THE DETERMINANTS OF INTERNET GAMING DISORDER'S SYMPTOMS THROUGH AVATAR IDENTIFICATION AMONG MULTIPLAYER ONLINE BATTLE ARENA (MOBA) GAMERS

T'NG SOO TING

SULTAN IDRIS EDUCATION UNIVERSITY

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APPRECIATION

I believe that most people who are accomplishing their doctor theses always dream of reaching the moment of writing acknowledgement. I am no exception. First and foremost, I wish to send my most tremendous gratitude to God, the almighty, for His countless blessings throughout the entire journey. God has taught me to remain humble and be always thankful for all the experiences that I have gone through. No doubt, it is a challenging journey for being a full-time employee while pursuing my PhD study. It has been twists and turns along the journey. However, the completion of this thesis has been made possible through continuous support from many individuals.

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This thesis is also dedicated to my family members, who have been a strong impetus for me, especially when I doubt myself while juggling multiple roles. I also wish to sincerely thank all my respondents who willingly participated in the present study. Your responses are highly appreciated. I sincerely hope that this small piece of research contributes to the area of interest, and gamers would receive greater attention from various parties while struggling to combat their addictive usage.

ABSTRACT

The popular game genre, multiplayer online battle arena (MOBA), contain addictive features. Concerns arise when gamers experience adverse consequences, particularly Internet gaming disorder's (IGD) symptoms. An examination of determinants is crucial to develop a clearer picture of IGD. Uses and Gratification Theory (UGT) was applied to ground the formation of the conceptual framework. There are several research objectives: (1) to identify the cut-off value of the nine-item IGD Scale (short form) and determine the prevalence rate of the disordered group, (2) examine the predictive effects of social phobia, depression, motivations of gaming (achievement, socialisation, and immersion), and identification of avatar on IGD's symptoms, and (3) explore the mediating effect of identification of avatar among the relationships. The present study applied translation and adaption of the used measures. The conceptual translation was performed to ensure the original meanings of items were retained while adapting to the local context. A cross-sectional descriptive design and purposive sampling method were implemented to collect 1,175 sets of responses via online survey. After data cleaning, 1,068 sets of responses were retained for final analyses. The present study discovered that social phobia, depression, achievement motivation, immersion motivation, and identification of avatar positively predicted IGD's symptoms, whereas socialisation motivation as a negative predictor. Identification of avatar was found as a significant mediator for all key determinants (except depression) and IGD's symptoms. Theoretically, the examination of mediating effect extended the application of UGT by illustrating clearer interplay between the determinants and IGD. The significant mediation reflected its suitability of UGT in the study context. Practical implications were suggested in providing prevention and intervention programs to at-risk youth (e.g., experience mental issues). Shaping youth's positive characteristics should always be placed as the top priority given that youth are the impetus who bring revolutionary changes and improvement in a nation.

PENENTU-PENENTU GEJALA GANGGUAN PERMAINAN DALAM TALIAN MELALUI IDENTIFIKASI AVATAR DI *MULTIPLAYER ONLINE BATTLE ARENA* (MOBA)

ABSTRAK

Genre permainan yang popular, iaitu arena pertempuran dalam talian berbilang pemain (*multiplayer online battle arena*, MOBA) mengandungi ciri-ciri ketagihan. Keadaan ini mencetuskan kebimbangan apabila pemain-pemain mengalami akibat-akibat negatif, terutamanya pembentukan gejala gangguan permainan dalam talian (*Internet gaming disorder*, IGD). Kajian terhadap penentu-penentu amat diperlukan untuk mendapatkan gambaran yang lebih jelas tentang gejala IGD. Teori Kegunaan dan Gratifikasi (*Uses and Gratifications Theory*, UGT) digunakan sebagai asas dalam pembentukan kerangka konseptual. Secara keseluruhannya, terdapat beberapa objektif: (1) untuk mengenal pasti nilai pemotongan bagi sembilan item Skala Gangguan Permainan dalam Talian (versi pendek) dan menentukan kadar kelaziman kumpulan yang mengalami gangguan, (2) menguji kesan ramalan fobia sosial, kemurungan, motivasi bermain (pencapaian, sosialisasi, dan penglibatan yang menenggelamkan) dan identifikasi avatar pada gejala IGD, dan (3) meneroka kesan perantaraan identifikasi avatar dalam hubungan pemboleh ubah utama. Kajian ini menggunakan penterjemahan dan pengadaptasian alat ukur. Penterjemahan secara konseptual dilakukan untuk memastikan maksud asal item dikekalkan ketika diadaptasikan dalam konteks tempatan. Reka bentuk deskriptif keratan rentas dan pensampelan bertujuan telah dilaksanakan untuk mengumpul sejumlah 1,175 set respons dengan tinjauan dalam talian. Setelah proses pembersihan data, 1,068 set respons dikekalkan untuk analisis akhir. Kajian ini mendapati bahawa fobia sosial, kemurungan, motivasi bermain (pencapaian dan penglibatan yang menenggelamkan) dan identifikasi avatar meramalkan gejala IGD secara positif manakala motivasi sosialisasi merupakan peramal negatif. Identifikasi avatar didapati sebagai pengantara yang signifikan untuk semua penentu utama (kecuali kemurungan) dan gejala IGD. Secara teorinya, pemeriksaan kesan perantaraan memperluas aplikasi UGT dengan menggambarkan interaksi yang lebih jelas antara penentu-penentu dan IGD. Mediasi yang signifikan menggambarkan kesesuaian UGT dalam konteks kajian ini. Implikasi secara praktikal, kajian ini mencadangkan agar program pencegahan dan intervensi disediakan untuk belia yang berisiko (mengalami masalah kesihatan mental). Pembentukan ciri-ciri positif belia haruslah sentiasa diutamakan memandangkan belia sebagai pendorong yang membawa perubahan dan peningkatan revolusi di negara.

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LIST OF ABBREVIATIONS

IGDS9-SF	9-Item Internet Gaming Disorder Scale – Short Form
APA	American Psychiatric Association
AUC	Area Under the Curve
AVE	Average Variance Extracted
BCa LL	Biased-Corrected and Accelerated Bootstrap Lower Level
BCa UL	Biased-Corrected and Accelerated Bootstrap Upper Level
CMV	Common Method Variance
CR	Composite Reliability
CVI	Content Validity Index
CB-SEM	Covariance-Based Structural Equation Modelling
DOTA2	Defense of the Ancients 2
DSM-5	Diagnostic and Statistical Manual of Mental Disorders – Fifith Edition
EM	Expectation Maximisation
HTMT	Heterotrait-Monotrait Ratio of Correlation
IGD	Internet Gaming Disorder
IP	Internet Protocol
KMO	Kaiser-Mayer-Olkin
LoL	League of Legends
LM	Linear Model
MCMC	Malaysian Communications and Multimedia Commission
MMOG	Massively Multiplayer Online Game

MMORPG	Massively Multiplayer Online Role-Playing Games
ML	Maximum Likelihood
MAE	Measure Absolute Error
MADRS-BM	Montgomery-Asberg Depression Rating Scale
MOBA	Multiplayer Online Battle Arena
PLS-SEM	Partial Least Square Structural Equation Modelling
PCA	Principal Component Analysis
RTS	Real-Time Strategy
ROC	Receiver-Operating Characteristics
RMSE	Root Mean Squared Error
SEM	Structural Equation Modelling
SPSS	Statistical Package for the Social Sciences
URL	Uniform Resource Locator
UGT	Uses and Gratifications Theory
VIF	Variance Inflation Factor
VB-SEM	Variance-Based Structural Equation Modelling
WHO	World Health Organisation

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter first introduces the background of the study, which is essential to provide an overview of the scope of the present study. Problem statement has been included to address literature and methodological gaps, which serve as a strong impetus for the present study to be conducted. Upon addressing the problem statement, research objectives, research questions, and hypotheses are presented. Uses and Gratifications theory has been selected to ground the formation of the conceptual framework for illustrating the interactions between selected key variables (determinants and Internet gaming disorder's symptoms). Literature and practical significance as well as limitation of the study are described. Lastly, conceptual and operational definitions are provided to establish a clearer understanding of the key variables.

1.2 Background of Study

Playing video games has now become one of the most popular recreational activities worldwide. This activity is exponentially growing after the launching of multiplayer online games that include competition and cooperation elements. Generally, video games can be conducted through different devices (e.g., gaming consoles, smartphones, personal computers, arcade machines, and tablets) and various modes (e.g., single-player, multiplayer, or local cooperative gameplay). They are also available in multiple genres (e.g., strategy, role-playing, adventure, action, educational, sports, and more). These days, online games have been successfully pioneered the triumphal march of the new gaming industry and labelled as intricate masterpieces of programming and worldwide leisure activities. It triggers strong research interest from different disciplines to examine further the predictors and impacts of online games playing (Mueller, 2017).

In 2013, Internet Gaming Disorder (IGD) was included in Section III of the fifth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-5) by the American Psychiatric Association (APA). IGD has been perceived as the relentless use of online video games, which can significantly lead to user's distress (American Psychiatric Association, 2013). It has been included as a new non-substance-related addiction warranting further research due to the negative impacts derived from this behaviour. This disorder notion has also been widely used in various disciplines, although numerous ongoing debates and controversies concerning IGD assessment criteria' appropriateness as listed in DSM-5 (Griffiths et al., 2016; Petry et al., 2014, 2015).

APA (2013) declared that an individual is diagnosed with IGD with the fulfillment of at least five out of nine diagnostic criteria over 12 months: (1) preoccupation with Internet games; (2) withdrawal symptoms when Internet gaming is taken away; (3) tolerance which means they need to spend more time in Internet games; (4) unsuccessful attempts to control participation in Internet games; (5) loss of interest in previous hobbies and entertainment except gaming; (6) continue use of Internet games despite knowing the negative consequences such as psychosocial problems; (7) cheating family members, therapists, and others on amount of Internet gaming; (8) use of the Internet to escape and relieve negative moods and (9) affecting the significant relationship, losing the career or educational opportunity by engaging in Internet gaming.

Most of the earlier studies (e.g., Jang & Ryu, 2011; Poels et al., 2014; Yoon & Cheon, 2013) on videogame playing have extensively focused on the genre of Massively Multiplayer Online Role-Playing Games (MMORPGs). MMORPGs are computer role-playing games in which thousands or more gamers interact in a virtual world. The events in this virtual world continue to exist and evolve when the user is not logged in. These structural characteristics can potentially promote an addictive usage pattern (Billieux et al., 2013). The extensive research focus on MMORPGs was due to their popularity in the past decade. However, in recent years, the most popular online game worldwide is *League of Legends* (LoL), classified under the Multiplayer Online Battle Arena (MOBA) genre. For example, in 2014, there were 67 million players found as active users. The widespread gaming content popularity successfully increased the population up to 100 million in 2016 (Statista, 2016).

In contrast to MMORPGs, MOBA games have to be played in a team while combating with another team, and it does not take place in a never-ending virtual world (Nuyens et al., 2016). The never-ending virtual world reflects that the game does not end, in which the game stories keep evolving even the gamer has quit the game. The main reason that game developers have designed a never-ending virtual world is to keep gamers constantly playing and paying (Bateman, 2021). However, both genres feature similar characteristics of advancement and require constant virtual interaction between players. Additionally, LoL was one of the most prominent E-sports games and had the longest viewing time throughout 2016, which accounted for nearly 1.03 billion hours of the game content viewed on Twitch (a live streaming video platform) (Statista, 2016).

Despite the far-reaching popularity of MOBA games, there were still inadequate local studies investigating its potentially addictive nature, risk factors, protective factors, and destructive outcomes, which may differ from the widely studied genre – MMORPGs (Nuyens et al., 2016). Over the life course, young people have been found to have greater immersion in online-related addictions (Sussman & Arnett, 2014). APA (2013) also stated an estimated 12% to 20% of the prevalence of IGD was occupied by young people during the initial phase. According to World Health Organization (2021), adolescents refer to individuals aged 10 to 19 years; youth aged 15 to 24 years, while young people aged 10 to 24 years.

However, Malaysia Youth Policy (Ministry of Youth and Sports Malaysia, 2018) defined individuals aged 15 and 29 as youth. In Malaysia, Statista (2021) reported that 73%

of Malaysian gamers aged between 16 and 24 years old are actively involved in online gameplay. This survey also found that a large portion of the age group played online games daily. Therefore, the present study examined youth as the target population, given that numerous empirical studies examined IGD on adolescents (King & Delfabbro, 2017; Müller et al., 2014; Rehbein et al., 2010). This research gap has highlighted the need for further investigation.

Subsequently, Arnett et al. (2014) also described that the change of demographic trends leads to a longer period in pursuing education and a later age to enter marriage and parenthood. As such, an extension of the age range for emerging adulthood (from 18 – 25 years to 18 –29 years) was suggested. Arnett (2000) argued that emerging adulthood is a stage where an individual has not fully taken the adult's responsibilities. Furthermore, Stone et al. (2012) described that greater freedom and less social control would make individuals more vulnerable to addictions during emerging adulthood (which is a stage that subsumes under youth). In other words, successful transition into adult roles and accomplishments of major developmental tasks (e.g., completion of school, career employment, financial responsibility, social relationships) are always associated with a lower risk of addiction. Arnett (2005) explained that emerging adulthood is always characterized by a peak prevalence of addiction, which negatively impacts the later adult development, signifying greater scholarly attention should be given to this population.

Furthermore, growing research reported this IGD potentially leads to functional impairment or destructive physical and mental health consequences. Hence, further

empirical investigation is essential to unveil the determinants of IGD. One of the determinants is social phobia, signifying the deficiency of having functional social interactions. The prominent theorists - Baumeister and Leary (1995) stated that human beings have an innate need to develop and maintain significant, meaningful, and long-term social relationships. Nevertheless, socially phobic individuals frequently avoid interpersonal situations, as having social interactions may make them feel unloved, rejected, or devalued. Hence, socially phobic individuals are inept in satisfying this innate need through social interaction (Moore & Johnson, 2009).

They may have irrational fears and internalised perception of their incompetence which subsequently demotivate them from interacting socially. The internalised perception is developed as a product of contempt, rejection, humiliation during childhood or adolescence, leading to low self-evaluation, low self-satisfaction, and they become more sensitive towards the feedbacks by others (Pinto-Gouveia et al., 2006). Given the unpleasant experiences in the real world, socially phobic gamers prefer to immerse themselves in the virtual world of gaming as it provides a safer opportunity for social connection (Lee & Stapinski, 2012). Virtual interactions are less threatening for gamers to partially fulfil the need for social contact partially. Some gamers positively view virtual relationships as significant as the relationships in the real world (Billieux et al., 2013).

Additionally, the next determinant to be included in the present study is identification of avatar. Avatar is a Sanskrit word that refers to personification (alter ego), and in the virtual gaming world, it is defined as an embodiment or visual representation of

the gamers (Ducheneaut et al., 2009). Gamers choose an avatar, which can be known as a game character to represent themselves or their alter ego visually and virtually (Lee, 2017). The degree of consequences experienced by gamers varies on their degree of avatar identification. The consequences were reported by empirical studies (Li et al., 2013; Whang & Chang, 2004) in which the pleasure of gamer is intensified when the gamer builds a stronger avatar identification. If the selected avatars experience negative consequences (e.g., losing a battle or injury), it can subsequently create unpleasant emotions or mental distress on the gamer. Consequently, the gameplay will be more intensive, and more gameplay-related problems will emerge (Sioni et al., 2017). Further, as gamers join communities (i.e., guild or clan), their emotional connection with the communities can subsequently strengthen their cognitive and emotional identification with their avatar (Obst & White, 2005). In short, the identification of one's avatar can be a double-edged sword.

Maslow (1943) described human motivation as a process that activates, guides, and maintains human behaviour. Yee (2007) collected self-reported data from 30,000 gamers and concluded that gamers are motivated by different needs even they are playing the same online game. Based on the collected data, Yee (2007) performed an exploratory factor analysis and classified gamers into three components according to their dominant motivational need. First, the achievement component, which includes advancement, mechanics, and competition as subcomponents. Gamers motivated by achievement needs are likely to engage in problematic gameplay due to the reinforcement strategy created by gamer designers to strengthen gamers' urge for obtaining greater rewards, scores, and ranking. Such a reinforcement strategy encourages gamers to stay in the game longer

(Chang et al., 2014). Second, the social component includes socialising, relationship, and teamwork. Chang et al. (2018) reported that when gamers are motivated by socialising (e.g., maintaining social relationships, enjoying team collaboration in completing a mission), they are less likely to experience IGD. Thus, it can be explained that the in-game social interaction is appealing to gamers but not harmful to life functioning. Third, the immersion component addresses discovery, role-playing, customisation, and escapism. Immersed gamers used online gaming to escape from the stressful online world, leading to excessive gameplay (Moudiab & Spada, 2019). On the contrary, Bartle (1996) classified players into four types: (1) killers who like to kill other gamers' avatars in gaining more substantial power, (2) achievers who desire to attain better virtual achievement, (3) socialisers who like to interact with others players, and (4) explorers who enjoy exploring the gaming world. Nevertheless, the taxonomy of gamers suggested by Bartle (1996) had not been empirically tested (Yee, 2007).

Internet gaming has been widely perceived as a beneficial leisure activity. However, empirical evidence revealed the potential connection between depressive symptoms and IGD. A contemporary systematic review conducted by Ko et al. (2012) described the comorbidity between addictive Internet use and other psychiatric disorders (e.g., depression) given that the Internet is one of the common leisure activities which always be used as a coping strategy for emotional and social difficulties. Importantly, these disorders should be treated concurrently. Any treatments focusing on Internet-related addiction without paying attention to psychiatric disorders (e.g., depression) might fail a treatment. Another study conducted by Ko et al. (2009) also discovered that depressed individuals are

more likely to become Internet-addicted throughout the two-year follow-up study than non-depressed individuals. The virtual world provides an essential platform for depressed individuals to escape from life adversities in the real world, which appears a vital solution for alleviating depression through the use of the Internet. The comorbidity between depression on IGD among youth has to be addressed substantially, which warrants further research.

1.3 Problem Statement

To date, there is an exponential growth of the genre of online games - Multiplayer Online Battle Arena (MOBA) by gathering gamers from around the world to a shared platform through fictional characters, which are also known as avatars. The online shared platform may fulfil gamers' psychological needs, such as social acceptance and social connectedness (Billieux et al., 2013). However, online games can contribute to problematic life aspects when one loses control in such activity. Subsequently, it leads to significant impairment in several life aspects, such as social, leisure, and occupation (APA, 2013). Similarly, past studies also reported that the nature of massively multiplayer online games is highly addictive (e.g., Chuang, 2006; Yee, 2002). Potential negative impacts of this addictive genre were reported by past studies, such as stress and maladaptive coping (Milani et al., 2018), poorer psychosocial well-being and loneliness (Lemmens et al., 2011), poorer academic performance (Yilmaz et al., 2018), lack of real-life friends (Kowert et al., 2014), and psychosomatic problems (Müller et al., 2015).

Hence, this implies the urgency to conduct more studies to unveil the determinants of this gaming behaviour.

In Malaysia, as reported by the Malaysian Communications and Multimedia Commission (MCMC) (2016), it accounts for 24.1 million (77.6%) of the total population (31.7 million) are Internet users. A total of 76.1% of those Internet users are youth, with 43.7% (13.8 million) of them actively engaged in online computer games. They were found to spend more than 17.9 hours per week playing online computer games. Furthermore, 2.4 million Malaysian gamers are actively involved as E-sport enthusiasts and spent approximately USD 589.4 million purchasing game-related items. E-sport is a tournament for gamers to apply their gaming skill in interactive video games. Malaysia is found as one of the fastest-growing countries in E-sport (Muhaimin et al., 2018).

Furthermore, youth in Malaysia were also found to have early exposure to the Internet since five years old (MCMC, 2017). According to the local studies by Ching et al. (2017) and Mohd Isa et al. (2016) reported that more problematic Internet use among Malaysian youth in the current digital era. Problematic Internet use is a broad concept which involves addiction in various contexts (e.g., watching online drama, shopping, chatting). However, addiction in online gaming has not been well-examined in Malaysia. For example, a recent study by Nik Jaafar et al. (2021) examined the factors correlated with IGD among Malaysian university students. However, much to be known among Malaysian youth gamers (not only university students) regarding the factors of IGD. Additionally, another local study by Aziz et al. (2021) only examined impacts (but not

the factors) of game addiction on adolescents' physical health. Hence, the examination of factors of IGD among Malaysian youth (including both university students and employed workers) reveals an under-researched topic which worth for greater scholarly attention.

Concerning the uncontrollably increased Internet game usage, official recognition of Internet gaming disorder (IGD) as mental health disorder has been included in Section III Emerging Measures and Models of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) (APA, 2013). Through a thorough review of pre-existing studies on problematic Internet gaming and use, APA (2013) has concluded nine diagnostic criteria for IGD. A formal diagnosis has to be the fulfillment of five or more criteria within 12 months. The diagnostic criteria were created in line with substance use and gambling disorders. However, IGD was not clinically labelled under the category of addictive disorder. The lack of consensus from the international and interdisciplinary perspectives had strengthened the use of the listed symptoms and cut-off points in defining gaming disorder. At this stage, inadequate research evidence has restricted a more precise conceptualisation of the disorder. Hence, this tentatively labelled disorder's definition needs further studies before receiving clinical and official recognition (APA, 2013).

Examining mediating effect is prominent in developing psychological theory and research as mediating variable transmits the impact from an independent variable to a dependent variable. Specifically, mediating variables refer to behavioural, biological, psychological or social constructs that explain the process or mechanisms by which one

variable affects another. A more contemporary justification for examining the mediating variable in a fundamental study is to apply findings in prevention and treatment, particularly interventions that aim to change the outcome of interest by focusing on mediating variable which is causally related (Agler & de Boeck, 2017).

Past scholars (Cohen, 2001; van Looy et al., 2012) reported that identification is a strong drive of media consumption and a crucial source of media attraction. The nature of the MOBA game involved intensive interaction with avatars, and gamers would be motivated to spend considerable time, psychological and monetary resources to enhance the superiority of the avatars, substantially increase the risk of gaming addiction (Lim & Reeves, 2009). Hence, the concept of self has become increasingly important while understanding the psychological mechanisms of excessive online gaming. Avatars enable gamers to compensate for perceived deficiencies in the real world (e.g., social phobia, depressed mood, lack of achievements). Currently, the interaction between avatar and self-related process in developing gaming disorder remains unclear. Further research and clinical evidence are vital in explaining how avatar and other self-related processes interact with the addictive mechanisms of IGD, contributing to more evidence-based assessments and interventions by incorporating avatar identification (Green et al., 2020).

The examination of identification of avatar shed light on the underpinning processes explaining the direct relationships between the key determinants (i.e., social phobia, depression, gaming motivations) and IGD. Such examination of mediation mechanisms is crucial, once a mediating process is identified, more efficient and power

interventions can then be developed by focus on the variables in the mediating process (MacKinnon & Fairchild, 2009). To date, there are numerous empirical studies (e.g., Carlisle, 2017; Kim et al., 2012; Othman & Lee, 2017, You et al., 2017) only reported the direct relationships between the determinants (e.g., depression, social phobia, motivations of gaming, and identification of avatar) and IGD individually. However, the mediating role of gamer's identification with the avatar remains unclear. To the best knowledge, there was only one past study conducted by Sioni et al. (2017) examining the mediating role of identification of avatar on the relationship between social phobia and IGD. It was stated that gamers who experience negative consequences (i.e., losing a virtual battle) from their strongly identified avatars are likely to experience negative emotions and psychological distress, leading to greater preoccupation in online gaming. However, the findings presented in the study only provided preliminary validity. More robust findings have to be confirmed by future researchers to investigate avatar identification as a significant mediator. Such mediation has also been emphasised by Stavropoulos et al. (2020), highlighting that clinician should examine the bond between gamer-avatar in the treatment of disordered gaming for increasing the treatment success rate. Thus, it demands greater exploration in fundamental research studies.

Additionally, gamers with different motivational type showed different behavioural patterns while interacting with the avatars in the virtual world. Comparing to immersed gamers, the socialisers and achievers may devote greater resources in the cognitive and emotional aspects to their avatars. As such, it can be explained that avatar-gamer identification reflects the extent to which gamers regard their avatars as idealised versions

of the self (Zhong & Yao, 2013). However, this study did not examine three motivational types (i.e., achievement, socialisation, and immersion) as suggested by Yee (2007), restricting a more comprehensive comparison. The scale developed by Yee (2007) in assessing gaming motivations has been the most popular measure employed in game-related research for nearly a decade, given that the scale was validated through the data collected from 30,000 gamers across countries (Chang et al., 2018). Upon reviewing the existing literature, the current empirical findings are not adequate to unveil the mediating role of identification of avatar on the association between the three gaming motivational types suggested by Yee (2007) in IGD.

Moreover, Burleigh et al. (2017) reported a novel finding in which gamer-avatar relationship played a significant role in the relationship between depression and IGD among emerging adults. This novel finding has to be interpreted with caution; further research is needed to confirm the findings reported in the study. Specifically, the findings suggested that depressed gamers who adopted maladaptive emotional regulation strategies, were prone to select an avatar with an idealised self to regulate the disparity with the actual self, resulting in more excessive gameplay and increasing the risk of developing IGD symptoms. The generalisability of this finding in the local context is yet to be examined. According to the World Health Organization (WHO, 2017), depression is a common but serious mental illness; at least 20% of people are commonly found to have depression. Therefore, examining such mediating relationship provides essential information either from a cognitive behavioural or psychodynamic perspective.

Green et al. (2020) also concluded that avatar identification is a promising area for interventions, implying a need for more empirical studies focusing on different game genres across various contexts. At the initial phase of Green et al.'s study (2020), there were 27,519 number articles identified through database searching (i.e., PsycINFO, Scopus, Web of Science, Google Scholar, and Academic Search Complete) with keywords (e.g., Internet gaming disorder, avatar, character, compulsive and more). In regard to the online searches, only a few past studies examined identification of avatar as mediator: (1) social phobia and gaming disorder (Sioni et al., 2017); (2) social skills and gaming disorder (You et al., 2017); (3) depression and gaming disorder (You et al., 2017); and (4) self-discrepancy and gaming disorder (Manchini et al., 2019), reflecting deeper scholarly investigation is deem important.

In another perspective, Menon and Praharaj (2019) suggested translating a good psychometric scale into the regional language is highly recommended if the scale is not available in regional languages. Having such translation is crucial, particularly for a scale with self-report nature. The translation of selected scales using a standard protocol such as forward-translation and back-translation method by WHO (2019) is commonly adopted. Additionally, some items on a scale may not be culturally relevant. Hence, a certain extent of "adaptation" for items are needed. The selected scales in assessing the main variables were initially developed in the English language. English is an international language that is globally recognised as one of the significant lingua franca. According to Chong et al. (2011), English is taught as a second language in Malaysia educational context. Malaysian students have been receiving between 11 and 13 years of formal English lessons in

educational settings. However, the command of the language is far from satisfactory. Hence, challenge arises when participants with unsatisfactory English proficiency are excluded, contributing to participation bias. However, if they are included in a study, this may also jeopardise psychometric soundness, given the deficient English command may weaken the comprehension of the selected scales. It signifies the methodological problem has to be resolved by providing psychological measures in Malaysia's primary language (*Bahasa Malaysia).*

In conclusion, the present study examines the determinants of IGD and the mediating effect of avatar identification among young MOBA gamers in the Malaysian context. The empirical findings are essential to provide a broader understanding of the current phenomenon, contributing to the effectiveness of intervention programs in the future.

1.4 Research Objectives

1.4.1 General Objective

The present study first identifies the cut-off value of the 9-item Internet Gaming Disorder Scale – Short form (IGDS9-SF) developed by Pontes and Griffiths (2015). The cut-off value is then used to measure the prevalence rate of those who are potentially classified as problematic gaming or disordered group in the present study. Further, the significance level of each determinant (i.e., social phobia, depression, motivations of gaming, and identification of avatar) on symptoms of IGD are assessed. Additionally, the predictive

effects of social phobia, depression, and motivations of gaming on identification of avatar are examined. Upon examining direct effects, the mediating effect of identification of avatar on the relationships between selected key variables (i.e., social phobia, depression, motivations of gaming and symptoms of IGD) are analysed.

1.4.2 Specific Objectives

1) To identify the cut-off value of IGDS9-SF and also the prevalence rate of IGD.

2) To examine the predictive effects of social phobia, depression, motivations of gaming (achievement, socialisation, and immersion), and identification of avatar on symptoms of IGD among MOBA gamers.

3) To investigate the influential roles of social phobia, depression and motivations of gaming on identification of avatar among MOBA gamers.

4) To explore the mediating effects of identification of avatar on the relationships between (i) social phobia and symptoms of IGD, (ii) depression and symptoms of IGD, and (iii) motivations of gaming and symptoms of IGD among MOBA gamers.

1.5 Hypotheses

The following hypotheses were derived from the Specific Objective 2:

H_1. Social phobia predicts symptoms of IGD positively among MOBA gamers.

H_2. Depression predicts symptoms of IGD positively among MOBA gamers.

H_3. Achievement as motivation of gaming predicts symptoms of IGD positively among MOBA gamers.

H_4. Socialisation as motivation of gaming predicts IGD's symptoms negatively among MOBA gamers.

H_5. Immersion as motivation of gaming predicts IGD's symptoms positively among MOBA gamers.

H_6. Identification of avatars predicts IGD's symptoms positively among MOBA gamers.

The following hypotheses were derived from the Specific Objective 3:

H_7. Social phobia influences identification of avatar positively among MOBA gamers.

H_8. Depression influences identification of avatar positively among MOBA gamers.

H_9. Achievement as motivation of gaming influences identification of avatar positively among MOBA gamers.

H_{10}. Socialisation as motivation of gaming influences identification of avatar positively among MOBA gamers.

H_{11}. Immersion as motivation of gaming influences identification of avatar positively among MOBA gamers.

The following hypotheses were derived from the Specific Objective 4:

H_{12}. The identification of avatar mediates the positive relationship between social phobia on IGD's symptoms among MOBA gamers.

H_{13}. The identification of avatar mediates the positive relationship between depression on IGD's symptoms among MOBA gamers.

H_{14}. Identification of avatar mediates the positive relationship between achievement as motivation of gaming on IGD's symptoms among MOBA gamers.

H_{15}. Identification of avatar mediates the negative relationship between socialisation as motivation of gaming and IGD's symptoms among MOBA gamers.

H_{16}. Identification of avatar mediates the positive relationship between immersion as motivation of gaming and IGD's symptoms among MOBA gamers.

1.6 Theoretical Framework

1.6.1 The Uses and Gratifications Theory

The uses and gratifications theory (UGT) was developed by Katz et al. (1974). This theory was initially derived from traditional mass communication research on how a specific media was sought and chosen for satisfying needs. UGT is applied not only in the field of media studies but also in psychological studies in recent years (e.g., Bulduklu, 2017; Dhir et al., 2015; Özad & Uygarer, 2014; Raackle & Bonds-Raacke, 2008). It exhibits a psychological-and-communication viewpoint in which users have different selections and uses governed by various reasons in media platforms (Severin & Taknard, 1997). User's psychological needs are typically presented at the stage of cognition and emotion (Maslow, 1970), whereby gratifications are utility-driven and goal-oriented (Palmgreen & Rayburn, 1979). Given the fast penetration, adoption, popularity of the Internet, Leung (2014) also further explained that a utility-driven notion is best to explain user's motivations in any media use.

Specifically, this theory has applied an approach by assessing "what individuals do to media?" instead of "what media does to individuals?" Some theories (e.g., magic-bullet and hypodermic needle theory) suggested that media use is passive and easily manipulated. However, this theory emphasises that media users actively seek media content that gives them the most significant level of satisfaction. In general, the degree of gratification depends on the media user's needs and desires. The more a person feels that the media

content (i.e., movies, music, and video games) satisfies his or her need, the higher the likelihood of selecting the media content (Katz et al., 1974).

Specifically, Wu et al. (2010) described that the choice of media content is no longer limited to conventional or offline media. However, it has also included online games given the high prevalence and attractive revenue provided by the Internet, which can connect with the conventional media. Thus, UGT has been applying in online gaming research as the nature of games reflects an integration of the Internet and the media. Furthermore, gamers are free to choose their preferred online games to satisfy a particular need and also to use it as a platform to exhibit empowerment or other motives. It is argued that playing online game is experience-oriented. The application of UGT fits well in explaining how and why online game users continue playing an online game when their social and psychological needs are satisfied in the virtual world, and also how and why the players obtain gratifications from gameplay.

Empirical studies (i.e., Pornsakulvanich et al., 2008; Scealy et al., 2002) suggested that people who have difficulties in having face-to-face communication (e.g., avoiding direct communication) have good experience in Internet-based and computer-mediated communication settings as compared to face-to-face setting. They tend to use computer-mediated communication more intensely for leisure and recreational purposes to gratify their needs. Importantly, Lull (1995) also stated that the focus on how and why individuals use media allows scholars to establish a more comprehensive understanding of exactly what needs are, where they originate, and how they are gratified.

There are several assumptions of UGT: (1) user is actively seeking for media, and its media use is goal-oriented, (2) the media choice is determined by the user for the purpose to achieve gratification of needs, (3) the media compete with other alternatives for need satisfaction, (4) users have established adequate self-awareness regarding the media use, interests, and motives, and (5) value judgments of media content can only be assessed by the user (Katz et al., 1974). UGT has been successfully adopted into research concerning the continued use of various mass media (Eighmey & McCord, 1998). Katz et al. (1974) highlighted that uses and gratifications could be classified into five groups of human needs:

1. Cognitive need – use media for acquiring information, knowledge, understanding of the social environment, as well as fulfil curiosity or exploration needs.

2. Affective need – use media for emotional experiences or the sake of pleasure.

3. Social interaction need – use media as a platform for building and maintaining family relations, friendship, connection with the external world, need for affiliation.

4. Personal identity need – use media for building self-confidence, personal stability, social status, need for self-respect, and integrity.

5. Escapism need– use media to satisfy the need to escape, tension release, and channel attention from unfavourable to favourable conditions.

During this theory's initial development stage, needs are perceived to be equal to the basic human needs. However, the latest development shows that the needs are not limited to the basic human needs and comprise other needs, such as needs for guidance, security, mutual interaction, and needs to alleviate tension and stress (Windahl et al., 2009). UGT hypothesises that the identification of the social and psychological needs has given media users to evaluate while choosing between media with different characteristics (Wurff, 2011). Lin (1996) argued that the primary strength of UGT is its capability to allow scholars to examine "mediated communication situations via a single or multiple sets of psychological needs, psychological motives, communication channels, communication content and psychological gratifications within a particular or cross-cultural context" (p. 574). For instance, the Internet use is to obtain gratifications of various needs, such as social identity, interpersonal communication, companionship, escape, entertainment, surveillance, and parasocial interaction.

Based on UGT, Zeng (2011) explained that all gratifications could also be classified as content or process gratification. Content gratification has resulted from an individual's need for intrinsic gain (i.e., entertainment). In contrast, process gratification is derived from extrinsic values, but they do not directly connect to particular characteristics of the content (i.e., information seeking). Miller (2015) further explained there are two types of gratifications: sought and obtained. Gratifications sought refers to the initial expectations of the media use, and gratifications obtained refer to the actual satisfaction gained from the media use. Both types are interrelated as the gratification sought is modified according to the extent of the gratification obtained. Luo and Remus (2014) described that this theory

could be considered an axiomatic theoretical approach because it can be applied in almost every type of traditional or interactive media. Generally, the application of UGT within new media and communication technologies based on different operationalisation of individual's gratifications were obtained from the use of various media from prior studies, such as email (Dimmick et al., 2000), Internet (Ferguson & Perse, 2000), social network sites (Johnson & Kaye, 2015), and online games (Wu et al., 2010). With the emergence of communication technology, examining needs, motifs, and users' satisfaction is of utmost importance.

1.7 Conceptual Framework

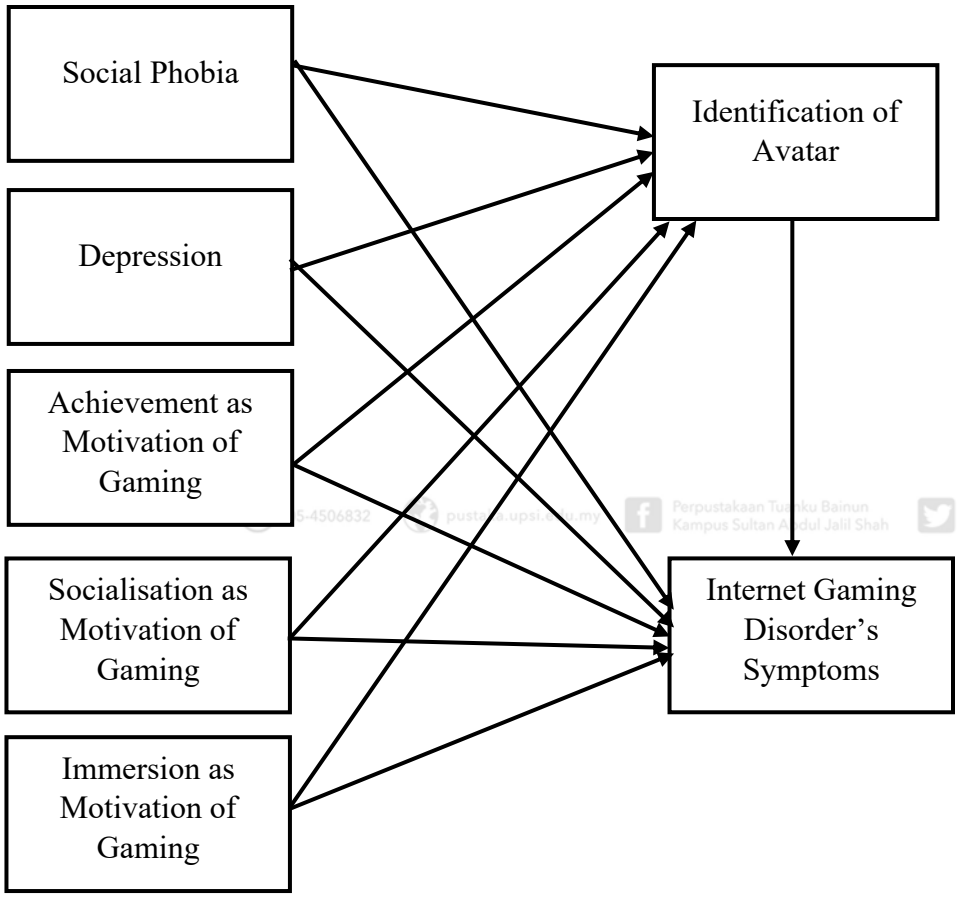

Figure 1.1. A Conceptual Model: The Determinants of Internet Gaming Disorder's (IGD) Symptoms among Gamers of Multiplayer Online Battle Arena (MOBA)

The present study developed a conceptual framework by integrating the uses and gratifications theory (UGT) by Katz et al. (1974). This theory has been regarded as best suited for Internet-related studies (Morris & Organ, 1996; Ruggiero, 2000). It assumes that media users actively seek media to satisfy particular needs (Baran & Davis, 2006). Therefore, individuals are likely to repeat this media experience as if their needs are fulfilled **(**Bryant & Miron, 2004). Figure 1.1 depicts a conceptual model of the determinants of Internet gaming disorder's symptoms among MOBA gamers. The determinants of IGD's symptoms comprise social phobia, depression, motivations of gaming (i.e., achievement, socialisation, and immersion), and identification of avatar. The direct effects between social phobia, depression, gaming motivations, identification of avatar, and IGD's symptoms are illustrated. The identification of avatar functions as a mediator for the relationships between determinants (i.e., social phobia, motivations of gaming, and depression) and IGD's symptoms.

There are several rationales that identification of avatar is selected as a mediating variable. Firstly, the gratification component in UGT by Katz et al. (1974) greatly emphasises about the gratification which resulted from the shared identities (i.e., gamer-avatar) and affiliation with "like-minded" members or characters through frequent interaction. Such gratification could be related to the positive experience of media use and the benefits derive from the use (Muntinga et al., 2011). Gratifications obtained from a medium (i.e., MOBA games) can function as the driving forces behind the existence and continuation of a particular medium. Therefore, scholars should place greater emphasis on gratification component by establishing more insightful perspective to unveil the question "what drives the continuation of the media use" (Katz & Blumler, 1974). In the context of MOBA games, the identification of avatar is

hypothesised as a mediator given that the use of a virtual character (also known as an avatar) serves as the compulsory tool to represent the gamer in the virtual environment. The avatar can be seen and manipulated by the gamer (Yee et al., 2009). Therefore, identification process with an avatar can be developed easily via intensive interaction across different psychological circumstances (i.e., social phobia, depression, gaming motivations). In other words, gamers are not the only audience of the played game but also participants who control the avatar's behaviours and experience its corresponding roles (Vorderer, 2000). Through intensive interaction with the selected avatars, gamers may perceive avatars as social entities. Consequently, the discrepancy between themselves and the avatars reduced, promoting the fusion of their self-conceptions and avatars. Thus, the avatar is valued significantly as it can substantially influence gamer's physical, psychological, and social behaviour (Li et al., 2020).

Additionally, each individual has both an actual self (characteristics that an individual possesses) and an ideal self (characteristics that the individual aims to have). In the context of online gaming, an avatar acts as a representation of the gamer's identity in the game, intentionally or unintentionally merging with the gamer's actual self (Pringle, 2015). Contemporary researchers also began to channel greater scholarly attention to the influential role of the gamer-avatar relationship on IGD (Burleigh et al., 2017; Mancini & Sibililla, 2017; Morcos et al., 2019). Other empirical studies also emphasised that gamers who have greater actual-ideal self-discrepancy (correspond to achievement motivation, Konijn et al., 2007, van Looy et al., 2012), negative evaluation on social abilities (correspond to social phobia, Leménager et al., 2014; Sioni et al., 2017), and negative emotions (correspond to depression, socialisation and immersion motivations, Bessière et al., 2007; Kim et al., 2012; Sibilla & Mancini, 2018) incline to

project their ideal selves into game avatars for making up the damaged self-concept, leading to a stronger extent of avatar identification and subsequently problematic gaming.

As highlighted by Katz et al. (1974), the uses and gratifications can be categorised into five groups: cognitive need, affective need, social interaction need, personal identity need, and escapism need. In Figure 1.1, social phobia conceptually corresponds to the social interaction need of UGT. Individuals with social phobia tend to have internalised perception of contempt, rejection, humiliation during an early life stage. They are likely to have low self-evaluation, low self-satisfaction, and prone to be more vulnerable towards the feedbacks by others (Pinto-Gouveia et al., 2006). The interaction with virtual gamers is characterised as non-threatening as gamers with social phobia do not have to exhibit nonverbal behaviour (Sioni et al., 2017). The virtual interactions can partially satisfy the need for social contact, and gamers view virtual relationships as significant as real relationships (Billieux et al., 2013).

Next, depression as one of the determinants of IGD conceptually reflects the affective need as highlighted in UGT. The connections between depression and addictive behaviours, technology-related addictions and Internet gaming disorder have been reported by empirical studies (Griffiths et al., 2016; Stetina et al., 2011). Addictions have been often conceptualised as attempts to self-regulate negative emotions. It is postulated that online addictive behaviours can regulate unpleasant emotions through reinforcing feelings of control, maintaining social recognition, and compensating for real-life adversities (Yen et al., 2007). Katz et al. (1974) also reported these affective needs in UGT, indicating that individuals actively seek media to have

emotional fulfilment and pleasure. For example, gamers involved in the online game expect to experience positive feelings (e.g., being in control and being respected by others). Such reinforcement of positive feelings leads to more intensive gameplay to cope with depression in the offline world (Yen et al, 2007).

The cognitive need is satisfied when individuals exhibit motivation of achievement in gameplay. Consistently, Yee (2007) described that the achievement component shows gamers' desire to progress and analyse the underlying rules and system rapidly. These abilities are essential in maximising their performance using an online character. Additionally, gamers who are motivated to achieve higher levels are likely to show the desire to challenge and compete with other gamers. In UGT, Katz et al. (1974) argued that cognitive needs are also found when media use is to acquire information or knowledge, fulfil curiosity, and explore the media world. Gamers who are motivated to win exotic decorations or achieve a good gaming performance are likely to show constant practice, repeated attempts, and perseverance (Wu et al., 2010; Xu et al., 2012b). In short, the strong motivation for achievement in online gaming (correspond to the cognitive need of UGT) drives the gamers to invest more resources in attaining a higher milestone in the gaming world.

Additionally, gamers with strong socialisation motivation correspond to the social interaction need in UGT. They value highly on building social relationships or having a social connection with the external world. For many gamers, social interactions are the most appealing features of online games (Griffiths et al., 2004). The online game world is not merely perceived as an entertainment medium, but it serves as a platform where new forms of human relationships are developed. Social gamers

are likely to dedicate their time and energy to socialise in the virtual world. They will also join in-game communities for experiencing a sense of companionship (Caplan et al., 2009).

In UGT, Katz et al. (1974) described that users actively use media to release tension, escape from a stressful life, or swift attention from unfavourable to favourable conditions. The immersion as motivation of gaming by Yee (2007) reflects escapism need. Most gamers involve in the online world to avoid thinking about real-life problems. He argued that escapist tends to do anything to drain off their dissatisfaction from the real world, such as they might attack other gamers in alleviating their negative emotions or cooperating with their team members to kill opponents. The gamers also immerse in discovery, role-playing, and customisation of the online character.

Katz et al. (1974) also postulated that users actively seek media in fulfilling personal identity needs, specifically on building self-confidence, emotional stability, social status, and the need for self-respect and integrity. MOBA gamers' features allow constant interaction with other gamers by experimenting with different video game roles (Kim & Kim, 2010). Therefore, gamers have more investment in their online identity by using their selected avatar in gameplay (Carter et al., 2012). As gamers involve in gameplay more intensively, it may subsequently develop a stronger identification of avatar. This situation has expectedly deteriorated, particularly when gamers experience negative consequences (e.g., losing a battle, injury, or death issue) from their selected avatars (Wei et al., 2012).

1.8 Significance of the Study

Empirical findings from the present study are significant for literature and practical aspects. In the literature aspect, the findings of the present study are essential to fill the literature gaps by specifically examining IGD among MOBA gamers. IGD has been newly included in DSM-5, therefore, more studies are required to establish a more comprehensive understanding of this psychopathology, given this phenomenon was pervasively found in most contexts. The urgency of examining this phenomenon should be highlighted by academic scholars and mental health practitioners. The study outcomes refine an understanding of the relationships between the selected key variables (social phobia, depression, motivations of gaming, and identification of avatar). Although several local studies (e.g., Abdul Latif et al., 2017, Arshad et al., 2013) examined problematic online gaming in Malaysia, these studies did not include the selected psychological variables of the present study and the targeted participants were only undergraduate students. The present findings provide an essential reference to the scholarly aspect by including more conceptually relevant determinants, examining the mediating effect (i.e., identification of avatar) and widening the age range of target participants from 18 to 29 years old. The examination of the mediating effect allows researchers to extent the usefulness of UGT into the online gaming context. Additionally, the present study attempts to focus on MOBA genre which has not been adequately addressed in the Malaysian context, specifically among youth. Hence, the findings are essential to provide a reference for future researchers to enlarge how IGD is initiated and developed among the gamers of this popular genre.

Practically, the research findings are essential to enhance public awareness of the determinants of IGD. Although most people perceived Internet gaming activities as one of the popular recreational activities, the addictive nature of the game genre might not have been adequately known by society. Hence, the empirical findings of the present study may receive greater attention from various parties, which can directly or indirectly cultivate more vital awareness and contribute to more effective prevention and treatment. Specifically, the empirical findings serve as a vital source to benefit relevant parties, such as schools, educators, mental health professionals, and parents. These parties are essential to assist in the early detection of IGD, which may substantially reduce the negative impacts.

As for MOBA gamers, the findings provide an essential source for gamers to identify their actual needs of excessive involvement in online gaming activities. Examining the determinants of IGD may directly or indirectly trigger their intention to have self-reflection about their gaming behaviour purposes, subsequently creating a stronger awareness to seek professional help.

1.9 Limitations

The present study serves as an exploratory study to examine the determinants of IGD's symptoms among Malaysian MOBA gamers. The present study is not a perfect research piece; any interpretation and conclusions might still be affected by limitations. The limitations are beyond the scope of the present study to cover. Firstly, the present study adopts a non-random sample. It is challenging for researchers to apply random sampling

methods for online gamers because they are anonymously and geographically distributed across different places. There is no specific sampling frame to make it possible to use a random sampling procedure, given that this area of interest is still at a very initial stage of development. Therefore, the personal characteristics of the present sample may not be truly proportionate to the population. As a result, most of the participants in the present study are males, students and single.

Additionally, participants aged 18 to 29 are included in the present study. However, it is vital to take note that such behavioural addiction may emerge during the adolescence stage. Nevertheless, an online survey does not permit the involvement of participants aged below 18 due to several practical challenges, such as (1) requires both gamer and parents to provide electronic consents, absence of anyone consent will be considered incomplete, (2) authenticity of the parental consent is questionable – given that gamer might forge a parental consent, (3) parents of gamers must also be sufficiently computer literate and acquire adequate language proficiency to provide consent. Therefore, only participants of the specified age range are recruited.

As for the distribution of racial groups, more than half of the participants were Chinese. Such distribution was probably due to the nature of non-probability sampling with online survey method in which researcher did not have much control on the characteristics of participants. The justifications of the used sampling method were provided in 3.5 Sampling Technique. The collected Chinese responses might be affected by the poor language proficiency, leading to poorer validity (i.e., content validity and construct validity) across constructs.

Furthermore, the past studies (e.g., Borges et al., 2019; Strittmatter et al., 2015; Qin et al., 2020) reported that male students are more likely to meet the IGD diagnostic criteria than the counterpart. This phenomenon is also reflected in the present sample, in which the disordered group is predominantly male students. However, it is unclear whether the male gamers process different psychological characteristics which make them to be more susceptible to develop IGD. According to Sex Role Theory by Ray (2019) stated that individuals socialise and learn their corresponding sex roles through cultural norms. It is also anticipated that femininity is not highly compatible with violent games which requires gamers to eliminate their rivals. MOBA genre is competitive, which places greater emphasis on the masculinity traits. Hence, the findings of the present study may restrict further understanding in the development of IGD with the use of online survey method.

Further, the quantitative data may not be sufficiently heterogeneous, as the responses are collected within one country and the generalizability of the findings is thus constrained. The cross-sectional survey design does not address a cause-and-effect relationship due to its nature. The situation factors and one's emotion at the time of measurement may influence the participants' responses. Therefore, the responses may not be reported accurately.

The selected theory – Uses and Gratifications Theory (UGT) has been widely applied in psychological studies. To the best knowledge, the present study serves as a pioneer in applying this theory in the present research area. The limited local studies restrict the main findings of the present study to be compared. Therefore, the usefulness of the theory is yet to fully confirmed. On top of that, face validity, content validity,

discriminant validity, composite reliabilities are found to meet the suggested cut-off values. As for construct validity, specifically the average variance extracted (AVE) is found with most constructs above .40 but slightly below .50 cut-off value. The slightly low AVE might be due to the poor proficiency of some participants in our national language (Chong et al., 2011). Therefore, the findings of the present study have to be interpreted with cautions.

Ultimately, there is a moderate Cohen's effect size (in-sample prediction) to explain the variances of IGD in the present study. Having a moderate effect size implies that some unknown variances are not included in the structural model. The present study also discovers that the out-sample predictive effect is small, probably due to numerous game genres in the market. Hence, it makes out-sample generalizability to be more challenging than our conventional practices.

1.10 Conceptual and Operational Definitions

1.10.1 Internet Gaming Disorder

1.10.1.1 Conceptual Definition

According to American Psychiatric Association (2013), IGD is clinically characterised by a "persistent and recurrent use of the Internet to engage in games, often with other gamers, leading to clinically significant impairment or distress". Nine diagnostic criteria have been documented in Section III of DSM-5: preoccupation with Internet games, withdrawal symptoms, tolerance, unsuccessful attempts to control participation in Internet games, loss of interest in previous hobbies, continued excessive use of

Internet games, deceiving family members, using Internet games to escape, and losing a significant relationship, job, education, or career opportunity. The diagnostic fulfillment is at least five out of these nine criteria over 12 months.

1.10.1.2 Operational Definition

In the context of the present study, IGD refers to a persistent and compulsive Internet gaming pattern that directly or indirectly leads to maladaptive functioning across important life aspects (mental health, physical health, interpersonal relationships and more). In the present study, the total score (range from 9 to 45) of the 9-item Internet Gaming Disorder Scale – Short form (IGDS9-SF) by Pontes and Griffiths (2015) is used to assess the extent of IGD. The higher the score indicates the stronger exhibition of this addictive gaming behaviour. However, this scale is not intended to be used as a stand-alone diagnostic instrument.

1.10.2 Determinants

Determinant refers to an element that identifies the nature of something or conditions an outcome (Merriam-Webster, 2019). In this present study, the determinants specifically refer to the influential roles or factors of IGD's symptoms. The determinants are social phobia, depression, motivations of gaming (i.e., achievement, socialisation, and immersion), and identification of avatar.

1.10.2.1 Social Phobia

1.10.2.1.1 Conceptual Definition

According to the American Psychiatric Association (2013), social phobia is defined as persistent and excessive fear (also characterised as stable individual differences) of one or more social or performance situations. Such an outcome emerges when the individual is exposed to other people or possible scrutiny by others. Consequently, the personal fears that he or she has may trigger an embarrassing or humiliating action.

1.10.2.1.2 Operational Definition

In the context of the present study, social phobia is a pervasive pattern across time and situations in which the individual is characterised by social inhibition, feeling of inferiority, and being highly sensitive to negative evaluation. These characteristics are intensified when the individual is exposed to or observed by strangers. Consequently, the individual may choose to avoid the social setting or endure the social environment with intense fear and distress. The total score (between 0 and 24) of the 6-item Social Phobia Scale-Short Form (Peter et al., 2012) is applied in the current study to assess social phobia. The higher the total score, the greater the intensity of one's social phobia.

1.10.2.2 Depression

1.10.2.2.1 Conceptual Definition

According to APA (2013), depression is a common but serious mental disorder that affects negatively one's feeling, thinking and behaviour. Depressive symptoms can be

displayed from mild to the severe stage: having a depressed mood, loss of interest or pleasure in activities once enjoyed, changes in appetite which lead to significant weight loss or weight gain, insomnia or hypersomnia, loss of energy, psychomotor agitation or retardation which is observable by others, feeling worthless or excessive guilt, difficulty in thinking, paying attention or being indecisive, and recurrent thoughts of death or suicidal attempt. A total of five (or more) diagnostic criteria have to be met within the same 2-week period, and at least one of the symptoms must be either depressed mood or loss of interest or pleasure.

1.10.2.2.1 Operational Definition

In the present study, depression refers to psychological functioning that affects the body, mood, and thoughts and interrupts normal daily functioning. However, these effects do not reflect one's weakness or condition that can be changed easily. The depressive state has caused one to lose interest in activities that they previously enjoyed. A depressed individual also persistently in a blue mood, has feelings of hopelessness and helplessness, social withdrawal, unusual fatigue, sleep disturbance, poor cognitive performance, and suicidal ideation. In the present study, depression is assessed by the 9-item of the Malay version of Montgomery-Asberg Depression Rating Scale by Yee et al. (2015). The higher the score, the more depression symptoms one experiences. This inventory is not intended to be used for diagnostic purpose.

1.10.2.3 Achievement as Motivation of Gaming

1.10.2.3.1 Conceptual Definition

Yee (2007) defined gamers with a high score in such component aims to derive satisfaction from attaining goals, progress quickly, and obtaining useful gaming items. They also enjoy analysing and understanding the system's underlying mechanics and the experience of competing with other gamers. Achievement as gaming motivation can be discovered among gamers who seek to pursue specific goals during gameplay.

1.10.2.3.2 Operational Definition

In the present study, this is measured by 14-items of the Online Gaming Motivation Scale developed by Yee (2007). The higher the score of this component, the stronger the achievement motivation.

1.10.2.4 Socialisation as Motivation of Gaming

1.10.2.4.1 Conceptual Definition

Yee (2007) described that gamers who score high enjoy meeting and socialising with other gamers. They seek to form meaningful relationship with others. They are also willing to share personal and meaningful conversations with others. Socialisation as motivation of gaming can be found among gamers who enjoy making friends, providing mutual support, and interacting with other gamers. They seek for satisfaction from group achievements than individual achievements.

1.10.2.4.2 Operational Definition

Gamers who score low in this component prefer solo gaming, and they will not join group interaction if this is unnecessary, vice versa. In the present study, this is measured by 11-items of the Online Gaming Motivation Scale created by Yee (2007). The higher the score of this component, the stronger the level of socialisation motivation.

1.10.2.5 Immersion as Motivation of Gaming

1.10.2.5.1 Conceptual Definition

Yee (2007) explained that a high score in such component corresponds to stronger motivation to explore and discover the virtual gaming world, which others may not know. They also enjoy being immersed in customising the storyline and/or characters they designed. Gamers are motivated to be involved in gameplay to avoid thinking about the problems in reality and a way to relax and alleviate unpleasant emotions. They may also be attracted by the appealing features in online games and develop greater immersion into the gaming world.

1.10.2.5.2 Operational Definition

Gameplay serves as a way for immersed gamers to escape from the stressful reality temporarily. They are allowed to create and discover something which cannot be found in the real world. In the present study, this is measured by 14-items of Online Gaming

Motivation Scale, invented by Yee (2007). The higher the score of this component, the stronger the immersion motivation.

1.10.2.6 Identification of Avatar

1.10.2.6.1 Conceptual Definition

Cohen (2001) defined the identification of avatar as a process that incorporates positive perception toward the media character, adopts the media character's goals, exhibits loss of self-awareness, and develops emotional and cognitive attachment with the selected media character. Identification of avatar refers to the extent to which the gamer resembles the avatars (online media character).

1.10.2.6.2 Operational Definition

In the present study, identification of avatar indicates the gamer’s emotional attachment to an avatar during gameplay. It is also a temporary alternation of the gamer’s self-concept via adopting the selected avatar's desired characteristic. Avatar identification allows bridging the distance between one’s actual and ideal selves. In the present study, a 15-item The Player-Avatar Identification Scale (Li et al., 2013) is used to measure players' identification with their gaming avatar. The higher the total score (range between 15 and 75) of this scale, the stronger the degree of the player-avatar identification.

1.10.2.7 Massively Online Battle Arena (MOBA) Gamers

1.10.2.7.1 Conceptual Definition

Multiplayer Online Battle Arena (MOBA), also named as Action Real-time Strategy, is a sub-genre that originated from Real-Time Strategy (RTS) as being a modified version (Silva et al., 2017). MOBA is one of the popular genres of massively multiplayer online games. This genre's popular online games consist of *Defense of the Ancients 2* (DOTA 2), *League of Legends* (LoL), and *Mobile Legends*.

1.10.2.7.2 Operational Definition

In the present study, individuals with at least a year of experience playing MOBA games (as stated above) are identified as MOBA gamers. MOBA gamers are also youth in the age range from 18 to 29 years old and are non-professional gamers.

1.11 Summary of the Chapter

The current chapter first addressed the background of the study that provided an overview of the study's scope. The problem statement highlighted literature and methodological gaps. Bridging these gaps are essential as IGD is a pervasive phenomenon, and inadequate scholarly attention is given in Malaysia. Subsequently, research objectives, research questions, hypotheses were addressed. Uses and gratification theory (UGT) was adopted in the present study to ground conceptual framework development. Additionally, the study's significance, particularly in

literature and practical aspects, were presented in this chapter. Lastly, the selected key variables' conceptual and operational definitions were included to provide a clearer understanding of the selected key variables.