PSYCHOMETRIC PROPERTIES OF BERGEN SOCIAL MEDIA ADDICTION SCALE (BSMAS) IN MALAY VERSION

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PSYCHOMETRIC PROPERTIES OF BERGEN SOCIAL MEDIA ADDICTION SCALE IN MALAY VERSION

ABSTRACT

Background The percentage of internet users in Malaysia has recorded continuous increment annually, in which it increased from 76.9% in 2016 to 87.4% of users in 2018. The prevalent use of all sorts of social media platform and the convenient access to the internet regardless of time and place has massively enhance the potential of social media addiction. After many years of research, the researchers have yet to reach the consensus in identifying criteria to diagnose problematic attachment to social media. The aim of the study was to validate the Malay version of Bergen Social Media Addiction Scale (BSMAS), by using a sample of 166 University of Technology Malaysia (UTM) students. **Methods** A cross sectional study was conducted at UTM, Johor Bahru. After translation stage and face validity were done, the result of the sample collection was subjected for internal consistency test, construct validity by using CFA method and subsequently testing of the fit indices. **Results** The instrument exhibited good internal consistency (Cronbach's alpha = .8) and concurrent validity with Internet Addiction Test (IAT) (Pearson's correlation = .56, $p<.001$). IAT was used as the gold standard to determine the cut-off point of BSMAS. Receiver Operating Characteristic (ROC) analysis demonstrated that 10 point was the cut-off score to differentiate the students with and without problematic social media use (composite score of 0 – 24). The analysis of CFA [Comparative Fit Index (CFI) = 1.000; Tucker Lewis Index (TLI) = 1.000; root mean square error of approximation (RMSEA) = <.001; Standardized root mean square residual (SRMR) = .019] confirmed the unidimensionality of the BSMAS. The score of BSMAS is correlated with IAT and the "addictiveness to the social media and academic performance" in SMAAPOS; negatively correlate with BBQ and no correlation with other components in SMAAPOS such as "use and exposure of social media in academic performance", "age and

gender use of social media with academic performance". **Conclusion** The Malay version of the BSMAS appeared to be a valid and reliable instrument for assessing problematic use of social media use in Malaysian University students.

Keywords: BSMAS, social media, addiction, Malaysia, reliability, validity

ABSTRAK

Latar belakang Jumlah pengguna internet di Malaysia telah mencatatkan peningkatan peratusan yang berterusan setiap tahun. Ianya bertambah dari 76.9% pada tahun 2016 ke 87.4% pada tahun 2018. Penggunaan media sosial yang berleluasa dan rangkaian internet yang luas di mana-mana jua telah menggalakan pembentukkan ketagihan media sosial. Setelah kajian yang bertahun-tahun, setakat ini para penyelidik belum mencapai suara sepakat untuk mengenalpasti kriteria yang berkenaan dengan ketagihan media sosial. Kajian ini bertujuan untuk mengesahkan dan mendokumenkan sifat-sifat psikometrik Bergen Social Media Addiction Scale diterjemah ke dalam Bahasa Malaysia. **Kaedah** Satu kajian keratan rentas telah dijalankan di kampus Universiti Teknologi Malaysia (UTM), Johor Bahru. Selepas selesai proses penterjemahan dan kesahihan muka, hasil pengumpulan data juga akan diuji dengan kebolehpercayaan dalaman, kesahihan konstruk dan pengujian index kesesuaian dengan menggunakan kaedah Analisis Faktor Pengesahan. **Keputusan** Skala ini menunjukkan kebolehpercayaan dalaman yang baik (Alfa Kronbach = .8) dan kesahihan bersamaan dengan Internet Addiction Test (IAT) yang memuaskan (Korelasi Pearson = .56, p<.001). IAT juga telah dipilih untuk menjadikan piawaian emas bagi menentukan markah penentu BSMAS. Hasil analisis Watak Operasi Penerima menunjukkan markah ke-10 dijadikan sebagai markah penentu untuk membezakan pelajar yang normal dan pelajar yang memiliki risiko ketagihan media sosial. Analisis Faktor Pengesahan [Index Perbandingan Padan (CFI) = 1.000; Index Tucker Lewis (TLI) = 1.000; Punca Min Ralat Kuasa Dua (RMSEA) = <.001; Sisa Punca Min Kuasa Dua yang Diselaraskan (SRMR) = .019] mengesahkan ciri unidimensi pada BSMAS. Markah BSMAS berkorelasi dengan IAT dan komponen “ketagihan terhadap media sosial dan pencapaian akademik” dalam SMAAPOS; berkorelasi songsang dengan BBQ dan tidak berkorelasi dengan komponen lain dalam

SMAAPOS seperti “penggunaan dan pendedahan media sosial dalam pencapaian akademik” dan “faktor umur dan jantina dalam penggunaan media sosial dan pencapaian akademik”. **Kesimpulan** BSMAS versi Melayu ditentukan sebagai skala yang sah dan boleh dipercayai untuk menilai ketagihan media sosial di kalangan pelajar univeristi di Malaysia.

Kata Kunci: BSMAS, media sosial, ketagihan, Malaysia, kebolehpercayaan, kesahihan

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LIST OF ABBREVIATION

BSMAS	Bergen Social Media Addiction Scale
BFAS	Bergen Facebook Addiction Scale
SMAAPOS	Social Media Addiction and Academic Performance of Students
BBQ	Brunnsviken Brief Quality of Life
FoMO	Fear of missing out
UTM	University Teknologi Malaysia
IAT	Internet Addiction Test
ICD	International Classification Disease
SPSS	Statistical Package for Social Science
CTT	Classic Test Theory
CFI	Comparative Fit Index
TCI	Tucker Lewis Index
SRMR	Standardized Root Mean Square Residual
CR	Composite Reliability
CFA	Confirmatory Factor Analysis
AVE	Average Variance Extracted
ROC	Receiver Operating Characteristic

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CHAPTER 1

INTRODUCTION

The internet has become the most useful technology in this modern world. The internet not only helps us in our day-to-day living, it also greatly assist in our personal and human living development (C. Cheng & Li, 2014). The usage of the internet not only restricted to collecting information for all sorts of purposes. The internet is also a platform for its users to stay in contact with their family, relatives and friends who live in the two-separate places (OReilly, 1996).

Consequently, the number of internet users in worldwide has increased almost reaching 2 billion in numbers for all the age groups. Out of this proportion, the youth age group has shown the most marked increase in trend. (Durkee et al., 2012)

On the other hand, according to the Internet Users Survey conducted by Malaysian Communications and Multimedia Commission (MCMC), the percentage of internet users in Malaysia has recorded continuous increment annually, in which it increased from 76.9%, or 24.5 million of users in 2016 to 87.4%, or 28.7 million of users in 2018. (MCMC, 2018)

In line with the local government's effort to achieve high quality of broadband service with more affordable price, our Communication and Multimedia Minister, YB Gobind Singh Deo announced bringing down the broadband price by implementing Mandatory Standard on Access Pricing (MSAP) on June 2018. (Star, 2018) With the implementation of this policy, the local telcos were required to bring down the price in their broadband packages. Undoubtedly, the number of internet users in Malaysia will continue to rise in the future. Our Minister was aiming to reach 95% of broadband coverage in populated area by the year of 2020. (Star, 2018)

According to the data statistics (Child Trends Data Bank, 2015), the internet usage has become so common that the age of the children beginning to use the internet has become lower and lower. In few European countries, the average age of first using internet has gradually gone down to 8 years old. In the United State, comparison studies between 1997 and 2013 revealed that there was 5-fold increment for the percentage of the children aged 3 – 17 years old who used the internet. It recorded about 11% and 57% in 1997 and 2013 respectively.

Some researchers feel that the child generation born after year 1990 were constantly exposed and grew up in an environment that integrate digital technology as part their life. (Monacis et al., 2017a) Study has shown that nine out of ten Malaysian used smartphones to access the internet. It remained the most popular device among the internet users, followed by notebook / laptop (44.3%) and desktop (28.1%) (MCMC, 2018) The similar trend was portrayed in the worldwide report in 2018. (Hootsuite&WeAreSocial, 2019) Internet enable the users to perform the entertainment (e.g. gaming, gambling, movies, porn), work-related tasks (e.g. e-mail, searching information via search engine, upload and download documents), socializing (e.g. chatting, online discussion, social networking sites), shopping, online banking and many more other activities. The survey done by the MCMC last year has shown that social engagement continues to become the top of the list in online activities among internet users in Malaysia. From the survey conducted, there was about 96.5% of the internet users has used internet for the purpose of texting over-the-top (OTT) messaging platform. About 85.6% of the users engaged in social networking activities. There was a rising trend of the people in Malaysia of using voice or video calls, in which it increased from 32% in 2016 to 60.6% in 2018 (MCMC, 2018).

From the local population survey that was done, more than half of the participants (65%) consider themselves were having internet addiction (Kapahi et al., 2013). Similarly, another local study that was carried out by AIA Group Ltd. pointed out that up to 73% of adult respondents admitted that they were addictive in engaging online activities, including social networking (AIA, 2014). On the other hand, there were various researches conducted in the past that has shown the association between the heavy use of social media and some mental illness, such as anxiety (McCord et al., 2014), depression (Sabatini & Sarracino, 2017) and histrionic personality (Rosen et al., 2013). Due to the increasing trend of social media use and its possible impacts, it is necessary for the steps emerged as psychometric to assess a new possible addiction (Andreassen et al., 2012). Nevertheless, the research on the social media addiction lags enormously behind than other behavioral addiction, because of the few reasons (van den Eijnden et al., 2016): (i.) there is no clear definition of the core component of this addiction (ii.) the social media platform has expanded in a rapid rate, so much so that the preexisting scale which targeting on specific platform may become outdated easily (iii.) different operationalization of social media addiction scale hampered the comparability of the research data.

CHAPTER 2

LITERATURE REVIEW

2.1 The Advancement of Information Technology

Digital technology nowadays is so advanced and influential that it has changed the style that we are doing things in our daily life. The presence of digital technology has in fact restructured the society worldwide (Fenwick & Edwards, 2016). Virtually, almost every human being ranging from the younger generation to even senior citizens learn many things using the digital technology.

Consequently, the internet is the most famous and the greatest example in digital technology (Cash et al., 2012). It sets a platform providing different kinds of information and communication services (OReilly, 1996). The internet exists in different kinds of formats, which can be accessed through our PC, mobile devices, laptop, console, television streaming box and even the smartwatch.

The Global Digital Report (Hootsuite&WeAreSocial, 2019) revealed the social media penetration in worldwide recorded the figures of 45%. The report indicates that there are 45% of active users of the top social networks in any point of time. Our country, Malaysia has 78% of social media penetration, which ranked higher than other developed countries such as Australia (72%), China (71%), USA (70%), UK (67%) and Japan (61%). Not only that, the same survey also shown that the Malaysian spent about 2 hours and 58 minutes using social media per day, which is also longer than those countries mentioned above.

2.2 Evolution of Social Media Addiction

Goldberg (2011) a New York psychiatrist, in 1995, was among the earlier people who described Internet addiction disorder. The diagnostic criteria resembled the criteria used by DSM-IV in diagnosing substance dependence (Goldberg, 1996). Goldberg (2011) defined internet addiction disorder as a dysfunctional pattern of using the internet, which resulted in clinically significant marked distress and representing a set of distinctive symptoms.

On the other hand, Kimberly Young was another key person who has done numerous research work in this field. When she was a clinical psychology student at that time, she developed an intense interest to know more about the psychological aspect of addictive use of the internet. This occurred following Ms Kimberly's observation that her husband's friend spent up to 60 hours online at a time in the chat room (K. S. Young, 1998). Back then, it was still an era where the fee was charged according to total hours a user dial into the internet. The issues eventually caused the financial burden and marital discord issue in him (Dalal & Basu, 2016).

Kimberly Young was the first to propose the problematic computer use matched the criteria listed in addiction and hence, it should be part of the content in DSM (Diagnostic and Statistical Manual of Mental Disorders), fourth edition, Text Revision. The idea was proposed during her seminal paper presentation in 1996 (Cash et al., 2012).

Subsequently, the research into internet addiction expanded in Europe with the publication of the Griffiths' paper on technological addiction (Griffiths et al., 2016). Mark Griffiths was a clinical psychologist from Nottingham Trent University in the United Kingdom, who was interested in the study of computer use, gambling and the utilization of different types of technology by a human at that time (M. Griffiths, 1995). In 1996, a year

after Griffiths' publication on the writing on technological addiction, he continued on with another publication entitled Internet addiction, which he grouped it under the umbrella of the broader term, "Technological Addiction" (M. D. Griffiths, 1996).

For the very first time, Internet addiction disorder was listed in the medical lexicon in 1996 (OReilly, 1996). It gradually gained popularity among the researchers after they noticed problematic computer use was a growing social issue and constantly debated in worldwide. Following the concerns, there were extensive studies focusing on the field over the past 20 years, including its epidemiology, sets of diagnostic criteria, neurobiological, psychosocial aspect and its related management (Dalal & Basu, 2016).

However, until now, there is no consensus regarding the best way to classify internet addiction disorder. Many researchers think that it should be categorized under the chapter of impulse control disorder (not otherwise specified). Another group of the practitioner and researchers observed that it was always associated with another mental disorder. Therefore, they believed that it should be part of other mental disorder, such as anxiety and depression or even obsessive-compulsive disorder, rather than the diagnosis stands on its own (Kratzer & Hegerl, 2008).

On the other hand, there was a growing body of pieces of evidence that the condition should fall under the category of the addiction chapter (American Society of Addiction Medicine, 2011). It is because the disorder consisted of the individual spending plenty of hours dealing with non-work-related online activities, associated with the preoccupation of using the internet, the incapability of limiting the number of hours spent on the internet or digital technology. Then, the individual requires more time to start another round of games to achieve the desired mood, with the presence of withdrawal symptoms during

disengagement (Beard, 2005). Then the continuation of the behavior occurs despite affecting the persons' social and occupational functioning (Beard, 2005).

Characteristically, both substance and behavioral addiction shared the common features, including salience, the urge of using, mood alteration and relieve of distress, presence of withdrawal and tolerance and continuation of use despite knowing the negative outcomes (Beard, 2005; K. Young, 2009; K. S. Young, 1998). The American Society of Addiction Medicine (2011) (ASAM) officially suggested that addiction should not be only limited to substance use, and should also extend the definition to include behavioral component as well.

Nonetheless, despite the growing consensus of the diagnosis of internet addiction disorder, American Psychiatric Association (2013) did not enlisted it into the latest DSM-5. Having said that, American Psychiatric Association (2013) have made some amendment in the chapter of "Substance-related and addictive disorders" by shifting gambling disorder from the chapter of impulse control disorders in DSM-IV to addictive disorder in DSM-5. This was because they have gathered the sufficient evidences to suggest the activation of the reward pathway in gambling disorder resembles those activated by the substance and produce the behavioral changes in a particular person. Alongside with others behavioral addiction such as sex addiction, shopping addiction and exercise addiction, internet addiction was not listed under the behavioral addiction in DSM-5 due to inadequate peer-reviewed evidences to determine on the diagnostic criteria and its course development in order to classify it under the mental disorder.

In spite of the huge disappointment experienced, a subtype of internet addiction, called Internet Gaming Disorder, was newly included in DSM-5 under the chapter of "Conditions for Further Study" (Association, 2013). The tentative proposed criteria enable

the researcher and clinician to communicate with each other when they are doing the relevant studies in the future.

On the other hand, there were some controversial going on to debate whether to consider internet addiction is a viable construct. According to Starcevic (2013), the concept of internet addiction might not be suitable if a person only used the internet as a platform only to fuel another addiction. Instead, it should be emphasized on the specific online activities that a person was addicted to, provided there was a pattern of behavioral addiction identified. It has been pointed out that there are few types of internet addiction, which includes social media addiction, online gaming addiction, shopping addiction (Kuss et al., 2013). An individual may get addicted to these experiences via engaging in these activities, as compared to the medium itself. Imagine that a person who devotes most of the time in shopping activities online is qualitatively different from those who spend long hours in engaging in porn watching activities, in terms of the self-gratification experience. Therefore, the main consideration of the research should focus on different functions of the aspects of the internet (Tokunaga, 2016).

2.3 Social Media

2.3.1 Definition of Social Media and Its Common Characteristics

By definition, social media represents interactive computer-mediated digital technology and websites which enable people to engage in the process of sharing the information and communicate the ideas or interests on the internet platform by using a device like phone or computer (Cambridge, 2019). Social media exists in various forms, such as the

email, video or photo sharing, blogs and microblogs, social networking sites, business network, products/service review, games and entertainment (Aichner & Jacob, 2015).

Despite the existence of different forms, social media shares a few common characteristics (Manning, 2014). Firstly, it allows the users to search for the information they wanted and voice out their ideas at the same time. Secondly, it also assists in shaping an individual's personal identity. After people created an account and include their profile on the social media, they will start seeing the reaction from others whenever they interact with them socially. It makes them feel free and more open to present their opinion and thoughts to others. Hence, it helps to contribute to the personality shaping directly and indirectly (Andreassen et al., 2017). Thirdly, social media changed the way how people created the relationship by putting in an additional outlet for people to know more friends and even future life partner (Abbasi, 2019). Lastly, social media plays vital roles in many people's daily work functioning. It can be either the individual using social media entirely as his or her job (e.g. YouTuber, bloggers, etc.). Likewise, social media can be part of their working tools to communicate or interact with each other in the working place (for e.g., email, LinkedIn etc.).

2.3.2 Definition of Social Media Addiction

The prevalent use of all sorts of social media platform and the convenient access to the internet regardless of time and place has massively enhanced the potential of social media addiction (M. Griffiths, 2000, 2012). At the same time, the progressive development has resulted in the proliferation of the studies on examining the use of online activities among the internet users, particularly in the field of social media and internet gaming (C. Cheng & Li, 2014; J Kuss et al., 2014)

Schou Andreassen and Pallesen (2014) illustrated that addiction to social media is characterized by overwhelmingly concern about the social media, which leads to compulsive behavior of using social media in excess and irresistible urge to use social media. Then, Kuss and Griffiths (2011) defined social media addiction as 1) excessive engagement and an increase in the desire over time to use social media, 2) prioritizing the time for social media over daily activities and personal relationship, 3) dealing with social media for reasons avoiding facing the stress in real life, 4) having difficulties stopping to reduce using social media, 5) easily anxious and angry when prohibited from using social media and 6) concealing the exact time spent.

After many years of research, the researchers have yet to reach the consensus in identifying criteria to diagnose problematic attachment to social media.(Altuwairiqi et al., 2019; Wegmann et al., 2015) In the absence of appropriate DSM-defined criteria for social media addiction, most of the screening tools or instruments the researchers are using are based on the criteria that listed in DSM-IV for substance dependence or pathological gambling disorder. (Van Rooij & Prause, 2014) To be more specific, it consisted of 6 components in total, which are listed as the main component from behavioral addiction as well (M. Griffiths, 1999; Marks, 1990)

- **Salience** means the presence of social media has dominating a significant portion of an individual's life.
- **Mood modification** occurs when a person needs to rely on the social media as part of the coping to encounter with his or her negative emotion.
- **Tolerance** is considered present when an individual requires increasingly amount of time in social media to achieve the purpose of mood modification.

- **Withdrawal** refers to the negative emotion an individual experiencing after being prohibited from using social media.
- The **conflicts** or external consequences occurs when an individual prefer social media over others like face-to-face socialization, or performing other activities.
- **Relapse** refers to an individual attempted to reduce the contact hour with social media, but unfortunately unable to do so.

2.3.3 Models of Social Media Addiction

Turel and Serenko (2012) summarized the models to explain the course of the formation of social media addiction, which may not be mutually exclusive with each other. The *cognitive behavioral model* (Davis, 2001) emphasized the role of maladaptive cognitions in social media users and environmental factors forming the problematic social media use. For instances, a user who experienced social rejection or diminished peer support that leads to the maladaptive compulsive pattern of using social media.

Social skill model (Caplan, 2005) illustrated that the social media users who lack of self-confidence are more likely to engage in interaction online, rather than face-to-face socialization. The avoidance behaviour serves as a reward and it encourage further the excessive use of the social media.

Whereas the *socio-cognitive model* (LaRose et al., 2003) proposed the social media addiction is enhanced by the positive outcome expectancy, combined with the attainment of internet self-efficacy, as well as dysfunctional self-regulation. Internet self-efficacy implies one's belief that they are capable in manipulating the internet tools in order to achieve different functions they intended to do (Eastin & LaRose, 2000). Researchers too believed

that the higher the internet self-efficacy in oneself, the higher the frequency of using or in-contact with the internet Hence, it would result in the higher the addictive tendencies towards the social media.(Leung & Lee, 2012; Yun & Trumbo, 2000)

2.3.4 Factors Affecting Social Media Addiction

When examining the gender factor in social media addiction, there is no unanimous agreement among the researchers in determining the gender predilection in social media addiction. Some literature revealed that females are more likely to stay on social media. (Aylaz et al., 2016; Mcandrew & Jeong, 2012; Simsek et al., 2019) While some researchers argued that the male group has higher tendency to develop this addiction behavior (Alnjadat et al., 2019; Bauman et al., 2013; Kasahara, 2017; Selkie et al., 2016). On the other hand, there were few studies suggested that there is no gender preponderance in this population (Błachnio et al., 2016; Jafarkarimi et al., 2016; Wang et al., 2015).

Men and women use social media for different reasons to gratify their needs (Manago, 2013; Tufekci, 2008). Men tend to spend time on social media to make new friends, to find dates, and play online games. Women use social media mostly for the purpose to maintain relationships with others, information searching, put up the public messages and passing the time (Haferkamp et al., 2012; Hargittai & Hsieh, 2010; Teppers et al., 2014). Women are more cautious not to reveal their personal private information on social media than men counterparts (Jelicic et al., 2007).

Also, the researchers discovered that men are at a higher risk of getting addicted to the games on social media site as compared to women (M. Griffiths, 2005; M. D. Griffiths et al., 2014; Kuss & Griffiths, 2011). Another study conducted by Elm (2007) detected that

women have a higher tendency to express their relationships on social media. Females were more likely to post the photos of their friends and family, particularly mentioning the specific name of significant others or even created a poem to cherish the relationship. Interestingly, the study discovered that male participants also conveyed their relationship similarly to female participants. The difference is in terms of the purpose of them doing it. The male participants expressed they did it for the purpose to display their heterosexual behavior publicly in social media, rather than just purely expressing their feeling. Several other studies replicated the findings (De Ridder & Van Bauwel, 2013; Hirdman, 2010; Manago, 2013; Siibak, 2010). Manago (2013)'s illustrated and discussed issues surround a young male participant expressing his masculinity in an alluring manner on the internet sites. Correspondingly, Van Doorn (2010) found male participants they were more likely to engage in gendered and sexualized interactions. Social media is one of the most important means of communication today. Consequently, an increasing number of male and female users are utilizing these social networking sites as spaces for both young men and women to express and portray themselves in ways deemed appropriate for themselves.

Subsequently, MCMC (2018) reported the highest internet users in Malaysia were young people within the ages of 20's (30%) and 30's (25.9%), respectively. There are also numerous studies and literatures which detected similar high numbers of young people engaging in social media activities (Akyazı & Ünal, 2013; Altin & Kivrak, 2018; Vural & Bat, 2010; Wu et al., 2013).

Research have discovered that the users' age is inversely related to the time spent on social media (Cha, 2010; Ozimek & Bierhoff, 2016). Ozimek and Bierhoff (2016) studied a sample aged between 16 until 56 years old. The research confirmed based on 335 participants,

the inverse association between age and frequency of Facebook activities. The researcher speculated the need for social comparison with significant others reduces the older the get.

The hypotheses put forth were that the older one gets, the likely to achieve their personal and relationship goals in their life (Abbasi, 2019). Thus, for the younger age group viewing one's own social media profile creates self-awareness which affects, i.e., enhances or diminishes self-esteem (Abbasi, 2019; Gonzales & Hancock, 2011; Valkenburg et al., 2006). Invariable findings show mixed results. It makes sense as research discovered positive feedback on social media enhances many adolescents' social self-esteem and well-being, whereas the opposite occurs with negative feedback (Valkenburg et al., 2006; Vogel et al., 2014)

For most of the teenagers, the first year of their university life corresponds to the end of their adolescence stage (Valkenburg et al., 2006). They need to put in considerable time and efforts to familiarize with the new environment so that the balance of social-cultural can be achieved. During this period, the building of self-identity and the formation of the sexual and social role took place. The sense of morality will continue to grow towards the end of the adolescent development, after they have been accepted for cultural and social tradition by others (Derman, 2008). Hence, this has become a critical period for young university students to fall into the tendency of excessive and harmful use of social media.

In the validation study of BSMAS done among the Italian population, by applying the independent samples t-test, it was revealed that significant differences exist between the gender group [$t_{(732)} = 2.18$, $p < .05$] and age group [$t_{(732)} = -5.94$, $p < .001$]. In the other words, female and young adults' groups scored higher in BSMAS. Moreover, the same study also detected the age difference within gender groups. Both young adult male and female have higher scores than the counterpart (Monacis et al., 2017b).

The personality of a person also plays a role in the psychological factor in contributing to social media addiction (Kircaburun & Griffiths, 2018; Van Doorn, 2010). People who have a broad offline social circle, are extrovert and has strong sense of self-worth also look for the social media network for social enhancement (Apaolaza et al., 2013; Błachnio et al., 2013)

Many adolescents' self-esteem is effected exclusively by the tone of the feedback that adolescents received on their profiles (Apaolaza et al., 2013; Błachnio et al., 2013; Valkenburg et al., 2006). Consequently, the larger the size of their social network on social media, the likely the presence of a higher level of life satisfaction as well as a sense of self-wellbeing (Apaolaza et al., 2013; Cheung et al., 2011; Lee et al., 2011; Valkenburg et al., 2006).

In comparison, on the further end of the spectrum, people with a smaller offline social network, who are more introvert and deflated self-esteem in their character prefer to dwell on the social network site to gain the social popularity (Barker, 2009; Valkenburg et al., 2006). Steinfield et al. (2008) and Apaolaza et al. (2013) are among authors who discovered using social media in these individuals helps reduce barriers they struggle with lower while in public or large groups.

Human's nature contains an innate motive to interact with others, which further enhanced by the sense of belongingness with people surrounding (Abel et al., 2016; Fiske, 2009). Social network site has the potential to satisfy the need for this group of people. Social network sites and social media facilitates meeting new individuals and making new computer-generated acquaintances (Apaolaza et al., 2013). The lack of physically presence in front of others encourages them to be less inhibited and freely share their thoughts in the platform. Being on-line allows them a relatively impersonal nature which helps to individuals lessened the practicalities and difficulties that can arise in managing relationships (Apaolaza

et al., 2013; Harridge-March et al., 2010). Being on-line reduces their feelings of inadequacy, shame and incompetence (Abel et al., 2016; Seu, 2006).

Thus, they may tend to overly involved in social media to satisfy the need for belongingness with others (Pelling & White, 2009). Barbera et al. (2009) studied and detected the people with narcissistic personality trait with social media addiction as well. Barbera et al. (2009) discovered the social media allowed these individuals to create profiles to reflect their identity, as noted by other authors (Gosling et al., 2011; Zhao et al., 2008) The social network allows these individuals to engage in a higher self-image profile, such as thinking themselves as more attractive and happy with their appearance (Barbera et al., 2009). Social network allows the individual space in an anonymous online environment to indulge in self-presentation and an extension of their already-complete selves (Barbera et al., 2009; Zhao et al., 2008).

In these anonymous online environment researchers have found individuals with unstable sense of identity, in which they have the fluctuating feeling between exaggerated self-importance and low self-esteem that required constant and excessive admiration (Cain et al., 2008; Zhao et al., 2008). Narcissism was also found out to be positively correlate with the amount of Facebook activities, like posting one's status or photos, checking on one's profile from time to time, etc. (Mehdizadeh, 2010). Besides, another study has shown that a person with narcissistic personality takes more "selfie" than others to enhance the level of narcissism (Halpern et al., 2016). Neuroticism is another personality trait has been studied that might be associated with social media addiction. The researchers postulated the group who scored high in neuroticism trait possibly indicates they are seeking for reassurance from the online social network (Amichai-Hamburger & Vinitzky, 2010). The literature also suggested the higher self-disclosure on social media platform in the high neuroticism group

leads to better subjective wellbeing and hence, it links to elevated risk of getting addicted to social media (Lee et al., 2011).

However, a Macau team researcher argued that the neuroticism, narcissistic and low self-esteem personality is insignificant in contributing to dispositional factors in social media addiction due to the low explanatory power (Wu et al., 2013). Instead, the literature proposed to use impulsivity factor, the more specific personality trait as the more important risk factor because this personality trait was also identified in other addictive behaviors such as substance use disorder, gambling and gaming disorder (Tang & Wu, 2012). A person with impulsivity personality tends to act out without forethought to satisfy their need immediately. Therefore, they are prone to get addicted to the social media as they gratify their relational and informational need via instant access to the smartphone.

There was a large national survey to find out the relationship of social media addiction and the narcissism and self-esteem by using BSMAS, Narcissistic Personality Inventory-16 and Rosenberg Self-Esteem Scale respectively (Andreassen et al., 2017). The correlation analysis was applied and it shows the significant ($p < 0.01$) and positive correlation between social media addiction and narcissism ($r = 0.06$), but negative correlation between the social media addiction and self-esteem ($r = -0.25$).

The other significant psychological factor that has been identified in the research papers is the fear of missing out (FoMO). It has been defined as the feeling of anxiety when others might be experiencing exciting or interesting events from which one is absent (Przybylski et al., 2013). People are living the era that requiring constant engagement with outside world to know about the latest development within their social networks. Undoubtedly, social media has done a perfect job on this! Many of the studies have shown an established social network may lead to longevity and happiness. On the other hand, the

real or perceived social isolation would affect one's quality of life (Holt-Lunstad et al., 2010). The modern society view the social network in the virtual world as equally important as the reality world. So, being socially excluded by others, one would feel loss of sense of belongingness, worthlessness and hence anxiety (Abel et al., 2016). Social media provides an opportunity where the users can keep up to date with the latest activities by their companions and result in temporary relief in the unpleasant anxiety feeling. Thus, FoMO induced anxiety feeling has serve as an important factor in contributing to social media addiction. One of the studies has found out the presence of FoMO has significant predictive value of negative outcome of the problematic social media use when they conducted the surveillance among the population with Spanish-speaking Latin-American countries (Oberst et al., 2017). Another study also detected FoMO may serves as a significant mediator in the linkage between the excessive use of social media and low self-esteem (Buglass et al., 2017).

2.3.5 The Negative Impacts of the Social Media Addiction

It needs to be bear in mind that frequent engagement in the social media, like many of us probably has, does not equal to social media addiction. The key differentiating feature between these two is social media addiction is always associated with the unfavorable outcomes. There are varying studies across the different population in showing the prevalence of the social media users being affected by the problematic use of the social media. The studies reported 1.6% and 4.5% in Nigeria and Hungary respectively. Meanwhile, the numbers are higher in the countries like Peru and China, which stated 8.6% and 12% respectively (Hussain & Griffiths, 2018).

Undeniably, social media has brought to us convenience in our life and it has been shown in the studies that the users gain positive psychological wellbeing from it, such as

establishing a wider online social network, feeling of connection with others, building up self-esteem and reduce the feeling of depression (Roberts & David, 2019). Another study even demonstrates the connectivity made with the virtual world is able to facilitate a person's wellbeing during the offline state (Nabi et al., 2013). As we all know, technology advancement comes with a cost, especially when it has been misused. The excessive indulgence into the realm of the social media or the maladaptive use of it may result in the physical or mental problem, interpersonal-related issue and drop in academic performance. Despite the aforementioned the fact that social media is able to help in depression, some of the studies have revealed that excessive usage of social media may linked with reduction in the score in subjective well-being and the quality of life, along with the worsening of the depressive symptoms (Kross et al., 2013; L. Y. Lin et al., 2016). By using the BSMAS as the instrument tool to assess the addictive use of social media, a study found that both anxiety and depression were correlated positively to the susceptibility in the use of addictive social media. Interestingly, after the confounding factor like demographic background, ADHD and OCD factors were controlled, the study revealed that anxiety illness contributed positively to social media addiction and the reverse pattern was noticed in the patient suffering from depressive illness (Andreassen et al., 2016). The study among the Central Serbia high school students suggested the amount of time they spent in using the social media is positively corelated with the severity of the depressive symptoms (Pantic et al., 2012). The authors believed that by engaging excessively in the social media, one might neglect the responsibilities and relationship in the real life, which might end up creating more conflicts and more anxiety with depressive symptoms. Also, when a person is over-emotionally involved in the social network, they are prone to negative comments or social interaction in the virtual communities, which leads to the higher rates of depression as well (Shensa et al., 2018). At the end of the day, the relationship between social media addiction can be bi-

directional, i.e. people who are suffering from depression are prone to social media addiction. Whereas it is possible also the people who are suffering from the social media addiction in the first place are at risk of acquiring psychiatric illness as well. Currently, there are only few studies to look into the relationship between these two variables and more empirical studies in the future are needed (Hussain & Griffiths, 2018).

Moreover, social media addiction can affect one's academic performance. This statement was supported by a study, which also include BSMAS as the main assessment tool to assess the degree of social media addiction, concluded that the higher level of addiction to social media associated with significant negative impact to their academic performance (Azizi et al., 2019). While the frequent use of social media in academic purposes does not correlate well with the better academic performance, the study has shown that the use of social media in non-academic purpose (especially in video gaming field) and social media multitasking negatively correlate with the academic performance (Lau, 2017). From the same study, this phenomenon was explained by the author via time displacement hypothesis and limited information processing capacity hypothesis. The time displacement hypothesis postulated that by nature, the students usually will spend more times in social media over academic activities due to its attractive features (Walsh et al., 2013). Limited information processing capacity hypothesis stated there is limitation in our cognitive function when performing multitasking. The learning process during the study requiring active involvement of the working memory. So, one's cognitive abilities will be affected when doing multitasking. Besides, excessive social media use also impairs the student's time management, causing the inability to complete the progress of study on time (Macan et al., 1990).

Another component that has been thoroughly studied for the effects of problematic social media use is the self-esteem. According to the definition given by Erikson, self-esteem is a kind of assurance which is acquired through the assessment by comparing society's view and self-recognition (Erikson, 1963). Based on the Hyperpersonal Model, the social media users have the advantage over the face-to-face interaction by selectively expose the glorified self-presentation to others, which in turn might causing the lowered viewer's self-esteem (Rosenberg & Egbert, 2011). Chou also pointed out people who are frequently exposing themselves to the virtual communities has the impression of others are always more superior than themselves, particularly referring to the group of friends that they never know during offline (Chou & Edge, 2012). The other reason that social media addiction can lead to diminished self-esteem is that they tend to compared themselves with the people who are superior than them in the social media more than those who are in the downward social comparison category (Vogel et al., 2014). This finding is consistent with another study that using the BSMAS as well for the social media addiction assessment, which shows that the longer hours an individual spent on social media is associated with lower self-esteem (Andreassen et al., 2017). In turn, low self-esteem may serve as a mediating factor in causing anxiety or depression psychological problem, and / or leads to deterioration in the academic performance.

Others less frequent negative consequences of social media addiction but important to mention here is the mortality resulted from selfie-related accidents. Based on the statistics collected worldwide from the year 2014-2016, there were 75 people died while attempting selfie. The mean age of the victims was about 23.3 year-old and the male victim comprised of 82% of it (Jain & Mavani, 2017). Moreover, a meta-analysis of observational studies from different countries revealed that the people diagnosed with internet addiction recorded

significantly higher chances of having suicidal ideation (OR = 2.952) and attempts (OR = 2.811) and higher severity of suicidal ideation (Hedges g = 0.723), even after the potential confounding factors like demographic data and depression were adjusted (Y.-S. Cheng et al., 2018).

2.3.6 Instruments to Measure Social Media Addiction

Despite the diagnosis of social media addiction was not included in the latest DSM-5 and ICD-11, there is increasing body of evidences which shows that it should be part of the legitimate mental disorder (Pantic, 2014; Ryan et al., 2014). In fact, based on the feedback from a member, (O'BRIEN, 2010) who was part of the DSM-5 working group, who mentioned that the inclusion of the internet addiction and its subtypes into the next DSM edition is possible, but is dependent on the more robust research studies.

Research in social media addiction is relatively new, when compared to game addiction, with the first studies appearing only after 2010 (Ryan et al., 2014). The problem identified earlier that was on the inability to clear out the conceptual confusion in internet addiction and its subtype related issue, such a way that there was absence of widely acceptable theories and also the absence of the gold standard that can use to measure this condition (J Kuss et al., 2014).

Without any clear definitions and the proper scale to measure the social media addiction, it is implausible for the researchers to progress further to explore the prevalence of the issue and subsequently hampering the important steps to understand this disordered behavior as a whole (C.-Y. Lin et al., 2017). In order to acquire a reliable prevalence rate of social media addiction in a population, it is essential to use the psychometrically validated

instrument tools. As compared to gaming addiction disorder, there are fewer validated instrument tool to measure social media addiction (Bányai et al., 2017). In fact, prior to this, there were numerous instrument tools focus on the specific platform of problematic social media use, such as Facebook Addiction Scale (Andreassen et al., 2012; Çam & Isbulan, 2012), Facebook Dependence Scale (Wolniczak Rodriguez et al., 2014), Bergen Facebook Addiction Scale (Andreassen et al., 2012), Twitter Addiction Scale (Saaid et al., 2014) and Social Networking Addiction Scale (M. D. Griffiths et al., 2014).

The inconsistencies in the social media research field and the use of specific form of social media addiction scale has few disadvantages (van den Eijnden et al., 2016). Firstly, the instrument tools might be outdated easily due to the rapid changes in the setting and interactive components of the platform. Secondly, the existing instrumental tools tend to adopt slightly different criteria from the operational criteria of social media addiction, which may yield heterogenous results and affecting the comparison of research data. Thirdly, being the most famous social media used by the adolescents, Facebook is also the most researched platform in the social media addiction related field (Elphinston & Noller, 2011).

Another study has revealed that the users, especially the adolescent group are mostly using more than one social media at particular point of time (M. D. Griffiths, 2013). Therefore, an ideal questionnaire should be able to assess all the social media available and levels of activities involved by the users, instead of focusing on only one specific social media platform. Also, it is uncommon that the internet users become addicted to social media platform or the internet itself (Bekalu et al., 2019). In other words, accurate terminologies or wordings are much needed to avoid the confusion.

Social Networking Activity Intensity Scale (SNAIS) is an assessment tool invented to assess the intensity of the use of social network site, in order to gauge the extent of social

media engagement among the targeted adolescent groups (Li et al., 2016). This assessment maybe particularly beneficial in the situation where self-report methods are probably not accurate. It serves as a more objective assessment to evaluate some behaviors, such as the total of time spent in engaging social media activities, the frequency of social network sites behavior etc. However, this scale has the inadequacy in evaluating the psychological factors of social network sites use, like the motivations behind the social media activities behavior (Lomborg & Bechmann, 2014) and the emotional engagement with the social media activities (Jenkins-Guarnieri et al., 2013). In view of inadequacy in evaluating the complex constructs of social media sites use, this scale was not chosen as the suitable scale for validation for my study.

Next, the Facebook Intensity Scale is another famous assessment tool that used to measure the extent of the emotional connection of the users with Facebook platform and the assimilation between its use and the user's daily life. Nevertheless, the disadvantage of using this scale was it only assesses the attitude of the user towards Facebook only, but not other social networking sites. In fact, the people nowadays, especially the adolescent group use multiple other types of social media, other than just focusing on Facebook platform alone (Lenhart et al., 2011). Besides, the validation study of Facebook Intensity Scale only providing the data on the internal consistency, but no data on other components of psychometric properties (Ellison et al., 2007). The study done by Kuru et al. showed that this famous scale was vulnerable to acquiescence bias, in which the estimation of the reliability was higher than it supposed to be (Kuru & Pasek, 2016). Therefore, this scale was removed from the list of the options of my validation study.

Following that, Social Media Disorder Scale (SMD) is another assessment tool that was taken into consideration to be part of the options to be selected into my validation study.

It was created based on the assumption of the fact that both Internet Gaming Disorder and Social Media Addiction shared the same overarching construct of Internet Addiction and hence should be categorized by the same diagnostic criteria (van den Eijnden et al., 2016). It consisted of 27-item and three items were designed for each of the nine criteria that was previously identified, i.e. Preoccupation, Tolerance, Withdrawal, Escape, Displacement, Persistence, Deception, Problems and Conflicts. The concern about using this scale was it is lengthy for the participants to answer this questionnaire and it may discourage the participants to take part in the survey. The use of dichotomous answer in this scale is another concern, in which means that it limited the degree of sensitivity or some emotional preference, which can be essential components while conducting the research.

Bergen Social Media Addiction Scale (BSMAS) (Andreassen et al., 2016) is one of the scales that overcomes the previous aforementioned drawbacks. BSMAS is a six items scale to assess the pattern of social media use in general for the past 12 months. The respondents are required to fill up each item in the questionnaire on a 5-point Likert scale, which is ranging from "Never" to "Always". It was modified from the previously validated Bergen Facebook Addiction Scale (BFAS) (Andreassen et al., 2012). The scale is operated based on the conceptual framework of addiction component in bio-psychosocial model (M. Griffiths, 2005). Originally, the BFAS (Andreassen et al., 2012) was developed based on the items with the highest possible factor loadings for each component from the 18-initial items. The six core addiction components include salience, tolerance, conflict, withdrawal symptoms, mood modification and relapse. A higher score of BSMAS indicates higher degree of addiction to the social media and suggestive of a person is at risk of having problematic social media use (Bányai et al., 2017).

Malaysia is a multiracial, multicultural and multilingual country. Despite being listed as second language taught in the Malaysia Education System, the English proficiency among the students has always been an issue as pointed out by the educators (Norasimah MA, 2007). The translation of the questionnaire into the Malay language is necessary in order to be able to have wider coverage of the participants. One of the major problems that frequently occurred when translating English to Malay was the loss of the exact meaning after direct translation was done. It could have resulted in some response errors due to the individual variation in the interpretation or understanding of certain words or sentences, depending on their educational level. Various studies have shown that if the questionnaire were to use across the cultures, each item in the questionnaire need to be translated linguistically professionally, and also culturally adapt to ensure the content validity is able to maintained at different countries and cultures (Ferraz, 1997; Guillemin et al., 1993).

The current study of validating the BSMAS questionnaire involving the use of different language as well as the culture from where this questionnaire was developed. According to the guideline developed by Guillemin, this scenario should consider the process of cross-cultural adaptation (Guillemin et al., 1993). The aim of the cross-cultural adaptation is to produce and achieve the equivalency in content between the source and the target questionnaire. However, the psychometric properties of the source questionnaire may not be retained after the translation into the target language is done. Further test should be done on the targeted questionnaire to test for its psychometric properties (Ware Jr & Gandek, 1998).

So far, the psychometric properties of BSMAS scale has been tested in Italian sample (Monacis et al., 2017a), Persian sample (C.-Y. Lin et al., 2017) and Hungarian nationally representative sample (Bányai et al., 2017). To show that an instrument tool is

psychometrically robust or not, different statistical methods across different group of population must be applied in testing its psychometric properties (C.-Y. Lin et al., 2017).

In view of lacking of proper diagnostic criteria for social media addiction, most of the development of instrument tools to measure the social media addiction nowadays is based on the assumption that the diagnosis of social media addiction and internet gaming disorder are two measurement of the same construct under internet addiction, hence it should falls under the same set of diagnostic criteria (van den Eijnden et al., 2016).

In conclusion, as compared to other subset of internet addiction such as internet gaming disorder and cybersexual addiction, the social media addiction received insufficient research concerns. There is limited knowledge regarding the risk of addiction and the protective factors that could help in identifying and preventing the social media addiction. It is important to explore deeper regarding this field, including how is it the way it is similar or different from others subset of internet addiction. By doing so, it could help to tackle more effectively this disordered behavior and even primary prevention of the development of addiction to social media.

CHAPTER 3

OBJECTIVES

3.1 Rationale of Study

There is growing body of evidences showing that social media addiction is associated with negative consequences of health as well as the wellbeing of a person, particularly the young people who are growing up in the environment that operated using digital technology. However, to date there is no standardized diagnostic criteria for social media addiction, which hampering the research progress and limited the understanding of this disorder.

The Bergen Social Media Addiction Scale (BSMAS) has been tested its reliability and validity by the author. BSMAS has been frequently used by various researchers to measure the social media addiction in their studies. It has been translated to different languages as well in other countries and has been tested for its psychometric properties. Yet, the Malay language version of BSMAS has not been created in Malaysia. Malaysia is a multiracial and multicultural country, which about half of the population consisted of Malay and Malay language has been selected to become the official language in this part of the world. Therefore, the validated BSMAS in Malay version is much needed to facilitate future local studies in the social media addiction related field.

3.2 General Objectives

The main objective is to find out the psychometric properties of BSMAS by assessing the reliability and validity among the Malaysia population.

3.3 Specific Objectives

1. To translate BSMAS into Malay version questionnaire.
2. To establish the face validity of BSMAS in Malay version questionnaire.
3. To establish the internal consistency and test-retest reliability of BSMAS in Malay version questionnaire.
4. To examine the construct validity of BSMAS in Malay version questionnaire.
5. To examine the concurrent validity of BSMAS in Malay version questionnaire.
6. To establish the convergent and divergent validity of BSMAS in Malay version questionnaire with gaming disorder in ICD 11
7. To determine the association between social media addiction and the academic performance.
8. To determine the association of social media addiction and the sociodemographic variables, including age, gender, race, religion, income and relationship status.

CHAPTER 4

METHODOLOGY

4.1 Study Design

This is a university-based, cross-sectional study to find out the psychometric properties of BSMAS in Malay version. The study will also assess the associated demographic features and negative impact of social media towards the academic performance and the quality of life.

4.2 Study Period

The research data for this study was collected from early September 2019 till end of December 2019. The sample was obtained from the study site on random weekdays from Sunday to Thursday depending on the convenience of the investigator.

4.3 Study Location

The study was conducted in both Hospital Permai, Johor Bahru and University Teknologi Malaysia, Johor Bahru. Hospital Permai is the second largest psychiatry hospital in Malaysia that located in Johor Bahru. It is also function as a secondary and tertiary referral psychiatry center from not only Johor state itself, and also from other states from West Malaysia such as Melaka, Negeri Sembilan, Kelantan, Terengganu and Pahang. Besides its main purposes of serving the psychiatric services for the public, Hospital Permai also provides the appropriate research setting in psychiatry field and training of the professional medical health personnel. University Teknologi Malaysia (UTM) has main campus located in Johor Bahru

and has another branch campus in Kuala Lumpur. UTM houses about 30 thousand students from local and international students, including under- and postgraduates' students. It is known for leading research university in science, engineering and technology. Furthermore, UTM is also known for academic and technological center and falls in the rank of top 100 in World University Rankings in technology and engineering field.

4.4 Sampling Method

Convenient sampling method is used throughout the study. Most of the literatures suggested 10 is the minimum number of sample size need to be taken in the pilot study (Isaac & Michael, 1995; Julious, 2005; van Belle, 2002) In this pilot study, total amount of 20 respondents are selected.

For the project sample size, there are various sources of recommendations to calculate the sample size that is sufficient to subject for factor analysis. As a general rule of thumb, at least 10 observations per variable is needed to prevent the computational difficulties (UCLA, 2016) BSMAS contains 6 questions in total. The ratio of 1:20 subject to variable ratio was applied in this study. Therefore, total of at least 120 samples are selected from UTM students to participate in this study.

4.5 Selection Criteria

Inclusion Criteria:

1. All the UTM students are eligible to participate in this study.
2. The age of subject must be 18 years old and above.
3. The subject must understand both Malay and English language.
4. The subject must be willing to give the consent and keen to be interviewed.

Exclusion Criteria:

1. The subject who do not give consent for the study
2. The subject who is not capable of understanding Malay or English language.

4.6 Ethical Consideration

The research project proposal was sent to Medical Research Ethics Committee in University Malaya Medical Centre (UMMC) for approval. The proposal was later reviewed and approved by them with the reference number of 2019625-7564.

The written consent was required for all the participants who agreed to join the research, after complete description of the study was revealed to them. The participants were allowed to decline for the participation or withdraw themselves in any point of time during the research period without any reason. It has emphasized earlier on that they would not be penalized by doing so.

4.7 Study Instruments

4.7.1 Sociodemographic Data

In this section, the respondents are required to provide the information such as age, gender, ethnicity, religion, household income, source of finance for studies, relationship status and types of social media they are using. They are also required to write down their email address, so that they will receive the translated version of BSMAS in Google Form format for the purpose of test-retest reliability.

4.7.2 Translated version of BSMAS in Malay version

As mentioned earlier, the BSMAS was derived from the previous validated Bergen Facebook Addiction Scale (BFAS) (Andreassen et al., 2012). Initially, BFAS was created based on the items with the highest factor loadings for each domain (i.e. salience, withdrawal, mood modification, tolerance, relapse and conflict) from a total of 18 item-pool. It consists of 6 items in the questionnaire that helps to identify the population who is at risk of having problematic social media use for the past 12 months. Each of the item in the questionnaire is given the option of 5-point Likert scale, ranging from very rarely to very often. Therefore, the composite score ranging from 6 to 30 points. Besides, every item in the questionnaire represents different domains reflecting the core of addiction elements. Cut-off score of 19 points has been taken as a threshold to which the individuals scores 19 and above are categorized under the group of at-risk in problematic social media use. The scale has been tested and it has the specificity of 99% and sensitivity of 83% (Bányai et al., 2017).

4.7.3 Internet Addiction Test (IAT)

IAT is a self-administered questionnaire that contains 20 items, on which the respondents are required to rate each item based on the 5-point Likert scale. This questionnaire assessed the extent to which the degree of the internet users affecting their emotion, daily activities, social circle and productivity. The composite score of this questionnaire range from 20 to 100 points; the higher the scores indicate the more problematic internet usage. The study on the local population was done and the factor analysis has extracted total of five factors from this questionnaire. The five factors are (a) lack of control (8 questions), neglect of duty factor (7 questions), problematic use factor (2 questions), social relationship disruption factor (2 questions) and email primacy factor (1 question). (Chong Guan et al., 2015)

4.7.4 Social Media and Academic Performance of Students Questionnaire (SMAAPOS)

SMAAPOS is an instrument that contain 20 items with 4-point Likert scale that helps to elicit the information from the respondents regarding their opinion on social media impact and addictiveness of social media in student's group. They are required to pick an option among Strongly Agree, Agree, Disagree or Strongly Disagree for each of the statement given. All the items are subdivided into the subcategories of Student addictiveness to social network and academic performance; Exposure of students to social media and their academic performance; Use of social media and student's academic performance; Gender and age usage of social media. The reliability of this instrument has been tested by using the split-half test. The co-efficient value was 0.65, which indicates the instrument was reliable. (Osharive, 2015)

4.7.5 Brunnsviken Brief Quality of Life Scale (BBQ)

BBQ is an empirically-derived, short and convenient-to-use self-rated questionnaire that has been validated for the use in clinical and non-clinical samples. BBQ contains 12 items and it examines the overall self-experienced quality of life. The six life areas were identified as important aspects in determining overall quality of life and they are included in this instrument. These six areas consisted of leisure time, philosophy of life, learning, self-regard, creativity and friendship. Each aspect comprised of satisfaction and importance component. The total score is calculated as the sum of (satisfaction x importance) for each component and hence, the composite score will come out in the range of 0 – 96. The cut-off score has been taken at 52 with the sensitivity of 0.75 (95% CI; 0.70-0.81) and specificity of 0.71 (95%CI; 0.63-0.78). Its psychometric properties have been tested was found out to have valid and reliable measurement of one's subjective quality of life.

4.7.6 Gaming Disorder based on ICD 11 Diagnostic Criteria

Besides administering questionnaire, a one-to-one interview will be conducted for each respondent to identify the presence of the gaming disorder based on ICD 11 diagnostic criteria.

4.8 Participants and Procedures

This study was conducted in divided 3 stages.

Stage 1: Translation of Original Version of BSMAS into Malay Version

The permission from the author, Prof Cecilie Schou Andreassen from Department of Psychological Medicine in University of Bergen was granted to use and translate the original version of BSMAS into Malay language, in order to test for the psychometric properties of BSMAS in Malay version.

According to the recommended guideline (Beaton et al., 2007), the forward translation from the original language to another language should be done by at least two independent translators. Ideally, the translators should be translating the items in the questionnaire into their mother tongue, as they are more capable of detecting the subtle differences when choosing the appropriate words. (Hendricson et al., 1989) Preferably, one of the translators is able to comprehend the conceptual framework of what the questionnaire intended to measure, so that he or she can translate the content more closely related to the original version of questionnaire. Whereas the guideline also suggested the second translator is a person who does not aware of the concept of the questionnaire intended to measure to come out with second translation. The purpose is to detect the subtle differences in the original version of questionnaire. Both of the translations are then compared and discussed

between two translators to come out with the agreeable version. This process involved 2 Child and Adolescent Psychologist from University Malaya, who have at least 5 years of clinical experiences in psychiatry. Both of them have good command in both Malay and English languages.

Similar to forward translation, the process of backward translation requires at least two independent translators to perform, preferably to their mother tongue. Backward translation is required to detect possible errors in words choosing or misunderstanding in the initial translation. (Guillemin et al., 1993) In order to minimize the bias, the translators should not be revealed on the concept that questionnaire intended to measure. Therefore, two University Malaya master students from Department of Psychological Medicine were chosen to perform this task.

At the same time, expert committee was formed to come out with the prefinal version of the translated questionnaire. The expert committee were consisted of a Professor from University Malaya, who has clinical experience in psychiatry for more than 10 years with vast experiences in validation research study; and two clinical psychologists from Hospital Permai, who are familiar with the construct of interest of the study. All the suggestions and opinions from every committee member were gathered and discussed. Any discrepancies that appeared in the translation were critically discuss to reach the consensus on every item in the questionnaire.

As a result, few amendments were made in the translated version of BSMAS after reviewed by the expert committees. The word "social media" in the original version should be translated to "*media sosial*", instead of "*sosial media*". Another correction was located at the question number 2, where the original sentence of "…felt an urge to use social media" was translated to "…*berasa sangat terdorong untuk menggunakan sosial media*". The expert

committees were thinking the word "*terdorong*" does not represent clearly the urge feeling in addiction. They have suggested to substitute the word using "*desakan*" instead. Next, they also pointed out the grammatical error at the question no. 3. The word "*guna*" in "…*guna media sosial*" was substituted by "*menggunakan*", as it represents more grammatically appropriate in Malay language. Furthermore, the original word of "…become troubled" at the question no. 5 was initially translated into the word "…*menjadi bermasalah*", was decided to be replaced with "…*menjadi terganggu*" because the word "*terganggu*" can represent better an individual's feeling than "*bermasalah*".

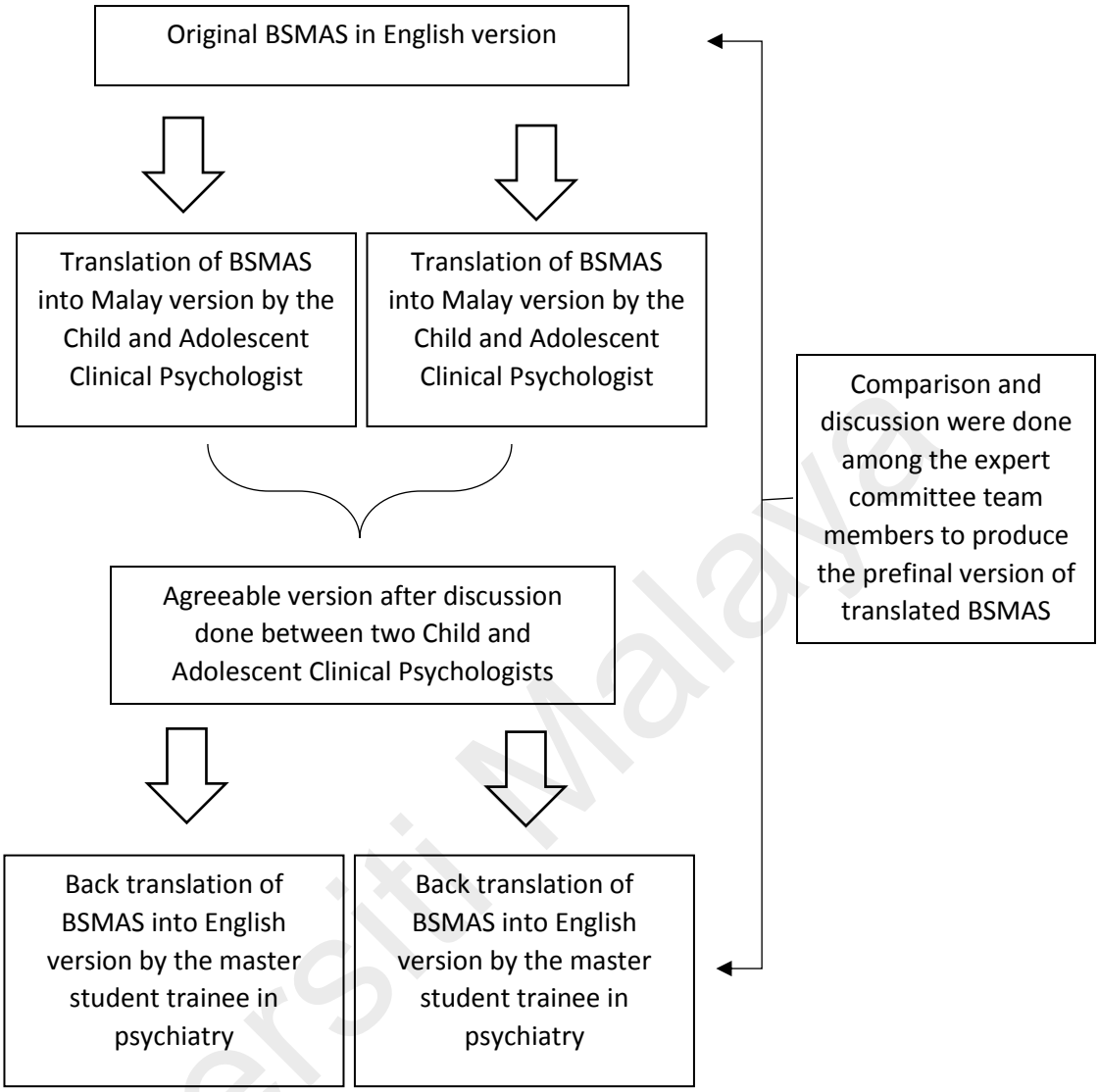

Figure 4.1: Flowchart for Translation of Original Version of BSMAS into Malay Version (Stage 1)

Stage 2: Preliminary Pilot Testing to Determine Face Validity

Prior to administering the questionnaire to the project sample, it is always good to conduct a pilot testing on a small group of samples to seek for the improvement of the items in the questionnaire. This process is also known as Cognitive Debriefing. The main purpose of this stage is to open for the suggestions from respondents to comment about the suitability of the language translated, format of the language used and the evaluation of concerned

feasibility. The process is needed to ensure the validity of the instrument and to avoid the destruction to the data pool of clinical research (Farnik & aw Pierzchała, 2012).

The prefinal version of the questionnaire was randomly distributed to the total of 20 students from Johor Bahru Allied Health Science College and Newcastle University Medicine Malaysia. They were attached to Hospital Permai as part of their undergraduate training at that time. The respondents were briefed regarding the purpose of the survey conducted. Then, the appropriate amendments were made based on the suggestions on the structure of the questionnaire. The newer version of the questionnaire was then revealed to the expert committee for finalization.

Furthermore, the responses gathered from pilot testing could also help to detect the presence of the ceiling or floor effects, which defined as nearly all the respondents obtained the score near with the top or bottom score respectively. This might need further revision of the translation for the items in the questionnaire.

After the pilot study was administered, only a minor correction was done after listening to the suggestion given by one of the respondents. The respondent thinks that "…*berasa desakan*" in no. 2 is better off substituted with "…*berasa terdesak*" to provide the better structure and understanding for that sentence. Other than that, generally they were satisfied and could easily understand the translated questionnaire as a whole.

Stage 3: Validation of Translated Version of Questionnaire

After the completion of preliminary pilot study and appropriate amendment done, the translated questionnaire is subsequently administered to the project sample for validation.

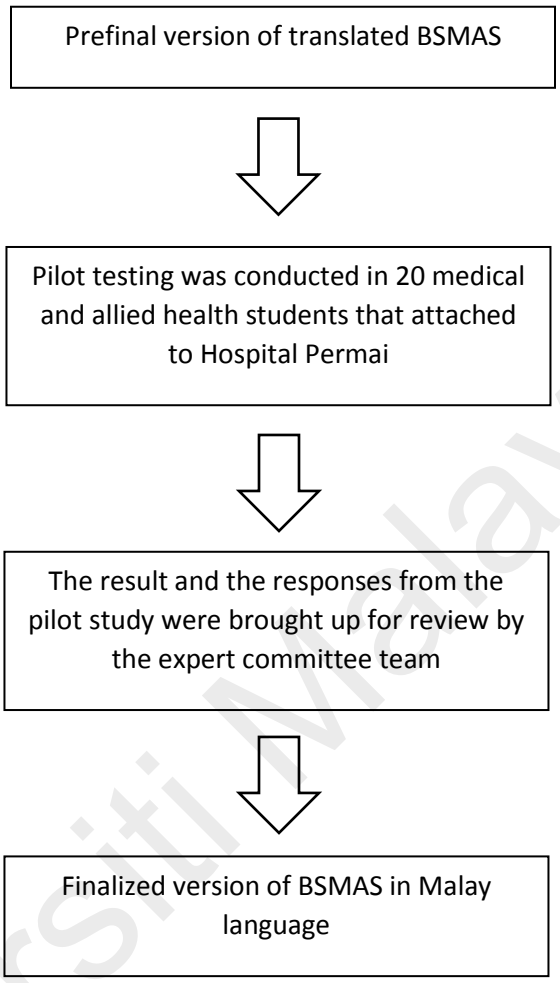

Figure 4.2: Flowchart for Preliminary Pilot Testing (Stage 2)

Data were collected from UTM campus from September 2019 till December 2019. Initially, the researcher attempted to approach on any class representative, so that the questionnaire can be distributed to all the students in that particular class whenever they are free in between the period of the class. However, this method was infeasible because the students are not required only to fill up the questionnaire, but also need to be interviewed by the researcher with a set of questions to identify the presence of gaming disorder. Most of the students do not have the additional time to wait for the interviewer to approach each of them. Therefore, the researcher decided to go to UTM Health Centre to approach the

respondents because they have the time to complete the questionnaire and interview as well while waiting for their turn or their friend's turn to see the doctor.

The sample size of the project sample needs to be adequately included to minimize the sampling error, so that it can achieve higher statistical power to validate the questionnaire. (Crocker & Algina, 2008) Reliability and validity are two core components in assessing a measurement instrument. The researchers intended to invent reliable and valid test as much as possible in order to amplify the accuracy of the evaluation.

Reliability measurement refers to the consistency of the result of the survey. It is one of the essential steps that the researchers need to look into in determining the quality of the instruments tested. A measurement could possibly go wrong in the content sampling, changes within the respondents themselves and discrepancies across raters. Therefore, the measurement errors aforementioned can be detected through the analysis test by using internal consistency, test-retest reliability and inter-rater reliability respectively to assess the overall consistency of the outcome. (Tsang et al., 2017)

Internal consistency measures the range to which the items in the questionnaire are inter-connected to each other. It also serves as an indicator to tell whether all the items are measuring the same construct. Cronbach's alpha has been widely used in the common practice in estimating the internal consistency because it is comparatively easier to use as compared to other estimates like test-retest reliability estimates. (Tavakol & Dennick, 2011) In practice, the acceptable range of alpha value is between 0.70 to 0.95. (Bland & Altman, 1997; DeVellis, 2016) A low alpha value is associated with low numbers of questions in the instrument, poor level of inter-connectedness between the items or the presence of heterogenous form of construct. On the other hand, high Cronbach's alpha may indicate that

some of the items in the questionnaire are included unnecessarily and need to be discard. (Streiner, 2003)

Test-retest reliability indicates the stability of the responses from the respondents over time. The same test will be distributed for the second time to the same group of respondents after a period of time. The result is deemed reliable if the response from the second time is the same or similar to the response given on the first encounter. During the first approach for data collection from the UTM students, they were asked to provide their email address in the hardcopy questionnaire. After about one to two weeks duration, the retest on the same group of respondents will be done by sending the translated version of questionnaire again to their email via the Google Form format. In general, it is assumed that the time between first and second administration of questionnaire is long enough to prevent the memory effect. Another assumption is that the measurement characteristic in each respondent remain stable over time between first and second administration of the test. (Engel & Schutt, 2016)

Validity is referring to the extent to which a test measure what it intended to measure. (Tsang et al., 2017) Content and construct validity are the two important types of validity during the process of validation of questionnaire. Content validity explains the degree whether the items in the questionnaire are measuring the construct of interest comprehensively. (Sangoseni et al., 2013) It is usually done by the experts who are familiar with the construct of interest. The content validity will not be carried out in this study as it has been done by the original author before. Factorial validity is the empirical extension of content validity because it helps to establish content validation in the construct of interest by applying the factorial analysis. Factorial analysis is usually used in the construct of interest which consisted of several dimensions that form multiple domains. Each item in the questionnaire that measuring the same domain should be highly correlated with each other

than the items measuring other domain. (Engel & Schutt, 2016) In this study, BSMAS questionnaire contains total of 6 domains and it will be further explained in the next section.

Construct validity is an essential component in the assessment of a questionnaire, especially when the construct of interest in the questionnaire is not directly observable (e.g. social media addiction) (DeVon et al., 2007). It refers to the extent to which the test measures the theoretical construct that it aims to measure (Ong, 2012). Poor construct validity will lead to the meaningless result of the questionnaire. Hence, it will result in the inability to derive any inference from the test. Convergent validity measures the degree of yielding same or similar result if the same concept is measured in the different ways. On the other hand, discriminant validity measures the extent of how the concept of this construct of interest differs from the others closely related concepts.

Concurrent validity is another type of validity that measure the extend of how fit a test is when it is compared with the previously validated scale. As the name implied, the timing of testing out the new scale and the validated scale must be at the same time or reasonable approximate timing. Otherwise, when the test is administered after a considerable amount of time initial test was done, it will be considered as predictive validity (Stevens, 2012). In this study, BSMAS will be carried out concurrently with the Internet Addiction Test (IAT), which is known to be measuring the same construct of interest.

4.9 Data Analysis

The results were obtained and analyzed by using Statistical Package for Social Science (SPSS) version 26.0. Sociodemographic characteristic data were examined in descriptive statistics. Cronbach's alpha coefficient was used to evaluate the internal consistency of

BSMAS in Malay version. Pearson's correlation (*r*) was used to examine the correlation between BSMAS in Malay version and Internet Addiction Test. Independent *t*-test was used to test the BSMAS in Malay version total and each item scores between subjects with and without internet dependence based on IAT. The same test was also used to test the correlation between every item in BSMAS in Malay version with each factor from internet addiction test. The factor in the internet addiction test was ascertained from the local study done on a group of medical students (Chong Guan et al., 2015). Principal component analysis with varimax rotation method was not used as only one factor involved in the analysis.

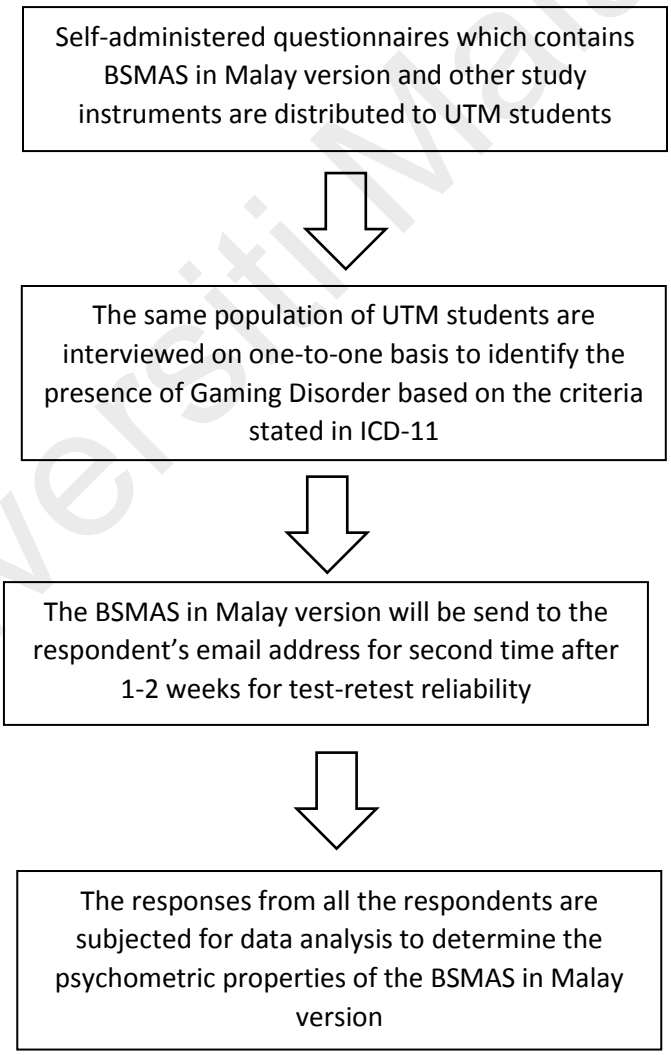

Figure 4.3: Flowchart for Validation of Translated Version of Questionnaire (Stage 3)

The internal consistency of each factor was then confirmed by calculating Cronbach's alpha. In terms of measuring construct validity in classic test theory (CTT), confirmatory factor analysis (CFA) was used and determined by using MPlus ver8.0 software. CFA is a type of factor analysis that is widely used in the social science study to examine of the extend of the construct whether it is consistent with the understanding of the researchers about the nature of a certain construct (Kline, 2015). Therefore, the main purpose of using CFA in this study is to measure whether the data collected at the end of the study fit into the addiction component in bio-psychosocial model. The test was used to examine the value of a series of fit indices, such as comparative fit index (CFI), Tucker-Lewis Index (TLI), root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR) as well as Chi-Square test (χ^2). Moreover, the factor loading that extracted from the CFA were used to calculate the composite reliability (CR) and average variance extract (AVE) to enhance the understanding of reliability and construct validity respectively. CR is a test that used to measure the scale items' internal consistency (Netemeyer et al., 2003). Whereas AVE is a test used to examine the total amount of variance that is captured by the construct against the total amount of variance due to measurement error, in order to establish the convergent validity. According to the rule, the square root of each construct's AVE should have bigger value than the correlation of certain construct with any of the others construct. The value of AVE for each construct should falls in the range of >.5 (Fornell & Larcker, 1981). Maximum Shared Variance (MSV) represents the square of the highest correlation coefficient between 2 latent constructs. Average Squared Variance (ASV) represents the mean of the correlation coefficients between latent constructs. Discriminant validity was confirmed when the value of MSV and ASV were both lower than AVE for each of the constructs (Hair et al., 2010).

Chi-Square analysis was used to look for the association between the BSMAS and the sociodemographic data. The same test was also applied to find out the possible association between the BSMAS scoring and academic performance. The optimal cutoff score for problematic social media use was ascertained from the coordinates point whereby the specificity and sensitivity were optimal in the receiver operating characteristic analyses using the Internet Addiction Test as standard diagnostic test. The area under the curve of the receiver operating characteristic was ascertained.

CHAPTER 5

RESULTS

5.1 Biodemographic Data

A total of 175 students were approached, but only 166 students were included in the study. Out of the 11 students who were not included in the study, 5 of them refused to participate; 6 of them are foreigners who do not have satisfactory command in Malay language. Hence, the overall response rate was 94.9%. The mean age of this population was about 23 years old. As shown in the Table 5.1, the study sample was consisted of 48.2% of male subjects and 51.2% of female. The racial component breakdown for this study were 56% of Malay, 28.3% of Chinese and 7.8% of Indian, in which the sample was in accordance with the figures shown in another study in year 2000. The study in 2000 revealed that about 60% of Malay, 32.5% of Chinese and 6.88% of Indian were enrolled in universities. (Yaakob, 2006) About three quarters of the respondents were still single and only 14 of them were married. Half of them had the household income between RM2,300 and RM5,600 and majority of them got the government scholarship or loan to further their studies.

Various types of social media were listed as part of the questionnaire to find out the popularity each social media among the UTM students. WhatsApp (98.8%) appears to be the most commonly used social media, followed by YouTube (89.2%), Instagram (89.2%) and Facebook (76.5%). All of the students used at least 2 types of the social media for various reasons.

Table 5.1: Sociodemographic Data of the Study Subjects (N = 166)

Demographic Variables	Mean (SD)	n (%)
***Age* (years)**	22.54 (4.063)	
Gender		
Male		80 (48.2)
Female		86 (51.2)
Race		
Malay		93 (56)
Chinese		52 (31.3)
Indian		13 (7.8)
Others		8 (4.8)
Religion		
Islam		98 (59)
Buddhism		47 (28.3)
Christianism		13 (7.8)
Hinduism		6 (3.6)
Others		2 (1.2)
Marital Status		
Single		121 (72.9)
In relationship		31 (18.7)
Married		14 (8.4)
Household Income		
<2,300		34 (20.5)
2,300 – 5,599		86 (51.8)
≥5,600		46 (27.7)
Source of Finance for Studies		
Own		56 (33.7)
Government		103 (62)
Private		7 (4.2)

Table 5.2: Types of Social Media Used by the Subjects

Types of Social Media	n (%)
Facebook	127 (76.5)
YouTube	148 (89.2)
WhatsApp	164 (98.8)
WeChat	49 (29.5)
Instagram	148 (89.2)
Tik Tok	7 (4.2)
Twitter	72 (43.4)
Skype	21 (12.7)
Others	15 (9)

Note: The subjects were allowed to pick more than an option of types of social media they are using

5.2 Internal Reliability

Table 5.3 shows that there was no ceiling or floor effects in the result, which tested .6% and 1.3% respectively (both were <20% and considered acceptable). The BSMAS in Malay version demonstrates good internal consistency, with overall Cronbach's α coefficient of .800. The corrected item-total correlations in all items of BSMAS were acceptable (>.4), ranging from .431 to .596. The Cronbach's α if item deleted ranged from .747 to .799 (Table 5.4). Therefore, no items in the BSMAS in Malay version shall be removed from the list.

5.3 Factor Analysis of BSMAS and Construct Validity

Both Bartlett's test of sphericity and Kaiser-Mayer-Olkin (KMO) Measures of Sampling Adequacy are usually utilized to check on the data collected for structure detection.

Bartlett's test of sphericity is a test to examine the hypothesis that stated the correlation matrix represents an identity matrix, which would mean that the variables are not related and hence not suitable for structure detection (Bartlett, 1951). The small value of the significance level (<0.05) pointing towards that a factor analysis maybe useful in the collected data.

Whereas Kaiser-Mayer-Olkin (KMO) Measures of Sampling Adequacy is another statistical method that represents the proportion of the variance in each of the variables that might be caused by the underlying factors (Kaiser & Rice, 1974). Generally, the higher the value, the more useful a factor analysis will be to the data. The value of <.5 is considered unacceptable (Kaiser, 1974).

The Bartlett's test of sphericity was significant (p<.01) and the Kaiser-Mayer-Olkin (KMO) sampling adequacy for the 6-item BSMAS was .854. Hence, it is appropriate to move on to factor analysis. Only one factor was extracted. The only factor account for 50.69% of the variance.

The satisfactory psychometric properties of BSMAS was supported by CTT. At the BSMAS item level, the result revealed that total of all 6 items contained acceptable range of corrected item-total correlations (.431 - .654), as shown in Table 5.4 and had fairly strong factor loading in CFA (.620-.769), as shown in Table 5.5.

Table 5.3: Psychometric Properties of BSMAS at Scale Level

Psychometric testing	Value	Suggested cut-off**
Classical test theory		
Ceiling effect (%)	.6	<20
Floor effect (%)	1.3	<20
Confirmatory Factor Analysis		
χ^2 (*df*)	5.085 (9)*	Non-significant
Comparative fit index (CFI)	1.000	>.9
Tucker-Lewis Index (TLI)	1.000	>.9
RMSEA (90% Confidence Interval)	<.001 (<.001, .053)	<.08
SRMR	.019	<.08
Average variance extracted	.88	>.50
Composite reliability	.805	>.6
Standard error of measurement	2.86	<SD/2[a]

Note: RMSEA: Root mean square error of approximation; SRMR: Standardized root mean square residual.

[a] The SD/2 was 3.193 based on the current study's result. (Table 5.9)

* p = 0.8269

** cut-off values was recommended based on the study done in 1999 (Hu & Bentler, 1999), and endorsed by Brown (Brown, 2015).

At the BSMAS scale level, both floor (1.3%) and ceiling effects (.6%) were found to be negligible. The measurement of AVE (.41) and CR (.805) were higher than the suggested cut-off, and SEM was lower than the SD/2 in the sample (2.86). χ^2 was also tested non-significant. All the fit indices in the CFA were seems to be excellent.

The prevalence of the UTM students of being at-risk to problematic social media use in this sample was 57.8% (51% for female; 49% for male).

Table 5.4: Corrected Item-Total Correlations and Cronbach's α if Item Deleted for the translated version of BSMAS

BSMAS Items	Corrected item-total Correlations	Cronbach's α If Item Deleted
1	.596	.760
2	.654	.747
3	.431	.799
4	.559	.768
5	.563	.767
6	.546	.771

Table 5.5 The Standardized Factor Loading and Standard Error of BSMAS by using Mplus Software

STDYX Standardization

		Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
F1	BY				
	BSMAS1	0.693	0.051	13.519	0.000
	BSMAS2	0.769	0.045	17.077	0.000
	BSMAS3	0.477	0.069	6.922	0.000
	BSMAS4	0.623	0.058	10.778	0.000
	BSMAS5	0.635	0.057	11.227	0.000
	BSMAS6	0.620	0.058	10.746	0.000

5.4 Concurrent and Divergent Validity

The Pearson's correlation between the BSMAS in Malay version and IAT was .559 (P <.001), with Kolmogorov-Smirnov test of normality >.05, which is considered as a strong degree correlation (Table 5.6).

The same test was applied to find out the correlation coefficient between each item in the BSMAS and each factor in IAT (Table 5.7). Based on the previous validation study on IAT, total of 5 factors were extracted (eigenvalue >1.00) by using factor analysis (Chong Guan et al., 2015).

These 5 factors are "lack of control" (Factor 1), "neglect of duty" (Factor 2), "problematic use" (Factor 3), "social relationship disruption" (Factor 4) and "email primacy" (Factor 5). With the exception of Factor 5, it can be seen that almost all the items in BSMAS were significantly associated with every factor in IAT. It was identifiable that item 5 in BSMAS was significantly associated with Factor 5, but not with other factors.

Table 5.6: The correlation between BSMAS against IAT and BBQ

	BSMAS	**IAT**	**BBQ**
BSMAS	1	.559**	-.233**
IAT	.559**	1	-.159*
BBQ	-.233**	-.159*	1

* Significant at .05 level (two-tailed)

** Significant at .001 level (two-tailed)

Table 5.7: Convergent Validity: The correlation between BSMAS against the domains in IAT

		IAT				
		Factor 1 (lack of control)	**Factor 2 (neglect of duty)**	**Factor 3 (problematic use)**	**Factor 4 (social relationship disruption)**	**Factor 5 (email primacy)**
BSMAS	**Item 1**	.359**	.318**	.321**	.264**	.002
	Item 2	.401**	.471**	.361**	.362**	.099
	Item 3	.301**	.263**	.061	.037	.064
	Item 4	.405**	.335**	.201**	.251**	.128
	Item 5	.310**	.400**	.318**	.344**	.209**
	Item 6	.416**	.496**	.368**	.322**	.020

* Significant at 0.05 level (two-tailed)
** Significant at 0.01 level (two-tailed)

Table 5.8: The Divergent Validity: Comparison of the BSMAS in Malay version Total and Each Item Scores Between Subjects With (n=127) and Without Internet Dependence (n=39)[a]

BSMAS	**BSMAS Mean Scores for Internet Dependence**		**Mean Difference**	**95% CI**	**P**
	Yes	**No**			
Item 1	2.35	1.54	.808	.459 – 1.157	<.01
Item 2	2.24	1.15	1.082	.756 – 1.409	<.01
Item 3	2.08	1.38	.694	.291 – 1.098	<.01
Item 4	2.21	1.38	.828	.489 – 1.167	<.01
Item 5	1.81	.90	.914	.547 – 1.281	<.01
Item 6	1.94	.97	.971	.594 – 1.347	<.01
Total	**12.63**	**7.32**	**5.297**	**3.136 – 7.459**	**<.01**

a - Internet dependence was diagnosed based on the IAT

Out of the feedback from 166 respondents, 127 (76.5%) were found to have probable internet dependence based on the IAT questionnaire. The BSMAS score for the students with internet dependence was significantly higher (12.63) than those without dependence (7.32). Even at the level of each item in BSMAS, the scores were significantly higher among the students with internet dependence (Table 5.8).

Table 5.9: The Mean Score and Total Mean Score for Each Item in Translated Version of BSMAS and BBQ

Variables	Mean (SD)
BSMAS	
Item 1 (*salience*)	2.16 (1.021)
Item 2 (*craving/tolerance*)	1.98 (1.012)
Item 3 (*mood modification*)	1.92 (1.152)
Item 4 (*relapse/loss of control*)	2.02 (1.000)
Item 5 (*withdrawal*)	1.60 (1.084)
Item 6 (*conflict/functional impairment*)	1.72 (1.117)
Total	**11.4 (6.386)**
BBQ	
Leisure Time (Item 1 x Item 2)	10.77(4.50)
Philosophy of Life (Item 3 x Item 4)	10.11 (4.17)
Creative (Item 5 x Item 6)	9.92 (4.30)
Learning (Item 7 x Item 8)	10.83 (3.84)
Friendship (Item 9 x Item 10)	10.90 (4.36)
Self-regard (Item 11 x Item 12)	10.72 (4.78)
Total	**63.25 (25.95)**

5.5 Receiver Operating Characteristic (ROC)

The area under the curve of receiver operating characteristic was 0.831. (95% confidence interval 0.761 – 0.901, p<.001) (Figure 5.1). The optimal cut-off score to

distinguish subjects with and without problematic social media use was 10 points, with sensitivity of .693 and specificity of .795, positive predictive value of .72 and negative predictive value of .77 (Table 5.11).

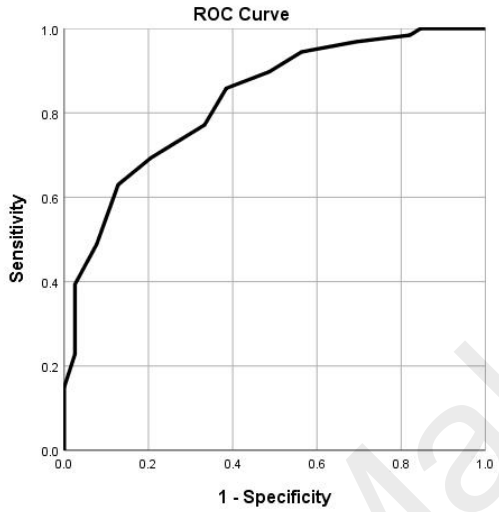

Figure 5.1: ROC curve for the total score of translated version of BSMAS

The area under the curve was 0.831 (95% confidence interval 0.761 – 0.901, p<0.001)

Table 5.10: The Number of Respondents Tested Positive in IAT and BBQ (n=166)

Variables	**n (%)**
IAT ≥43[a]	127 (76.5)
IAT<43	39 (23.5)
BBQ ≥52[b]	118 (71.1)
BBQ<52	48 (28.9)

a – the cut off score was taken based on the local study on IAT. (Chong Guan et al., 2015). The respondents who score 43 or more falls into the category of internet dependence.

b – the cut off score was taken based on the study published in PubMed (Lindner et al., 2016). It is a subjective complement measurement of quality of life in clinical psychology and psychiatry. Lower score represents lower quality of life associated with underlying psychological condition.

Table 5.11: Sensitivity and specificity at different cut-off scores

Cut-off Score	Sensitivity	Specificity
5.50	0.969	0.308
6.50	0.945	0.436
7.50	0.898	0.513
8.50	0.858	0.615
9.50	0.772	0.667
10.50	**0.693**	**0.795**
11.50	0.630	0.872
12.50	0.488	0.923
13.50	0.394	0.974
14.50	0.331	0.974
15.50	0.228	0.974

Table 5.12: The Subject's Response in SMAAPOS (n=166)

Variables	SA	A	D	SD
	n (%)	n (%)	n (%)	n (%)
Student Addictiveness to Social Network and Academic Performance				
Item 1	35 (21.1)	65 (39.2)	44 (26.5)	22 (13.3)
Item 2	26 (15.7)	86 (51.8)	41 (24.7)	13 (7.8)
Item 3	36 (21.7)	75 (45.2)	44 (26.5)	11 (6.6)
Item 4	13 (7.8)	35 (21.1)	88 (53)	30 (18.1)
Total	110 (16)	261 (39)	217 (33)	76 (12)

SA – Strongly Agree; A – Agree; D – Disagree; SD – Strongly Disagree

Table 5.12, continued

Variables	SA	A	D	SD
	n (%)	n (%)	n (%)	n (%)
Exposure of Students to Social Media Network and their Academic Performance				
Item 5	9 (5.4)	38 (22.9)	81 (48.8)	38 (22.9)
Item 6	8 (4.8)	59 (35.5)	68 (41.0)	31 (18.7)
Item 7	54 (32.5)	84 (50.6)	26 (15.7)	2 (1.2)
Item 8	11 (6.6)	43 (25.9)	75 (45.2)	37 (22.3)
Total	82 (12)	224 (34)	250 (38)	108 (16)
Use of Social Media and Student's Academic Performance				
Item 9	25 (15.1)	92 (55.4)	43 (25.9)	6 (3.6)
Item 10	8 (4.8)	37 (22.3)	97 (58.4)	24 (14.5)
Item 11	22 (13.3)	97 (58.4)	41 (24.7)	6 (3.6)
Item 12	9 (5.4)	50 (30.1)	79 (47.6)	28 (16.9)
Total	64 (10)	276 (41)	260 (39)	64 (10)
Gender Usage of Social Media				
Item 13	33 (19.9)	83 (50.0)	46 (27.7)	4 (2.4)
Item 14	22 (13.3)	83 (50.0)	55 (33.1)	6 (3.6)
Item 15	17 (10.2)	60 (36.1)	72 (43.4)	17 (10.2)
Item 16	21 (12.7)	68 (41.0)	66 (39.8)	11 (6.6)
Total	93 (14)	294 (44)	239 (36)	38 (6)

SA – Strongly Agree; A – Agree; D – Disagree; SD – Strongly Disagree

Table 5.12, continued

Variables	SA	A	D	SD
	n (%)	n (%)	n (%)	n (%)
Age Usage of Social Media				
Item 17	53 (31.9)	91 (54.8)	19 (11.4)	3 (1.8)
Item 18	22 (13.3)	78 (47.0)	62 (37.3)	4 (2.4)
Item 19	13 (7.8)	60 (36.1)	77 (46.4)	16 (9.6)
Item 20	80 (48.2)	61 (36.6)	19 (11.4)	6 (3.6)
Total	168 (25)	290 (44)	177 (27)	29 (4)

SA – Strongly Agree; A – Agree; D – Disagree; SD – Strongly Disagree

5.6 Association of Social Media Addiction with Sociodemographic Variables and Academic Performance

A Chi-Square test of independence was used to examine the relation between the BSMAS score and the sociodemographic variables, including age, gender, race, religion, income, relationship status and IAT score. Other than IAT score, the relation between BSMAS score with these variables were not significant. The students who score high in IAT were more likely to score high in BSMAS, with X^2 (1, N=166) = 29.111, p <.001.

Chi-Square Analysis was also adopted to examine the relationship between the use of social media and academic performance. From the result, it was found out that the use and exposure of the social media has no influence on their academic performance, but addictive to social media has the influence on their academic performance (p <.05; CI .255-.992). Besides, age was noted to have influence on the pattern of social media use, but not the gender (Table 5.13).

Table 5.13: Chi-Square Analysis on the association between the sociodemographic variables and the BSMAS

	BSMAS		Chi-Square	P value	OR	CI
	Yes (>10)	No (≤10)				
Age						
>21	46	41	1.843	.175	.651	.349 –
≤21	50	29				1.212
Gender						
Male	47	33	.053	.817	.930	.502 –
Female	49	37				1.723
Race						
Malay	54	39	.005	.945	.978	.526 –
Non-Malay	42	31				1.820
Religion						
Muslim	56	42	.046	.829	1.071	.572 –
Non-muslim	40	28				2.006
Income						
<2,300	21	57	.271	.602	.815	.376 –
≥2,300	75	75				1.764
Relationship Status						
Single	74	47	2.024	.155	.608	.305 –
Non-single	22	23				1.211
Source of finance						
Own	32	24	.016	.898	1.043	.544 –
Not-own	64	46				2.001
IAT						
Yes (≥43)	88	39	29.111	<.001	8.744	3.686 –
No (<43)	8	31				8.744

Table 5.14: Chi-Square Analysis on the Association Between the (a) Social Media and Academic Performance (b) the Association Between Age and Gender with Problematic Social Media Use

	BSMAS		Chi-Square	P value	OR	CI
	Yes n (%)	No n (%)				
Student Addictiveness to Social Network and Academic Performance						
Yes	74 (62.7)	44 (37.3)	3.986	.046	.503	.255 - .992
No	22 (45.8)	26 (54.2)				
Exposure of Students to Social Media Network and Their Academic Performance						
Yes	50 (58.1)	36 (41.9)	.007	.934	.974	.526 – 1.804
No	46 (57.5)	34 (42.5)				
Use of Social Media and Student's Academic Performance						
Yes	63 (60)	42 (40)	.551	.458	.786	.415 – 1.486
No	33(54.1)	28 (45.9)				
Gender Usage of Social Media						
Yes	70 (61.4)	44 (38.6)	1.904	.168	.629	.324 – 1.218
No	26 (50)	26 (50)				
Age Usage of Social Media						
Yes	91 (60.7)	59 (39.3)	5.130	.024	.295	.097 - .891
No	5 (31.3)	11 (68.8)				

CHAPTER 6

DISCUSSION

There is increasing evidences pointing towards the emerging of the social media addiction disorder as a mental disorder, particularly in the adolescent groups (Pantic, 2014; Ryan et al., 2014). However, the biggest challenge the researchers are facing now is the lacking of a valid measurement tools that can differentiate between the addictive category and highly engaged but not-disordered category (van den Eijnden et al., 2016). The BSMAS is a short, brief self-report screening tools for assessing those at risk of social media addiction on the internet. The purpose of the current study is to validate the Malay version of the BSMAS questionnaire by examining its validity and reliability; and to investigate whether this questionnaire can be applied to the local population. At the same time, the study is intended to examine the association between the students who are at-risk of problematic social media use and their sociodemographic variables. Next, this study is also interested to look for the association between the students who are at risk of problematic social media use with their academic performance.

Among various types of social media listed, WhatsApp was the most common type of social media used among the sample population. Out of the 166 subjects, there was 164 students who were using this type of social media app. The result shown was consistent with the finding from the Internet User Survey 2018 in local setting, where 98.1% of the respondents prefer WhatsApp over other communication apps. This finding was also supported by another study, where they stated WhatsApp was one of the most popular social network sites used among the university students due to its advantage in speed, real-time messaging, convenience and affordable cost (Ahad & Md Ariff Lim, 2014). A local qualitative study found out that the use of WhatsApp among the students in the universities

were able to facilitate their learning process by bridging the communication with other students or instructors and sharing the educational content information (Malecela, 2016). Surprisingly, only 76.5% of the respondents from this survey have Facebook accounts, which is lower than the result of the survey done in 2018 among Malaysia population (97.3%) (MCMC, 2018). This is probably because the digital technology nowadays offers wide arrays of choices for the users to pick which social media is the most suitable for them. Hence, the number of users in a particular social media has disperse out and causing reduced number of users in the older social media.

In the present study, the face value of the translated version of BSMAS appeared to be acceptable and easily comprehensible among the university student's population. Based on the consensus from a consultant psychiatrist and two clinical psychologists, the content of the questionnaire is appropriate in assessing the problematic social media use. According to the guideline, the translated version of BSMAS needs to target to achieve the equivalence of the original version in semantic, conceptual, experiential and idiomatic aspects (Guillemin et al., 1993). Although the face validity is the weakest method of all to assess the validity of questionnaire, it may probably encourage the respondents to complete the questionnaire more truthfully (Tsang et al., 2017).

Generally, it is a simple and clear questionnaire, yet it contains sufficient items to measure the construct of interest to minimize the measurement error. Each domain was represented by only one question namely salience, craving / tolerance, mood modification, relapse / loss of control, withdrawal, and conflict / functional impairment. Other than great time saving, the short questionnaire also has the advantage of preventing the respondents to feel fatigue and loss of motivation while finishing the questionnaire (Shultz et al., 2013). The

outcome of the analysis of the psychometric properties revealed that the Malay version of BSMAS is a reliable and valid screening tools among the university students in UTM.

The psychometric properties found in the Malay version of BSMAS including good reliability with internal consistency, in which the Cronbach's α turned out to be .800. Previous similar validation study done in Persian and Italian population were also demonstrated good internal consistency, with the Cronbach's α of .86 and .88 respectively (C.-Y. Lin et al., 2017; Monacis et al., 2017b). The guideline suggested to take the threshold of .7 as the adequate indicator of Cronbach's α (Nunnally, 1978). On the other hand, the level of Cronbach's α≥.9 may signify certain items in the questionnaire may be redundant and probably should remove it from the list (Streiner, 2003).

Besides, the study also showed good concurrent validity between Malay version of BSMAS and IAT, as evidenced by the significant correlation result between each item in BSMAS and each factor in IAT. Furthermore, the Malay version of BSMAS also tested with good discriminant validity on this sample population, in which it was evidenced by the value of average variance extracted of .88 (>.50). In other words, all the items in BSMAS correlate well with each other than they correlate with other construct's item that are theoretically not supposed to correlate on. The result is expected as BSMAS only consisted of single construct that load on the single factor.

By using principal component analysis, the factorial analysis in this study identified the Malay version of BSMAS had only one-factor model with 6 components. The result is consistent with the previous validation study done on Bergen Facebook Addiction Scale (BFAS), which BSMAS originally adapted from (Andreassen et al., 2012; MPh, 2015; Pontes et al., 2016). It is also consistent with the psychometric properties of translated BSMAS done in different countries and different languages across the studies. (C.-Y. Lin et al., 2017;

Monacis et al., 2017a) To confirm the factor structure of the BSMAS, a confirmatory factor analysis with maximum likelihood estimation method was performed in this study. The analysis of the data provided an acceptable fit to the data [χ^2 = 5.085 df=9 p=0.8269; CFI & TLI = 1.000; RMSEA <.001 (<.001, .053); SRMR = .019]. In the current study, the problematic social media use was measured by using 6-item scale. This construct is sometimes known as latent variable or common factor because it is impossible to be observed directly. Due to the insufficiency of each item to capture the construct of interest, a researcher needs to combine with the other item, or observed variable to come out with more consistent and reliable construct than any of the observed variable on its own (Prudon, 2015). Therefore, the main purpose of CFA is to test how well the data collected from the university students to fit into the theorized model.

According to the study done, the factor loading and composite reliability (or construct reliability) must be equal or exceed .707 in order to fulfill the criteria of a good convergent validity. (Gefen et al., 2000) From the result, it was revealed that the composite reliability was .805. Only item No 2 has the factor loading of more than .707 and other five items have factor loading ranging between .620 - .769. Nevertheless, there were various resources suggesting different values for the cut-off point of the factor loading (Cabrera-Nguyen, 2010). To make it more convenience, the rule of thumb of factor loading <.40 was considered weak and ≥.60 was considered strong (Garson, 2010). Therefore, the factor loading for each item in this questionnaire were considered acceptable.

Next, from the finding of the study, the comparison was done between the students who has internet dependence based on IAT questionnaire (score ≥43) and the students who does not have internet dependence (score <43). Independent t – test was carried out to determine whether there was any statistically significant difference between the means of

these two groups. The result showed that not only the total mean score of the Malay version of BSMAS was significantly higher in the internet dependence group, but also statistically significant in every item's mean score ($p < .01$) Therefore, one can conclude that the score in BSMAS has significant difference between internet dependence group and non-internet dependence group.

Originally, the study was designed to compare the BSMAS with the gold standard instrument tool. Interviewer-rated gaming disorder based on the latest ICD-11 was selected to be the gold-standard for this study. However, the choice of the gold standard was overlooked and it was later on found out not to be suitable. In this case, the Young Diagnostic Questionnaire (YDQ) is more appropriate to use as the gold standard because it defines "addiction" based on pathological gambling in DSM-IV and ICD 10. By substituting the word "internet" with "social media", it can be used to assess the presence of social media dependence in an individual. In the end, the author decided to replace the interviewer-rated gaming disorder with IAT.

IAT was used as the gold standard (due to the reason mentioned above) to ascertain the optimal cut-off threshold to classify those at risk of problematic use of social media. However, there is a drawback when IAT was chosen and used as a gold standard in validating the social media addiction scale. The users are seldom addicted to internet platform itself. It is usually the activities they are engaging via the internet platform are the one that result in the addictive behavior. Other than the social media or social network sites, gaming and gambling activities were among other common activities that would potentially elicit the addictive behavior in the individuals that tested positive in Internet Addiction Test. Despite both of the screening tools are measuring the same construct of interest, the criterion validity

might not be well established due to the weaker relationship between BSMAS and the gold standard.

Based on the ROC analysis, a cut-off score of 10 points was taken as ideal threshold at and above which the people are classified at risk of problematic social media use (composite score of 0 – 24). In this study, about 20% of non-problematic social media users are marked wrongly as being at-risk of problematic use by using the scale (specificity = 79.49%). On the other hand, the proportion of about 30% of the true cases of users in problematic social media users are missed (sensitivity = 69.29%). The sensitivity and specificity for the Malay version of BSMAS in this study was relatively lower than the other validation study conducted on the same scale in Hungarian language. The sensitivity and specificity in the Hungarian study was 83% and 99% respectively (Bányai et al., 2017).

By using the cut-off score of 43 in detecting internet dependence in IAT (Chong Guan et al., 2015), the calculated positive and negative predictive value for this study were 71.82% and 77.43% respectively. This represents the fact that about 28% of the positive test in BSMAS are identified incorrectly; and 23% of the negative result are identified incorrectly. Overall, the accuracy of the test was 75.10%, which also represents the likelihood of an individual correctly classified. The difference in the observation was mainly due to the methodology used, specifically the error during the selection of the gold standard scale in performing the ROC test. To improve the result, it definitely has to be compared the current study with another instrument which measuring the same construct.

Again, if the test is going on by using the cut-off score of 10 points in BSMAS, this study actually detected the prevalence of 57.8% of the UTM students were at risk of developing problematic social media used. The figure was relatively high when it is compared with other literatures, where the prevalence rate was documented ranging from 1.6%

to 47%. (Alabi, 2013; Bányai et al., 2017; Jafarkarimi et al., 2016; Wan, 2009; Wolniczak et al., 2013)

The data obtained earlier on was subsequently used to look for the association of BSMAS score with the student's sociodemographic variables by using Chi-Square analysis. In this study, there was no significant association between the students at-risk of problematic social media use and their age, gender, race, religion and relationship status. For the gender comparison, the result has not reported any difference in the prevalence between men and women, which confirms some of the previous studies (Çam & Isbulan, 2012; Ryan et al., 2014). Nevertheless, some of the studies were not consistent with the current study's findings and reported women group has more prevalent than the men group in reporting problematic use of social media (Chaudhari et al., 2015; Kircaburun, 2016; Masthi et al., 2018). The difference observed could be due to the variation in the sample size, diagnostic method used and the study design. In general, the evidence showed that estimated 62% of men and 68% of women used social media and they spend 31 minutes and 46 minutes respectively in a day in using social media network (Hawi & Samaha, 2017).

Age is another important determining factor in social media addiction. The outcome of this study has shown there was no statistically difference in terms of social media addiction between the age of ≤21 and >21 years old. This result was consistent and comparable with another study done in Iran (Azizi et al., 2019), where the study demonstrated no significant difference between the age group less than 20 and the age group between 31 – 40 years old. Another study done by Mesfin et al, which include larger sample size and broader age group in the study sample, has shown that routine use of social media is significantly lower in age group > 60 years old (Bekalu et al., 2019). From the same study in Iran, the routine use of

social media does not exert significant difference across the different group in race and household income. The similar findings were detected in the current study as well.

The relationship status was also reported not exerting any significant difference in determining problematic social media use. This finding was not supported by the study done by Andreassen , where the author demonstrated those who are not in the relationship has higher prevalent for addictive behavior in social media use (Andreassen et al., 2017). However, the author further added that the impact of the relationship was small and has no practical importance. To added on footnote to this information, in the study that examine the relationship between the amount of time spent in social media and the quality of the relationship, they found out that increasing time an individual spend on social media will reduce the quality of their relationship (Christensen, 2018).

Next, by applying the Chi-Square analysis, it has shown that there was significant association between social media addiction and academic performance among the university students. In another words, the excessive engagement in the social media could lead to decrease in the student's academic performance. The similar finding was found across most of the literatures (Afacan & Ozbek, 2019; Azizi et al., 2019; Kumar et al., 2018; Mingle & Adams, 2015). In fact, the problematic use of social media among the students negatively affecting their study by causing academic procrastination, impairing their sleep quality and inducing more academic stress. Reducing the quality of sleep may disrupt the normal secretion of serotonin and melatonin, and hence it will induce higher level of stress and create more anxiety among the students (Bijari et al., 2013). Also, excessive use of social media may reduce the time spent on their study, and distract their attention towards non-educational purposes such as chatting or watching videos, which can directly affect their academic performance (Gabre & Kumar, 2012; Kuppuswamy & Narayan, 2010).

In this study, the examination of the relationship between the scoring in BSMAS and the corresponds quality of life was done by applying correlation coefficient analysis. From the result, it was discovered that the scoring in the BSMAS was negatively correlate with one's quality of life. This finding could represent 2 different meanings. It could mean that the students were having certain degree of psychological distress and they spent more time on the social media to avoid their personal problems. Another explanation that could apply for this observation was the students were preoccupied with the activities on the social media for constant psychological rewards, till the extent it neglected other life aspects and hence, the quality of life (Demir et al., 2015). This outcome of the study was consistent with the finding from few literatures (Sahin, 2017; Satici & Uysal, 2015; Spraggins, 2009)

CHAPTER 7

CONCLUSION

7.1 Limitations

The main limitation for this study was the error in the selection of the gold standard of this study. Choosing Gaming Disorder based on ICD 11 as the gold standard initially was an inappropriate decision that was unfortunately overlooked as both BSMAS and Gaming Disorder are 2 instruments that measuring the different construct. Eventually, IAT was used as a substitution to gold standard measuring scale. Invariably, the mistake could result in the measurement error in the subsequent result, including the identification of the cut-off points to determine the presence of the risk of problematic social media use in an individual and also the respective prevalence in the population.

Next, the sample population appeared to be homogenous because the study was only conducted among UTM students with restricted age group. The sample size of this study was also considered small (N=166). However, the sample of the study comprised of the students from all over states of Malaysia with mixture of various races and religion, which could represent the diversity of our local nations. The generalization of the result is therefore need to be cautiously exercised.

Another limitation encountered was the inability to complete the test-retest reliability analysis. The study was designed in such a way that the respondents were required to provide their email address during the first encounter, so that the retest questionnaire can be delivered to them via the email after a week duration. Unfortunately, some of the respondents did not provide their email due to the privacy reason. Small portion of them has unclear handwriting,

causing the delivery of the mail became more difficult. Finally, the majority of them did not reply the message, despite 3 times delivery attempts were done.

The data collected were mostly self-report and this may lead sorts of response biases. Among the response bias includes memory recall bias (answering BSMAS questionnaire requiring the respondents to recall their use of social media behavior for the past year), social desirability response (addiction tends to carry the meaning of stigmatizing for the respondents) and response style bias (Bányai et al., 2017).

During the data collection period, there was a section where the interviewer needs to interview with the respondents to identify the presence of Gaming Disorder. There was a grey area in reaching the diagnosis of Gaming Disorder based on the criteria listed in ICD 11. The criteria include impaired controlling over gaming, increasing priority, continuation despite the negative consequences and also the impairment in their various aspects of life. Some of the respondents actually gave the positive answer to certain number of criteria only but not all of it. The interviewer has the difficult time to identify whether they fulfill the diagnosis of ICD 11. Moreover, the interviewer found out that some of the respondents were probably reluctant to admit the presence of the symptoms due to the connotation of the word "addiction" being labelled on them. Another explanation for this observation was the rapport between the interviewer and the respondents were probably inadequate, which causing the unwillingness to reveal the truth for every question directed to them.

7.2 Strength of the Study

This study served as the first study ever that was done locally to translate a social media addiction scale into the Malay language. It validates the content of the scale by

ascertaining its reliability and the validity, so that it is more applicable into our local population setting.

The sample that was included into the study consisted of the students that came from different faculties, races and sociocultural background, which can be more generalized and representative of study population.

7.3 Recommendation

Despite all the shortcomings mentioned in the limitation section, the study did follow the sensible approach of validating this short and simple instrument tool to measure problematic social media use. As what the result has shown, the finding from the validity and reliabilities test show that the BSMAS scale in Malay version is a valid and reliable measurement tool. This enable further investigation of the pattern of the development in the prevalence of problematic social media use in this digital technology era.

This study is regarded as the first validation of questionnaire in Malay language in our local population to screen for the presence of the risk of problematic social media use. It was hoped that after this research step has taken, it will help to facilitate the identification the signs of risky social media use in different age groups, especially the adolescent and the teenage population. Therefore, various preventive measures or intervention can be done before the issue getting more complicated.

Moreover, with the validation of this questionnaire, it is recommended to conduct this screening in other age group to understand better the pattern of usage and the prevalence in difference age group. Besides, longitudinal study needs to carry out in the future to look for the causal relationship between different types of risks and the problematic social media use.

This will help us in understanding the illness more and therefore, the appropriate steps can be taken to prevent or treat the condition. For the treatment part, it is slightly difference as compared to the treatment in substance addiction. The treatment direction should be moving towards the control rather than total abstinence as it is impractical to do so in modernized society (Turkle, 2017).

7.3 Summary

In the nutshell, the outcome of the current study proposed the unidimensionality Bergen Social Media Addiction Scale in Malay version in UTM students. The BSMAS in Malay version also had psychometrically validated scale that is useful in screening the signs of an individual who is at risk of problematic social media use. From the survey conducted in UTM, there was about 57.8% of UTM students who were at risk of developing problematic social media use, which is much higher than other studies conducted across the other countries. The study could have improved better if the appropriate gold standard was applied during the sample collection period. This study also detected the negative correlation between the problematic social media use and 1.) academic performance and 2.) quality of life. Further research needs to be done in the future to contribute to more understanding about the social media addiction.

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