. While some studies revealed that problematic smartphone use experiences were higher in female as compared to male (Bianchi & Phillips, 2005; Billieux et al., 2008; Beranuy, Oberst, Carbonell, & Chamarro, 2009), findings from Güzeller and Cosguner (2012) posited that there are no differences in male and female in predicting problematic smartphone use.

To date, little is known about problematic smartphone use among emerging adults in the Malaysian context. Given the statistics and literature gaps that are present in the literature, it is hence of interest to this study to explore the relationship between self-esteem, extraversion and problematic smartphone use among emerging adults, as well as the gender differences in problematic smartphone use.

1.3 Research Objectives

The primary objective in this study is to identify the relationship between self-esteem, extraversion and problematic smartphone use among emerging adults in Malaysia. Due to most of previous studies are from western context, there is a lack of study in Malaysia context. This study also aims to examine the difference between male and female in problematic smartphone use among emerging adults. This study is carried out to fulfil the following specific objectives:

1. To examine the relationship between self-esteem, extraversion and problematic smartphone use among emerging adults in Malaysia.

2. To examine the gender differences in problematic smartphone use among emerging adults in Malaysia.

1.4 Significance of Study

The current study focuses on problematic smartphone use among Malaysian emerging adults. As presented in the existing literature, emerging adults are among the younger generations who display more daily significant smartphone usage than other age groups (Zulkefly & Baharudin, 2009). Thus, it is important for this research to contribute into the literature by finding whether the two psychological attributes could predict problematic smartphone use among emerging adults who are more likely to be vulnerable to problematic smartphone use due to their higher rate of smartphone usage.

Moreover, emerging adults have been chosen to be studied in this research because majority of researches related to media and smartphone use during emerging adulthood were conducted solely on university students, which was said to be unrepresentative of the heterogeneity that exists among emerging adults (Coyne et al., 2013). Thus, emerging adults is chosen to be studied under this research so that this study can contribute to the literature by presenting findings that are more representative among the emerging adults.

Since majority of the past studies about problematic smartphone use were mainly concentrated on the western context (Bianchi & Phillips, 2005; Ehrenberg, Juckes, White, & Walsh, 2008; Billieux, 2012), studies that directly investigate the relationship between problematic smartphone use and the two psychological attributes in this research are yet to be conducted in Malaysia. Hence, this study hopes to enhance the literature through its findings from the perspective of Malaysian context and thus, serve as a reference for other researchers who intended to explore similar studies in the future.

Apart from that, this study also has its intended practical contributions. Since this study strives to understand the relationship between self-esteem, extraversion, and problematic

smartphone use, the findings of this study may be especially useful to educators and psychological health practitioners. For instance, educators and practitioners may find the findings useful in their design of new modules and programs associated with individual psychological attributes and problematic smartphone use in assisting individuals who have such issues. The findings in terms of gender differences in problematic smartphone use may also be of help for the practitioners in determining their direction of interventions.

1.5 Research Questions

Based on the research objectives above, the current study seeks to fulfill the following research questions:

1. Do self-esteem and extraversion significantly predict problematic smartphone use among emerging adults in Malaysia?

2. Is there a significant difference between male and female in problematic smartphone use among emerging adults in Malaysia?

1.6 Hypothesis

1. H_0: There is no predictor that can significantly predict problematic smartphone use among emerging adults.

   H_1: There is a least one predictor that can significantly predict problematic smartphone use among emerging adults. Self-esteem and extraversion can significantly predict problematic smartphone use among emerging adults.

2. H_0: There is no significant difference between male and female emerging adults in problematic smartphone use.

H_1: There is a significant difference between male and female emerging adults in

problematic smartphone use. Females are more likely than male emerging adults to

engage in problematic smartphone use.

1.7 Conceptual Definitions

Problematic smartphone use. Problematic smartphone use can also be understood as

smartphone addiction or compulsive smartphone use and the affected individuals will experience

unpleasant when their smartphones are withdrawn from them or when they are not around them

(Foerster, Roser, Schoeni, & Roosli, 2015). It is a term to describe individual unable to regulate

own smartphone use (Fernandez et al., 2017).

Extraversion. According to McCrae and Costa (1987), they describe Extraversion is one

of the Big Five Personality Traits. Moreover, McCabe and Fleeson (2012) explain that it

describes those active people with the characteristic of sociable, talkative, and assertive.

Extraversion is directly opposite of Introversion. On the other hand, Depue and Collins (1999)

stated that extraversion is made of two core components: affiliation which is characterised by

having and valuing warm personal relationships and agency which is characterised by being

socially dominant, assertive, and influential.

Self-esteem. Sedikides and Gregg (2003) defined that self-esteem refers to the

individual's perception or subjective assessment of own self-worth, feelings of self-respect and

self-confidence and the extent to which the individual has got positive or negative thoughts about

self. According to Rosenberg (1960), self-esteem is the attitude toward self whether positive or

negative. Self-esteem is the temperament of the person, which represents the judgment of his

own merit (Olsen, Breckler, & Wiggins, 2008).

1.8 Operational Definitions

   Problematic smartphone use. Problematic smartphone use is indicated by the score of Problematic Use of Mobile Phones (PUMP; Merlo, Stone, & Bibbey, 2013) scale. The total scores could range from 20 to 100, with higher score indicating higher amount of problematic smartphone usage.

   Extraversion. Extraversion is the score of Eysenck Personality Questionnaire-Revised (EPQ-R; Eysenck, Eysenck, & Barrett, 1985) scale. The total scores could range from 0 to 23, with higher scores indicating higher level of extraversion.

   Self-esteem. Self-esteem is represented by the scores on Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The total scores could range from 10 to 40, with higher scores indicating higher level of self-esteem.

Chapter II

Literature Review

2.1 Prevalence of Problematic Smartphone Use

The use of technology has become a new social phenomenon in our society. There are 77.2% of Malaysians own at least one mobile/smartphone especially among emerging adults (Malaysian Communications and Multimedia Commission, 2017). The Smartphone User Persona Report (SUPR) (2015) showed that 64% of 11 million Malaysian smartphone users are emerging young adults and they spent an average of three hours per day on smartphone. The statistics shown was not surprising as Malaysian Communications and Multimedia Commission (2017) claimed that 57.6% of Malaysia's smartphone users keep looking at their smartphone during a meal with others while 21.5% of them play their smartphone while driving. This statistic analysis was interesting because it was typically as most researches done discovered that older adults were less engaged with technology usage such as smartphone (Brickfield, 1984).

It is said that phone-snubbing behaviour has been classified as a part of the problematic smartphone use by past researchers (Davey et al., 2018). It is closely associated with smartphone addiction and could yield the same implications (Chotpitayasunondh & Douglas, 2016). It results in some negative effects such as addictive use, feelings of dependency, risky behaviour and others (Bianchi & Phillips, 2005; Billieux, Van der Linden, D'Acremont, Ceschi, & Zermatten, 2007). The problematic smartphone use related studies have increased significantly, and different kinds of conceptualizations in smartphone use including smartphone addiction, phone dependency, and phubbing are found.

Phubbing has been classified as smartphone dependency where ones depend on a non-substance such as smartphone or mobile phone. For instance, phubbing and smartphone dependency are included under the broad category of behavioural addictions (Marks, 1990).

Behavioural addiction has been proposed as the non-substance-related disorder with listed criterion in DSM-5 (American Psychiatric Association, 2013; Lee, Chang, Lin, & Cheng, 2014). Smartphone dependency was viewed as problematic learned behaviour through experiences (Karadağ et al., 2016). This is because it would bring potentially serious psychopathological consequences to those who get addicted to smartphone use (American Psychiatric Association, 2013).

From behavioural perspective, operant conditioning is the best model to describe those problematic behaviour. For positive reinforcement, the behaviour will be strengthened when a favourable outcome or reward occurs after an action. The action could provide desired outcomes to emerging adult such as increasing attention, social acceptance, and provoking good feelings. Thus, they will be more likely to get addicted to smartphone use once they receive the desired outcome. For negative reinforcement, the behaviour will be strengthened by suspending a negative stimulus. Emerging adults able to reduce undesirable feelings or emotions such as anxiety, loneliness, and others through smartphone use (McKenna & Bargh, 2000; Kadden, 2001; Bianchi & Phillips, 2005). Therefore, it is not surprising that people will get addicted or repeated for certain problematic behaviour when reinforcement is there.

2.1.1 Gender and Problematic Smartphone Use

Gender was always be considered in the various implementation of research studies. Bianchi and Phillips (2005); Billieux et al. (2008); Beranuy, Oberst, Carbonell, and Chamarro (2009) discovered that problematic smartphone use experiences were higher in female as compared to male. Research found that there are different behavioural aspects of problematic smartphone use between genders. Males were found to use their smartphone in a dangerous way. However, females were more inclined to use their smartphone in the higher dependence-related

way (Billieux et al., 2008). For example, males are twice as likely to engage in risky driving while female stated that they experience trouble to put their smartphone aside. On the other hand, Güzeller and Cosguner (2012) found that there are no differences in male and female in predicting problematic smartphone use. Therefore, it is important to examine problematic smartphone use in gender aspect.

2.2 Self-esteem

According to Bianchi and Phillips (2005), emerging adults who experienced more serious psychological issues tend to have lower self-esteem. For instance, individuals with low self-esteem tend to have negative core beliefs about the self (Billieux, 2012). Erikson's (1968) theory has explained that adolescents will develop their independence and a sense of self during identity versus role confusion stage by receiving proper encouragement and reinforcement. Those who have passed this stage successfully tend to have a positive self-belief, self-control, and self-value especially positive self-esteem. The described development stages by Erikson has matched with some recent studies' result which directly shows consequences of identity confusion (Billieux, 2012). One of the identity confusion consequences will result in poor self-value which including low self-esteem leading to problematic behaviour.

2.2.1 Self-esteem and Problematic Smartphone Use

Past research studies discovered that the negative relationship between self-esteem and problematic smartphone use is statistically significant. In other words, individual with poor self-esteem may result in problematic smartphone use or other addictive behavioural problem such as internet addiction due to inability to control themselves and feeling anxious (Gordon & Caltabiano, 1996; Bianchi & Phillips, 2005; Niemz, Griffiths, & Banyard, 2005; Ehrenberg et al., 2008; Leung, 2008). Cognitive-behavioral model of pathological internet use indicates that

individual with low self-esteem tends to have more potential to engage in problematic smartphone use such as internet addiction, phubbing and others (Davis, 2001; Wang et al., 2017).

Moreover, individuals who have poor self-esteem frequently seek reassurance by keeping in touch with significant others (Billieux, 2012). Allen, Hauser, Bell, and O'Connor (1994) pointed out that avoidant and anxious-ambivalent attachment style in attachment theory are interrelated with low levels of self-esteem. Individuals who are cultivated in both attachment style have a strong desire for intimacy and dread loss of someone. (Baumeister, 1997; Billieux, 2012). From a psychosocial development perspective, unsuccessful self-identity formation may result in low self-esteem which was associated with maladaptive self-belief in cognitions (Erikson, 1968; Beck, 1970; Billieux, 2012). Thus, Individual who get affected by low self-esteem have higher risk to engage in problematic smartphone use behaviour.

Researcher Leung (2008) found that individuals with high self-esteem might perceive themselves as being in control, showing less tendency of problematic smartphone use behaviours. Those with higher self-esteem reported that face-to-face communication is more preferable instead of using smartphone (Billieux, 2012). However, some researchers claimed that there is no relationship between smartphone addiction and self-esteem in form of problematic smartphone use (Phillips et al., 2006; Butt & Phillips, 2008). There is vague research findings which are contradicting in self-esteem and problematic smartphone use. In this case, Phillips et al. (2006); Butt and Phillips (2008) did not provide concrete evidence to further discuss the differences of result in their research paper. Thus, present research is desired to use self-esteem as a predictor of problematic smartphone use.

2.3 Extraversion Personality

Individual who actively involved in the world of people and things are indicated as an extrovert. On the other hand, introverts are more comfortable immersed in their inner world. According to Jung, both personality traits are mutually exclusive (As cited in Feist, Feist, & Roberts, 2013). Researchers indicated that extraversion personality displaying negative association with ages during emerging adulthood for both genders (Lehmann, Denissen, & Allemand, 2013). Bianchi and Phillips (2005) addressed that extroverts were more likely to be reported in problematic smartphone use.

2.3.1 Extraversion Personality and Problematic Smartphone Use

Individuals with high extraversion personality were predicted to have higher problematic smartphone use (Ehrenberg et al., 2008). A few studies claimed that extroverts are more tend to overuse their smartphone more (Bianchi & Phillips, 2005; Billieux, 2012). This is because an extrovert might have strong desires to communicate with others and wish to extend their current social network resulting in problematic smartphone use. According to Eysenck (1994), extroverts are sensation seekers and risk takers. From cognitive perspective, extroverts would constantly seek for a need of reassurances which promoted by fear of isolation. They might also seek intense experiences and feelings by engaging in dangerous smartphone use while driving (Billieux, 2012). Thus, extraversion and sensation seeking have consistently been linked with problematic smartphone use in forms of risk-taking.

However, Mottram and Fleming (2009) stated that an extrovert scored lower frequency on smartphone usage and an introvert is more embraced to be a problematic user (Griffiths, 2000). In other words, Pearson and Hussain (2015); Stead and Bibby (2017) have found that there is a negative correlation or no relationship between extraversion personality and

problematic smartphone use. This is because individuals who are low in extraversion may not be fully comfortable in face-to-face social interactions and look for comfortable ways to express their real selves by technology use (Mesurado et al., 2014). Frequent use of smartphone might lead them to problematic smartphone use (Bianchi & Phillips, 2005). There is a contradiction between research findings in extraversion and problematic smartphone use. Thus this research is needed to establish extraversion as a predictor of problematic smartphone use.

2.3.2 Extraversion Personality and Self-esteem

Previous studies indicated that there is a moderate positive relationship between extraversion personality and self-esteem (Costa, McCrae, & Dye, 1991). In this case, it is expected that those with lower self-esteem or higher extraversion personality trait will be more prone to problematic smartphone use behaviours. According to Harter (1998), relationship between personality domain and self-esteem of an individual might change along with the ages especially within puberty period when emerging adult deal with their self-conceptions. Thus, the moderate relationship shown does not provide strong and concrete evidence to prove extraversion and self-esteem are linearly correlated. Last but not least, present study aims to point out which variables in the relationship mentioned is the most influential predictor towards problematic smartphone use.

2.4 Theoretical Framework

The **problematic mobile phone use model** established by Billieux, Maurage, Lopez-Fernandez, Kuss, and Griffiths (2015) has shown that there are three psychological pathway which will result in problematic smartphone use behaviour. This model suggests that problematic smartphone use was influenced by individual psychological factors and result in misuse and risky use behaviour. Precisely, one of the pathways that might lead to problematic smartphone

use behaviour is an individual's excessive reassurance from risk factor including low self-esteem, neuroticism, emotional instability, and others. Previously, Billieux's (2012) research framework explained that poor self-esteem is associated with insecure attachment style and increase individual constant need for reassurance which results in problematic smartphone use.

The second pathway is an individual's poor impulsive control. Individual who has low self-control, aggressive trait and antisocial personality resulted in uncontrolled urges and deregulated. Prohibited use or smartphone aggressiveness is one of the poor impulsive control's consequences. For example, some people with acute emotion are not able to restrain themselves from using the smartphone due to lacking self-control. In this pathway, most of them will also neglect the potential future consequences of such behaviour.

The third pathway explained that individual with extraversion personality tends to be sociable and having high constant desires in exploring and maintaining potential social networks with others. For instance, extroverts will exhibit their constant desire through problematic behaviours such as phoning while driving (Billieux, 2012; Billieux et al., 2015). They take the form of dependence-like symptoms. Billieux et al (2015) mentioned that there are at least two described psychological pathway condition in one's problematic smartphone use behaviour.

Many research studies have been done by researchers which emphasized several pathways in predicting problematic smartphone use behaviour. Recently Billieux et al. (2015) have proposed the problematic smartphone use model which precisely explain the relationship between explanatory factors and problematic smartphone use behaviour by using three different pathways. Some replication studies' results are tally with the model; however, there were only limited or vague evidence discovered the degree of influence of different pathways towards

problematic smartphone use. Thus, it is important to explore and define related explored factors in pathway in order to develop an accurate theoretical base.

The present study intends to examine the degree of predictors influence in the proposed pathway towards problematic smartphone use among emerging adult including extraversion personality, self-esteem along with the age. Besides that, present research also examines gender difference in problematic smartphone use. This research study aims to discover the predictors of problematic smartphone use and provide more concrete evidence to fill in the past research's knowledge gap in the relevant area. The present research hypothesized that both predictors can significantly predict problematic smartphone use among emerging adult and there will be a significant difference between male and female emerging adult in problematic smartphone use.

2.5 Conceptual Framework
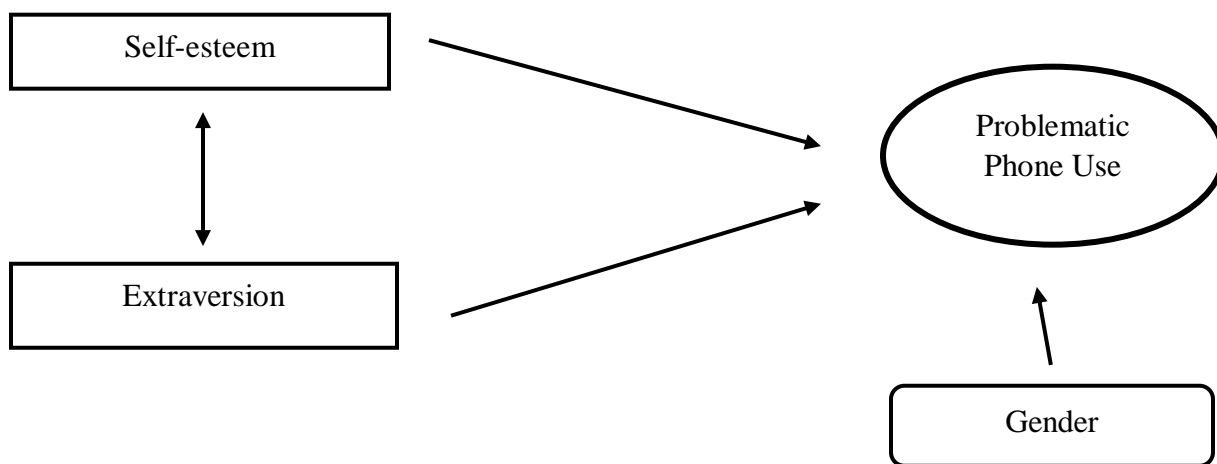
Figure 2.1 Conceptual framework of the study

Present research has two independent variables and one dependent variable which shown in figure 2.1 including extraversion, self-esteem and problematic smartphone use respectively. Self-esteem has a negative correlation with problematic smartphone use (Deniz, 2006). Previous studies indicated that extraversion is positively correlated with problematic smartphone use

(Bianchi & Phillips, 2005; Ehrenberg et al., 2008; Billieux, 2012). This research aims to identify the strength of the relationship between extraversion, self-esteem and problematic smartphone use in order to provide more concrete evidence for future studies. This research hypothesized that both predictors will significantly predict problematic smartphone use among emerging adults.

Present research predicts there will be a similar result with past studies which emphasized that there are gender differences among problematic smartphone use (Bianchi & Phillips, 2005; Billieux et al., 2008; Beranuy et al., 2009). This research intends to find out the gender differences in problematic smartphone use. Present research hypothesizes that female emerging adults prone to engage in more problematic smartphone use as compared to male emerging adults.

Chapter III

Methodology

3.1 Research Design

The current research is quantitative in nature whereby a cross-sectional research design using self-report questionnaire was employed to collect and analyze its research data. Since the current research sought to examine the extent to which the two independent variables could predict the dependent variable, cross-sectional design for this research is deemed appropriate because it allowed researchers to describe the characteristics of population under studied as well as make predictions (Shaughnessy, Zechmeister, & Zechmeister, 2015). Examining gender differences was also made possible in quantitative method through the statistical analysis of numerical data.

3.2 Research Sample

This sub-chapter discusses about the determination of sample size and its sampling technique in recruiting participants of the study with appropriate justifications.

3.2.1 Sample Size

The current research targeted its research sample as emerging adults in Malaysia with the age range from 18 to 29 years old as defined by Arnett, Žukauskienė, and Sugimura (2014). According to the statistics published by Department of Statistics Malaysia (2015), a total of 6,269,100 adults were identified as the population of Malaysian adults aged 20 to 29. Hence, the optimum sample size required for this research was determined through Cochran's sample size formula (as cited in Israel, 1992) for large or infinite population, stated as follows:

$$n_0 = \frac{z^2 \times p(1-p)}{e^2}$$

where n_0 refers to sample size; z^2 refers to the chosen critical value of desired level of confidence; p refers to the maximum variability of the population; and e refers to the desired level of margin of error.

In reference to Israel (1992)'s strategies in determining sample size, this research employed the recommended level of confidence at 95%, maximum variability of population at 50%, and the margin error of ±5. The outcome of substituting the recommended values in the provided formula is presented as follows:

$$n_0 = \frac{(1.96)^2 \times 0.5(1-0.5)}{(0.05)^2} = 384.16$$

Hence, the sample size required for this study was decided at 384. In addition, considering that the computed sample size falls within the range of 200 to 500 by which Israel (1992) considered sufficient for studies that adopt multiple regression in data analysis, this study proceeded to use 384 participants as the desired sample size.

3.2.2 Sampling Method

In terms of sampling method, the current study recruited its participants using convenience sampling, whereby questionnaires were distributed online to reach out for individuals who were convenient and available to participate in the study (Etikan, Musa, & Alkassim, 2015). In order to recruit participants across different states in Malaysia, this study utilized online survey to recruit its participants since online survey has the ability to offer benefits in reaching out for a diverse sample (Shaughnessy, Zechmeister, & Zechmeister, 2015). Hence, using online survey enabled the researchers to recruit emerging adults with wide demographic profile living in different parts of Malaysia.

Considering the fact that it was not possible to obtain name lists from various institutions such as universities to generate random samples, probability sampling such as random sampling

would not be suitable to implement. If the method of recruiting participants from institutions were to be used, participants aged 25 to 29 may not stand a chance to be approached given the statistics of age group of undergraduate students is estimated at 19 years old and above with the duration of study at three to five years ("The Malaysian higher education system - An overview", 2015). Thus, non-probability method of convenience sampling using online survey was not employed in this study.

3.3 Instrumentation

This section discusses about the four sections of instruments included in the research questionnaire, which covered Rosenberg Self-Esteem Scale, Extraversion scale adapted from Eysenck Personality Questionnaire-Revised, Problematic Use of Mobile Phones scale, and demographic items.

3.3.1 Rosenberg Self-Esteem Scale

Section A represented Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), which was used to assess one's self-esteem by referring to self-acceptance and self-respect (Martin-Albo, Nunez, Navarro, & Grijalvo, 2007). The scale consisted of 10 items rated on a 4-point Likert scale ranging from "strongly disagree - 1" to "strongly agree - 4". Items 1, 3, 4, 7, and 10 were positively scored while items 2, 5, 6, 8, and 9 were negatively scored. An example of the items is "On the whole, I am satisfied with myself". The scores were summed, with higher scores indicating higher level of self-esteem. The RSES was reported to have an excellent internal consistency at .89 and .91 respectively in the past studies (Andreassen, Pallesen, & Griffiths, 2017; Sinclair, Blais, Gansler, Sandberg, Bistis, & LoCicero, 2010). The Cronbach's alpha of RSES in this study was reported at .69, indicating a moderate strength of reliability.

3.3.2 Extraversion Scale

Section B was dedicated to measure participants' extraversion level by using the relevant Extraversion scale adapted from Eysenck Personality Questionnaire-Revised (EPQ-R) scale developed by Eysenck, Eysenck, and Barrett (1985). The EPQ-R's extraversion scale has a total of 23 items, in which participants responded to the items using the yes-no format. 1 point was awarded when participants answered "yes" on 20 items, whilst the remaining 3 items awarded 1 point when "no" is answered. An example of the items is "Are you a talkative person?". The scores were summed, with higher scores indicating more extraversion qualities. The Extraversion scale was found to have a good internal consistency at .88 (Smillie, DeYoung, & Hall, 2015). With an acceptable Cronbach's alpha of .79 in this study, the Extraversion scale adapted is considered a reliable instrument in measuring extraversion trait.

3.3.3 Problematic Use of Mobile Phones Scale

Section C represented Problematic Use of Mobile Phones (PUMP) scale developed by Merlo, Stone, and Bibbey (2013), which was intended to measure the degree to which an individual engages in problematic smartphone use. The scale consisted of 20 items rated on a 5-point Likert scale ranging from "strongly disagree - 1" to "strongly agree - 5". An example of the items is "I think I might be spending too much time using my cell phone". The scores were summed up, with higher scores indicating higher amount of problematic smartphone usage (Iqbal, Khan, & Khan, 2017). The Cronbach's alpha of the scale was reported at .90 and .94, indicating an excellent internal consistency (Schroeder, Bailey, Whitmer, & Sims, 2017; Merlo, Stone, & Bibbey, 2013). In this study, PUMP reported a Cronbach's alpha value of .85, indicating a strong reliability.

3.3.4 Demographic Items

Finally, section D represented demographic items, in which participants were asked to provide information such as age, gender, race, state of residence, and highest level of education completed. An item that represented inclusion criterion, "Do you own a smartphone?" was also being asked, in which participants who responded "no" were regarded as not meeting the criterion and were redirected to the end of questionnaire.

3.4 Research Procedure

The research ethical approval was obtained prior to data collection. The data collection was then conducted through online via an online questionnaire created using Qualtrics online survey platform. The URL that redirects to the online questionnaire were circulated through social network websites (e.g. Facebook) and social messaging applications (e.g. Whatsapp, Facebook Messenger). An informed consent sheet was attached on the first page of the questionnaire as participants were required to read through and click the button that indicates willingness to participate if they were to proceed to take part in this research. The informed consent form addressed the purpose of the study, voluntary participation, participants' rights and confidentiality. Participants were assured that their data will be kept undisclosed and no risks will be involved in this research, and that they were allowed to withdraw from the study without any consequences applied.

3.5 Data Analysis

The data collected were analysed through Statistical Package for the Social Sciences (SPSS) version 24. The first research question was analysed using multiple regression to examine whether self-esteem and extraversion are able to predict problematic smartphone use. The second research question was analysed using independent t-test to find out whether there is a

significant gender difference between both male and female emerging adults in problematic

smartphone use.

Chapter IV

Results

4.1 Preliminary Analysis

A total of 388 responses were collected in this study. However, 45 of them were identified as outliers through the tests of normality and were excluded from the study. Provided that the outliers excluded did not exceed 40% of the dataset which was regarded as excessive by the researchers (Ramsey & Ramsey, 2007), the exclusion of outliers for this study was considered optimum. Although the current sample size obtained did not meet the desired sample size predetermined in methodology after excluding the outliers, it is still considered sufficient based on the ideal range of sample size for studies involving multiple regression analysis provided by Israel (1992)'s guidelines of sample size determination.

4.2 Demographic Information

The sample consisted a total of 343 participants, whereby 165 of them were male and 178 were female. The participants' age range was recorded at 18 to 29 years old ($M = 22.53$, $SD = 2.46$). In terms of race, majority of the participants were Chinese (51.0%), followed by Indian (28.6%), Malay (18.4%), Bumiputera (1.7%), and with one participant reported a mixed racial background (0.3%). The current study also managed to recruit its participants across Malaysia, with majority of them living in the states of Perak (21.0%), Selangor (16.6%), Malacca (15.7%), and Penang (11.7%). The complete demographic information of participants in this study is presented in Table 4.1.

Table 4.1

Demographic information of participants (N=343)

	Frequency (%)	Mean	SD	Min	Max
Age		22.53	2.457	18	29
18 to 24	285 (83.1%)				
25 to 29	58 (16.9%)				
Gender					
Male	165 (48.1)				
Female	178 (51.9)				
Race					
Malay	63 (18.4)				
Chinese	175 (51.0)				
Indian	98 (28.6)				
Mixed	1 (0.3)				
Bumiputera	6 (1.7)				
State of residence					
Kedah	23 (6.7)				
Perlis	8 (2.3)				
Kelantan	11 (3.2)				
Penang	40 (11.7)				
Perak	72 (21.0)				
Malacca	54 (15.7)				
Negeri Sembilan	18 (5.2)				
Pahang	13 (3.8)				
Terengganu	9 (2.6)				
Johor	19 (5.5)				
Selangor	57 (16.6)				
Sabah	6 (1.7)				
Sarawak	13 (3.8)				

Note. SD: Standard Deviation; Min: Minimum value; Max: Maximum value

4.3 Self-esteem, Extraversion, and Problematic Smartphone Use

Multiple regression analysis was used to test if self-esteem and extraversion significantly predicted problematic smartphone use among the emerging adults. The model was statistically significant, $F(2,340) = 23.034$, $p < .001$ and accounted for 11.4% of the variance. It was found that self-esteem significantly predicted problematic smartphone use ($\beta = -.337$, $p < .001$), as did extraversion ($\beta = .222$, $p < .001$). Self-esteem negatively predicted problematic smartphone use while extraversion positively predicted problematic smartphone use.

Table 4.2

Model summary of multiple regression analysis

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin-Watson
1	.345	.119	.114	9.820	1.966

Note.   Predictors: (Constant), Self-esteem, Extraversion

Dependent variable: Problematic smartphone use

Table 4.3

ANOVA statistics between self-esteem, extraversion, and problematic smartphone use

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	4442.796	2	2221.398	23.034	.000
Residual	32790.014	340	96.441		
Total	37232.811	3422			

Note.   Predictors: (Constant), Self-esteem, Extraversion

Dependent variable: Problematic smartphone use

Table 4.4

Multiple regression analysis of self-esteem and extraversion in predicting problematic smartphone use

Model		Unstandardized Coefficients		Standardized Coefficients			95% Confidence Interval for β	
		β	Std. Error	β	T	Sig.	Lower Bound	Upper Bound
1	(Constant)	79.915	4.412		18.114	.000	71.237	88.593
	Self-esteem	-1.058	.167	-.337	-6.341	.000	-1.386	-.730
	Extraversion	.489	.117	.222	4.168	.000	.258	.719

Note. Dependent variable: Problematic smartphone use

4.4 Gender and Problematic Smartphone Use

Independent t-test was used to test if there is a gender difference in problematic smartphone use among emerging adults. The results showed that there was no significant gender difference in problematic smartphone use, $t(341) = 0.999$, $p = .32$.

Table 4.5

Gender difference in problematic smartphone use

	Gender				df	t	95% Confidence Interval of the Difference		Sig.
	Male		Female						
	Mean	SD	Mean	SD			Lower	Upper	
Problematic smartphone use	59.430	10.156	58.303	10.685	341	.999	-1.091	3.345	.318

Note. SD: Standard Deviation.

Chapter V

Discussion

5.1.1 Self-esteem, Extraversion and Problematic Smartphone Use

The findings of the present study showed that self-esteem and extraversion significantly predicted problematic smartphone use, whereby self-esteem negatively predicted problematic smartphone use while extraversion positively predicted problematic smartphone use. In other words, it is indicated that low level of self-esteem and high level of extraversion will lead to high level of problematic smartphone use.

The result showed that self-esteem significantly predicted problematic smartphone use, which is similar to past research studies (Bianchi & Phillips, 2005; Billieux, 2012). People with low self-esteem would use their smartphones more excessively compared to high self-esteem people as individuals with low self-esteem will perform self-defeating behaviour to escape from some situation. They use their smartphones as tools to escape from the situation that they feel aversive and fear at (Baumeister, 1997). Individuals with poor self-esteem are not confident and often think themselves in negative ways presented in negative self-talks such as "I am a boring person". Hence, they tend to frequently seek assurance by contacting significant others (Billieux, 2012). It actually leads them to become more dependent on their smartphones. According to Joinson (2004), individuals with poor self-esteem prefer indirect communication such as sending emails and text messages rather than face-to-face communication; unlike individuals with high self-esteem, they are more towards face-to-face communication in their preference. The individuals with poor self-esteem would use internet and smartphone in a large amount of time to communicate with others and those with high self-esteem have less time usage in smartphone

and internet because they prefer face-to-face communication with friends and other instead of using their smartphones.

Meanwhile, the results showed that extraversion positively predicted problematic smartphone use, which is supported by the past research studies (Bianchi & Phillips, 2005; Billieux, 2012; Ehrenberg et al., 2008). The individuals with a high level of extraversion are more likely to have strong desire to communicate with others and make new friends to extend their social networks. The extraverts also have the traits of socializing, talkative and outgoing. Those are considered as the common characteristics of problematic smartphone users (Biglu & Ghavami, 2016). According to Bianchi and Phillips (2005), individuals with high level of extraversion tend to extend their social network, so they are more frequent in communicating with others by using their smartphone. Due to their fear of isolation and loneliness, the individuals with high level of extraversion would display excessive use in smartphones to maintain and build their social networks. Since smartphones can be accessed easily everywhere and anytime, individuals with high level of extraversion would like to use smartphones as their communication tools. Therefore, it may lead to problematic smartphone use. Eysenck (1994) found that extroverts are more likely to take risks and seek sensation. The extroverts have a strong tendency to use their smartphone in unsafe and inappropriate situations, such as using their smartphones while driving, travelling on the plane, at library and other problematic ways. The unsafe and inappropriate ways may provide intense feelings to extroverts due to their intention to seek for it (Billieux, 2012). For this reason, individuals with high level of extraversion tend to involve in problematic smartphone use.

The findings of the present study are able explain by the problematic mobile phone use model (Billieux et al., 2015). The model stated that there are three psychological pathways which

will result in problematic smartphone use behaviour. One of the pathways explained that an individual's excessive reassurance from risk factor including low self-esteem, neuroticism, emotional instability, and others will lead to problematic smartphone use. The findings of the present study tally with the model, since the study shows that the low self-esteem frequently seek reassurance with contacting significant one and it leads to the problematic smartphone use. Moreover, the present study also shows that high level of extraversion will lead to problematic smartphone use which is related to another pathway in the model. The pathway explained that individual with extraversion personality tends to be sociable and having high constant desires in exploring and maintaining potential social networks with others. The extroverts tend to exhibit their constant desire through problematic behaviours such as phoning while driving. (Billieux, 2012; Billieux et al., 2015). The present study is tally with two psychological pathways in the model, which is low self-esteem and extraversion will lead to problematic smartphone use.

5.2 Gender and Problematic Smartphone Use

In the present study, it was found that there is no significant gender difference among emerging adults in problematic smartphone use behaviours. One of the present research questions hypothesized that there is a gender difference in problematic smartphone use. Thus, the result was not supported by the claim that gender difference exists in problematic smartphone use. However, this result has been found to be consistent with some past studies (Chen et al., 2017; Tavakolizadeh, Atarodi, Ahmadpour, & Pourgheisar, 2014).

This non-significant result could be further defined by different aspects of behaviours observed in different genders. Males were more likely to send text messages, watch gaming videos, play mobile games in a risky manner whereas females were more prone to watch drama, online shopping, social networking services in a dependence manner. Both genders present

problematic smartphone use behaviours in different ways. Roberts, Yaya, and Manolis (2014) found that the most problematic smartphone applications use are voice calls, text messages, and social networks. The participants were found to be displaying excessive use in some of the applications in different ways depending on their personal preferences for specific smartphone applications. Both gender were scored equally in problematic smartphone use in this study which not in line with other studies (Bianchi and Phillips, 2005; Billieux et al., 2008; Beranuy, Oberst, Carbonell, & Chamarro, 2009). Thus, there is still a need for further studies to unravel the inconsistent prevalence of problematic smartphone use in gender aspect in more specific ways.

5.3 Limitations, Strengths, and Future Directions

One of the limitations is that selection bias exists in this study, whereby non-probability sampling (convenience sampling) was adopted to collect data and information. It appears that online questionnaire was unable to reach out to certain populations in the current study, especially among the late emerging adults which constituted only 16.9% of all the participants included in the study. Thus, their opportunities to participate in the study was eventually omitted indirectly. This might influence the representativeness for the entire population and reliability of the findings. Hence, future studies are suggested to adopt quota sampling method in recruiting participants from both early and late emerging adulthood population in order to better represent emerging adults as a whole.

Meanwhile, the instruments used were fully focused on self-report inventories. Response bias was presented in this study as a limitation. Social desirability bias increases the possibility for respondents to manipulate their results to indicate that they have better self-esteem, personality traits, smartphone use behaviour than they actually are due to the desire of good impression. Provided that it might affect the reliability and accuracy of the present findings, it is

recommended that participants in future studies are to be made sure to identify with survey topic of their interest. Indirect questions, interview and experimental method are also recommended to help overcome the stated bias.

In terms of racial background, most of the participants recruited were Chinese and Indians in the present study, while Malay participants were lesser than both race groups. According to Department of Statistics Malaysia (2018), the result shows that the majority population in Malaysia are Malays, followed by Chinese and Indian. It is regarded as a sampling bias in the study. There is an inappropriate number of participants in specific races and the result may not be representative to the population of Malaysia. The results may become unfair and biased due to different races has different culture. The culture could be a factor to lead them commit or not commit to problematic smartphone use. Therefore, future researchers should formulate the sample size adequately by considering the population of each race group in order to provide more representative and accurate results.

Despite the several limitations found in the study, this study also displayed some strengths. Firstly, the findings and instruments used in the present study are considered reliable. Since the reliability of the instruments presented acceptable and strong Cronbach's alpha values in the context of present study, thus the future researchers can refer to the study as reference and possibly utilize the instruments for future research studies in Malaysian context.

The present study is also able to fill the literature gap in the Malaysian context. In this topic, there is a lack of research studies in Malaysian context. Since there are majority of research studies are from western culture, it may be different from Malaysian culture and the results may appear to be different in problematic smartphone use. The past study shows that the result in problematic smartphone use is different between western culture and eastern culture

(Lopez-Fernandez et al., 2018). The present study is able to be representative in Malaysian

context and as a reference for future researchers interested in this area of study. Moreover, the

sample size in this study was determined by using reliable formula. Hence, the sample size of the

present study is able to represent the population of emerging adults in Malaysia.

Besides, the present study also managed to recruit participants across the states of

Malaysia. Thus, the findings of the present study is able to represent Malaysian population

because the participants have wide demographic profile across all different states instead of

focusing on few states in the country.

5.4 Recommendations for Future Studies

Future researchers can target more diverse sampling to include late emerging adults from

different races as their participants in future study. This is because they are first batch of

population to be embraced with smartphone technology (Berry & Bass, 2012). It might help

researchers to eliminate unfair and biased data rather than only approaching young emerging

adults. Moreover, researchers are suggested to avoid collecting majority of participants who

came from same institution but also approach participants from other institutions as well. The

researchers are also suggested to include more Malay participants to avoid biased results and

unrepresentative data to the population.

Meanwhile, future study can include other related variables such as sensation seeking,

impulsiveness, reassurances in this topic of interest. Different variables might have different

degree of relationship with dependent variable or other independent variables. Integrated

conceptual framework with multi-pathways may figure out the direction of relationship clearly

(Mitchell & Hussain, 2018). Clear framework with causal direction provides stronger evidence to

scholarly articles and theoretical framework which are important for future theoretical development.

Furthermore, researchers can adopt mixed methods to conduct future study. The researchers can use qualitative method to conduct study about problematic smartphone use for future study, such as interviewing. It might provide more accurate and reliable results. Apart from that, it is also recommended that other methods of collecting data such as paper-and-pencil questionnaires to be used. Although paper-and-pencil questionnaire may not be convenient compared to online survey, paper-and-pencil questionnaire can ensure the participants are fulfilling the requirements of study.

5.5 Implications

5.5.1 Practical Implications

The present study has yielded some practical implications to the society. One of the important implications is that it helps the public especially emerging adults to understand smartphone-related addictive behaviour and provides a clear relationship between personality trait and problematic smartphone use behaviours. They could be able to receive some awareness towards it and control their own behaviours. This study will also convey some related problematic smartphone use information to practitioners such as mental health professionals, non-governmental authorities, policy makers and other parties. For instance, these important messages can be delivered to the public through some new modules and programmes such as awareness campaign, short programmes, forums and other activities. Furthermore, government agencies may tighten control over mobile application or age limit of having a smartphone among Malaysians after rigorous investigation. Government authorities can also propagate all related information through awareness video on national TV channels and posters in government office.

Psychoeducation programmes in different forms are also important for assisting individuals who have problematic smartphone use issues. Prevention can start and operate well when all levels of the social ecology work together.

5.5.2 Theoretical implications

For theoretical implication, the present study might fill in some literature gap in this interest topic. There are only few several past studies in related topic that have been done among emerging adults in Malaysia context (Zulkefly & Baharudin, 2009; Ching et al., 2015). Past researchers focus more on internet addiction rather than problematic smartphone use among young adults. Besides, there is a need for further concrete studies such as systematic review of this topic of interest. The findings of the present study are able to contribute some related literature and analysed data to other researchers on further systematic study.

In addition, this research showed that high self-esteem among emerging adults could significantly predict low problematic smartphone use. Thus, practitioners should refer to this research outcome and apply more relevant activities such as self-esteem and confidence building program to elevate self-esteem among emerging adults. Programmes offered based on findings implication can indirectly help in reducing problematic behaviours. Society always preferred to increase individual's work productivity compared to non-productive work. Problematic smartphone use might cause unproductive work to a certain extent. Therefore, it is important for practitioners to reduce problematic smartphone use among emerging adults.

5.6 Conclusion

In conclusion, the present study had achieved the objectives to identify the relationship between self-esteem, extraversion and problematic smartphone use among emerging adults in Malaysia. The results obtained indicated that the emerging adults with high self-esteem were

predicted to have low level of problematic smartphone use. However, individual high in extraversion level is observed to have an increase in problematic smartphone use.

It was also revealed that there is no gender difference between male and female in problematic smartphone use among emerging adults. Although our study does not study the causal relationship between self-esteem and extraversion towards problematic smartphone use, the risk of low self-esteem, high extraversion level can lead to problematic smartphone use among emerging adults was demonstrated.

Emerging adults of a population are the valuable assets in the nation. They have been recognized as the major workforce and future economic sources of the nation. Advancement in technology has caused much concerns for the society especially among the smartphone users. Increasing problematic smartphone use among this population may lead to social issues, mental health issues such as behavioural addiction, and other anxiety-related disorders (Jeong, Kim, Yum, & Hwang, 2016; World Health Organization, 2015). Professionals in the society should conduct further studies in this field to find out the possible protective factors. This is important to help emerging adults address problematic smartphone use behaviours in a more effective way.

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Appendices

Appendix A

Participant Information Sheet

UNIVERSITI TUNKU ABDUL RAHMAN
FACULTY OF ARTS AND SOCIAL SCIENCE
DEPARTMENT OF PSYCHOLOGY AND COUNSELLING

Participant Information Sheet

Dear participants,

Introduction
We are students of Bachelor of Social Science (Hons) Psychology from Universiti Tunku Abdul Rahman (Kampar Campus). This is a research study conducted as part of our course requirement. Please read this consent document carefully before deciding to participate in this study.

This online survey includes three questionnaires that concern about different areas of study and a demographic information sheet. This survey may take **approximately 8 - 10 minutes** to complete.

Confidentiality
Please be assured that your identity will be kept **private and confidential.** You are not required to provide your name. No one but the researchers will know how you answered the questions. Your responses will only be coded numerically for data analysis, discussions, and presentations. Your personal information will not be disclosed to any unauthorized party and will be used only for academic purpose.

Voluntary participation
Your participation in this study is completely voluntary. Should you choose to discontinue participation, any information being collected will be discarded. There is no penalty or loss of benefit for choosing not to participate. You have the right to withdraw from the study at any time without consequence or penalty. We greatly appreciate your time and contribution upon completion of this survey

However, if you have answered a similar questionnaire before, you are advised to quit this survey to avoid duplication of responses.
Should you have any doubts, please do not hesitate to contact Yap Jyh Shen at
jerryyjs@1utar.my.

☐ I have read the above information and agree to participate in this study
☐ I disagree to participate in this study

Appendix B

Demographic Items

Below are items concerning your personal demographic profile. Please answer each of them accordingly.

1. Age: ____

2. Gender
   - ☐ Male
   - ☐ Female

3. Race
   - ☐ Malay
   - ☐ Chinese
   - ☐ Indian
   - ☐ Others, please specify: _____

4. State of residence
   - ☐ Kedah
   - ☐ Perlis
   - ☐ Kelantan
   - ☐ Penang
   - ☐ Perak
   - ☐ Malacca
   - ☐ Negeri Sembilan
   - ☐ Pahang
   - ☐ Terengganu
   - ☐ Johor
   - ☐ Selangor
   - ☐ Sabah
   - ☐ Sarawak

Appendix C

Rosenberg Self-Esteem Scale (RSES)

Below is a list of statements dealing with your general feelings about yourself.

Please indicate how strongly you agree or disagree with each statement.

		Strongly Disagree	Disagree	Agree	Strongly Agree
1.	On the whole, I am satisfied with myself.	1	2	3	4
2.	At times I think I am no good at all.	1	2	3	4
3.	I feel that I have a number of good qualities.	1	2	3	4
4.	I am able to do things as well as most other people.	1	2	3	4
5.	I feel I do not have much to be proud of.	1	2	3	4
6.	I certainly feel useless at times.	1	2	3	4
7.	I feel that I'm a person of worth, at least on an equal plane with others.	1	2	3	4
8.	I wish I could have more respect for myself.	1	2	3	4
9.	All in all, I am inclined to feel that I am a failure.	1	2	3	4
10.	I take a positive attitude toward myself.	1	2	3	4

Note: Items 2, 5, 6, 8, and 9 are to be reversely scored.

Appendix D

Extraversion scale adapted from Eysenck Personality Questionnaire - Revised (EPQ-R)

Please answer each question by clicking the radio button between 'YES' or the 'NO' following the question. There are no right or wrong answers, and no trick questions.

Work quickly and do not think too long about the exact meaning of the questions.

		Yes	No
1.	Do you have many different hobbies?		
2.	Are you a talkative person?		
3.	Are you rather lively?		
4.	Can you usually let yourself go and enjoy yourself at a lively party?		
5.	Do you enjoy meeting new people?		
6.	Do you tend to keep in the background on social occasions?		
7.	Do you like going out a lot?		
8.	Do you prefer reading to meeting people?		
9.	Do you have many friends?		
10.	Would you call yourself happy-go-lucky?		
11.	Do you usually take the initiative in making new friends?		
12.	Are you mostly quiet when you are with other people?		
13.	Can you easily get some life into a rather dull party?		
14.	Do you like telling jokes and funny stories to your friends?		
15.	Do you like mixing with people?		
16.	Have people said that you sometimes act too rashly?		
17.	Do you nearly always have a 'ready answer' when people talk to you?		
18.	Do you like doing things in which you have to act quickly?		
19.	Do you often make decisions on the spur of the moment?		
20.	Do you often take on more activities than you have time for?		
21.	Can you get a party going?		
22.	Do you like plenty of bustle and excitement around you?		
23.	Do other people think of you as being very lively?		

Note: 'Yes' is coded as '1', while 'No' is coded as '2'. Items 6, 8, and 12 are to be reversely scored.

Appendix E

Problematic Use of Mobile Phone (PUMP) Scale

Listed below are items concerning your routine mobile phone use.

Answer each item by rating on the Likert scale provided.

		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
1.	When I decrease the amount of time spent using my cell phone I feel less satisfied.	1	2	3	4	5
2.	I need more time using my cell phone to feel satisfied than I used to need.	1	2	3	4	5
3.	When I stop using my cell phone, I get moody and irritable.	1	2	3	4	5
4.	It would be very difficult, emotionally, to give up my cell phone.	1	2	3	4	5
5.	The amount of time I spend using my cell phone keeps me from doing other important work.	1	2	3	4	5
6.	I have thought in the past that it is not normal to spend as much time using a cell phone as I do.	1	2	3	4	5
7.	I think I might be spending too much time using my cell phone.	1	2	3	4	5
8.	People tell me I spend too much time using my cell phone.	1	2	3	4	5
9.	When I am not using my cell phone, I am thinking about using it or planning the next time I can use it.	1	2	3	4	5
10.	I feel anxious if I have not received a call or message in some time.	1	2	3	4	5
11.	I have ignored the people I'm with in order to use my cell phone.	1	2	3	4	5

12.	I have used my cell phone when I knew I should be doing work/schoolwork.	1	2	3	4	5
13.	I have used my cell phone when I knew I should be sleeping.	1	2	3	4	5
14.	When I stop using my cell phone because it is interfering with my life, I usually return to it.	1	2	3	4	5
15.	I have gotten into trouble at work or school because of my cell phone use.	1	2	3	4	5
16.	At times, I find myself using my cell phone instead of spending time with people who are important to me and want to spend time with me.	1	2	3	4	5
17.	I have used my cell phone when I knew it was dangerous to do so.	1	2	3	4	5
18.	I have almost caused an accident because of my cell phone use.	1	2	3	4	5
19.	My cell phone use has caused me problems in a relationship.	1	2	3	4	5
20.	I have continued to use my cell phone even when someone asked me to stop.	1	2	3	4	5

Note: All items are to be positively scored.

Appendix F

Turnitin Originality Report

Fyp 2 Combined

ORIGINALITY REPORT

8% SIMILARITY INDEX

4% INTERNET SOURCES

5% PUBLICATIONS

4% STUDENT PAPERS

PRIMARY SOURCES

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Publication
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2 Submitted to CVC Nigeria Consortium
Student Paper
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4 Sharon Horwood, Jeromy Anglim. "Personality and problematic smartphone use: A facet-level analysis using the Five Factor Model and HEXACO frameworks", Computers in Human Behavior, 2018
Publication
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5 Michelle H van Velthoven, John Powell, Georgina Powell. "Problematic smartphone use: Digital approaches to an emerging public health problem", DIGITAL HEALTH, 2018
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Publication

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17   **www.angra.uac.pt**
     Internet Source   <1%

18   **Dean Lauterbach, Scott Vrana. "Relationship Between Trauma Exposure and Substance Use in a Sample of College Students", Journal of Trauma Practice, 2002**
     Publication   <1%

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     Student Paper   <1%

20   **Submitted to Deakin University**
     Student Paper   <1%

21   **Louis Leung, Jingwen Liang. "chapter 54 Psychological Traits, Addiction Symptoms, and Feature Usage as Predictors of Problematic Smartphone Use Among University Students in China", IGI Global, 2019**
     Publication   <1%

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23   **Kyung Eun Jahng. "Maternal abusive parenting and young South Korean adolescents' problematic smartphone use: The moderating effects of time spent hanging out with peers and trusting peer relationships", Children and Youth Services Review, 2019**
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30	Jon D. Elhai, Jason C. Levine, Robert D. Dvorak, Brian J. Hall. "Non-social features of smartphone use are most related to depression, anxiety and problematic smartphone use", Computers in Human Behavior, 2017 Publication	<1%
31	Y-H Lin, Y-C Lin, S-H Lin, Y-H Lee, P-H Lin, C-L Chiang, L-R Chang, C C H Yang, T B J Kuo. "To use or not to use? Compulsive behavior and its	<1%

role in smartphone addiction", Translational Psychiatry, 2017
Publication

Appendix G

Ethical Approval Form

UTAR UNIVERSITI TUNKU ABDUL RAHMAN

Wholly Owned by UTAR Education Foundation (Company No. 578227-M)

Re: U/SERC/38/2019

25 February 2019

Dr Chie Qiu Ting
Head, Department of Psychology and Counselling
Faculty of Arts and Social Science
Universiti Tunku Abdul Rahman
Jalan Universiti, Bandar Baru Barat
31900 Kampar, Perak.

Dear Dr Chie,

Ethical Approval For Research Project/Protocol

We refer to the application for ethical approval for your students' research projects from Bachelor of Social Science (Hons) Psychology programme enrolled in course UAPZ3023. We are pleased to inform you that the application has been approved under <u>expedited review</u>.

The details of the research projects are as follows:

	Research Title	Student's Name	Supervisor's Name	Approval Validity
1.	Self-Esteem and Extraversion in Predicting Problematic Smartphone Use Among Malaysian Emerging Adults	1. Yap Jyh Shen 2. Edward Lim Heng Yuan 3. Liew Jia Kang	Dr Lee Ai Suan	25 February 2019 – 24 February 2020

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research;

(2) Confidentiality of participants' personal data must be maintained; and

(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

Should the students collect personal data of participants in their studies, please have the participants sign the attached Personal Data Protection Statement for records.

Thank you.

Yours sincerely,

Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c   Dean, Faculty of Arts and Social Science
         Director, Institute of Postgraduate Studies and Research