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THE PREDICTIVE ROLES OF BOREDOM, DEPRESSION, LONELINESS AND SELF-ESTEEM ON PHUBBING BEHAVIOUR AMONG UNDERGRADUATES IN MALAYSIA

LETCHUMYESSWARY A/P GUNASHEKARAN

NIVASHINI A/P RAGU

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Letchumyesswary A/P Gunashekaran, and Nivashini A/P Ragu

Universiti Tunku Abdul Rahman

This research project is submitted in partial fulfilment of the requirements for the Bachelor of Social Science (Hons) Psychology, Faculty of Arts and Social Science, Universiti Tunku Abdul Rahman. Submitted on November 2022.

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LETCHUMYESSWARY A/P GUNASHEKARAN

NIVASHINI A/P RAGU

APPROVAL FORM

This research paper attached hereto, entitled "The Predictive Roles of Boredom, Depression, Loneliness and Self-Esteem on Phubbing Behaviour among Undergraduates in Malaysia" prepared and submitted by Letchumyesswary A/P Gunashekaran, and Nivashini A/P Ragu in partial fulfilment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

_____ Date: 29.11.2022

Supervisor

(Dr. Grace T'ng Soo Ting)

Abstract

The developments in computer and Internet technology have led to increased communication and faster access to information. These advancements have increased reliance on smartphones which resulted in phubbing behaviour and this consequently will damage interpersonal relationships. However, research on the predictive roles of (a) boredom; (b) depression; (c) loneliness; (d) self-esteem on phubbing behaviour appear less. Therefore, the current research attempted to study the predictive roles of boredom, depression, loneliness, and self-esteem on phubbing behaviour among Undergraduates in Malaysia. The current research utilized Cognitive Behavioural Theory as its theoretical framework. The current cross-sectional study's purpose was to examine the predictive roles of boredom, depression, loneliness, and self-esteem on phubbing behaviour among Malaysian undergraduates. The cross-sectional study included 170 target individuals who were recruited via an online survey using the purposive sample method. However, for data analyses, only 161 responses were selected. The participants that were chosen met the requirements which were (i) Aged 18-30 years old (ii) Malaysian Undergraduate students (iii) smartphone users. The result of the present study showed that boredom, depression, and loneliness positively predict phubbing behaviour while self-esteem negatively predicts phubbing behaviour. Thus, the hypotheses of the current study were supported. In conclusion, this study has filled in the knowledge gap and provided information for future studies related to the predictive factor of phubbing behaviour. Parties' concerned may also use the offered knowledge and information to develop and conduct effective intervention programs to reduce phubbing behaviour.

Keywords: Phubbing behaviour, boredom, depression, loneliness, self-esteem, undergraduates, Malaysia

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.

Name : LETCHUMYESSWARY A/P GUNASHEKARAN

Student ID : 19AAB06993

Signed : 

Date : 29.11.2022

Name : NIVASHINI A/P RAGU

Student ID : 19AAB06905

Signed : 

Date : 29.11.2022

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Abbreviations	
PB	Phubbing Behaviour
SBS	Short Boredom Scale
CES-D	Centre for Epidemiological Studies Depression Scale
UCLA	Loneliness Scale
RSES	Rosenberg Self-Esteem Scale
DSM-5	Diagnostic and Statistical Manual of Mental Disorders
COVID-19	Coronavirus Disease 2019
Q-Q plot	Quantile-Quantile plot
MLR	Multiple Linear Regression
UTAR	Universiti Tunku Abdul Rahman
TARC	Tunku Abdul Rahman University College
VIF	Variance Inflation Factors
SPSS	Statistical Package of Social Science

Chapter I

Introduction

Background of Study

The fourth industrial revolution brings changes to many aspects of human life, including science, information, and communication technologies (Isrofin & Munawaroh, 2021; Nardo et al., 2020). A profound change in science and technology, especially in the communication and information field, have achieved with various high-tech products and devices. Undoubtedly, smartphones are one of them. Smartphones have lately surpassed personal computers and laptops as the most regularly used Internet-accessing devices (Nardo et al., 2020). According to Statista (2021), amount of people who own smartphones is projected to be around 29 million. Due to the country's growing population, the number of smartphone users in Malaysia is estimated to rise to 1.74 million by 2025.

People tend to check their smartphones frequently for constant updates from the virtual world, despite the fact that smartphones have slowly entered our lives (Ang et al., 2019). One of the disadvantages of smartphone use is that it may isolate individuals and cause them to neglect one another while they are physically conversing because they are engaged in their phones (David & Roberts, 2017). Additionally, the quality of face-to-face communication has decreased due to the high usage of technology (Drago, 2015).

Smartphone users are frequently reluctant to put their phones down because they do not want to lose any of their texts or notifications (Drago, 2015). According to Przybylski et al. (2013), someone who is worried about losing something significant on social media will constantly check his or her smartphone, even in front of other people. Therefore, people spend less time on everyday interaction due to a strong predisposition towards smartphones. Phubbing is an issue that most

People confront nowadays when spending time with peers or others. It occurs when everyone is engaged in their smartphones and no one is paying attention or making eye contact with the other person (Chotpitayasunondh & Douglas, 2016; Karadag et al., 2015; Nazir & Pişkin, 2016). Phubbing, a portmanteau of phone and snubbing, is a sort of snubbing in which a person focuses on their phone while paying little attention to the people around them in a social setting (Ang et al., 2019). Hence, physical social cues like eye contact, intonation, and reaction during face-to-face conversations are reduced or missing among phubbers, resulting in low-quality physical relationships with people in the real world. Without a doubt, if a person is constantly attracted to the world of information, the quality of the relationship will become low (Ang et al., 2019).

Furthermore, phubbing might have a negative influence on conversation intimacy (Fang et al., 2020) and depression (Wang et al, 2017; Xie & Xie, 2020), poor relationship quality (Aagaard, 2019; Cizmeci, 2017) less marriage satisfaction (Roberts & David, 2016) and escalate loneliness level (Franchina et al., 2018). Furthermore, accidents commonly occur when pedestrians are excessively engaged on their smartphones when walking on a crowded street, and instinctively overlook the risky surroundings (Kim et al., 2017). Pedestrians are reminded to quit phubbing by more than 300 signboards. Although they are aware of the consequences of phubbing, which can lead to accidents, the power of signboards appears to have little influence on the phubbing phenomena since people are unable to detect the signboard because their heads are buried in their smartphones (Kim et al., 2017).Additionally, several research studies have found that heavy smartphone usage in undergraduates was more susceptible to physical and psychological ill-being (Jani, 2021; Panda & Jain, 2018; Robert & David, 2016; Tuan, 2021).

According to Al-Saggaf (2020), research findings are suggesting that boredom is related to phubbing behaviour. Boredom is a distressing state that occurs when a person is unable to actively

set their sights on either internal or external stimuli (Eastwood et al., 2012). Eastwood et al. (2012) also explain that boredom occurs when it is not possible to achieve an optimal level of arousal through

engagement with the environment. When people feel bored, they are more likely to seek a stimulus to keep them engaged at the moment. As a result, they phub their communication partner. The current study investigated how boredom relates to phubbing behaviour.

Depression is defined as a state of sadness, emptiness, or irritation that is accompanied by physical and cognitive changes that have a major impact on the individual's functioning (Ivanova et al., 2020). Studies have found that depression is related to phubbing (Davey et al., 2018; Roberts & David, 2016). Individuals experiencing depression or having depressive symptoms tend to avoid social situations but not the usage of technology (Andreassen et al., 2016). According to a study, depressed people are more likely to phub their friends, and socially anxious persons, who may prefer online social connections to face- to-face conversation, are also more likely to exhibit more phubbing behaviour (Kim et al., 2015). According to Cho (2015), the usage of the internet or a smartphone has been found to boost social capital through increasing social engagement, social support, and reducing negative moods. Depression has become one of the reasons for people to have phubbing behaviour.

There is research finding that suggests loneliness is associated with phubbing behaviour (Matthews et al., 2016). Loneliness is considered as a feeling of inadequacy in one's connections, which can be produced by a small or insufficient social network in contrast to one's expectations (Al-Saggaf & O'donnell, 2019). According to Matthews et al. (2016), loneliness is a distressful, subjective experience that arises when one perceives their social bonds are inadequate and unsatisfactory. In the past, old people were linked with loneliness, however, nowadays, the youth are

the ones who are surrounded by fear or loneliness which triggers them to find ways to combat this loneliness through their smartphones. The excessive use of smartphones leads to phubbing behaviour (Chotpitayasunondh & Douglas, 2016). The current study examines how loneliness with associated with phubbing behaviour.

Moreover, self-esteem means how much worth or importance people place on themselves as an individual (Thomas et al., 2018). According to Kim and Lee (2020), a person who has low self-esteem is more likely to show up with phubbing behaviour. In view of that, people with low self-esteem are dependent on the virtual world by seeking authorization and reassurance as they have negative beliefs about themselves but generally have good views about others (Kim & Lee, 2020). They gain acceptance and reassurance (i.e., likes, and positive comments) by posting pictures on social media frequently which leads to phubbing behaviour (Blachnio & Przepiorka, 2018). Thus, the current study wishes to investigate how self-esteem relates to phubbing behaviour.

Problem Statement

The developments in computer and Internet technology have led to increased communication and faster access to information (Karadag et al., 2015). These advancements, however, have increased reliance on gadgets especially smartphones (AlSaggaf & MacCulloch, 2018) which resulted in phubbing behaviour even during face-to-face chat, people are engrossed in their smartphones (Capilla Garido et al., 2021). Karadag et al. (2015) stated that smartphone usage is related to phubbing behaviour. Past findings (Chotpitayasunondh & Douglas, 2016; Karadag et al., 2015; Roberts & David, 2016) have stated that smartphones detached people apart from each other because of phubbing behaviour.

The rise in smartphone usage resulted in phubbing behaviour even while having a face-to-face conversation, people are engrossed in their smartphones (Ang et al., 2019). According to the

Malaysian Communication and Multimedia Commission's handphone usage survey, 88.7% of Malaysians are utilising the Internet in 2020, up from 87.4% in 2018 (MCMC, 2020). The proportion of non-Internet users fell from 12.6% in 2018 to 11.3% in 2020. Moreover, only 6% of the population at '20s are non-internet users, which indicates that undergraduates are frequent Internet users (MCMC, 2020). Parasuraman et al. (2017) claimed that individuals, especially undergraduates utilize smartphones because of the attractive and multiple functions of smartphones.

Additionally, MCMC (2018) stated that more than half of handphone users, 52.1% claimed they used their phones during meals with others. Furthermore, several studies (Beukeboom & Pollmann, 2021; Davey et al., 2018; David & Roberts, 2017; Vanden Abeele et al., 2016) reported that when an individual is being phubbed, they tend to have very little satisfaction since they see the interaction to be lacking in quality, and they also feel less connected to their companions. Moreover, phubbing behaviour is also seen as a serious mental health issue such as anxiety (Guazzini et al., 2019) and substance addiction (Ang et al., 2019). Even though it may not appear to be a big deal, research suggests that phubbing can influence our emotional relationships (Ang et al., 2019).

This study addresses some literature gaps that need to be emphasised on. First of all, to date, phubbing has hardly received scholarly attention. There are no official statistics on phubbing that have been found in Malaysia (Ang et al., 2019). Lee et al. (2015) in Malaysia, a six-year-old girl fell through an escalator gap when her mother was preoccupied with fiddling with her smartphone while conversing and therefore neglected the child. This incident demonstrated how being inattentive while using smartphones costs lives. Although this phenomenon has been noticed, there is not enough importance given to this issue in the Malaysian context (Bulut & Nazir, 2020). Hence, this study was done in an attempt to better understand the phubbing phenomenon and to trace the evolution of phubbing, which is known as the modern communication of this era.

Secondly, the cognitive behaviour theory (CBT) is not empirically and extensively tested in the context of phubbing behaviour (Abeele, 2020). There is a need to further explore the idea of the selected theory on phubbing behaviour. Thus, the current study fills the knowledge gap through the application of cognitive behavioural theory by providing better theoretical knowledge on phubbing behaviour and bringing structure and coherence to our theoretical knowledge, and useful for future studies.

Phubbing behaviour among undergraduates are increasing over the years and they are vulnerable groups to this addictive behaviour (Bala et al., 2020). This is because they are in the distinct transitional developmental period from adolescence to adulthood (Burleigh et al., 2017). These may cause them uncomfortable which leads to engaging in addictive behaviour (i.e., phubbing behaviour). Thus, there is an urgent need to examine how undergraduates in Malaysia can be affected by phubbing behaviour.

According to Enez Darcin et al. (2016), lonely people are more likely to indulge in phubbing behaviour. Several studies support this statement and claim that loneliness has been positively associated with phubbing behaviour (Karadag et al., 2016; Tulane et al., 2018; Wang et., 2021). In contrast, Al-Saggaf & O'donnell (2021) research stands on a different line from the previous above-mentioned statements by discovering that loneliness is adversely associated with phubbing. According to Ergun et al. (2019), phubbing is negatively linked to loneliness, that seems to be, an increase in phubbing behaviour results in a reduction of loneliness. Individual loneliness and social loneliness, on the other hand, could be different. The phubber may engage in continual phubbing to overcome loneliness. According to Ang et al. (2019), loneliness and phubbing obtained contradictory results. As a result, additional research is required to go beyond the conclusions of

current and previous research (Ergun et al., 2019). Due to the inconsistencies of the results, the current study is vital to investigate the predictive role of loneliness on phubbing.

In the nutshell, limited studies have looked into the complex connection between boredom, depression, loneliness, self-esteem, and phubbing behaviour. To fill this gap in empirical knowledge, this study aims to provide a comprehensive framework of these predictors of phubbing behaviour, which could be crucial for suitable interventions and prevention to lessen phubbing behaviour.

Research Questions

1. Do boredom, depression, and loneliness predict phubbing behaviour positively among undergraduates in Malaysia?
2. Does self-esteem negatively predict phubbing behaviour among undergraduates in Malaysia?

Research Objectives

1. To investigate the predictive roles of boredom, depression, loneliness, and self-esteem on phubbing behaviour among undergraduates in Malaysia.

Hypotheses

H1: Boredom positively predicts phubbing behaviour among undergraduates in Malaysia.

H2: Depression positively predicts phubbing behaviour among undergraduates in Malaysia.

H3: Loneliness positively predicts phubbing behaviour among undergraduates in Malaysia.

H4: Self-esteem negatively predicts phubbing behaviour among undergraduates in Malaysia.

Significance of Study

The current study intends to analyse the predictors of phubbing behaviour among Malaysian undergraduates, which are boredom, sadness, loneliness, and self-esteem. The purpose of this study is to fill research gaps in the predictors of phubbing behaviour.

Furthermore, various studies on phubbing behaviour were undertaken in different contexts, with only a few studies in Asian countries. As a result, the findings of this study may help to improve understanding of the predictors of phubbing behaviour in the Malaysian setting. This study may also help future studies and researchers that are interested in learning more about this area of study.

Moreover, this study provides insights into the application of Cognitive Behaviour Theory (CBT) in the field of phubbing behaviour. There are inadequate studies that used CBT in their research. Meanwhile, past studies on phubbing behaviour did not mention the theory that they applied to their research (Al-Saggaf et al., 2018; Solecki, 2021). Hence, the current study contributes theoretically as the application of CBT is expanded to explain the connection between boredom, depression, loneliness, self-esteem, and phubbing behaviour.

Furthermore, this study has practical contributions to society. The findings could be helpful to Malaysians as they are unaware of the factors of phubbing behaviour. Numerous empirical studies (Abeele, 2020; Bipeta et al., 2015; Elhai et al., 2017; Robert & David, 2016; Wolniewicz et al., 2018) showed the impact of phubbing behaviour on one's mental health. By conducting the current study, the Malaysian community may have a clearer understanding, more knowledge, awareness and this will make them pay closer attention to phubbing behaviour. Not only that, but this study also could contribute ideas to the government, media, mental health professions, and public health workers to identify the factors of phubbing behaviour. Furthermore, researchers could use it as starting point for future research into other potential causes of phubbing behaviour. It can also be

utilised as a reference for behavioural treatment techniques to assist in the management of this phubbing behaviour.

Lastly, phubbing behaviour leads to various negative effects such as low trust issues (Robert & David, 2016), poor social interaction, and lower relationship satisfaction (Chotpitayasunondh & Douglas, 2018). The findings of the present study may provide useful information for practical significance. Hence, providing effective and useful methods can be planned to control the phubbing behaviour which would help to reduce the smartphone usage and improve their quality of life. These initiatives make at least some changes in the behaviour of phubbing among undergraduates in Malaysia.

Conceptual Definitions

Boredom

Boredom is an unpleasant experience that occurs when there is a lack of purpose, interest, or challenges in a situation (Cleary et al., 2016). According to Danckert and Merrifield (2016), boredom is regarded as a negative experience caused by an inability to engage with one's environment in the desired manner despite one's best efforts.

Depression

Depression is a mental condition that occurs when a person experiences a loss of interest and persistent unhappiness over time (Plieger et al., 2015). National Institute of Mental Health (2018), claimed that depression can eventually develop and severely impair an individual's day-to-day functioning. A decrease in appetite, focus, and energy, as well as a loss of hope, worth, and enthusiasm, may be experienced by the person. In addition, a depressed person may experience excessive guilt, lose or gain weight without dieting, have trouble falling asleep or oversleeping, and consider suicide when their depression is severe (American Psychiatric Association, 2013).

Loneliness

Loneliness is an unpleasant feeling caused by an imbalance between desired and achieved levels of social connection (Perlman & Peplau, 1981). It is an unusual condition in which a person considers himself or herself as socially alone even when surrounded by others (Cacioppo & Cacioppo, 2018). To one person, loneliness can be experienced differently at different times and circumstances (Sanders, 2020).

Self-esteem

Self-esteem is described as a person's total sense of self-worth (Nguyen et al., 2019). A person's perception of himself or herself might be either positive or negative. According to Koç and Kafa (2018), persons with high self-esteem feel more in sync with their perceptions and have a greater feeling of purpose in life than people with low self-esteem, who have a hazy sense of self. According to Abdel-Khalek (2016), self-esteem could be a favourable, unfavourable attitude or a positive or negative view of themselves.

Phubbing Behaviour

Phubbing is the act of using one's smartphone instead of paying attention to another person or persons during a face-to-face interaction (Al-Saggaf, 2018). According to David and Roberts (2017), phubbing behaviour is a form of social exclusion and interpersonal neglect that is associated with poor interaction quality, frequent disputes, and low communicative relationship satisfaction.

Operational Definitions

Boredom

Struk et al. (2017) developed the Short Boredom Proneness Scale- Short Form (BPS- SR), a regularly used measure of trait boredom, although does not constitute a scale. It is made up of a total of eight items. This scale was generated from the original 28-item true- false version of the Boredom

Proneness Scale (BPS) developed by Farmer & Sundberg, (1986). Items are assessed on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The higher the score, the greater the boredom level.

Depression

The Centre for Epidemiological Studies Depression Scale (CES-D) was developed by (Radlof, 1977). It is a 20-item screening tool, initially created to detect depression in general populations. Subsequently, several shorter versions have been developed, including 10-item version (CES-D-10) by Andresen et al. (1994). Out of the ten items, three items are on depressed affect, five items on somatic symptoms, and two on positive affect. They indicate their responses on a 4-point scale. Options for each item range from 0 (*rarely or none of the time*) to 3 (*all of the time*). Scoring is reversed for items five and eight, which are positive effect statements. The higher the score, the greater one's level of depression.

Loneliness

The short form of the Revised UCLA Loneliness Scale (ULS-6) was used in this study. Russell et al. (1978) developed the original scale which included 20 statements. Then, (Neto, 1992) derived the ULS-6 scale which consists of a subset of six items. It is a 4-point Likert scale ranging from 1 (*never*) to 4 (*often*). Higher scores indicated higher loneliness.

Self-esteem

The Rosenberg Self-Esteem Scale is a self-report instrument developed by (Rosenberg, 1965). This measures global self-worth by measuring both positive and negative feelings about the self. The scale is believed to be uni-dimensional. This model consists of 10 items and five expressed in positive statements and five in negative statements. Negative items are reversed scored. All the items are answered using a 4-point Likert scale format. The total score ranges from 10 to 40, as a

result of the participants' responses that describe the level of agreement ranging from 0 (totally disagree) to 3 (totally agree). Items 3,5,8,9,10 are reversely scored. The higher the score, the higher one's self-esteem.

Phubbing Behaviour

The phubbing scale (PS) has been used in this research. Karadag et al. (2015) created this inventory, which comprises ten items. It is conducted using a 5-point Likert scale ranging from 1 (never) to 5 (always). The measure has a two-component structure, according to exploratory and confirmatory factor analyses. The higher the score, the higher the possibility of being phubbed.

Chapter II

Literature Review

Conceptualizing on Phubbing Behaviour

Phubbing is a combination of the terms "phone" and "snubbing" that refers to the act of accessing one's smartphone while engaged in a co-present communicative engagement (Vanden Abeele et al., 2019). According to Karadag et al., (2015), phubbing is an irritation that is linked to numerous addictions, and it has a multi-faceted structure that includes smartphone addiction, internet addiction, social media addiction, and gaming addiction.Worries in the public domain regarding the damaging consequences of using one's phone during social interactions triggered this interest (Vanden Abeele et al., 2019). According to Hidayat et al. (2016), students have nearly gotten accustomed to the phubbing phenomenon.

According to Zhao et al. (2021), students would leave their families and relocate to other places to pursue higher education. For undergraduates, the most important interpersonal ties are those with family, friends, and academic institutions. Since they must leave their circle of comfort to seek their higher education, undergraduate students have a greater wish to remain connected with their close ones, including friends and family members (T'ng et al., 2018). As a result, it stands to reason that wherever students travel, they will want an Internet connection as well as their smartphones (Ang et al., 2019). Not only that, during the current COVID-19 pandemic, students had to maintain social distance in order to communicate and get information about the outbreak via smartphone, which increased the amount of time and frequency spent on a smartphone. As a result, the constraints on them would be lessened, leading to the formation of undesirable behaviours and phubbing (Zhao et al., 2021).

Conceptualizing on Boredom

Aversive experience where individuals show a lack of interest, have difficulty concentrating, or are unable to engage in satisfying activities, is called boredom (Westgate & Steidle, 2020). It is commonly defined as a state marked by unpleasant feelings, a lack of stimulation, and a low level of physiological arousal. Boredom is caused by a mismatch between one's urge for excitement and the stimuli present in one's environment (Zhao et al., 2021). Boredom is best recognised as a distinct emotion that is frequently disregarded in schools due to its unobtrusive and non-disruptive nature, particularly in comparison to emotions such as anger and anxiety (Pekrun et al., 2014).

According to Spruyt et al. (2016), although boredom has been linked to the prevalence of various bad health behaviours, the relationship is likely to be more complex. It is conceivable to infer that undergraduate students who are unable to construct a pleasant leisure lifestyle are also dealing with broader life adjustment issues connected with attitudes and behaviours that result in poor levels of well-being. In other words, claims of higher degrees of boredom in the undergraduate student cohort, whose primary developmental objective is to establish an adult identity, may reflect a broader difficulty in developing a satisfying and effective lifestyle (Ohlmeier et al., 2020). Thus, extensive evidence indicates that boredom is positively related to school discontent, absenteeism, psychological development, and high dropout rates (Eren, 2013).

Boredom and Phubbing

Individuals with characteristic boredom have a recurring or chronic high propensity to get bored (Ng et al., 2015). It differs from state boredom, which is a momentary feeling of boredom at a specific time (Poon & Leung, 2011).

According to Al-Saggaf and O'donnell. (2019), based on the relationship between boredom and maladaptive smartphone usage, boredom may drive phubbing behaviour. The tendency to boredom was revealed to be a predictor of phubbing, however, the influence of this characteristic prediction was minor (Karadag et al., 2015). According to the findings of the study, state phubbing increases as state boredom grows, indicating that transient experiences of boredom promote phubbing behaviour. This result is supported by (Elhai et al. 2017) stating that boredom predicts poor smartphone use and (Al-Saggaf et al. 2018) phubbing frequency. These findings emphasise the importance of state boredom as a determinant in phubbing behaviour and offer support to the idea that people phub to cope with unpleasant emotions, such as immediate feelings of boredom.

Zhao et al. (2021) studied the relationships between boredom, impulsivity, and smartphone addiction among university students in recent research. The data found that characteristic boredom, as well as smartphone usage, were all highly positively and significantly related to phubbing behaviour. The study by Elhai et al. (2017), which targeted university student populations, found that characteristic boredom is linked positively with smartphone addiction. Additionally, a study by Huang (2014) found that Boredom was found to be strongly and positively connected to not just social media addiction, but also all four addiction symptoms, namely preoccupation, alleviation of unpleasant feelings, negative consequences, and loss of interest in offline activities.

According to Qasim (2019), in a study conducted on undergraduates, the number of undergraduate males and girls exhibiting phubbing behaviour is greater than 50%, indicating an alarming rise in disruptive mental health indicators such as anxiety or failure to cope with real relationships. An astonishing 90% of the population spends more than 4 to 5 hours each day on their phones, and approximately 86%of undergraduate students are highly fussy about keeping their

phones updated with all the latest programmes that can be used right away. It was also notable that almost 61% categorically denied visiting any place where they could not use their cellular service. Their refusal to answer such a question, as well as the
increasing percentages of time spent demonstrates the phubbing nature of undergraduate students.

Conceptualizing on Depression

According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), depression is characterised by a loss of excitement and pleasure in practically all activities, as well as a depressed mood; irregularities in appetite and sleep; decreased energy; feelings of worthlessness, and guilt; and trouble reasoning, focusing, and making decisions. (American Psychiatric Association, 2013). Depression, as illustrated in the cognitive model, may also be explained by three main aspects: the cognitive triad, dysfunctional cognitive self-schema, and cognitive distortions, which refer to a negative viewpoint of oneself, life, and the future (Bresolin et al., 2020). Like other types of illness, depression is more prone to manifest itself in early adulthood, and it can occasionally occur along with undergraduate students (Bresolin et al., 2020). Students in universities are more likely than the general population to suffer from depression (January et al., 2018).

Stressful life experiences are common among university students, about 85% to 99% reporting at least one stressful encounter in their lives (Anders et al. 2012). Young people face significant changes such as separation from family and social circles and adaption to new routines, a crisis scenario may arise.

These situations may cause students to have a more negative perception of their adaptation to the university setting, course, and future career, which may be linked to the cognitive model of depression, in which the person has pessimism about himself, the world, and the future has a cognitive schema that distorts reality, following unpleasant patterns, and cognitive errors that adapt

reality to the negative schema, reinforcing depressive beliefs (Bresolin et al., 2020). A recent study found a rise in the prevalence of psychiatric illnesses such as depression, anxiety, suicide, and mental health deterioration among university students (Mortier et al., 2018). Excessive stress in one's life can have a severe influence on one's mental and physical health, as well as predict poorer university grade point averages among students (Anders et al. 2012). In people who experience substantial perceived

stress, higher depression severity is associated with dependence on maladaptive coping techniques (Kamimura et al., 2015), which may raise the likelihood of worse mental health outcomes. The symptoms of depression and anxiety might be modest, ranging from a change in mood to sleeping problems and feelings of sadness (Peres et al., 2017).

Depression and Phubbing

Phubbing is linked to mental health; indirect and direct beneficial correlations between phubbing and depression have been discovered in people of all ages (Wang et al., 2017). Phubbers possess poor psychological well-being, as well as high levels of anxiety and depression (Davey et al., 2018).

Sun and Samp (2021) indicated that depression impacted the amount of friendship satisfaction not only directly, but also indirectly through phubbing. It implies that friend phubbing is related to lower levels of friendship satisfaction among students. Prior studies revealed that relationship satisfaction was strongly associated with smartphone use, which might give support to this conclusion (Miller-Ott et al., 2012). This might be seen as time spent with friends being less valuable in terms of happiness with friends for people who use smartphones regularly (Rotondi et al., 2017). Those who often phub others may be easily distracted by their smartphones during face-to-face conversations, preventing them from giving full attention to the exchanges. Along with their

dissatisfaction with their face-to-face encounters and subsequent relationships, they are likely to be upset with their smartphone's dispersion of attention.

Next, Erzen et al. (2019) explored that among neurotic individuals, another probable reason for phubbing may be a predisposition to exhibit depression in research with 545 university students. It is well recognised that neurotic people are susceptible to depression (Chu et al., 2020). Research has similarly shown that depression has a positive correlation with phubbing behaviour (Davey et al., 2017; Wang et al., 2017). Aside from that, the outcomes of this study indicated that being phubbed was connected with anxiety, depression, negative self, somatic symptoms, and aggressiveness in a positive and significant way.

Despite the fact that prior research is lacking, studies show that communication between phubbers and those being phubbed is negatively impacted (Vanden-Abeele & Postma- Nilsenova, 2018). One explanation for this consequence is that persons being phubbed consider themselves to be neglected and ignored by phubbers (Nazir, 2017).

Not only that, Ivanova et al. (2020), concluded that the greater the levels of smartphone addiction and phubbing, the greater the degree of depressive emotions in research with 402 university and college students from Ukraine.

Conceptualizing on Loneliness

Loneliness is described as where an individual has few or no interpersonal relationships (Tian et al., 2020). Loneliness is a distressing, subjective experience that occurs when one feels their social relations are not met to their needs (Matthews et al., 2016).

Hawkley and Cacioppo (2010) explained that loneliness happens when an individual's existence is unimportant, worthless, and feels completely invisible to surrounding people. Besides, loneliness has

a negative consequence in terms of emotion, behaviour, cognition, and health. This means the students will view the loneliness in a more negative view.

Thomas et al (2019), discovered that 34% of undergraduates are feeling lonely to some extent. This shows evidence that undergraduates can suffer from loneliness. Ang et al. (2019) discovered that students who are in excessive usage of smartphones and the internet could lead to loneliness. Besides, students tend to avoid internal conflicts such as depression, and other difficulties after spending an enormous amount of time on the internet and avoid mingling in real life, causing loneliness. Drevitch (2020) also stated that an individual might be feeling hopeless if they are feeling lonely for a longer period as the human brain tend to exaggerate the seriousness of a situation. Additionally, undergraduates are vulnerable to the negative impact of loneliness (Dannel et al., 2017).

Loneliness and Phubbing

Matthews et al. (2016) stated that an alternative key to understanding phubbing behaviour is loneliness. Bian and Leung (2014) also indicated that loneliness plays an important role in phubbing behaviour. Besides, students with a greater level of loneliness are capable to engage in phubbing as they need a stimulus to make them feel sociable (Bian & Leung, 2014). Hence, the study discovered that students who feel lonely are more likely to involve in phubbing behaviour.

Moreover, collectivistic people tend to see themselves as vital parts of social interactions, hence they are more prone to feel lonely when studying abroad (Karadag et al., 2015). This means that they were more likely to use their smartphones as a tool for them to cope with their lonely condition. Therefore, they may overuse smartphones to the point that interfere with their offline social relationship, which leads them to phub their communication partners (Subagio & Hidayati,

2017). Hasmujaj (2016) also indicated that undergraduates utilize phubbing behaviour as a defense mechanism to avoid loneliness.

In addition, snowball sampling was used to acquire 478 students to complete the online survey. According to the findings, loneliness is an influential factor in predicting smartphone addiction. They argued that smartphones serve as an intermediate for lonely individuals to participate in a variety of social activities such as chatting and online gaming. As a result, lonely people have less face-to-face connection and may choose to communicate with others via smartphone. As a result, this demonstrates the act of phubbing,
in which people neglect face-to-face interaction in favour of focusing on their smartphones (Haigh, 2015).

Besides that, Al-Saggaf and O'donnell (2019) stated that loneliness encourages undergraduates to feel more isolated from reality and immerse themselves in a virtual world which leads to phubbing behaviour. This study was supported by Stead and Bibby (2017) explained that when an individual feels lonely, they would attempt a behaviour that makes them feel good although they are in a social setting. Similarly, when students are feeling lonely they are more likely to engage in phubbing as an escape from their loneliness (Karadag et al., 2015).

Conceptualizing on Self-esteem

Self-esteem is viewed as an appraisal where people express themselves as good or bad and make decisions about their self-worth (Abdullah & Roslan, 2021). People with high self- esteem tend to view themselves as good and worthy and that others have a positive view of them. However, people with low esteem tend to view themselves as less worthy and incomplete compared to others. Self-esteem is a quality that varies from person to person, with some experiencing high self-esteem while others have low self-esteem. According to Garcia et al (2019), when an individual failed to

accomplish something harmful, they might feel neglected or criticized, thus, the negative qualities of their self-concept become more visible, and eventually experience low self-esteem.

Likewise, low self-esteem has a significant impact on mental health which may hinder successful development and growth, particularly in undergraduates (Ketata et al., 2021).
Choo et al (2017), discovered that low self-esteem among undergraduates leads to antisocial behaviour. Additionally, students with low self-esteem are more likely to disengage from the task, hesitant to try new things, or cannot tolerate a distinctive level of frustration. They also tend to pretend like they do not care to cover up their lack of confidence (APA, 2020).

Self-esteem and Phubbing

As mentioned above, self-esteem is referring when people express themselves as worthy or worthless about themselves (Abdullah & Roslan, 2021). Students require self- esteem to succeed in their life. Self–esteem can help students to improve their day-to-day life events (Rosi et al., 2019). A high level of self-esteem can encourage the students to engage in healthy behaviors whereas low self-esteem leads students to engage in unhealthy behaviour. Kim et al. (2020), stated that self-esteem is negatively related to phubbing behaviour.
Students who feel unworthy tend to spend more time on their smartphone to improve their self-esteem (Servidio et al., 2018). This means that students with low esteem are at risk of engaging in unhealthy behaviour such as phubbing behaviour (Nguyen et al., 2019).

According to Kim and Lee (2020), as an individual with low self-esteem has negative thoughts about themselves but generally positive beliefs about others, they tend to rely on others for approval and support. This study was supported by Blachnio and Przepiorka (2018) explained that undergraduates with low self-esteem are more likely to engage in a virtual world to gain acceptance and support which leads them to engage in phubbing behaviour. Additionally, students with lower

self-esteem have a higher level of smartphone usage. As to cover up their low-esteem in a social setting, undergraduates are more likely to engage themselves in phubbing behaviour (Mulyana & Alriani, 2017).

Furthermore, Chiu et al. (2013), conducted a study to examine the association between self-esteem and phubbing behaviour among undergraduates. The findings stated that self–esteem was negatively related to phubbing behaviour. These findings were supported by Deng et al. (2015) in their study. They explained that students with low self-esteem are more likely triggered by an unrealistic situation from the virtual world. When they are obsessed with the unrealistic approval in the virtual world, probably they will spend more time on smartphones (Blachnio & Przepiorka, 2018). Therefore, students with low self-esteem are more likely to involve in phubbing behaviour.

Theoretical Framework

Cognitive Behavioral Theory (CBT) by Aaron Beck (1967) is the foundation of the cognitive model that describes that dysfunctional thoughts (negative thoughts) can impact an individual's mood (upset feeling/emotions) which drive their action (unhelpful behaviour) as illustrated in Figure 2.1. This theory has been supported by past researchers who applied it in their study to explain the factors associated with phubbing behaviour (Efriani et al., 2020; Solecki, 2021; Youarti and Hidayah (2018). This framework provides a visualized framework and reveals the potential mechanism of a relationship.

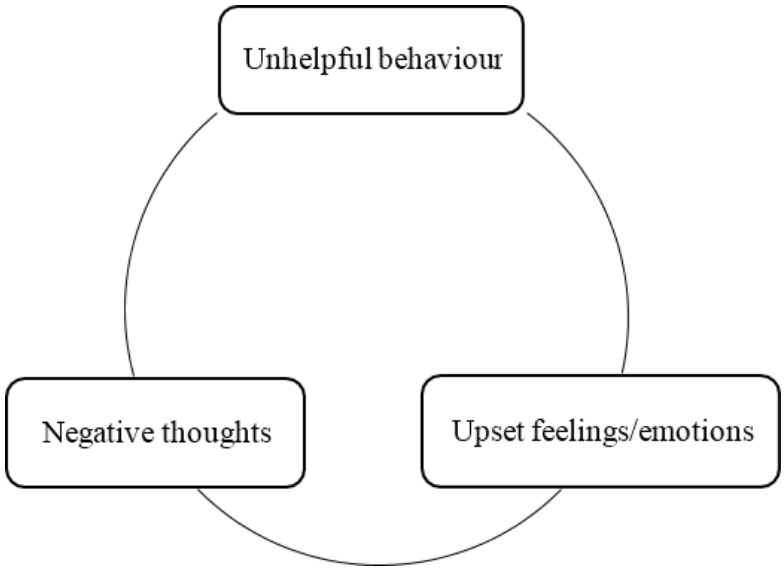
The cognitive model revolves around three components: thoughts, feelings, and behaviour. It emphasises the relationship between our thoughts, our feelings, and our behaviours (Mastroleo et al., 2020) More specifically, how our thoughts change the way that we feel, which subsequently changes the way that we act.

Besides, there is three various level of cognition such as core beliefs, dysfunctional assumptions, and negative automatic thoughts (Beck, 2012). Core beliefs refer to the beliefs that one holds about their self, others, and the world. These beliefs are learned from early childhood life and experiences that happen to them in their life. For instance, people with negative perception may view themselves as "I am useless" which lead them to have similar perception towards others and the world (Beck, 2012).

Furthermore, dysfunctional assumptions refer that an individual may establish rigid and conditional norms to live. These assumptions could be unrealistic and maladaptive.
Negative automatic thoughts are thoughts that arise unintentionally under certain circumstances. An individual with negative thoughts is often overestimated an issue and underestimate their ability to cope with the situation (Beck, 2012). This may directly
impact the behaviour of an individual. Therefore, the greater the negative automatic thoughts the greater the chances to involve in unhealthy behaviour. This means that thinking about a situation is related to the way people feel and behave. When we have negative thoughts, it may affect our emotions and consequently, unhealthy behaviour occurs.

Figure 2.1

CBT Framework



Conceptual Framework

In the present study, the variables involved are boredom, depression, loneliness, self- esteem, and phubbing behaviour. Figure 2.2 shows boredom, depression, and loneliness as positively predicting phubbing behaviour while self-esteem negatively predicts phubbing behaviour. In this research study, boredom, loneliness, depression, and low self-esteem are all hypothesised to be predictors of phubbing behaviour among Malaysian undergraduates. The current study is based on the cognitive behavioural theory (CBT), which identifies poor self- esteem as a negative thought. Loneliness, boredom, and depression as upset emotions.

Phubbing behaviour is unhelpful behaviour. With low self-esteem, high depression, high boredom, and high loneliness, one is likely to engage in phubbing behaviour. Hence, the application of CBT in the study can investigate whether boredom, depression, loneliness, and self-esteem predict phubbing behaviour among undergraduates in Malaysia.

Because the variables are linked to the CBT model, this theory was applied in this study. An increasing amount of data shows that emotions influence our cognition and behaviour, memory, learning, attention, and perception (Asutay & Vastfjäll, 2012). So, phubbing behaviour would be the behavioural element in this study.

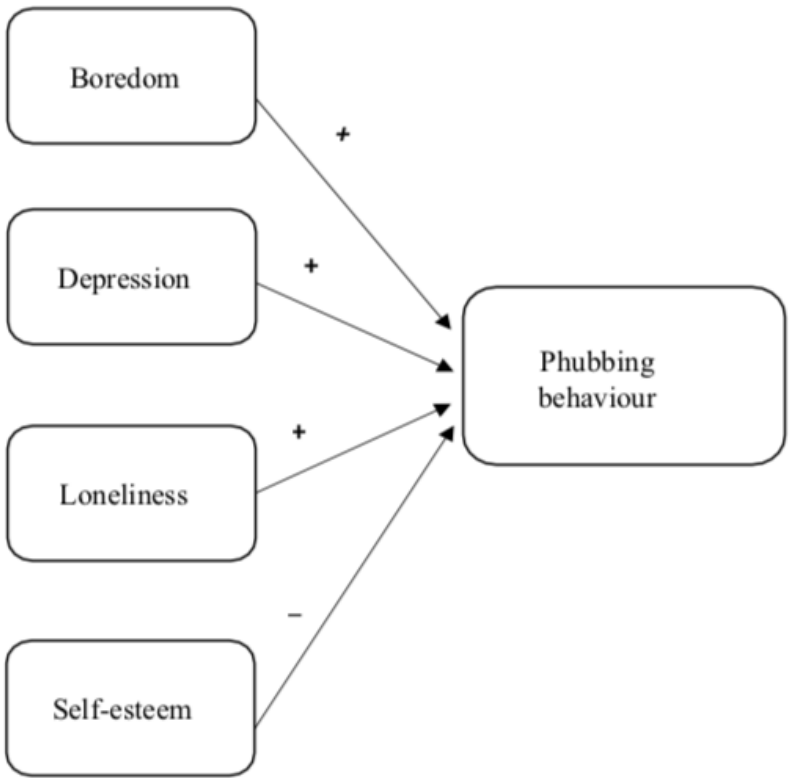
Low self-esteem is regarded as a negative thought under the cognitive model. According to Rossi et al. (2020), negative thoughts are impressions of oneself, others, or the universe in general that are accompanied by negative ideas. Self-esteem is a component of self-concept that describes a complete evaluation of an individual's worth, exhibited as a positive or negative attitude toward them (Minev et al., 2018). Xie et al. (2020), have found that self-esteem has a positive effect on phubbing. At the same time, a negative association was discovered between phubbing and self-esteem (Benvenuti et al., 2020; Bitar et al., 2021). In participants with a variety of co-morbid conditions, CBT is far more effective than a waitlist condition in lowering low self-esteem and related symptoms and diagnoses (Waite et al., 2012).

Next, boredom, loneliness, and depression are classified as upset feelings or emotions. According to Danckert and Merrifield (2016), boredom is an unpleasant experience caused by an inability to engage with one's environment appropriately despite one's best efforts (Ang et al., 2019; Al-Saggaf, 2020). CBT procedures appear to be useful for alleviating loneliness, according to empirical studies (Kall et al., 2019; Shapira et al., 2021). Next, loneliness is a feeling of dissatisfaction that happens when a person perceives his or her social interactions to be less rewarding than intended (Okwaraji et al., 2018). According to Al-Saggaf & O'donnell. (2019); Yuan et al. (2019), loneliness is strongly linked to phubbing.

Simultaneously, evidence indicates that loneliness has nothing to do with phubbing behaviour (Ergün et al., 2019). CBT is a viable cure for loneliness because it may target cognitive biases associated with underlying social threat perception, as well as cognitive biases associated with depression and anxiety in general (Smith et al., 2020). Depression, on the other hand, is a negative emotional state that causes a person to be upset, disheartened, and hopeless (Allan Schwartz, n.d). Furthermore, according to the findings, there is a significant positive association between depression and phubbing behaviour (Chu et al., 2021; Ivanova et al., 2020; Wang et al., 2017). According to National Institute for Clinical Excellence (NICE) standards, CBT is an evidence-based psychotherapy for mild, moderate, and severe depression (Wise, 2019).

Figure 2.2

Proposed Conceptual Model



Chapter III

Methodology

Research Design

The current research utilized a cross-sectional research method to look into the predictive effects of boredom, depression, loneliness, and self-esteem on phubbing behaviour among Malaysian undergraduates. The reason conducting cross-sectional research was relatively easy to do, with fewer ethical issues and lower costs (Wang & Cheng, 2020). This study applied a cross-sectional quantitative method to collect data which comes in the form of a survey. Besides, using a quantitative method enables the researcher to save time and effort in conducting research (Daniel, 2016). The cross-sectional method that applies in this study is cost-effective as data would only need to be collected once from the participants (Wang & Cheng, 2020). Besides, cross-sectional research is suitable for this study since it uses to measure causes and outcomes (Sedgwick, 2014).

The current study used a descriptive and quantitative method to collect data by distributing a self-administered online questionnaire. Thus, this study distributed the self-administered questionnaire to the target population via online platforms (i.e., WhatsApp, Facebook, and Instagram). Furthermore, IBM Statistical Package of Social Science (SPSS) statistic computer software version 23 was used to analyze the result.

Sampling Method

In the present study, the non-probability sampling approach was used. According to Sharma (2017), the non-probability sampling method relies solely on the researcher's subjective judgment and does not use random selection. Since there were numerous conditions to be met, this sampling technique was suitable to use in the current study. It also assisted researchers in recruiting participants by recognizing their qualifications. Purposive sampling, also known as judgmental

sampling, was used in this study as part of the non-probability sampling method. This sampling technique is used when researchers select a sample of participants based on research inclusion criteria (Etikan., 2016). The people chosen for recruitment are regarded as a representative sample of the population while using purposeful sampling. Purposive sampling is based on the characteristics, capacity, and willingness of the participants to take part in the study (Raj & Thapa, 2015).

Furthermore, purposive sampling was chosen in this study because it allows a researcher to focus on certain aspects of a sample population that captivates participants' curiosity and can draw relevant inferences (Verma et al., 2019). Therefore, this sampling method allows the researcher more leverage to execute and bring out the best information available from the samples. It is highly reliant on the researcher's knowledge, judgement, and intellect (Patino & Ferreira, 2018).

The inclusion criteria of the current study comprised (1) those aged between 18 to 30 (2) those who pursue an undergraduate degree in Malaysia (3) and smartphone users. According to Mohamad et al. (2021), students enrolled in undergraduate degree programs were 18 years to 30 years old. Thus, the criterion of participants for the current study were students pursuing undergraduate degrees over 18 and having smartphones in Malaysia. Purposive sampling is affordable, time-saving, and efficient. Not only that, according to Campbell et al. (2020), purposive sampling is applied to better fit samples to the research's aims and objectives, increasing the rigor of the study and the reliability of the data and outcomes. Furthermore, it requires identifying and choosing individuals or groups who are knowledgeable and talented about an interesting phenomenon.

Consecutively, the participants were chosen based on their presence at the appropriate time. Besides, numerous studies on phubbing behaviour have applied the purposive sampling method to collect data from undergraduates (Fani Reza., 2018; Haque et al., 2021; Verma et al., 2019). The

current study used an online survey due to cost-effectiveness and high efficiency which took less time and effort (Leiner, 2016). Furthermore, this data was collected online (Chaturvedi et al., 2021). According to Babulal (2022), the Education Ministry and institutions should be ready to resume offering online courses if the number of COVID-19 cases rises. Besides, Malaysian universities implemented hybrid learning in which physical classes are seamlessly combined with online classes (Ignatius, 2021). As a result, the current study used online data collection since the researchers were unable to perform a paper-and-pencil survey due to the new phase of hybrid learning's poor accessibility and to prevent physical meetings during data collection, which could result in a high possibility of infection (Ganasegeran et al., 2020).

Sample Size

For the current study, G*Power computer software, version 3.1.9.4 developed by Faul (2014) was used to calculate the minimum sample size. G*Power has four parts, including effect size, probability of alpha error, statistical power, and a number of predictors. The present study obtained an average effect size of .13 based on the calculated Cohen f2 effect size from four different correlation coefficients (.05, .18, .17, and .12) reported by different past studies (Al-Saggaf, 2020; Choitpitayusunondh, 2018; Ergun et al., 2019), the statistical power of .95 and a probability level .05 with four predictors. The sample size calculated by using the G*Power software was 148. (refer to Appendix __B_).

Participants

Malaysian university students were the intended participants. Students who were still enrolled in bachelor's degree programs, meanwhile attending private or public universities were recruited for the current study. The current study enlisted the participation of 161 Malaysian university students. They ranged in age from 18 to 30 (M=23.68; SD=2.897). There were 82 Indians,

48 Chinese, and 31 Malay people among them. There are 60.2% were female (n=97), and 39.8% were male (n=64).

Location

The current investigation was conducted in Malaysia. The information was gathered through an online survey with a link, and a QR code was provided to individuals who fit the criteria through social networking sites (e.g., Facebook, Instagram and WhatsApp).

Instruments

Short Boredom Proneness Scale- Short Form (BPS-SR)

The original Boredom Proneness Scale (BPS) by (Farmer & Sundberg, 1986) is a 28-item which measures a person's proclivity towards boredom. Struk et al. (2016) created an eight-item, single-factor version of the BPS, the Short Boredom Proneness Scale (BPS-SR). BPS-SR has demonstrated strong relationships with the external component of the Boredom Proneness Scale (BPS), which implies a person's need for strong environmental stimulation, and with other relevant measures, such as depression (Goldberg et al., 2011), and anxiety (Hunter & Eastwood, 2016). The BPS-SR is an eight-item scale whose responses are rated on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The potential scores range from 1 to 56. It is also reported to have a good-to-excellent internal consistency, with α ranging from 0.87 to 0.92 (Elhai et al., 2017; (Drody et al., 2022; Wegmann et al., 2018). High scores indicate a higher tendency to experience boredom. Examples of items in this scale are “I find it hard to entertain myself”, “Much of the time, I just sit around doing nothing”, and “In most situations, it is hard for me to find something to do or watch to keep me interested”. The internal reliability of the pilot test in the current study was .91, while the actual study was .90. It was claimed to have high reliability.

The 10-item Centre for Epidemiological Studies Depression Scale (CES-D-10)

Center for Epidemiologic Studies Depression Scale (CES-D) was primarily designed by Radloff (1977), for use in research on the epidemiology of depressive symptoms in the general population. The original CES-D included 20 items and demonstrated significant psychometric properties in measuring depressive symptoms and identifying a depression diagnosis. Based on item total correlations, a shortened 10-item version (CES-D-10) was developed that offers improved efficiency and ease of scoring (Andresen et al., 1994). The 10-item measure has demonstrated strong psychometric properties, including predictive accuracy and high correlations with the original 20-item version, in community populations (Bjorgvinsson et al., 2013). The possible range of the 10-item scale is 0 to 30, and a cut-off score of ten or higher indicates the presence of significant depressive symptoms (Zhang et al., 2012). They indicate their responses on a 4-point scale. The sample items are “I was bothered by things that usually don’t bother me”, “I felt that everything I did was an effort”, and “I could not get “going.” Not only that, item 5 and 8 are reversed items, which are positive affect statements. The two statements are “I felt hopeful about the future”, and “I was happy”. Options for each item range from 0 (*rarely or none of the time*) to 3 (*all of the time*). High internal consistency (Cronbach alphas = .76 (Kilburn et al., 2018). The current research examined at the internal reliability of the pilot study (.81) and the real study (.71), which is deemed good internal reliability.

Revised UCLA Loneliness Scale (ULS-6)

The ULS is a short form of the 20-item Revised UCLA Loneliness Scale (Russell et al., 1978), that assesses subjective feelings of loneliness (Neto, 2014). It is one of the most often used measures for assessing loneliness and social isolation. All items were scored on a 4-point

scale ranging from 1 (*never*) to 4 (*often*). Therefore, the total ULS-6 score ranged from 6 to 24. Higher loneliness is indicated by a higher score. The reliability of the translated scale was examined with Cronbach's standardized alpha which was 0.76. Examples of items in this scale are "How often do you feel that you lack companionship?", "How often do you feel left out?", "How often do you feel that people are around you but not with you?" The internal reliability of the pilot and actual studies was assessed in this investigation, and the results were .84 and .86, respectively. While it is close to the excellent reliability range, it may be considered as good reliability.

Rosenberg Self-Esteem Scale (RSES)

One of the most recognized instruments for evaluating one's level of self-esteem is the Rosenberg Self-Esteem Scale (RSES). Self-esteem is one of the elements of self-concept, according to Rosenberg (1965). In other words, the RSES is a 4-point Likert-type scale that is used to measure and assess a person's self-esteem by referring to self-acceptance and self-respect. The scale ranges from 0 (*totally disagree*) to 3 (*totally agree*). This scale had also been translated into many languages. It consisted of 10 questions and has a continuum of self-worth. Moreover, this scale has two factors. The first factor assessed positive self-esteem (items with positive wording), whereas the second assessed negative self-esteem (items with negative wording). 5 items were positively worded (items 1, 2, 4, 6, 7) and another 5-items were reverse scoring (items 3, 5, 8, 9, 10). Item ratings are summed up, with higher scores indicating a greater positive evaluation of them. The scores were added together, with higher scores showing a higher level of self-esteem. In previous studies, the RSES was shown to have great internal consistency, with values of .89 and .91, respectively (Kielkiewicz et al., 2019). In this study, the RSES's Cronbach's alpha was reported at.69, indicating a moderate level of

reliability. Examples of items in this scale are “On the whole, I am satisfied with myself” (Positive), “At times I think I am no good at all” (Negative), and “I feel I do not have much to be proud of” (Negative). The internal reliability of the pilot and actual study were assessed in this study, and the results were .90 and .79, respectively. While it is close to the outstanding reliability range, it may be considered as good reliability.

Phubbing scale (PS)

The phubbing scale (PS) used in this study was developed by Karadag et al. (2015) with the aim of recognizing communication issues resulting from individuals focusing on their smartphones. The 5-point Likert-type scale is a self-report measure that contains 10 items and it contains two sub-dimensions of communication disruption and smartphone obsession. The first consists of five items, and higher scores indicate that participants frequently interrupt their conversations when using their smartphones in face-to-face interactions. The second, the phone obsession, is measured through 3 items, suggesting that participants constantly need their smartphones in face-to-face communication environments. The Cronbach reliability coefficients related to the sub-dimensions of the scale are .89 and .85. High scores indicate a higher tendency to experience boredom. Examples of items in this scale are “My phone is always within my reach”, “The time allocated to social, personal or professional activities decreases because of my mobile phone” and “I feel incomplete without my mobile phone”. The internal reliability of the pilot and actual studies was examined in the present research, and the results were 0.87 and 0.87, respectively. Given that it is so near to the exceptional reliability level; it may be classified as having good reliability.

Procedure

The researchers had requested approval from the UTAR Scientific and Ethical Review Committee (SERC) (refer to appendix) because the current investigation required the use of human subjects. The pilot study was then taken place. Next, the actual study of the predictive roles of boredom, melancholy, loneliness, and self-esteem on phubbing behaviour among Malaysian students has begun.

Qualtrics, an online survey platform was used to create the survey form. The following criteria were used to select the participants: (1) They must be at least 18 to 30 years old (2) They must be undergraduates in Malaysia, and (3) They must own a smartphone. A URL link and a QR code to the survey were used to recruit participants. The survey starts with electronic informed consent, demographic data, a boredom scale, a depression scale, a loneliness scale, a self-esteem scale, and a phubbing scale. Before proceeding with the survey, participants must read and respond to the Personal Data Protection Statement and consent form, and declare that they had willingly consented to the conduct of this online survey. For data analysis and interpretation, the IBM Statistical Package for Social Science (SPSS) statistic computer program version 23 was used.

Pilot Study

Prior to starting the actual study, a pilot study was undertaken to determine if the research was feasible. According to Noordini et al. (2018), 10 to 30 participants have been recruited in a pilot study. The current study's researchers invited 30 people to participate in the study and used Qualtrics to construct an online survey. The research objectives, consent form, demographic questions, and instrument items were all included in the survey. The researchers obtained consent from targeted students and distributed questionnaires mostly using social media sites (e.g., Facebook, Instagram,

and WhatsApp) as well as QR codes to get fast responses. Furthermore, before distributing the survey link and QR code, the researchers inquired about respondents' gender, race, and institute to verify their identity.

Actual Study

The actual study was conducted once the pilot test findings were reviewed. Targeted participants were given access to the online survey with their informed consent using a variety of platforms, including Facebook, WhatsApp, Instagram, and QR code. To assure data quality and the accuracy of the results, data that met the exclusion criteria and incomplete data were also eliminated prior to completing data analyses. The remaining completed data were analyzed with the IBM SPSS Statistic 23 computer software.

Data Analyses

Data Cleaning

The current study gathered 171 responses from the intended participants. The current study was unable to include ten responses because they were either incomplete, blank, had missing values, or did not fit the requirements. There is a potential multivariate outlier in the current study that has not violated any indicator benchmarks (Cook's Distance, Mahalanobis Distance, and Centered-Leverage Value). As a result, only 10 incomplete responses were eliminated, leaving 161 responses to be evaluated as the final sample.

Normality Test

There are five indicators for the assumption of normality, which are as follows: (a) histogram, also known as the frequency distribution, which plots on the values and provides a distribution to judge the shape and outlier data; (b) histogram graph which represented a graphical plot that determined whether the distribution is around its mean or not (symmetrical

bell curve shape) to be considered as normally distributed (Gupta et al., 2020); (b) Quantile-Quantile plot (Q-Q plot), it is a scatterplot that involves a straight line with data points, and the points plotted along with the straight line are concluded as normally distributed (Bewick et al., 2003); (c) Skewness and kurtosis are symmetry and peakedness distribution measurements, respectively (Kim, 2013), and the acceptable range for both measurements was ±2 (Garson, 2012); (d) The Kolmogorov-Smirnov test is used to examine data distribution with a significant value, as p-value less than .05 indicate that the data is not normally distributed (Gupta et al., 2020).

Multiple Linear Regression (MLR)

Multiple linear regression (MLR) was used in this study to investigate the correlation between the variables being investigated (e.g., Boredom, depression, loneliness, self-esteem). Following the assumption of normality, the MLR assumption was immediately tested.

Multivariate outliers. Outliers are defined as the influencers of data means and standard deviations, as well as some important information such as a contemporary phenomenon or certain human behaviour (Kannan & Manoj, 2015) The occurrence of abnormal data with several variables is referred to as a multivariate outlier. It is not an extreme value with a high or low score (Kannan & Manoj, 2015). The Mahalanobis Distance, Cook's Distance, and Centered-Leverage Value are the three main tests used to analyze multivariate outliers. To find outliers, the Mahalanobis Distance is analyzed using the sample means and covariance matrix (Kannan & Manoj, 2015). The Mahalanobis Distance benchmark is the value of outliers that is less than 15 (Barnett et al., 1979). Cook's Distance is used to determine an individual's score, which influences the regression model (Zhu et al., 2012). The outliers which have met the criterion (<1) were concluded as acceptable points (Cook & Weisberg, 1982). Centered

Leverage value signifies the extent of influence the outcome variable's observed value has over the predicted value. Hoaglin and Welsch (1978) suggested that cases with values of more than the centered-leverage value calculate by $\frac{2(p+1}{n}$, whereby possible multivariate outliers where p represents the number of independent variables and n represents the sample size. Finally, potential outliers had to be identified using the cut-off ranges of each method.

Multicollinearity. According to Daoud (2017), multicollinearity is defined as the numerous correlations of predictors. Two indicators, tolerance and variance inflation factors (VIF), were used to determine the existence of multicollinearity. According to Daoud (2017), the presence of correlation influenced the standard error and variances of the examined predictor's coefficient, while it directly linked with VIF and possibly led to non-multicollinearity. Tolerance is portrayed as reciprocal of VIF (Miles, 2014). The cut-off range for tolerance is greater than .10 while VIF is lower than ten (Hair et al., 2010).

Independence of residuals. It was examined using the Durbin-Watson statistic which is used to measure autocorrelation in residuals (Chen, 2016). Data that correlates with itself over time will exhibit autocorrelation, which will cause the standard error to be understated and result in incorrect conclusions when choosing meaningful predictors. According to the standard of Champion et al. (1998), the cut-off ranges below one and greater than three. Based on the rule of thumb for the Durbin-Watson test, the test statistics value of approximately two is acceptable (Reddy & Sarma, 2015).

Test of normality of error, linearity of error, and homoscedasticity. Normality of error stands for the existing residual is normally distributed, linearity of error represents the linear correlation of X and Y, and homoscedasticity is the variances of residuals are consistent in each of the levels X (Schützenmeister et al., 2012). The scatterplot to examine the normality

of residuals, linearity of residuals, and homoscedasticity. The residuals were not detected because the scatterplot points were not evenly distributed around the diagonal line with fairly constant variance (Osborne & Waters, 2002).

Chapter IV

Results

Normality Assumptions

The present study received 171 responses from the target participants. However, 10 responses were removed due to failure to fulfill the inclusion criteria, straight-lining data, and high missing values. The normality test was examined using histogram, Quantile-Quantile (Q-Q plot), Skewness and Kurtosis Values, and the Kolmogorov –Smirnov Test.

Histogram

Additionally, histogram was used to assess the distribution of normality. Each of the variables of histogram displayed a bell-shaped curve, and the distribution was close to its mean, indicating that the assumption of normality for histogram was met (refer to appendix .E)

Quantile-Quantile (Q-Q) Plot

The normality was also assessed by the Q-Q plot. The assumption of normality was achieved as the points were evenly distributed along a diagonal line in the Q-Q plot for each variable (refer to appendix E)

Skewness and Kurtosis Values

According to Table 4.1, it can be seen that the skewness and kurtosis value of each variable is within the acceptable range of -2 and +2.

Table 4.1

Skewness and Kurtosis Value for Each Variables

Variables	Skewness	Kurtosis
Boredom	-.245	-.853
Depression	.017	-.634
Loneliness	.039	-.647
Self-esteem	.456	-.435
Phubbing behaviour	-.087	-.615

Kolmogorov-Smirnov (K-S) Test

Kolmogorov-Smirnov test were also used to check normality of assumption in the current study. Mishra et al (2019) stated that when the result shows a non-significant p-value (p >0.05) is normally distributed. Based on Table 4.2, the results of K-S test for boredom, depression, loneliness, self-esteem and phubbing were found smaller than the significant level (p<.05). Hence, this indicates that the normality assumption was not met.

Table 4.2

Kolmogorov-Smirnov (K-S) Test

Variables	Significant value
Boredom	.007
Depression	.000
Loneliness	.010
Self-esteem	.000
Phubbing Behaviour	.030

Summary

The five indicators of normality demonstrate that there were no violation in histogram, Q-Q plots, skewness and kurtosis. However, the K-S test violate the normality assumption. Peat (2005), stated that the K-S test is highly sensitive to extreme values. K-S test should not only be used for normality assumption due to its low power (Thode, 2002). Hence, it can be concluded that the current study is normally distributed as the four indicators f normality show no violation except for K-S test.

Outliers

Multivariate Outliers

The present study has applied Mahalanobis Distance, Cook's Distance, and Centered-Leverage value to investigate multivariate outliers using standard deviation of two. 8 cases were exceeding the standard deviation of two, which considered as potential multivariate outliers. According to Mahalanobis Distance, the assumption was not violated as none of the cases exceed the benchmark of 15 (Barnett & Lewis, 1978). Besides, all of the cases in cook's distance has lower than 1 (Cook & Weisberg, 1982). Moreover, the calculated CL value of the present study 0.0621 was produced by the formula $\frac{2(p+1)}{n}$. According to Hoaglin and Welsch (1978), cases that have higher value than CL were considered as potential multivariate outliers such as case 50. However, none of the cases were removed as it has not breached the benchmark of residual statistic. Since none of the cases have significant impact on the model's parameters, all of them were included in the data analysis.

Table 4.3

Multivariate Outlier Test

Case ID	Mahalanobis Distance	Cook's Distance	Centered Leverage Value
5	5.08307	.05183	.03177
21	4.35794	.08147	.02724
50	10.69416	.09212	.06684
57	3.53328	.03600	.02208
98	6.01990	.04054	.03762
117	4.92849	.04289	.03080
120	.43396	.00863	.00271
125	2.41159	.02397	.01507

Descriptive Statistics

The present study consisted of 161 participants where 60.2 % of females and 39.8% of males. Besides, the majority of the participants were Indian (50.9%) whereas 19.3 % of Malays, and 29.8% of Chinese were participate in this study. The age ranged fall from 18 to 30 years old (M=23.68 , SD=2.897). Besides, 34.2% of participants were phubbing 2-3 times per day while 28 % of participants were phubbing less often. Furthermore, majority of the participants spends 1-2 hours per day on phubbing behaviour while few participants spends less than an hour per day engaging in phubbing behaviour in daily life.

Table 4.4

Demographic Information of Participants and Variables

Variable	n	%	*M*	*SD*
Age			23.68	2.897
Sex				
Male	64	39.8		
Female	97	60.2		
Race				
Malay	31	19.3		
Chinese	48	29.8		
Indian	82	50.9		
Others	-	-		
Phubbing Frequency				
Less often	45	28		
Less than once daily	37	23		
2-3 times per day or more	55	34.2		
4 times per day or more	24	14.9		

Table 4.4 (Continued)

Demographic Information of Participants and Variables

Variable	*n*	%	*M*	*SD*
Phubbing Duration				
Less than 15 min per day	36	22.4		
Less than an hour per day	28	17.4		
1-2 hours per day	51	31.7		
More than 2 hours per day	46	28.8		

Table 4.4 (continued)

Demographic Information of Participants and Variables

Variable	n	%	*M*	*SD*
Main Variables				
Boredom	161		32.33	10.156
Depression	161		21.63	4.850
Loneliness	161		15.68	4.031
Self-esteem	161		18.91	5.515

Multiple Linear Regression Assumptions

Multicollinearity

The present study analyze the correlation of each independent variable, Variance Inflation Factor (VIF) and Tolerance were used. Tolerance and VIF have cut-off points that are above.10 and below 10, respectively (Bager et al., 2017). Table 4.5 demonstrated that there was no multicollinearity problem based on the values of Tolerance and VIF for each independent variable.

Table 4.5

Collinearity Statistics

Variables	Tolerance	VIF
Boredom	.478	2.093
Depression	.562	1.779
Loneliness	.647	1.545
Self-esteem	.732	1.366

Independence of residual

In this study, the residual assumption was examined using the Durbin-Watson test, and the benchmark ranged from 1 to 3 (Durbin & Watson, 1951). Table 4.6 indicated that the assumption was met as there were no violation, and the value near to 2. Hence, the assumption was met.

Table 4.6

Durbin-Watson Test

Model	Durbin-Watson
1	1.788

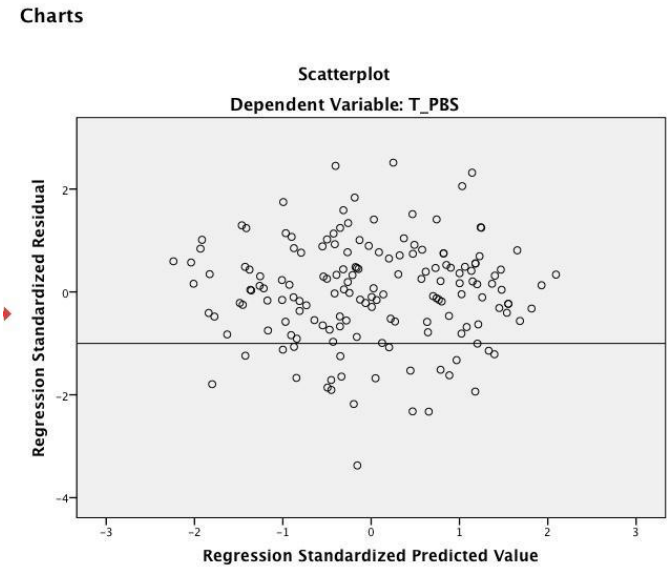
Note. Dependent variable = Phubbing behaviour

Test of Normality of Error, Linear of Error, and Homoscedasticity

According to Figure 4.1, the scatterplot revealed that the residuals were mainly concentrated around the zero line and that the residuals in the surrounding area were distributed randomly which indicates the three assumptions were met.

Figure 4.1

Scatterplot of Standardized Predicted Value and Standardized Residual



Multiple Linear Regression Analysis

In the present study, multiple linear regression was used to examine the predictive roles of boredom, depression, loneliness and self-esteem on phubbing behaviour. Based on the Table 4.7, the model was statistically significant as $F(4, 161) = 46.433$, $p = .000$, and accounted for 53.2% of variance. According to Cohen (1988), the value of R2 greater than .02, .13, and .26 indicates small, medium, and large effect size respectively. Therefore, the model showed a large effect as the value .532 is greater than .26. Besides, Table 4.7 showed the boredom **(**$\beta = .368$, $p = .000$), depression ($\beta = .245$, $p = .001$) and loneliness ($\beta = .245$, $p = .019$ significantly and positively predicted phubbing behaviour while self-esteem ($\beta = -.161$, $p = .012$) negatively predicts phubbing behaviour among undergraduates in Malaysia. The results revealed that boredom, depression, loneliness and self-esteem were significant predictors of phubbing behaviour (refer to Table 4.8, Appendix). Therefore, it can be concluded that all four hypotheses of the study were supported.

Table 4.7

Result of Regression Model

	df	*F*	*p*	Adj. R^2
Regression	4	46.433	.000	.532
Residual	156			
Total	160			

Note. Dependent variable = Phubbing behaviour. Predictors = Boredom, depression, loneliness and self-esteem.

Table 4.8

Result of Regression Coefficient

Model		Std. β	*t*	*p*
1	(Constant)		4.493	.000
	Boredom	.368	4.706	.000
	Depression	.245	3.400	.001
	Loneliness	.160	2.380	.019
	Self-esteem	-.161	-2.545	.012

Note. Dependent variable = Phubbing behaviou

Summary of Results

Table 4.7

Summary of Results

Hypotheses	Decision
H1: Boredom positively predicts phubbing behaviour among undergraduates in Malaysia	Supported
H2: Depression positively predicts phubbing behaviour among undergraduates in Malaysia	Supported
H3: Loneliness positively predicts phubbing behaviour among undergraduates in Malaysia	Supported
H4: Self-esteem negatively predicts phubbing behaviour among undergraduates in Malaysia	Supported

Chapter V

Discussion

H_1: Boredom positively predicts phubbing behaviour among undergraduates in Malaysia.

The regression results support the first hypothesis of the study, which states that boredom predicts phubbing behavior among Malaysian Undergraduate students. Similar to past findings (Al-Saggaf et al., 2018; Elhai et al., 2017; Karadag et al., 2015; Spruyt et al., 2016) the current study shows boredom as a positive predictor of phubbing behaviour. This is because boredom increases when an individual's urge for excitement and the stimuli present in one's environment were not correspond with each other. They may seek excitement from the virtual world and this may lead to phubbing behaviour. Huang (2014), stated that boredom has been linked to addictive behavior. People phub to cope with unpleasant emotions, such as immediate feelings of boredom.

Moreover, German and Latkin (2012), state that people who experience a high level of boredom are more likely to experience negative feelings, which could cause anxiety, and has lower levels of subjective well-being. To avoid boredom, people often seek out new and exciting experiences on a smartphone as it is easily available. Qasim (2019), indicated that Undergraduate students who engaged in phubbing behaviour, use their smartphones as an immediate reaction to their momentary emotions and to deal with rumination problems. The desire to control strong negative emotions may be the driving force behind using technology (Al-Saggaf & O'donnell., 2019). Therefore, people engage in phubbing behaviour to manage their negative emotions.

H_2: Depression positively predicts phubbing behaviour among undergraduate in Malaysia.

Similar to past studies (Ergun et al., 2020; Davey et al., 2018; Ivanova et al., 2020; Wang et al., 2017), the second hypothesis of the study is supported by the findings of the current study, which showed that depression positively predicts phubbing behaviour. This is because depressed people tend to spend more time on the smartphone as a way to deal with depressive emotions, as a result, this

leads to phubbing behaviour (Anders et al., 2012). According to Wang et al. (2017), depression and phubbing behaviour have a "bi-directional" relationship. In particular, depressed could be tempted to use their smartphones excessively to vent their negative emotions, but this leads to an increase in depression. Therefore, depressed people may turn to their smartphones to relieve their negative emotions, and eventually, this leads to phubbing behaviour.

Moreover, Ergun et al. (2020), indicated that depressed people tend to engage in phubbing behaviour more frequently compared to non-depressed people. People with depression tend to believe that interpersonal communication through Internet could alleviate their psychological problems as it is less risky and easy to get support online than face-to-face communication. Sun and Samp (2021), stated that depression harmed friendship satisfaction due to phubbing behaviour. The phenomenon of phubbing does not help an individual to alleviate their depression. Indeed, it increases the level of depression as it reduces interpersonal relationships in reality.

***H_3*: Loneliness positively predicts phubbing behaviour among undergraduates in Malaysia.**

The third hypothesis, which states that loneliness positively predicts phubbing behavior, was validated by the study's findings. The results of the present study were supported by past studies that a greater level of loneliness will be more likely to engage in phubbing behaviour (Bian & Leung, 2014; Karadag et al., 2015, Subagio & Hidayati, 2017). This is because loneliness encourages an individual to feel more isolated from reality and immersing them in a virtual world would be one way for them to feel less alone, eventually, this leads to phubbing behaviour. Exposure to this behaviour also makes people phub, which feeds their negative emotions. Phubbing also makes people lonely and has a detrimental effect on other people's mental health. As a result, communication quality and overall happiness decline as phubbing usage rises (Parmaksiz, 2021).

According to Savci and Aysan (2017), people who experience loneliness are more likely to engage in phubbing behaviour as the world in their smartphone allows them to feel connected to others. Moreover, Tonacci et al. (2019), an investigation into how smartphone use impacts a person's

physiological functioning revealed that using a smartphone increases the likelihood that a person will become emotionally active, even if they are not reliant on a smartphone. This explains why individuals who experience loneliness exhibit phubbing behaviour more frequently than those who are not. The phenomenon of phubbing does not help an individual to alleviate their loneliness. Indeed, it increases the level of loneliness as it reduces the sense of community (Hu & Yang, 2016).

***H_4*: Self-esteem negatively predicts phubbing behaviour among undergraduates in Malaysia.**

The result of the current study found that self-esteem negatively predicts phubbing behaviour which supports the fourth hypothesis. The result is consistent with past studies (Mulyana & Alriani, 2017; Nguyen et al., 2019) which indicate individuals with low self-esteem are more likely to engage in phubbing behaviour. This is because an individual with high self-esteem are more likely to engage in healthy behaviour while individuals with low self-esteem are more likely to engage in unhealthy behaviour.

According to Kim and Lee (2020), individuals with low self-esteem have negative thoughts about themselves but generally favourable beliefs about other people, and they tend to rely on other people for support and approval. Blachnio and Przepiorka (2018) explained that undergraduates with low self-esteem are more likely to engage in the virtual world to gain acceptance which leads to engagement in phubbing behaviour. Furthermore, individuals with low self-esteem are easily triggered by an unrealistic situation in the virtual world. This may cause an obsession with the unrealistic approval from the virtual world, hence they will spend more time on smartphones which leads to phubbing behaviour (Deng et al., 2015). Therefore, students with low self-esteem are more likely to involve in phubbing behaviour.

Implication

Theoretical Implication

The present study implemented Cognitive Behavioural Theory (CBT) to investigate the predictive roles of boredom, depression, loneliness, and self-esteem on phubbing behaviour. Based on the findings, showed that boredom, depression, and loneliness positively predict phubbing behaviour

among undergraduates in Malaysia while self-esteem negatively predicts phubbing behaviour among undergraduates in Malaysia. The significant findings of boredom, depression, loneliness, self-esteem, and phubbing behaviour imply that CBT fits well into the present study. This indicates that this study contributes to the area of study as a novel reference and validates the theoretical aspects. By applying the CBT, the variables in the current study could be explained well in the context of undergraduates in Malaysia. Thus, the present study may serve to broaden perspectives and add insights to the application of Cognitive Behavioural Theory as the findings supported the theoretical literature particularly in the context of phubbing behaviour. The results of this study may help to fill the literature gaps for Malaysian undergraduates.

In a nutshell, this study also provides valuable information for further research as no study focused on boredom, depression, loneliness, self-esteem and phubbing behaviour together in Malaysian context.

Practical Implication

The current study can contribute to the idea of phubbing behaviour and some of its potential underlying factors, which are boredom, depression, loneliness, and self-esteem. However, the findings of the present study showed that boredom is the strongest predictor of phubbing behaviour compared to depression, loneliness, and self-esteem. As such, it can be concluded that boredom could be the fundamental underlying factor that leads to phubbing behaviour. Cognitive Behavioural Therapy approaches play an important role in reducing boredom and other potential underlying factors of phubbing behaviour. The mental health professional should identify the potential causes of phubbing behaviour and undergo behavioural treatment techniques to manage phubbing behaviour.

Moreover, phubbing behaviour is considered a serious threat to the technologically evolving world, and mental health workers and policymakers need to consider this issue. Phubbing behaviour leads to various negative effects such as low trust issues (Robert & David, 2016), poor social interaction, and lower relationship satisfaction (Chotpitayasunondh & Douglas, 2018). Mental health professionals and policymakers should include a policy that should be executed in reducing the

adverse consequences of phubbing behaviour. Public areas such as restaurants, and universities should consider setting a no- phone zone or displaying a positive message such as “put your phone down and respect the person in front of you”. This may directly or indirectly encourage smartphone users to engage in social interaction in the present moment. Mental health workers and policymakers also should work together to raise public awareness on this issue. It is firmly believed that people are more inclined to perceive phubbing behaviour as socially acceptable behaviour when they are frequently exposed to it (T’ng et al., 2018). However, this norm can be reduced if the public is more aware of this issue.

In addition, Du, Xing and Gong (2017) conducted a study to see if it was possible to alert phubbing walkers when they entered dangerous territory. The location of phubbing walkers was determined using a Global Positioning System (GPS) was applied with a digital map in a smartphone application whenever phubbing walking was identified. The smartphone will display a warning message when the phubbing walkers approach potential risk areas. This innovation is to remind them of the potential dangers such as crossing roads, traffic signals, and other harmful areas. This creative method has produced an effective system that warns strolling walkers anytime dangers are nearby.

In a nutshell, the public, mental health practitioners, researchers, and policymakers should work together to lessen the prevalence of phubbing culture, which may have detrimental effects on social functioning.

Limitation of Study

The limitation of the present study was the lengthy online survey which took a long time to complete. This could make respondents impatient and have them stop filling out the survey questionnaire in the middle. Participants may eventually get bored in this situation and simply select the answers without attentively reading the question, resulting in some misleading validity of the results. Researchers received feedback from the participants that the survey was too long to complete.

Secondly, only Malaysian university students have been selected as the targeted population in this study. Therefore, the findings of the current study cannot be generalized to all populations. To be

precise, young children and adolescents are the newly emerging groups to focus on smartphone behaviour issues since they are more likely to use their smartphones excessively in the modern century (Hsieh et al., 2021; Fradelos et al., 2016). Hence, highlighting the fact that the finding can only be applied to young adults.

Moreover, only the Malaysian context was used for the location setting. The lack of a comparison restricts the multi-cultural connection. Due to cultural diversity, the current study is unable to recognize differences in the variety of cultures and perspectives that might be used to fill the research gap. Instead, it is based on variances in behaviour and attitude toward the research's factors.

Furthermore, another limitation was that it was carried out using a cross-sectional research design. This approach has a time limitation, as it is only a one-time observational method (Johnson, 2018). However, four predictors (boredom, depression, loneliness, and self-esteem) as well as phubbing behaviour, may vary over time due to changes in emotional stability and environmental factor. As a cross-sectional study was only applied to determine the prevalence of an occurrence at a specific time, it was unable to examine the cause-and-effect relationship between the variables.

Finally, the limitation found in this study was that the racial ratio was not proportional. The majority of participants were Indians, indicating a disproportional population ratio. Other races' information and data were inadequate when compared to the Indians. However, analysis of the racial disparity in phubbing behaviour was not the purpose of the current study. Therefore, it may have no impact on the current study. Future research on racial differences should ensure that the sample group is proportional to the different races in order to provide equitable opportunity to all individuals who may benefit from research participation.

Recommendations of Study

The current study has several study recommendations. To begin, participants who are hesitant to finish the questionnaire should be asked as few questions as possible to minimize boredom, which will diminish participants' interest in participating in the study. Furthermore, participants grasp simple questions more quickly, which reduces inaccuracies in questionnaire responses if they misinterpret the questions' meaning. Sahlqvist et al. (2011) recommended that the questionnaire could be made shorter to increase the response rate. A shorter questionnaire will take up less time for participants, making the survey more convenient and easy to complete.

Secondly, the target participants should be emphasized by the researchers to detect the emerging groups in the modern generation for future prediction. As young children and adolescents' development matches that of the contemporary world, it is suggested that more study be done on these populations in the future so that this problem may be brought to their attention and addressed.

Upcoming research should include distinct cultures to examine the diversity between cultures; this will improve understanding of multi-cultural contexts while minimizing culture shock. Furthermore, future research should focus on more studies among youngsters, as their development is linked to the development of the era, and problems can be identified for attention and improvement.

Numerous suggestions are made concerning the limitations of the current study. To evaluate behavioural changes over a sufficient period of time, researchers are recommended to utilize longitudinal studies as their research design. Therefore, future research that uses a longitudinal design and tests the same factors as the current study will be able to produce results that are more accurate concerning the examined predictors (e.g., boredom, depression, loneliness, and self-esteem).

Last but not least, it is suggested that future studies on the proportional race ratio to collect data and information from all races equally so that the findings may be applied to other races. Furthermore, stratified random sampling, which divides the population into various subgroups or strata with common characteristics like race, is advised for gathering proportional races. Future researchers will randomly select final samples proportionally from each group (Acharya et al., 2013).

Moreover, future study can focus on Malaysia's minority ethnic groups such the Melanau, Kadazans, and Bumiputra to better understand their level of boredom, depression, loneliness, self-esteem, and phubbing behavior because various cultures adopt distinct lifestyles.

Conclusion

In conclusion, the present study supported all the hypothesis in which (i) boredom positively predicts phubbing behaviour among undergraduates in Malaysia (ii) depression positively predicts phubbing behaviour among undergraduates in Malaysia (iii) loneliness positively predicts phubbing behaviour among undergraduates in Malaysia (iv) self-esteem negatively predicts phubbing behaviour among undergraduates in Malaysia. The current study indicated that a high level of boredom predicts a high level of phubbing behaviour which suggests that boredom leads to phubbing behaviour when a person does not feel excited with their surroundings. Besides, a high level of depression predicts phubbing behaviour which suggests that depressed people tend to rely on a smartphone to get excitement from the virtual world. Moreover, a high level of loneliness predicts phubbing behaviour which suggests that people who experience loneliness may depend on their smartphones to escape from the social environment. Furthermore, low self-esteem predicts phubbing behaviour which suggests that people with low self-esteem tend to rely on the virtual world to gain approval and reassurance. In a nutshell, this study has provided a better understanding of the predictors of phubbing behaviour and could be beneficial in providing intervention programs to reduce this behaviour in the future. Future researchers can get insight from this study to further explore the predictive roles of phubbing behaviour in future research studies.

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Appendices

Appendix A

Questionnaire

PERSONAL DATA PROTECTION NOTICE

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR")is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes:

    a) Name
    b) Identity card
    c) Place of Birth
    d) Address
    e) Education History
    f) Employment History
    g) Medical History
    h) Blood type
    i) Race
    j) Religion
    k) Photo
    l) Personal Information and Associated Research Data

2. The purposes for which your personal data may be used are inclusive but not limited to:

    a) For assessment of any application to UTAR
    b) For processing any benefits and services
    c) For communication purposes
    d) For advertorial and news
    e) For general administration and record purposes
    f) For enhancing the value of education
    g) For educational and related purposes consequential to UTAR
    h) For replying any responds to complaints and enquiries
    i) For the purpose of our corporate governance
    j) For the purposes of conducting research/ collaboration

3. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointedoutsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.

4. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance

with our retention policy applicable for us in the event such informationis no longer required.

5. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent:

6. By submitting or providing your personal data to UTAR, you had consented and agreed for your personal data to be used in accordance to the terms and conditionsin the Notice and our relevant policy.

7. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.

8. You may access and update your personal data by writing to us at_____.

Acknowledgment of Notice

[ ] I have been notified and that I hereby understood, consented and agreed perUTAR above notice.

[ ] I disagree, my personal data will not be processed.

Q2 SHORT BOREDOM PRONENESS SCALE

	Strongly disagree (1) (1)	Disagree (2) (2)	Somewhat disagree (3) (3)	Neutral (4) (4)	Somewhat agree (5) (5)	Agree (6) (6)	Strongly agree (7) (7)
I often find myself at "loose ends", not knowing what to do. (1)	○	○	○	○	○	○	○
I find it hard to entertain myself. (2)	○	○	○	○	○	○	○
Many things I have to do are repetitive and monotonous. (3)	○	○	○	○	○	○	○
It takes more stimulation to get me going than most people. (4)	○	○	○	○	○	○	○
I don't feel motivated by most things that I do. (5)	○	○	○	○	○	○	○
I most situations, it's hard for me to find something to do or see to keep me interested. (6)	○	○	○	○	○	○	○
Much of the time, I just sit around doing nothing. (7)	○	○	○	○	○	○	○

Unless I am doing something exciting, even dangerous, I feel half-dead and dull. (8)	○	○	○	○	○	○	○

Q5 CENTRE FOR EPIDEMIOLOGIC STUDIES SHORT DEPRESSION SCALE (CES-D-R 10)

	Rarely or none of the time (0) (1)	Some or a little of the time (1) (2)	Occasionally or a moderate amount of time (2) (3)	All of the time (3) (4)
I was bothered by things that usually don't bother me. (1)	○	○	○	○
I had trouble keeping my mind on what I was doing. (2)	○	○	○	○
I felt depressed. (3)	○	○	○	○
I felt that everything I did was an effort. (4)	○	○	○	○
I felt hopeful about the future. (5)	○	○	○	○
I felt fearful. (6)	○	○	○	○
My sleep was restless. (7)	○	○	○	○
I was happy. (8)	○	○	○	○
I felt lonely. (9)	○	○	○	○
I could not "get going." (10)	○	○	○	○

Q7 6-ITEM REVISED UCLA LONELINESS SCALE (RULS-6)

	Never (1) (1)	Rarely (2) (2)	Sometimes (3) (3)	Often (4) (4)
How often do you feel that you lack companionship? (1)	○	○	○	○
How often do you feel alone? (2)	○	○	○	○
How often do you feel that you are no longer close to anyone? (3)	○	○	○	○
How often do you feel left out? (4)	○	○	○	○
How often do you feel that no one really knows you well? (5)	○	○	○	○
How often do you feel that people are around you but not with you? (6)	○	○	○	○

End of Block:

Start of Block: Rosenberg Self-Esteem Scale

Q8 ROSENBERG SELF-ESTEEM SCALE

	Strongly disagree (0) (1)	Disagree (1) (2)	Agree (2) (3)	Strongly agree (3) (4)
I feel that I am a person of worth, at least on an equal plane with others. (1)	○	○	○	○
I feel that I have a number of good qualities. (2)	○	○	○	○
All in all, I am inclined to feel that I am a failure. (3)	○	○	○	○
I am able to do things as well as most other people. (4)	○	○	○	○
I feel I do not have much to be proud of. (5)	○	○	○	○
I take a positive attitude toward myself. (6)	○	○	○	○
On the whole, I am satisfied with myself. (7)	○	○	○	○
I wish I could have more respect for myself. (8)	○	○	○	○
I certainly feel useless at times. (9)	○	○	○	○
At times I think I am no good at all. (10)	○	○	○	○

End of Block: Rosenberg Self-Esteem Scale

Q9 PHUBBING SCALE

	Never (1) (1)	Rarely (2) (2)	Sometimes (3) (3)	Often (4) (4)	Always (5) (5)
My eyes start wandering on my phone when I'm together with others. (1)	○	○	○	○	○
I'm always busy with my mobile phone when I'm with my friends. (2)	○	○	○	○	○
People complain about me dealing with my mobile phone. (3)	○	○	○	○	○
I'm busy with my mobile phone when I'm with friends. (4)	○	○	○	○	○
I don't think that I annoy my partner when I'm busy with my mobile phone. (5)	○	○	○	○	○
My phone is always within my reach. (6)	○	○	○	○	○
When I wake up in the morning, I first check the messages on my phone. (7)	○	○	○	○	○

I feel incomplete without my mobile phone. (8)	○	○	○	○	○
My mobile phone use increases day by day. (9)	○	○	○	○	○
The time allocated to social, personal, or professional activities decreases because of my mobile phone. (10)	○	○	○	○	○

End of Block: PHUBBING SCALE

Start of Block: DEMOGRAPHIC DETAILS

DEMOGRAPHIC DETAIL Age

_____

Q13 Gender

○ Female (1)

○ Male (2)

Race

- Chinese (1)
- Indian (2)
- Malay (3)
- Others (4)

Institute

_____

Phubbing Frequency

- Less often (4)
- Less than once daily (5)
- 2-3 times per day (6)
- 4 times per day or more (7)

Phubbing Duration

- Less than 15 min per day (1)
- Less than an hour per day (2)
- 1-2 hours per day (3)
- More than 2 hours per day (4)

End of Block: DEMOGRAPHIC DETAILS

Appendix B

Calculation of Total Effect Size

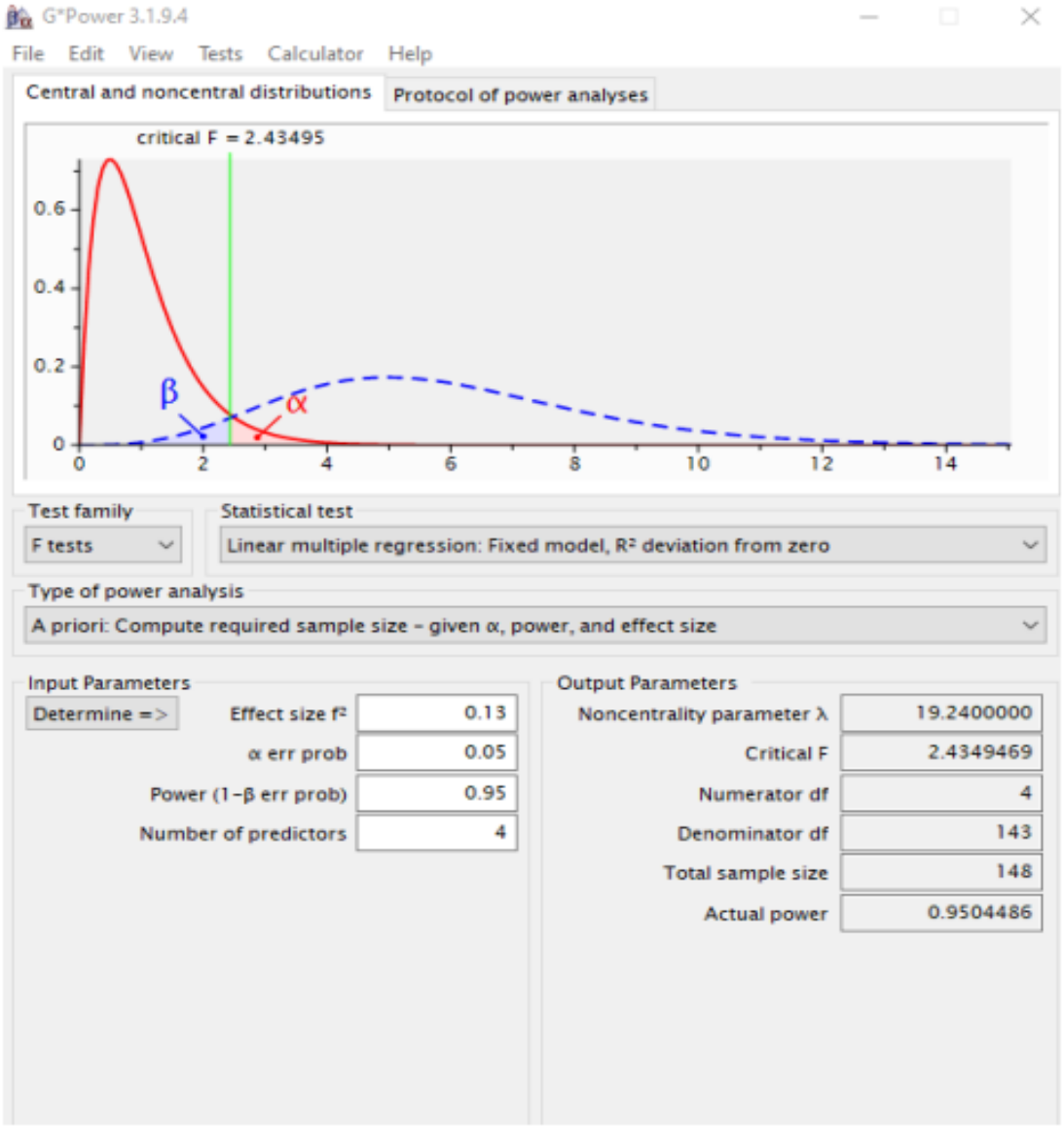
Total effect size

$$f^2 = \frac{0.05+0.18+0.17+0.12}{4}$$

$$= 0.13$$

Appendix C

G*Power Sample Size Calculation for Multiple Regression



Appendix D

Ethical Review Committee (SERC) of Universiti Tunku Abdul Rahman Scientific

UNIVERSITI TUNKU ABDUL RAHMAN DU012(A)
Wholly owned by UTAR Education Foundation Co. No. 578227-M

Re: U/SERC/117/2022

1 June 2022

Dr Pung Pit Wan
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 Pung,

Ethical Approval For Research Project/Protocol

We refer to the application for ethical approval for your students' research project from Bachelor of Social Science (Hons) Psychology programme enrolled in course UAPZ3013. We are pleased to inform you that the application has been approved under Expedited Review.

The details of the research projects are as follows:

	Research Title	Student's Name	Supervisor's Name	Approval Validity
1.	The Predictive Roles of Boredom, Depression, Loneliness and Self-esteem on Phubbing Behaviour Among Undergraduates in Malaysia	1. Letchumyeswary a/p Gunasekaran 2. Nivashini a/p Ragu	Dr Grace T'ng Soo Ting	1 June 2022 – 31 May 2023

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.

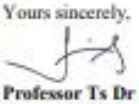
(4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 Fax: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 Fax: (603) 9019 8868
Website: www.utar.edu.my

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

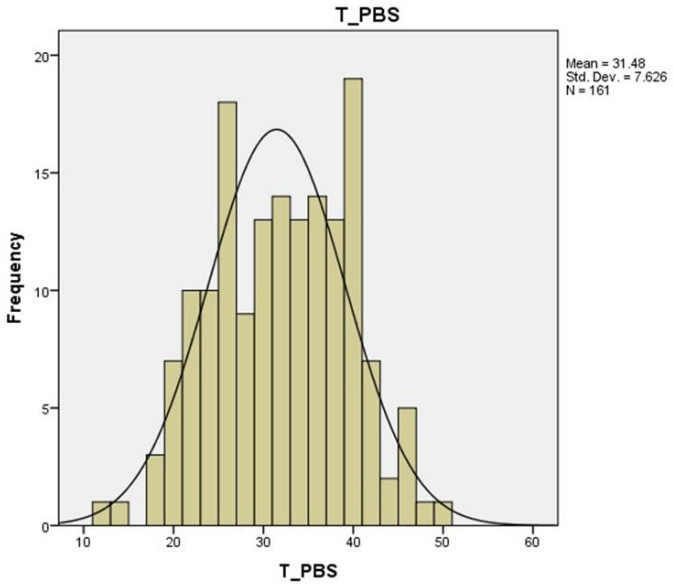
Kampar Campus : Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: (605) 468 8888 Fax: (605) 466 1313
Sungai Long Campus : Jalan Sungai Long, Bandar Sungai Long, Cheras, 43000 Kajang, Selangor Darul Ehsan, Malaysia
Tel: (603) 9086 0288 Fax: (603) 9019 8868
Website: www.utar.edu.my

Appendix E

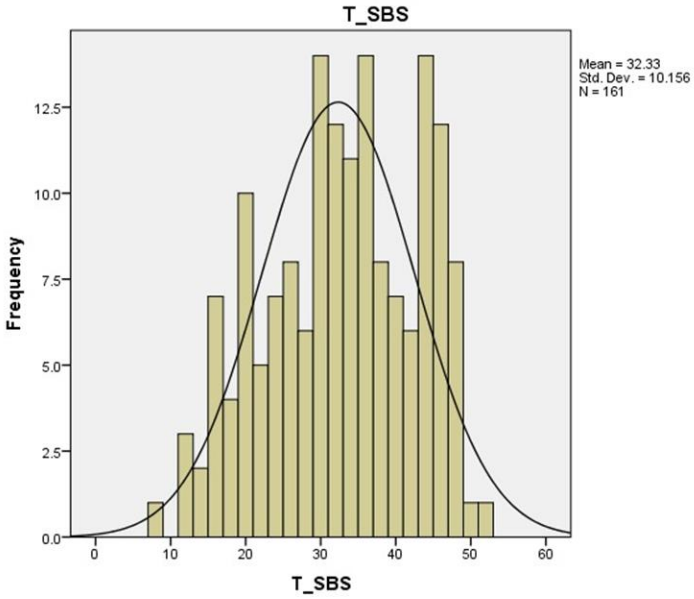
SPSS Output: Normality Assumptions

Histogram for Each Distribution

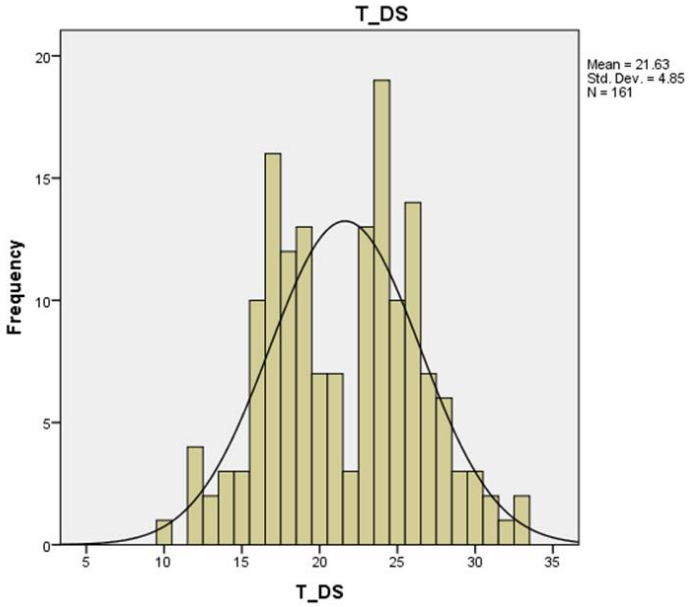
Phubbing behaviour



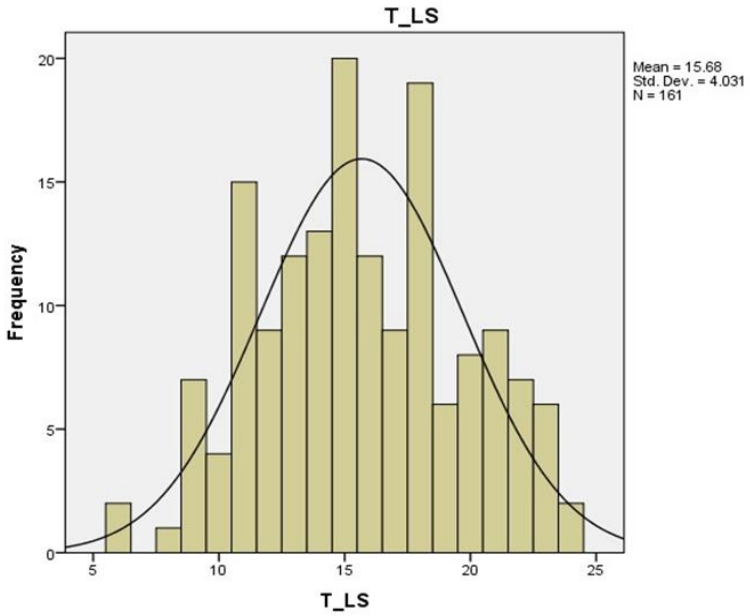
Boredom



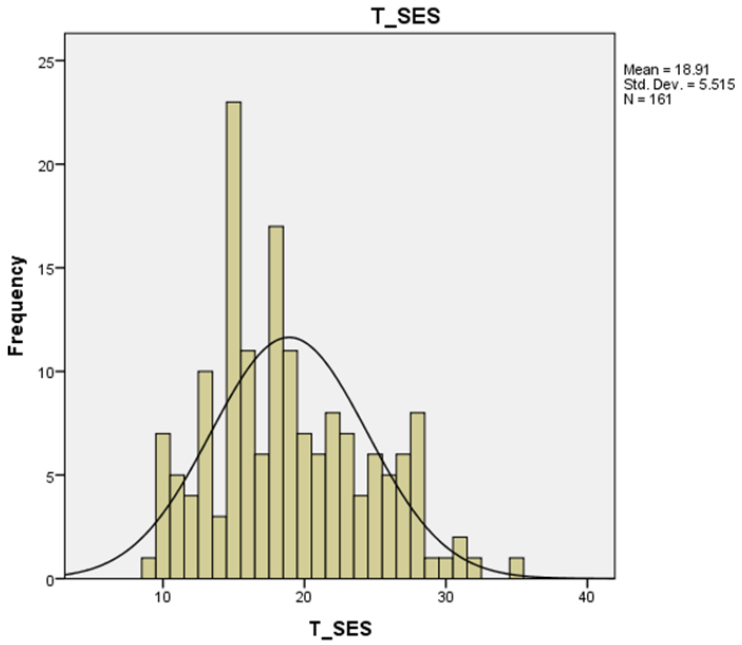
Depression



Loneliness



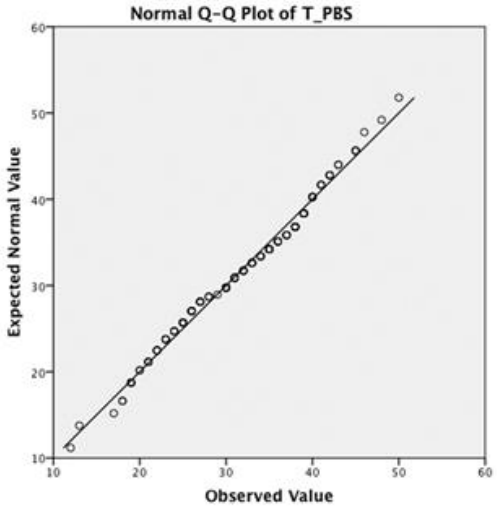
Self-esteem


T_SES
Mean = 18.91
Std. Dev. = 5.515
N = 161
Frequency
25
20
15
10
5
0
10
20
30
40
T_SES

Normal Q-Q Plot for Each Distribution

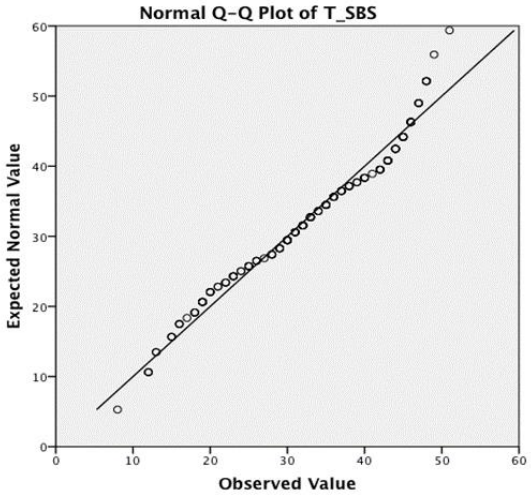
Phubbing behaviour

T_PBS



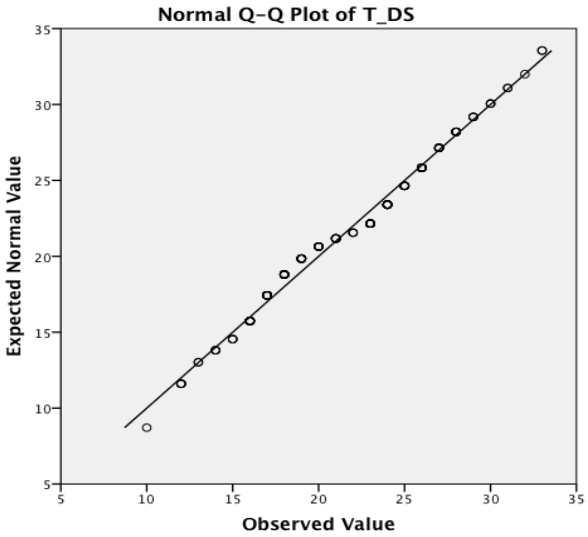
Boredom

T_SBS



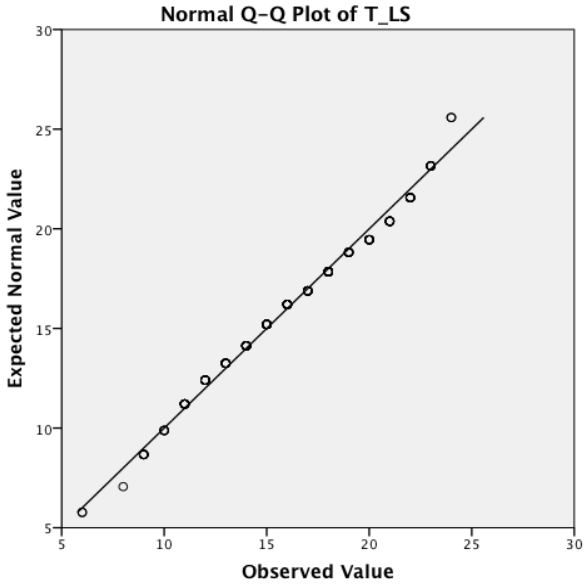
Depression

T_DS



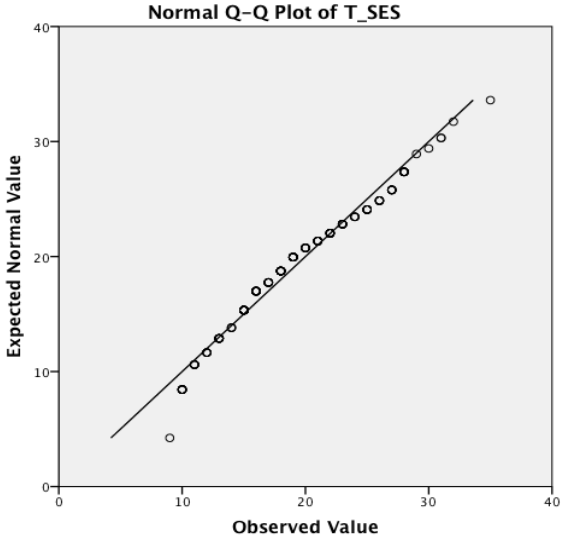
Loneliness

T_LS



Self-esteem

T_SES



Kolmogorov-Smirnov Test for Each Distribution

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
T_SBS	.084	161	.007	.969	161	.001
T_DS	.108	161	.000	.979	161	.016
T_LS	.082	161	.010	.981	161	.024
T_SES	.106	161	.000	.967	161	.001
T_PBS	.074	161	.030	.986	161	.111

a. Lilliefors Significance Correction

Appendix F

SPSS Output: Multiple Linear Regression

Variance Inflation Factor (VIF) Values and Tolerance Values

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	13.660	3.040		4.493	.000		
	T_SBS	.277	.059	.368	4.706	.000	.478	2.093
	T_DS	.386	.113	.245	3.400	.001	.562	1.779
	T_LS	.303	.127	.160	2.380	.019	.647	1.545
	T_SES	-.223	.087	-.161	-2.545	.012	.732	1.366

a. Dependent Variable: T_PBS

Durbin-Watson Test

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.737[a]	.543	.532	5.218	1.788

a. Predictors: (Constant), T_SES, T_DS, T_LS, T_SBS

b. Dependent Variable: T_PBS

Regression Model

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5056.82	4	1264.20	46.433	.000[b]
	Residual	4247.36	156	27.227		
	Total	9304.17	160			

a. Dependent Variable: T_PBS

b. Predictors: (Constant), T_SES, T_DS, T_LS, T_SBS

Regression Coefficient

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	13.660	3.040		4.493	.000		
	T_SBS	.277	.059	.368	4.706	.000	.478	2.093
	T_DS	.386	.113	.245	3.400	.001	.562	1.779
	T_LS	.303	.127	.160	2.380	.019	.647	1.545
	T_SES	-.223	.087	-.161	-2.545	.012	.732	1.366

a. Dependent Variable: T_PBS

Appendix G

Turnitin Summary Report

The Predictive Roles of Boredom, Depression, Loneliness and Self-esteem on Phubbing Behaviour among Undergraduates in Malaysia

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