



MOTIVATIONS OF ONLINE GAMING AND IDENTIFICATION OF AVATAR
PREDICT INTERNET GAMING DISORDER'S SYMPTOMS AMONG YOUTH IN
MALAYSIA

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Motivations of Online Gaming and Identification of Avatar Predict Internet Gaming
Disorder's Symptoms among Youth in Malaysia

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APPROVAL FORM

This research paper attached hereto, entitled “Motivations of Online Gaming and Identification of Avatar Predict Internet Gaming Disorder's Symptoms among Youth in Malaysia” prepared and submitted by Bong Wei Jian, Emilia Teh Yi Wen, and Yon Da Yaw in partial fulfilment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

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INTERNET GAMING DISORDER

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Abstract

There is a need to further study on Internet Gaming Disorder's symptoms in Malaysia context due to its limited research. Furthermore, the study of multiplayer online battle arena (MOBA) games has received inadequate scholarly attention in Malaysia, and also pathological online gaming behaviour is growing among youth in Malaysia. The purpose of the study is to examine the predictive effect of achievement motivation, social motivation, immersion motivation, and identification of avatar on Internet Gaming Disorder's symptoms. Cross-sectional research design was employed and purposive sampling method was applied in selecting participants who are (1) MOBA gamers; (2) between 18 to 29 years old; (3) have 12 months gaming experience and above. 781 respondents were recruited and 706 of respondents were used in actual study analysis. Instruments used included Internet Gaming Disorder Scale–Short-Form, Player-Avatar Identification Scale, and Online Gaming Motivations Scale. Current results presented that immersion motivation and identification of avatar are significant positive predictors of Internet Gaming Disorder's symptoms, and social motivation is a significant negative predictor of Internet Gaming Disorder's symptoms, however, achievement motivation did not significantly predict Internet Gaming Disorder's symptoms. Self-Determination Theory and Social Identity Theory were employed in the study. Mental health professionals can design their interventions to educate youth in Malaysia to adopt healthy coping mechanisms to deal with daily stress, to teach youths the ways to form offline social support and also form meaningful self-identity in the real world.

Keywords: Internet Gaming Disorder's symptoms, identification of avatar, achievement motivation, social motivation, immersion motivation

DECLARATION

Hereby, we declare that this project entitled “Motivations of Online Gaming and Identification of Avatar Predict Internet Gaming Disorder's Symptoms among Youth in Malaysia” is a record of original work done by us under the guidance of Miss T’ng Soo Ting, submitted to Universiti Tunku Abdul Rahman in the partial fulfilment of the requirements for Bachelor Degree of Social Science (HONS) Psychology. The due acknowledgement has been given in the bibliography and references to ALL sources, be it printed, electronic or personal.

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List of Abbreviations

APA	American Psychological Association
DSM-5	Diagnostic and Statistical Manual of Mental Disorders (Fifth-edition)
IGD	Internet Gaming Disorder
IGDS9-SF	Internet Gaming Disorder Scale- Short Form
MMOG	Massively Multiplayer Online Game
MMORPG	Massively Multiplayer Online Role-Playing Game
MOBA	Multiplayer Online Battle Arena
PAIS	Player-Avatar Identification Scale
SDT	Self Determination Theory
SPSS	Statistical Package for the Social Science

Motivations of Online Gaming and Identification of Avatar Predict Internet Gaming Disorder's Symptoms among Youth in Malaysia

Chapter I

Introduction

Background of Study

Internet usage has been increased dramatically due to the advancement of technology and the high accessibility of the Internet. Furthermore, online gaming has developed into one of the leisure activities that gains enormous popularity worldwide, especially these days many attractive online multiplayer games have been established and popularized among society. However, Bueso, Santamaría, Fernández, Merino, Montero, and Ribas (2018) stated that mental health professionals have acknowledged the fact that problematic gaming behaviour as an addiction with clinical relevance. This phenomenon can be explained by many people may have been negatively affected by problematic gaming behaviours and lead to undesired outcomes, for instance, relationship conflicts, loss of interest other than gaming as well as the decreased well-being in their psychological, social and physical health areas (Männikkö, Billieux, & Käariäinen, 2015; King, Haagsma, Delfabbro, Gradisar, & Griffiths, 2013). Then, problematic gaming behaviour gradually channels to Internet Gaming Disorder's symptoms (IGD).

People use the Internet for different reasons and the Internet has undoubtedly transformed the way how the majority of people to obtain information, to socialize, and to entertain themselves and even to involve in economic activity online. An Internet user survey has been done by Malaysian Communication and Multimedia Commission (2017) stated that nearly all Internet users out of 3,469 respondents used Internet for texting (96.3%), followed by looking for information (86.9%), leisure activities such as listening to music (72.7%), download videos from the Internet and watch TV (70.0%), download pictures, audios, and

online reading resources (68.6%) and engage in playing computer games (41.6%).

Furthermore, as the online game industrials get more developed and advanced in worldwide, people who participate in online games have also increased significantly. In Malaysia, there are around 14 million gamers who spent a total huge amount of \$587 million and makes Malaysia the 21st worldwide in terms of game revenues (Newzoo, 2017). In conclusion, all these data show that online gaming is not a rare phenomenon in Malaysia and yet it shows the trend possibly grows exponentially in future. In addition, several empirical studies reported that online gaming addiction behaviours happen frequently among youth in Malaysia (Kapahi, Ling, Ramadass, & Abdullah, 2013; Latif, Aziz, & Jalil, 2017), thus, the current study focuses on youth as targeted samples. As defined in the Malaysian Youth Policy 2015, the youth in Malaysia ranged between the ages of 15 to 29. Moreover, the percentage of youth in Malaysia playing online computer games is at an increasing trend (Aziz, Iida, Ariffin, Akhir, & Sugathan, 2018). Therefore, there is a need to investigate further on online game addiction among Malaysia youth.

There are many different genres of online games under the umbrella of massively multiplayer online game (MMOG). For instance, the most famous online game genre is known as multiplayer online battle arena (MOBA) with cumulative of not less than 100 million registered active players and currently, *DOTA 2* and *League of Legends* are the two most widely-played MOBA games around the world (Kokkinakis, Cowling, Drachen, & Wade, 2017). Furthermore, another popular game genre namely massively multiplayer online role-playing game (MMORPG). In MMORPG, the gamers are able to control the own avatars or characters, through a variety of approaches of human-computer-interface enclosed by more, or less, formalized and specified rules and technical boundaries (Kolo & Baur, 2004).

Furthermore, there are some similarities and differences between MOBA and MMORPG. For example, both MOBA and MMORPG have adopted a ladder system, which

is a ranking system or sale of items for decorative purposes in game, but this will not affect the results of the game. In contrast, one of the differences found between MOBA and MMORPG is that gamers who played MMORPG games spent a longer time in the game (Ng & Wiemer-Hasting, 2005). This is because MMORPGs are never-ending games, its system of goals and achievements are the key characteristic of MMORPGs. Furthermore, in terms of gameplay, MOBA games such as *League of Legends* and *DOTA 2* will end as soon as gamers take down the throne. However, gamers who play MMORPGs are prone to keep on playing one match after another. In addition, popularity is also another aspect that needs to be highlighted between MOBA and MMORPG. For example, MOBA is getting more popular compared to MMORPG is because MOBA is a competitive-based game and is included in eSports. According to Casselman (2015), he has reported that in 2014, around 205 million people played or watched eSports. This means that MOBA games, such as *League of Legends* and *DOTA 2* are in the lead, in both gamers and watchers among the eSports (Cantallops & Sicilia, 2018).

Thus, the study of MOBA are known to be important due to its prevalence; however, there is inadequate scholarly attention on this genre, especially in Malaysia. For example, Nuyens, Deleuze, Maurage, Griffiths, Kuss, and Billieux (2016) stated that statistical studies that had been focusing on the problematic use and abusing of MOBA games are still scarce and inadequate (Bertram & Chamarro, 2015; Kwak, Blackburn, & Han, 2015). They also pointed out despite the widespread popularity of MOBA games, few studies have investigated the factors related to their excessive use, while these features could be dissimilar from those found in MMORPGs. This claim is further strengthened by Ferrari (2013) stating that MOBA remains under-explored by scholars. Therefore, the current study focuses on the genre of MOBA which can contribute to the growth of this body in Malaysia context.

In 2013, American Psychiatric Association (APA) has published the fifth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-5) which included Internet Gaming Disorder (IGD) in Section III emerging measures and models as a condition for further study. However, "condition for further study" signifies that it is not an official disorder in the DSM-5, which APA has requested supplementary research on IGD's symptoms. The DSM-5 Task Force claimed that there was deficient evidence to conclude the addition of IGD as an official mental disorder in Section II (Diagnostic Criteria and Codes) in DSM-5, therefore, further research will determine the usage of proposed criteria to detect the same patterns of excessive online gaming and make the final decision on the inclusion of IGD in the updated version manual (APA, 2013).

Nine criteria of IGD were then proposed in DSM-5 (APA, 2013) which include: (1) preoccupation with Internet games; (2) withdrawal symptoms; (3) tolerance; (4) unsuccessful attempts to control the involvement in Internet games; (5) loss of interests in previous hobbies and entertainment; (6) continued excessive use of Internet games despite aware about psychosocial problems; (7) has deceived others regarding the amount of Internet gaming; (8) use of Internet games to escape or relieve a negative mood; and (9) has jeopardized or lost a significant relationship, job, or educational or career opportunity. Furthermore, DSM-5 also suggested that five or more of these nine criteria must be met of following in a 12-month period in order to be recognized as IGD (APA, 2013). Since the inclusion of IGD in DSM-5, many critics were received from different past researches such as criticizing the way the criteria were worded, some criteria are pathologizing the gamers, criteria are confusing and some researchers even criticized the naming of this disorder (Griffiths et al., 2016; Kardefelt-Winther, 2014a; Petry et al., 2014; Pontes & Griffiths, 2014; Van Rooij & Prause, 2014). Therefore, conceptualizing IGD and an examination of the determinants of IGD's symptoms are crucial.

The present study aims to investigate the four factors which include achievement motivation, social motivation, immersion motivation, and identification of avatar on IGD's symptoms. The concept of gaming motivation was first introduced by Yee (2006) in his study. Based on the finding of Carlisle (2017), achievement motivation was found to be positively predicted on IGD's symptoms. Furthermore, social motivation was also found to be positively predicted online gaming addictive behaviour (Blinka & Mikuška, 2014; Šporčić & Glavak-Tkalić, 2018). Next, past studies found out that immersion motivation does correlate with gaming addiction (Caplan, Williams, & Yee, 2009; Seah & Cairns, 2008), it may because gamers use the online game as a means to drive away themselves from real-life difficulties and problems, and therefore contribute to problematic online gaming behaviour (Vowles, 2012).

Lastly, identification of avatar, also termed as player-avatar identification, avatar self-identification or gamer-avatar relationship in other past studies (Li, Liao, & Khoo, 2013; Watts, 2016) serves as an important determinant in predicting IGD's symptoms. It refers to the extent to which gamers project themselves to the avatar or they perceive a similarity between themselves and the avatar (Soutter & Hitchens, 2016). Based on past studies, researchers found that people with a stronger identification of avatar would be associated with more IGD's symptoms (Sioni, Burlison, & Bekerian, 2017; You, Kim, & Lee, 2017). Thus, the present study would like to focus on the direct predictive effect of achievement motivation, social motivation, immersion motivation and identification of on IGD's symptoms.

Problem Statement

Generations Y and Z are known to be technology savvy and they are more prone to develop problematic Internet use (Kapahi et al., 2013). According to Aziz et al. (2018),

approximately 76.1% from the total of Internet users in Malaysia are youth, and 43.7% engage in playing online games, and they reportedly spend time more than 17.9 hours a week and the percentage of youth who involves in online gaming behaviour keeps on increasing. Due to the fast development of online games around the world, people who are addicted to online games have enormously increased globally to a worrying situation. For instance, local past studies revealed that majority of their participants show a different variant level of problematic online gaming behaviours (Aziz et al., 2018; Freeman, 2012). Thus, these findings suggest that there is a growing trend of pathological online gaming behaviour in Malaysia, and the majority of these groups of people are youth.

Since APA has included IGD in DSM-5, many researchers have started to study in-depth about the IGD's symptoms. Past studies revealed that IGD's symptoms may lead to negative outcomes, for instance, stress, depression, decreased psychosocial well-being, low school performance, increased aggressiveness, and more risk of attempted suicide (Kaess et al., 2017; Kim et al., 2016; Naskar, Victor, Nath, & Sengupta, 2016; Percy, McEvoy, & Roberts, 2017; Van Rooij, Kuss, Griffiths, Shorter, Schoenmakers, & Van De Mheen, 2014). However, many critics and debates have risen after the inclusion of IGD in DSM-5 (Griffiths et al., 2016; Király, Griffiths, & Demetrovics, 2015; Kuss, Griffiths, & Pontes, 2017; Starcevic, 2017). Thus, there is a need to further study IGD's symptoms as suggested by DSM-5 Task Force in order to provide more sufficient shreds of evidence for the inclusion of IGD as an official disorder in DSM-5 (APA, 2013).

The current study aims to narrow the literature gaps exist and to address some of the controversies found in past studies. According to Yee (2006), most of the gamers are motivated for playing games by achievement, social, and immersion motivations. For example, even though three motivations were found to be correlated with IGD's symptoms; however, achievement motivation was the most highly correlated with IGD's symptoms

while social motivation and immersion motivation were only found to be loosely correlated with IGD's symptoms (Carlisle, 2017). In contrast, Klimmt, Schmid, and Orthmann, (2009) found out that social motivation was the most important motive for gamers, while immersion motivation served as the least important motive for gaming behaviour. Moreover, these studies were also conducted in the Western contexts which the applicability of these findings in Malaysia context is unclear, moreover, the inconsistency of findings has restricted scholars to develop a clear understanding of how these motivations predict on IGD's symptoms differently.

For example, according to Hellström, Nilsson, Leppert, and Åslund (2012) found that only immersion motivation and achievement motivation are related to gaming addiction while people who play for social motives are more likely to have a reduced risk in negative outcomes such as pathological gaming behaviour. Moreover, Kuss, Louws, and Wiers (2012) revealed that only immersion motivation and achievement motivation were significantly predicted problematic gaming behaviour while social motivation was found to be insignificant. In contrast, in Kneer and Glock (2013) study, the findings showed that for normal gamers, immersion motivation was rejected to be significant predictor of gaming behaviour while only social motivation and achievement motivation play the role, meanwhile, three motivations are found to be significant for problematic gamers. Lastly, based on the study of Zhong and Yao (2013), they found that social motivation and immersion motivation in online games exert direct effects on the problematic gaming behaviours, however, unpredictably, the relationship linking achievement motivation and problematic gaming behaviours were found to be insignificant.

Lastly, identification of avatar. Past studies showed that a positive correlation was found between identification of avatar and online gaming addiction symptoms or IGD's symptoms (Burleigh, Stavropoulos, Liew, Adams, & Griffiths, 2017; Dieter et al., 2015;

Sioni et al., 2017; Smahel, Blinka, & Ledabyl, 2008; You et al., 2015; Zhong & Yao 2013). However, all of the mentioned past studies were focused on MMORPG, which is another genre as compared to current study (MOBA), moreover, the local study has an inadequate number of researches put attention on the study of MOBA in Malaysia. Similarly, the findings of Nuyens et al. (2016) have strengthened the fact of inadequate study on MOBA by stating that despite its widespread popularity, only a few studies have examined the factors associated with their excessive use, while these characteristics could be different from those studied in MMORPGs.

Issues associated with IGD's symptoms should be carefully addressed as they might intensely worsen the well-being of society, by inducing pathological gaming behaviour which might lead to poorer social, psychological and interpersonal aspects of affected individuals. Therefore, by examining the predictive effect among these variables, the proper interventions and preventions programs can be designed. In conclusion, the present study aims to study the predictive effects of achievement motivation, social motivation, immersion motivation, and identification of avatar on IGD's symptoms among youths in Malaysia.

Research Objectives

1. To examine the direct predictive effect of achievement motivation on symptoms of IGD.
2. To investigate the direct predictive effect of social motivation on symptoms of IGD.
3. To study the direct predictive effect of immersion motivation on symptoms of IGD.
4. To examine the direct predictive effect of identification of avatar on symptoms of IGD.

Significance of Study

Considering the negative consequences of gaming addiction behaviour including poor mental health, quality of life, and physical health issues (Dolatabadi, Eslami, Mostafavi,

Hassanzade, & Moradi, 2013; Zamani, Chashmi, & Hedayati, 2009), a critical need to recognize various factors that predict IGD's symptoms raises.

Moreover, the literature regarding this issue is still scarce to generate a comprehensive understanding of Malaysian IGD's symptoms. Next, the majority of those studies were conducted in Western countries, which it might not be able to generalize their findings in Malaysia due to the difference in cultural background. Hence, the present study aims to further consolidate and discover the relationship related to IGD's symptoms, thus, a more inclusive understanding is able to enrich the literature of IGD's symptoms in Malaysia.

Next, some of the past researches were mainly focused on social and immersion motivation due to these two motivations are highly correlated with IGD's symptoms but not the achievement motivation variable. However, it was found that achievement motivation was in fact also a significant predictor of problematic gaming behaviour in some of the other past studies (Carlisle, 2017; Klimmt et al., 2009). Therefore, current study views this as a gap due to the contradictions on this variable. Moreover, many past studies were mainly focused on the genre of MMORPG but not on MOBA, thus, the present study fills up the literature gap by focusing on the investigation of especially on MOBA in Malaysia context.

Furthermore, game developers may also receive advantages from the results of the present study. For instance, game developers will have more understanding on what motivates the gamers to engage in online gaming behaviours, therefore, in order for them to design more attractive online games, the game developers may design their game genres to be more related or in line with the preferred gaming motivation shown by the gamers in the findings in order to be more appealing to gamers.

In addition, the prevalence of IGD's symptoms in Malaysia remains under research and lack of empirical findings to show its pervasiveness in Malaysia. Through the current

study, it is able to provide valuable data analysis and results on IGD's symptoms for the future researchers in Malaysia, which allows mental health professionals in Malaysia to develop effective intervention programs for IGD's symptoms prevention.

Lastly, the findings of the present study are able to provide meaningful descriptive statistics to the Department of Statistic Malaysia in order to raise the awareness of the society on the negative effects and consequences of IGD's symptoms. Additionally, Ministry of Youth and Sports Malaysia is also able to base on the current research findings to understand the trend of youth nowadays, therefore, the ministry will be able to promote the eSports training or academy as the strategy to cope with IGD's symptoms.

Research Question

Do achievement motivation, social motivation, immersion motivation, and identification of avatar positively predict the symptoms of IGD?

Research Hypotheses

H1: Achievement motivation positively predicts the symptoms of IGD.

H2: Social motivation positively predicts the symptoms of IGD.

H3: Immersion motivation positively predicts the symptoms of IGD.

H4: Identification of avatar positively predicts the symptoms of IGD

Conceptual Definition

Internet Gaming Disorder. Internet Gaming Disorder refers to the long-term and frequent use of the Internet to involve in online games, often engage with multiple players, leading to clinically significant impairment or distress while fulfilling five or more of the criteria in a 12-month period (APA, 2013).

Identification of avatar. Identification of avatar refers to the visual representation or the embodiment of gamers to the avatar, for instance, in virtual gaming world, gamers will project themselves into the virtual environment by identifying themselves to their avatar: a three-dimensional body which they control and whose appearance is often able to be customized in the game (Ducheneaut, Wen, Yee, & Wadley, 2009).

Achievement motivation. Achievement motivation refers to the psychological needs to seek master and advancement in game, competition and gaining virtual power in the game (Yee, 2007).

Social motivation. Social motivation refers to the motivation that leads the gamers to develop a meaningful relationship with other gamers and remain connecting with each other in the virtual community (Yee, 2007).

Immersion motivation. Immersion motivation refers to the craving to escape from real-life negative issues, and immerse themselves in the gaming world and want to role-play (Yee, 2007).

Operational Definition

Internet Gaming Disorder. Internet Gaming Disorder is symptoms that cause significant impairment or disability in several aspects of a gamer's life. A nine-item instrument namely Internet Gaming Disorder Scale–Short-Form (IGDS9-SF) has been developed by Pontes and Griffiths (2014) to measure the extent of IGD's symptoms occurring over a 12-month period. The higher the total score, the higher the degree of gaming disorder.

Identification of avatar. Identification of avatar refers to the mental attachment between the gamers and their chosen avatars in the online game environment. The 15-item Player-Avatar Identification Scale is developed as a measurement scale to assess the gamers'

identification of avatar (Li et al., 2013). The higher the score, the higher the identification of avatar.

Achievement motivation. Achievement motivation refers to the motivation to achieve certain tasks in the game in order to seek a sense of mastery and competition. Online Gaming Motivations Scale is a 39-item scale developed by Yee (2007) which is used to measure to what extent that gamers are being motivated for achievement to play games. The higher the total score, the higher the achievement motivation.

Social motivation. Social motivation refers to the motivation to stay connected and to interact with other gamers in the gaming community. Online Gaming Motivations Scale is a 39-item scale by developed Yee (2007) which is used to measure to what extent that gamers are being socially motivated to play games. The higher the total score, the higher the social motivation.

Immersion motivation. Immersion motivation refers to the motivation to escape from real-life problems by immersing in the virtual gaming world. Online Gaming Motivations Scale is a 39-item scale developed by Yee (2007) which is used to measure to what extent that gamers are being motivated by immersion to play games. The higher the total score, the higher the immersion motivation.

Chapter II

Literature Review

Theoretical Framework

Self-determination theory. Self-determination theory or SDT is a grand theory that was primarily presented by scholars Deci and Ryan in their studies of motivation during the 1970s and 1980s which focused on human motivation, development, and wellness (Deci & Ryan, 2008). SDT has thus highlighted the significance of motivational quality and quantity and it has also presented a wide-ranging method to reviewing health behaviour through its definition and measurement of three motivations namely autonomy, competence, and relatedness to others (Patrick & Williams, 2012). According to Sterling (2017), the main feature of SDT is choice—especially, personal choice, she also claimed that everyone has to make choice, for example, to play or not to play online games, and the individual may realize the importance of adjusting his or her behaviour according to the choice that person has made.

SDT recommends a range of motivational regulations from intrinsic motivation to extrinsic motivation and the two classification of motivation includes autonomous motivation and controlled motivation (Keshtidar & Behzadnia, 2017). Autonomous motivation encompasses both intrinsic and extrinsic motivation in which people have identified with a behaviour's value and ideally will have united it into their sense of self, such as when people are autonomously motivated, they experience a sense of power to make own decision, or a self-motivated of their actions (Deci & Ryan, 2008). In contrast, controlled motivation refers to being controlled includes acting a behaviour with an external pressure, or a sense of having to get involved into particular actions, for example, when motivation comes from external,

people will behave in a certain way in order to obtain the desired outcome or to avoid a negative one (Gagné & Deci, 2005).

SDT views motivation as a psychological drive directed at a specific goal. Firstly, autonomy refers to people's psychological need to act or make choices with a sense of ownership of their behaviour and experience psychologically free to engage in the behaviour (Deci & Ryan, 2000), when an individual is assumed to have a sense of choice, a recognition of emotions, or an opportunity for self-directed choice, feelings of intrinsic fulfilment are heightened (Riley, 2016). Secondly, competence focuses on an individual's need to feel a sense of mastery through competent interaction within their environment (Adie, Duda, & Ntoumanis, 2008), for instance, when people are able to solve problems or to overcome challenges in the environment competently, their needs for competence will be met. Thirdly, relatedness reflects the need to feel intimacy in relationship, sense of attachment and understood by significant others (Patrick & Williams, 2012), for example, when people are making meaningful friendships with others or spending quality time together, this enables them to fulfil their relatedness needs.

In conclusion, Ryan and Deci (2000) claimed that if three of these psychological needs are satisfied and fulfilled within a social setting, people will tend to experience a sense of self-motivation, more energetic and experience wellness, nevertheless, on the contrary, if these three needs are not met, people will experience undesirable feelings such as frustration and eventually, lead to reduced of self-motivation.

Social identity theory. Social Identity Theory was developed by Tajfel and Turner and this theory focuses on the individuals' sense of belongingness toward the membership of a particular group (Feitosa, Salas, & Salazar, 2012). Social identity, in other words, refers to how individuals describe themselves according to their group memberships (Hogg &

Williams, 2000). The motivation that drives individuals to be involved in a group is due to their need for self-enhancement and reduction of ambiguity about people's feelings, perceptions, and behaviour (Hogg & Terry, 2000). Social identity is strongly connected to the affective attachment to a particular group membership (Fielding, McDonald, & Louis, 2008) and such emotional connection and the motivation to preserve the membership of a group reinforce the individuals' intention to continue to use the associated mediums to stay in touch with the memberships (Jiang et al., 2016), for instance, an online gaming platform.

Furthermore, Tajfel and Turner (1979) proposed that there are three mental processes take place in categorizing people into two groups, known as the in-group and the out-group, and these three processes are from social categorization, social identification and to social comparison. For social categorization, individuals will constantly evaluate the groups that they feel sense of belongingness to (in-groups) and the groups they separate themselves from and do not consider them as part of the memberships (out-groups), thus, in order to decide the in-groups' and out-groups' memberships, individuals will be continuously categorizing themselves, assessing and evaluating the in-groups and out-groups' worth, and compare with their own personal values (Trepte & Loy, 2017). Furthermore, social identification refers to the process of identification with the in-group membership that is an essential condition for separating oneself from the outgroup members (Perreault & Bourhis, 1998). Next, the social comparison was proposed by Leon Festinger (1954) which refers to the ways in which people compare themselves to others and to themselves at different situation and condition from time to time and the outcomes of such comparisons.

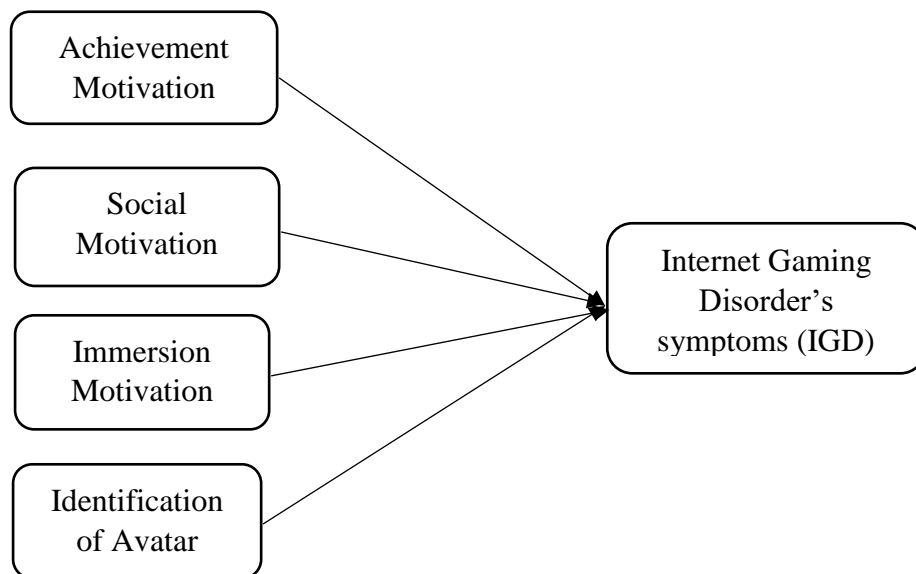
Conceptual Framework

Figure 1.1. Conceptual framework of achievement motivation, social motivation, immersion motivation, identification of avatar and Internet gaming disorder's symptoms.

This study aims to investigate the predictive effect of achievement motivation, social motivation, immersion motivation, and identification of avatar on IGD's symptoms (refer to Figure 1.1). When an individual involves in gaming behaviour, the reward system in the games such as obtaining rare items, acquiring special skills or achieving certain level will satisfy the achievement motivation of the gamer, therefore, to keep on having this achievement need satisfied, the gamer will spend a long time on online games and lead to the development of IGD's symptoms. Next, when people have the motive to socialize with other, they will be motivated to keep in touch and to contact with other people. Virtual communities of online games are able to provide this social platform to satisfy their social needs, thus, the more they are motivated to social, the more they attach to online gaming behaviour, and eventually channel into pathological online gaming behaviour. Furthermore, immersion motivation leads people to escape from reality, for instance, by engaging in online gaming, consequently, gamers are addicted to online games due to the satisfaction of escapism and lead to the symptoms of IGD. Lastly, people identify themselves with certain groups to form

a unique social identity, when gamers identify themselves with their avatars and interact with other gamers through the avatars, they are able to develop the desired identity which causes them to have a strong attachment towards the game and eventually, lead to IGD' symptoms.

Achievement motivation, known as the need to seek more complicated, challenging, and unique goal-oriented activities is significantly positive correlated with IGD symptoms (King, Herd, & Delfabbro, 2018) and it was also found that achievement is highly correlated to problematic gamers (Kneer & Glock 2013). According to Uysal and Yildirim (2016), when gamers are able to complete certain tasks in gaming, it creates a sense of achievement or feeling of competence which retains or enhances the gamers' ego. In another word, the competence needs as proposed in Self-Determination Theory is able to be gratified when the gamers successfully achieve their initial desirable goals. Furthermore, online games are also able to satisfy gamers' competence needs by providing optimal challenges and performance feedback that lead to a sense of worth and mastery such as the sense of achievement (Rigby & Ryan, 2011), and this may make gamers who play games for achievement motivation continue the gaming behaviour and lead to uncontrollable gaming behaviour such as IGD's symptoms.

Next, social motivation refers to gamers desire to stay connected with other gamers and develop an in-game relationship in the virtual gaming community (Yee, 2007). Past study found that social motivation is a positive predictor of IGD's symptoms (Carlisle, 2017). For instance, this is due to gamers were very interested in connecting with others through the game, founding friendships with other gamers, and feeling supported by them (Fuster, Oberst, Griffiths, Carbonell, Chamarro, & Talarn, 2012) and they enjoy the rich social life in online games and once they get attached to online social relationship, the time spending with online social ties will increase, hence, it is more possible to develop symptoms of problematic gaming (Zhong & Yao, 2013). Relatedness needs, which is one of the psychological needs in

Self-Determination Theory is commonly addressed in the setting of multiplayer games. This is because online games make the gamers feel accepted and supported in the gaming community would gratify the relatedness needs (Rigby & Ryan, 2011). As multiplayer online games tend to be rich in content and offer many occasions for gamers to socialize with each other, therefore, it allows gamers to gratify the psychological need for relatedness (Ryan, Rigby, & Przybylski, 2006), thus, gamers who play for the social motivation are able to fulfil their relatedness needs through the virtual community, and therefore, the tendency for them to develop problematic gaming behaviour is heightened.

In addition, gamers who are being motivated by immersion motivation have the intention to escape from real life difficulties (Yee, 2006) and virtual environment provides by online games can serve as a means for gamers to run away from real-life problems, even just for short moments. Immersion motivation is found to be significant positive predictor of problematic online gaming (Khan & Muqtadir, 2016; Kneer & Glock, 2013). Autonomy, the psychological needs to make personal choices with a sense of ownership (Deci & Ryan, 2000) was found to be positively associated with enjoyment and immersion (Ryan et al., 2006). Furthermore, they also stated that immersion is associated with autonomy satisfaction, such that in the games where gamers experience greater autonomy to achieve in-game goals and interests to carry out effective actions, the sense immersion is enhanced. Self-Determination Theory believes that when motivation comes from external, people will behave in a certain way in order to obtain a desired outcome or to avoid a negative one (Gagné & Deci, 2005) such as when people feel stressful in real life, they will actively immerse themselves in the gaming world in order to avoid negative reality. For instance, people receive undesirable stresses from the physical world, therefore, when virtual gaming world is able to provide a stress-relieve situation for them, consequently, they will immerse themselves more in the gaming world for this desired feeling which is not found in the

physical world. Therefore, when they have this autonomy to actively engage in gaming behaviour, it may lead them to pathological online gaming behaviour, such as IGD's symptoms.

Identification of avatar is defined as the temporary changing and shifting of users' self-concept by identifying the perceived characteristics of a media character (Hefner, Klimmt, & Vorderer, 2009). Several past studies have investigated the positive predictive effect of identification of avatar on IGD's symptoms (Burleigh et al., 2017; Sioni et al., 2017). Based on Social Identity Theory, it refers to an individual's sense of belonging or emotional attachment to a group's membership (Feitosa et al., 2012). Therefore, social identity may serve as one of the main motivators for the involvement in gaming virtual communities (Dholakia, Bagozzi, & Pearo, 2004) because identification of avatar encourages the gamers to identify their avatars with gaming groups, for example, holding membership of a gaming union (Teng, 2017). Therefore, gamers are able to form their desired social identity in the virtual community by identifying themselves with their avatars. Thus, as identification of avatar increases, more psychological resources are invested to develop and maintain one's virtual self and therefore this may lead to the problematic gaming consequences, IGD's symptoms, for instance (Sioni et al., 2017).

Conceptualizing on Internet Gaming Disorder

American Psychiatric Association (APA) has included IGA as a condition required for further study in Section III of the latest fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5). APA (2013) defined IGD as using of Internet persistently and constantly to play games, usually with other gamers, causing clinically significant impairment or distress over a period of 12 months, accompanying with at least five of the nine criteria as below: (1) preoccupation with Internet games; (2) withdrawal

symptoms when Internet gaming is taken away; (3) tolerance which means the 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 regardless of knowing the negative outcomes; (7) has deceived family members, therapists and others on amount of Internet gaming; (8) use of Internet to escape and relieve negative moods and (9) affecting the significant relationship by engaging in Internet gaming (APA, 2013).

Conceptualizing on Identification of Avatar

Identification of avatar is defined as the momentary changing and shifting of users' self-concept by embracing the perceived characteristics of a media person (Klimmt et al., 2009). Moreover, identification includes the merging of self and other and repeating internalization of substitute identities of media characters which are influential and seductive (Cohen, 2001). In addition, these avatars are human-like in the virtual settings; they play the roles as digital illustrations of the gamers and create the boundary between the real world and the video gaming world, for the connection to be built between the avatars and the gamers, people must hypothesize their avatars to represent them (Watts, 2016). Identification of avatar also has been known to increase the enjoyment of gamers (Hefner, Klimmt, & Vorderer, 2007), improved perceived learning (De Grove, Courtois, & Van Looy, 2015) and improved self-esteem (Watts, 2016).

Identification of Avatar and Internet Gaming Disorder's Symptoms

As the identification of avatar increases, more psychological elements such as emotion are invested in order to create and sustain one's virtual self-identity in the game, thus, this identification may lead to the problematic gaming behaviours, IGD, for instance (Sioni et al., 2017). There is a positive relationship between game addiction and avatar

identification, this finding can be explained that it is possible the gamers perceive their avatar to be their alternative ego or as a visual symbolization for the gamers themselves, they then develop a connection and attachment to it and as a consequence, it leads them to become addicted to the virtual gaming world (You et al., 2017). In other words, gamers who identify themselves with their avatars will develop a sense of belonging and attachment to their avatar and immerse into the virtual world, which is most likely contributes to IGD's symptoms. Furthermore, based on both cross-sectional and longitudinal of a past study, they found a stronger identification of avatar is accompanying with increased IGD's symptoms risk (Burleigh et al., 2017), they stated that this may due to the gamers view avatar and its associated identity become important, lead to higher game engagement, and spend a longer time on gaming.

Conceptualizing on Achievement Motivation

In general meaning, achievement motivation refers to that individuals seek to excel and mastery in what they do and actively strive to accomplish goals (Neigel, Miao, Montagna, Chirino, & Szalma, 2017). Furthermore, a study showed that there are several factors that could affect the motivational level in people, for example, personal, social, and educational factors (Kavousipour, Noorafshan, Pourahman, & Dehghaninazhvani, 2015). Moreover, to view achievement motivation in terms of online gaming behaviour, according to Yee (2007), achievement motivation means the desire to become powerful in the context of the virtual environment through the achievement of goals and gathering of items that symbolise power. Under the achievement motivation, there are three subcomponents namely advancement: the craving to obtain power, progress speedily, and achieve wealth or status in the game, mechanics: having an interest to heighten the character performance and competition: the desire to challenge with others.

Achievement Motivation and Internet Gaming Disorder's Symptoms

Past study showed achievement motivation was a significantly stronger predictor than social or immersion motivation (Carlisle, 2017), this relationship can be due to gamers use online games, to some degree, to gain power, currency, and status is related to an addictive pattern of online gameplay (Cross, 2016). Furthermore, results showed that problematic engagement in online gaming behaviours could come from an unstoppable desire to seek achievement in the game (Billieux, Van der Linden, Achab, Khazaal, Paraskevopoulos, Zullino, & Thorens, 2013). In other words, they feel more powerful as they achieve a higher status in the game and therefore, they become more addicted to the game. Furthermore, achievement motivation was found to be significantly positive correlated with IGD's symptoms (King, Herd, & Delfabbro, 2017). Moreover, Khan and Muqtadir (2016) mentioned that the psychological needs of achievement motivation of the problematic gamers can be gratified mainly via playing games in contrast to normal gamers. Lastly, the reason that contributes to IGD's symptoms by achievement motivation might due to when addicted gamers are not satisfied with their initial developed goals that are highly specific or specialized, withdrawal symptoms will then occur (Kaptsis, King, Delfabbro, & Gradisar, 2016), thus, they will feel uncomfortable by leaving the goals undone and spend more time achieving their initial goals.

Conceptualizing on Social Motivation

In online gaming setting, social motivation refers to gamers who have the needs to interact and socialize with other gamers in the gaming community while intend to develop a meaningful relationship (Khan & Muqtadir, 2016). Furthermore, socialization has become an important motivation in everyday life because people receive rewarding experiences or positive feelings by staying connected or interact with other people (Godman, 2013). This

motivation is supplementary separated into three subcomponents of socialization, relationship, and teamwork. First, socializing: having an intention in providing help and staying connected with other gamers, second, relationship: the need to form long-term meaningful relationships with others and third, teamwork: the need to contribute effort to the group (Yee, 2007).

Social Motivation and Internet Gaming Disorder's Symptoms

There are several studies that found social motivation is correlated to IGD's symptoms (Blinka, & Mikuška, 2014; Fuster et al., 2012; Šporčić, & Glavak-Tkalić, 2018). This phenomenon can be explained by the case of when gamers engage in a particular game for long-term involvement such as engaging in a game for years, social relationships among gamers may progress to become especially durable and meaningful (Klimmt et al., 2009). This is also because online games provide a capacity for allowing supportive group play and social interactions among gamers (Griffiths, Davies, & Chappell, 2004), thus, online games that provide wide-range opportunities for social interaction are found to be addictive.

Conceptualizing on Immersion Motivation

Immersion motivation refers to the desire to escape from real-life problems, like to immerse themselves in the gaming world and want to role-play as their gaming character, and under this motivation there are four subcomponents which are discovery: finding and knowing things that is not known by other gamers, role-playing: creating a unique character with a unique background story and interacting with other gamers, customization: interested in customizing the outlook of their character and escapism: engaging in the virtual gaming environment as a channel to escape from reality problems (Yee, 2007). When people are immersed in an online game, gamers will experience a sense of pleasure and satisfy their psychological needs (Teng, 2010).

Immersion Motivation and Internet Gaming Disorder's Symptoms

Studies suggested that gamers often play online games to escape problems from their real-life, and gamers who are addicted to online games would rather spend time with friends on the virtual community than their offline friends, and that they find spending time on the virtual community more enjoyable and satisfying (Hussain & Griffiths, 2009; Ng & Wiemer-Hastings, 2005). Moreover, immersion motivation was found to be a significant positive predictor of pathological online gaming behaviours and IGD's symptoms (Khan & Muqtadir, 2016; Kneer & Rieger, 2015). It might be due to virtual environment provides by online games can serve as an escape which allows gamers to run away from real-life problems, therefore, a study found that immersion motivation played the role as a risk factor to predict IGD's symptoms (Kneer & Glock, 2013). Furthermore, a motivational factor that separates usual gamers and addicted gamers differently is the immersion motivation, it might due to addicted gamers spend more time to look for something that most other gamers do not aware about and have more intentions in escaping from the reality (Lehenbauer-Baum, Klaps, Kovacovsky, Witzmann, Zahlbruckner, & Stetina, 2015).

Chapter III

Methodology

Research Design

Research design is known as the basic structure of a scientific study to collect meaningful information from research participants. Research methodology is significant not only because it embodies philosophical assumptions, but also because it guides the selection of research methods and quantitative researchers tend to employ measurement, experiment, and statistical analysis to answer their research questions (Long, 2014). In current study, a cross-sectional study was applied to collect data from participants in order to investigate the direct effects of social, achievement, immersion motivations and identification of avatar on IGD's symptoms. Cross-sectional study is a research method that collects data at one time, the aim of cross-sectional design is to describe the features of a population or the variations exist among different populations at a specific time (Shaughnessy, Zechmeister, & Zechmeister, 2012). Furthermore, online survey as the data collection method was applied in this study due to its suitability in accessing to individuals in distant locations, the ability to reach difficult to contact participants which reduces researchers' time and cost-saving (Wright, 2005).

Participants

MOBA gamers between 18 to 29 years old were selected in this study. Examples of MOBA games include *DOTA 2*, *League of Legends*, *Heroes of the Storm* and *Smite*. Current study focused on Malaysia youths and according to Ministry of Youth and Sports Malaysia (2015), the age range of youth in Malaysia is between 15 to 29 years old, which this policy starts to be implemented in 2018. The inclusion criteria for selecting participants in the current study were: (1) MOBA gamers; (2) between 18 to 29 years old; and (3) have gaming

experience at least 12 months and above. Exclusion criteria of selecting participants were: (1) gamers who are below 18 years old and above 29 years old; (2) less than 12 months of gaming experience; (3) non-MOBA gamers; and (4) professional gamers. Gamers below 18 years old were excluded in data collection because in order for a participant below 18 years old to participate in a research, the researchers must acquire parental consent. Therefore, this has increased the difficulty in data collection as the underage participants may not be physically close to their parents in order to get parental consent immediately. Several recent empirical studies have adopted the same sampling method in collecting data which the gamers below 18 years old were excluded (Burleigh et al., 2017; Caplan et al., 2009; King, et al., 2018; Nuyens et al., 2016; Šporčić & Glavak-Tkalić, 2018; Zhong & Yao, 2013). Besides, the reason to exclude professional gamers from the sample because playing online game is their occupation which IGD's symptoms is not valid to be identified.

Research Procedure

An online questionnaire including demographic data collection was approved before the commencement of distribution (refer to Appendix A, p. 82). The questionnaire was created through Qualtrics based on three instruments namely Internet Gaming Disorder Scale–Short-Form (IGDS-SF) (Pontes & Griffiths, 2014), Player-Avatar Identification Scale (PAIS) (Li et al., 2013), and Online Gaming Motivations Scale (Yee, 2007). Informed consent was being stated on the first page before entering to the questionnaire to ensure every participation was voluntary and well informed that their information will keep privately and confidentially, and have no known risks associated with current research.

Pilot study. Pilot study was conducted before the actual study to evaluate the feasibility of the method to be used in larger scale study (Leon, Davis, & Kraemer, 2011). Online questionnaire was sent to potential participants by posting on Facebook MOBA pages

and groups such as *Komuniti dota 2 (zon malaysia)*, *Komuniti DOTA 2 Ipoh/Perak*, *Komuniti Dota 2 Malaysia*, *League of Legend Gamers*, *League of legends Malaysia*, *Mobile Legends MOBA Malaysia*, *Official Community League of Legend Malaysia*, *DOTA 2 大马华人玩家群* (Malaysia Chinese DOTA 2 Players), *王者荣耀吹水站* (King of Glory Forum), *王者荣耀首都古晋交流区* (King of Glory Kuching Forum), *王者荣耀马来西亚交流群* (King of Glory Malaysia Forum), *王者荣耀* (King of Glory), and *王者荣耀-新交流区* (King of Glory New Forum) (refer to Appendix B, p. 92). In pilot study, 200 sample data were collected. According to Nunnally and Bernstein (1994), Cronbach's alpha of .70 is a criterion of good internal consistency. Thus, the collected data of pilot study was tested for Cronbach's alpha, and each of the instrument showed above .70 reliability to ensure the proceeding of actual study with the condition of reaching the standard of reliability.

Table 3.1

Reliability of Instruments in Pilot Study

Variable	Number of items	Cronbach's alpha
IGDS9-SF	9	.752
Identification of avatar	15	.839
Achievement motivation	14	.852
Socialization motivation	11	.794
Immersion motivation	14	.827
Online gaming motivations	39	.917

Note. IGDS9-SF = Internet Gaming Disorder Scale–Short-Form.

Actual study. Questionnaire was sent to potential participants by posting on Facebook MOBA pages and groups. A total of 781 cases were collected and 706 cases were used in actual study analyses. Reliability of each instrument was analysed for Cronbach's alpha, and each instrument showed good reliability.

Table 3.2

Reliability of Instruments in Actual Study.

Variable	Number of items	Cronbach's alpha
IGDS9-SF	9	.813
Identification of avatar	15	.868
Achievement motivation	14	.859
Socialization motivation	11	.786
Immersion motivation	14	.855
Online gaming motivations	39	.926

Sample Size Calculation

A minimum required sample size of 122 were collected with the medium .17 of anticipated effect size (refer to Appendix C, p. 99), with .95 of statistical power level and probability level of .05 according to Soper's (2018) A-priori sample size calculator for multiple regression (refer to Appendix D, p. 101).

Sampling Technique

Non-probability sampling is also called as non-random sampling, it means that every unit in the population does not get an equal chance of participation in the study (Shorten & Moorley, 2014). Because of the populations of MOBA gamers are unknown in Malaysia, non-probability sampling was used for current study. Therefore, purposive sampling method which derived from non-probability sampling was adopted in the study.

Purposive sampling method. Through purposive sampling method, there are some predetermined criteria for selecting target samples and only participants who met the required criteria were selected as sample for the study (Palinkas, Horwitz, Green, Wisdom, Duan, & Hoagwood, 2015). The reason to use purposive sampling in the current study is because of unidentified sampling frame, participants are geographically diverse and widely spread, and

participants must meet certain criteria. Furthermore, purposive sampling method is applied in research study when the researchers aim to study specific information of the sample and have precise criteria in choosing samples who meet the requirements (Panacek & Thompson, 2007). The researchers make decision about what kind of information needs to be collected and to look for participants who are able and ready to provide the information (Bernard, 2006). The rationale of using purposive sampling method is to focus on samples with specific characteristics who will be suitable to contribute meaningful information to the research (Etikan, Musa, & Alkassim, 2016). In current study, the inclusion criteria were: (1) MOBA gamers; (2) between 18 to 29 years old; and (3) have gaming experience at least 12 months and above. There are several recent empirical past studies applied the same sampling method in their studies (King et al., 2017; King, et al., 2018; Laconi, Pirès, & Chabrol, 2017; Nuyens et al., 2016; Sterling, 2017).

Instruments

Internet Gaming Disorder scale–short-form (IGDS9-SF). Internet Gaming Disorder is a “condition for further study” in the DSM-5 (APA, 2013). Nine-item short-form scale (IGDS-SF9) developed by Pontes and Griffiths (2014), is to measure the severity of IGD’s symptoms and its detrimental effects through the examination of both online and/or offline gaming activities taking place in 12-months period. The scale includes nine items that matching to the nine core criteria defined by the DSM-5 (APA, 2013). The scoring is based on a five-point Likert scale ranging from 1 (*never*) to 5 (*very often*) and it may be possible to classify disordered gamers and non-disordered gamers by considering only those gamers that obtain a minimum of 36 out of 45 points in the test (Pontes & Griffiths, 2014). The total mark that respondents scored is ranged from 9 to 45. Higher score indicates higher degree of gaming disorder. IGDS9-SF has excellent Cronbach’s alpha ($\alpha = .96$) in past study and is commensurate with the coefficients reported in other studies (Fuster, Carbonell, Pontes, &

Griffiths, 2016; Pontes & Griffiths, 2016). In current study, IGDS9-SF obtained a good reliability of Cronbach's alpha ($\alpha = .81$). The example of statements that participants need to respond such as:

- (1) "Do you systematically fail when trying to control or cease your gaming activity?";
- (2) "Do you feel more irritability, anxiety or even sadness when you try to either reduce or stop your gaming activity?";
- (3) "Have you deceived any of your family members, therapists or others because the amount of your gaming activity?".

Player-Avatar Identification Scale (PAIS). Identification of avatar refers to the mentally attachment between the gamers and their chosen avatars in the online game environment. The 15-item Player-Avatar Identification Scale is used as measurement of player's identification with his or her gaming avatar and this scale is developed by Li et al. (2013). The scale is assessed using five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The higher the score, the higher the identification of avatar. The scale has an internal consistency with the Cronbach's alpha ($\alpha = .68$) to ($\alpha = .84$) for four factors, such as feelings during play ($\alpha = .68$), absorption during play ($\alpha = .70$), positive attitudes toward avatar ($\alpha = .78$) and importance to identity ($\alpha = .84$) (Li et al., 2013). In current study, PAIS is found to have good Cronbach's alpha ($\alpha = .87$) and shows consistent good reliability as past research (Li et al., 2013). Participants respond to statements such as:

- (1) "I feel as if I am physically in the game world during the game";
- (2) "I am proud to play the character I am playing now";
- (3) "The characters I play reflect who I am".

Online Gaming Motivations Scale. Motivation of gaming refers to the reasons why do gamers engage in playing online games and what purposes are motivating them. Online Gaming Motivations Scale is a 39-item scale by Yee (2007) is used to measure to what extend that gamers are being motivated to play games for many different reasons, which is based on the three-motivation model related to achievement, social and immersion motivations which consist of 14 items, 11 items and 14 items respectively.

Achievement motivation refers to the psychological needs to seek mastery and advancement in game, competition and gaining virtual power in the game, meanwhile social motivation refers to the motivation that leads the gamers to develop a meaningful relationship with other gamers and remain connecting with each other in the virtual community and immersion motivation refers to the craving to escape from real-life negative issues, and immerse themselves in the gaming world and want to role-play (Yee, 2007). The scoring is based on a five-point-fully-labelled construct-specific scale ranging from 1 (*not at all important*) to 5 (*extremely important*), or 1 (*not at all*) to 5 (*a great deal*) for three motivations, it has different choices within the five-point Likert scale for different items. Thus, the higher the total scores, the higher the motivation.

The reliability of each motivation has Cronbach's alpha above .70, for instance, achievement motivation ($\alpha = .74$), socialization motivation, ($\alpha = .77$) and immersion motivation ($\alpha = .75$) (Yee et al., 2012). In current study, Online Gaming Motivations Scale has an overall good Cronbach's alpha ($\alpha = .93$) and each of the motivation also shows good reliability, such as achievement motivation ($\alpha = .86$), socialization motivation ($\alpha = .79$) and immersion motivation ($\alpha = .86$). Examples of items of each type of motivation, such as achievement motivation, social motivation and immersion motivation respectively:

- (1) “How important is it to you that your character is as optimized as possible for their profession / role?”;
- (2) “How much do you enjoy working with others in a group?”;
- (3) “Feeling immersed in the world”.

Statistical Analyses

Data of sex, age, race, relationship status, employment status, educational level, gaming frequency (per week), average gaming duration (per day), gaming experience (in years), starting age of playing Internet games, average monthly spend on Internet games (RM), and whether participants’ family members play Internet games were collected and used as descriptive statistics. All of the collected data were analysed by using SPSS version 23. Normality tests were conducted to determine if the data set is well-modelled by a normal distribution for current study. Normality test is important for empirical study, because if the assumptions of normality test are not fulfilled or violated, it may contribute to making inappropriate inferential findings and imprecise predictions in the research (Das & Imon, 2016). There are several indicators of normality which include histograms, boxplots, quantile-quantile (Q-Q) plots, Kolmogorov-Smirnov normality test, skewness and kurtosis tests.

Histogram. Histogram refers to the frequency distribution of the data that the values are plotted against the frequency, it is use to provide a graphical approximation whether the distribution is in bell-shaped curve or not, hence, a histogram that displays a bell-shaped curve is known to be normally distributed (Das & Imon, 2016).

Boxplots. The horizontal line shown inside the box refers to the median of the data and the interquartile range from 25th to 75th percentiles as contrast to the length of the box (Ghasemi & Zahediasl, 2012). Any individual points o or x shown outside the box are known

to be suspected outliers of the data set, and if these points appear on the both upper and lower sides of the box, it means that the distribution is heavy-tailed (Öztuna, Elhan, & Tüccar, 2006), thus, outliers need to be removed in order to ensure normal distribution.

Quantile-quantile (Q-Q) plots. If the data are normally distributed, the Q-Q plot will have all the points lying approximately near the straight line, however, if the points are lying scattered away from the straight line, it means there could be suspected outliers that lead to skewed distribution instead of normal distribution (Öztuna et al., 2006).

Kolmogorov-Smirnov normality test. K-S test refers to the comparison of the collective distribution of the data with the predicted collective normal distribution of the data that based on its p value on the largest difference (Öztuna et al., 2006), which is .05 in current study. If the test is significant, then the distribution is non-normal (Ghasemi & Zahediasl, 2012).

Skewness and kurtosis tests. Skewness refers to the extent of asymmetry of a distribution around its mean, meanwhile kurtosis refers to the comparison of a distribution's highness or flatness with the normal distribution, if the value is close to 0, the data is said to be symmetrically distributed (Čisar & Čisar, 2010). According to George and Mallery (2010), skewness and kurtosis values between ± 1 is known to be good, however, a value between ± 2 is satisfactory as well.

Furthermore, multiple linear regression was used to study the predictive effect of achievement motivation, social motivation and immersion motivation, and identification of avatar on IGD's symptoms, and to answer the research questions. There are eight assumptions for multiple linear regression which include linearity, multicollinearity, homoscedasticity, independent error, multivariate outliers, normality of residual, all variables are continuous and independent response.

Linearity of residual. The linearity of the data can be observed by plotting residuals against estimated Y values and non-linearity of the data will cause the regression analysis findings to underestimate the accuracy of the relationship (Osborne & Waters, 2002).

Multicollinearity. Multicollinearity refers to a multiple regression model has two or more predictor variables that have high correlation among them (Daoud, 2017). Variance Inflation Factor (VIF) is used to measure the inflation of the variance, while tolerance refers to the amount of a predictor's variability that is not being explained by another predictor variable, hence, when VIF value is below one and tolerance value is more than .10, the variables are said to not correlated with each other (Daoud, 2017).

Homoscedasticity. Homoscedasticity refers to the variance of errors are similar across all the independent variables, if the residuals are randomly plotted around zero or the horizontal line, it shows it is evenly distributed on the scatterplot (Osborne & Waters, 2002).

Independent error. Durbin-Watson test has to be analysed in order to test the assumption of independence of errors and Durbin-Watson test value should be between 1.5 and 2.5 which suggesting the values are independent (Gan & Ahmad, 2011).

Multivariate outliers. When there is outlier in the study, the regression line will be pulled near to itself and this can lead to the finding that is more accurate for the outliers, however, less accurate for the rest of the cases in the data (Kannan & Manoj, 2015). There are three criteria that used to determine which specific case in the data set is multivariate outlier, which included Centered Leverage Value, Mahalanobis Distance and Cook's Distance. In Centered Leverage Value, cases which are greater than two average leverage ($2(k + 1)/n$), n is sample size, k is number of predictors, will be potentially labelled as multivariate outliers (Hoaglin & Welsh, 1978). For Mahalanobis Distance, it is to measure the distance between two data points (Xiang, Nie, & Zhang, 2008). According to Stevens

(2002), for data set more than 500 cases, with four predictors and p value of .05, cases with more than 23.06 Mahalanobis Distance are highly influential on the regression parameters (refer to Appendix E, p. 102). Lastly, for Cook's Distance, cases score more than one in Cook's Distance are potentially labelled as multivariate outliers (Cook & Weisberg, 1982).

Normality of residual. It refers to the randomness in the residuals that is representing the error and normality of residual can be evaluated by observing the residuals on the scatterplot visually (Casson & Farmer, 2014). If the residuals are randomly plotted around zero or the horizontal line, it shows it is evenly distributed on the scatterplot (Osborne & Waters, 2002).

Chapter IV

Results

Descriptive Statistics

Background of respondents. A total of 781 participants were collected. After removing missing data and cases that did not fulfil criteria, a total of 729 cases were remained. Furthermore, after cleaning univariate outliers, current data have 706 valid cases for the final analyses. Background of respondents were analysed in order to understand the distribution for each category and instrument (refer to Table 4.1).

Table 4.1

Demographic Information of Participants, Frequency Distribution of IGD's Symptoms, Identification of Avatar, Achievement, Socialization, and Immersion Motivations (N = 706).

	n	%	Mean	S.D
Age			21.94	2.33
Gender				
Male	506	71.7%		
Female	200	28.3%		
Relationship Status				
Single	511	72.4%		
Married	14	2.0%		
In Relationship	177	25.2%		
Separated/divorced	4	0.6%		
Educational Level				
Secondary school/Pre-U	146	20.7%		
Diploma	131	18.6%		
Bachelor Degree	404	57.2%		
Postgraduate Degree	25	3.6%		
Employment Status				
Employed	162	22.9%		
Unemployed	66	9.4%		
Others (e.g., Student)	478	67.7%		

Table 4.1 (Continue)

Demographic Information of Participants, Frequency Distribution of IGD, Identification of Avatar, Achievement, Socialization, and Immersion Motivations (N = 706).

	n	%	Mean	S.D
Gaming Frequency				
0 - 1 time	76	10.8%		
2 - 4 times	204	28.9%		
5 - 8 times	185	26.2%		
9 times and above	241	34.1%		
Average Gaming Duration				
1 hour and below	125	17.7%		
2 - 4 hours	420	59.5%		
5 - 7 hours	140	19.8%		
8 - 10 hours	0	0%		
11 hours and above	21	3.0%		
Gaming Experience (in years)				
1 year	58	8.2%		
2 - 4 years	201	28.5%		
5 - 7 years	176	24.9%		
8 - 10 years	129	18.3%		
11 years and above	142	20.1%		
Average Monthly spend on Internet games (RM)				
0 - 100	583	82.6%		
101 - 200	64	9.1%		
201 - 300	27	3.8%		
301 - 400	13	1.8%		
401 and above	19	2.7%		
Do you have family member(s) play Internet games?				
Yes	486	68.8%		
No	220	31.2%		
Race				
Malay	177	25.1%		
Chinese	402	56.9%		
Indian	104	14.7%		
Others	23	3.3%		

Table 4.1 (Continue)

Demographic Information of Participants, Frequency Distribution of IGD, Identification of Avatar, Achievement, Socialization, and Immersion Motivations (N = 706).

	n	%	Mean	S.D
IGD's symptoms			21.54	6.44
Low (≤ 21.54)	388	55.00%		
High (≥ 21.55)	318	45.00%		
Identification of Avatar			45.37	10.61
Low (≤ 45.37)	350	49.60%		
High (≥ 45.38)	356	50.40%		
Achievement Motivation			45.33	9.70
Low (≤ 45.33)	355	50.30%		
High (≥ 45.34)	351	49.70%		
Socialization Motivation			34.30	6.92
Low (≤ 34.30)	370	52.40%		
High (≥ 34.31)	336	47.60%		
Immersion Motivation			40.46	9.81
Low (≤ 40.46)	357	50.60%		
High (≥ 40.47)	349	49.40%		
Total	706	100.0%		

Note. S.D = Standard Deviation

In the present study, majority of the participants are male. Furthermore, Chinese have the highest number of participants in the current study, followed by Malay and Indian participants. The mean age of participants is 21.94 years old. The participants are mainly single and most of the participants have bachelor degree as their current highest educational level. Next, more than half of the participants are currently students and many of them have nine times and above of gaming frequency in a week as compared to the other categories of gaming frequency. Moreover, most of the participants involved in two to four hours of average gaming duration and followed by five to seven hours of average gaming duration. Besides, many of the participants have two to four years of gaming experience and majority

of the them spend around RM0 to RM100 per month on Internet gaming and have family member(s) who play Internet games.

For the outcome variable, IGD's symptoms, a total of 55% of participants scored below or equal the mean. For the predictor variables, identification of avatar, 50.4% of participants scored above or equal the mean, meanwhile, for achievement motivation, half of the participants which consists of 50.3% scored below or equal the mean. For socialization motivation, majority of 52.4% participants scored below or equal the mean, moreover, for immersion motivation, 50.6% participants scored below or equal the mean.

Normality

Boxplot. According to the boxplot of each variable, during the univariate outliers cleaning, a total of 23 cases were removed. Results were analysed again to ensure there was no univariate outliers in each variable (refer to Appendix F, p. 103).

Skewness and kurtosis tests. Current data have achieved desirable skewness and kurtosis standard as suggested by George and Mallery (2010) which data are normally distributed when the range of skewness and kurtosis is within ± 2 .

Table 4.2

Skewness and Kurtosis Table

Variable	Skewness	Kurtosis
Internet gaming disorder's symptoms	.381	-.366
Identification of avatar	-.018	-.307
Achievement motivation	-.176	-.316
Socialization motivation	.002	-.310
Immersion motivation	.079	-.403

Kolmogorov-Smirnov normality test. This assumption is not met as the test value of each variable has to be greater than p value of .05 in current study to indicate the data are

normally distributed (Ghasemi & Zahediasl, 2012) (refer to Table 4.3) According to Berg (2018), a small deviation from the observed value will lead to a high probability value or p value. Hence, significance result of K-S test will be presented.

Table 4.3

Kolmogorov-Smirnov Normality Test Table

Variable	Statistic	df	Sig
Internet gaming disorder's symptoms	.083	706	.000
Identification of avatar	.032	706	.082
Achievement motivation	.042	706	.005
Socialization motivation	.045	706	.002
Immersion motivation	.038	706	.016

Histogram. Histogram of data of each variable shows approximate symmetrical curve which indicates that the data is normal distribution (refer to Appendix G, p. 104).

Quantile-quantile (Q-Q) plots. Each q-q plot of the variable shows that the points are fall approximately along the reference line which suggest that the assumption of normality is met (refer to Appendix H, p. 107). Therefore, at least three assumptions were met in order to ensure the data are distributed normally.

Multiple Linear Regression

Linearity of residual. The linearity of the data can be observed by plotting residuals against estimated Y values. This assumption was met because the scatterplot showed (refer to Figure 4.1) majority of the residuals fall approximately around the zero or the horizontal line (Field, 2009).

Normality of residual. It refers to the randomness in the residuals that is representing the error and normality of residual can be evaluated by observing the residuals on the scatterplot visually (Casson & Farmer, 2014). This assumption was met because the

scatterplot showed (refer to Figure 4.1) majority of the residuals fall approximately around the zero or the horizontal line (Field, 2009).

Homoscedasticity. Homoscedasticity refers to the variance of errors are similar across all the independent variables (Osborne & Waters, 2002). This assumption was met because the scatterplot showed (refer to Figure 4.1) majority of the residuals fall approximately around the zero or the horizontal line (Field, 2009).

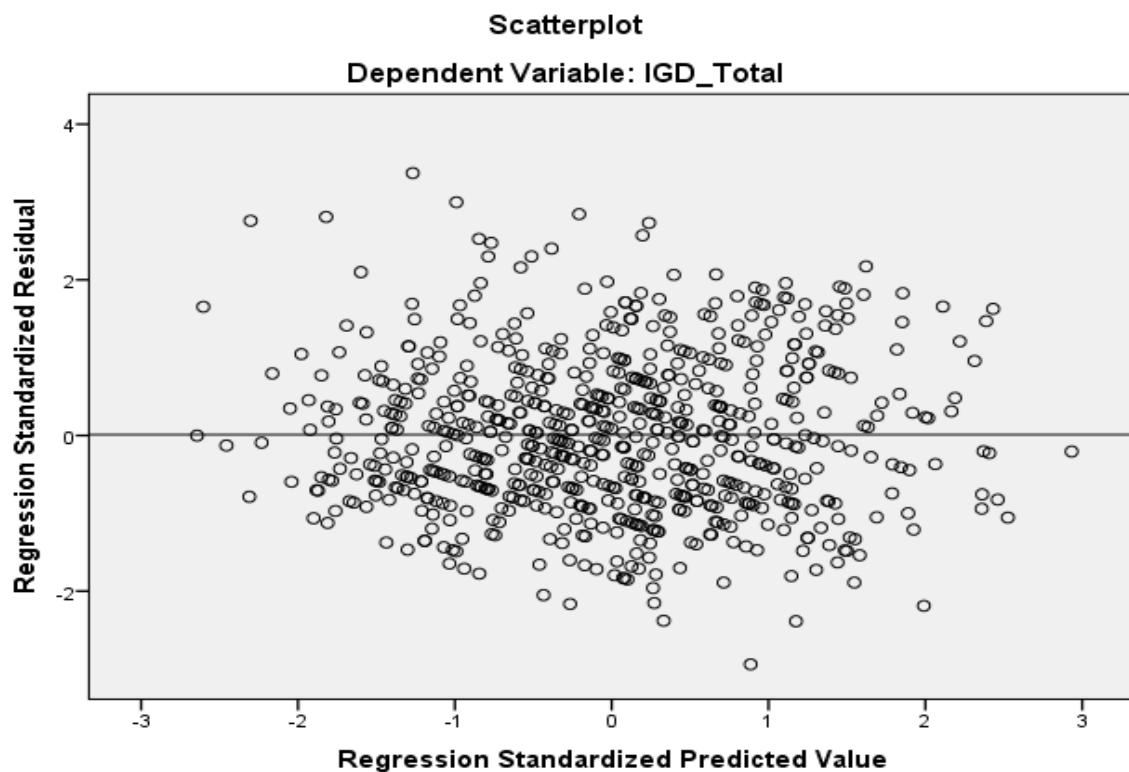


Figure 4.1. Linearity of residual, normality of residual and homoscedasticity among variables

Multivariate outliers. According to Casewise Diagnostics (refer to Appendix I, p. 110), 24 cases which included B33, B86, B89, B146, B172, B192, B198, B218, B284, B286, P2, P38, P40, P68, P129, P169, S13, S49, S54, S57, J17, J92, J128, J134 were shown to be potential multivariate outliers. Therefore, Mahalanobis Distance, Cook's Distance and Centered Leverage Value were examined to determine the exclusion of these cases. In term of Mahalanobis Distance, for dataset with more than 500 cases, with four predictors and p

value of .05, cases with more than 23.06 Mahalanobis Distance are highly influential on the regression parameters (Stevens, 2002). Furthermore, cases score more than one in Cook's Distance are likely to be labelled as influential cases (Cook & Weisberg, 1982). Lastly, in Centered Leverage Value, cases which are greater than two average leverage $(2(k + 1)/n)$, n is the sample size, k is the number of predictors, will be labelled as potential multivariate outliers (Hoaglin & Welsch, 1978), in the current study, the Centered Leverage Value was .014. After the analysis, no cases were considered as influential cases as it did not exceed Mahalanobis Distance of 23.06, Centered Leverage Value of .014 and Cook's Distance of one.

Multicollinearity. Multicollinearity refers to high correlation between the predictors as high correlation between predictors will reduce the accuracy of estimation of the regression coefficients, and therefore, contributes to the inflation of associated standard error (Slinker & Glantz, 2008). When VIF values are below 10% and tolerance values are more than .10, it is said that the variables are not correlated (Daoud, 2017). Therefore, multicollinearity assumption was not violated in current study (refer to Table 4.4).

Table 4.4

Collinearity Statistics Table

Variable	Tolerance	VIF
Identification of avatar	.587	1.705
Achievement motivation	.438	2.281
Socialization motivation	.513	1.948
Immersion motivation	.434	2.303

Independence error. Durbin-Watson test should be between 1.5 and 2.5 indicating the values are independent (Gan & Ahmad, 2011), therefore the assumption was met (refer to Table 4.5).

Table 4.5

Durbin-Watson Table (Identification of Avatar, IGD's Symptoms, Achievement Motivation, Socialization Motivation, Immersion Motivation)

Model	Durbin-Watson
1	2.062

Independent variable: Achievement motivation, Socialization motivation, Immersion motivation and Identification of avatar

In conclusion, the assumptions of linearity of residual, normality of residual, homoscedasticity, no multivariate outliers, independent error were met and multicollinearity assumption was not violated in the current study.

Table 4.6

ANOVA Table of Multiple Linear Regression (Identification of Avatar, Achievement Motivation, Socialization Motivation, Immersion Motivation, and IGD's Symptoms)

Model	Sum of squares	Mean square	Sig.
1			
Regression	9152.788	2288.197	.000
Residual	20046.754	28.597	
Total	29199.542		

Table 4.7

Model Summary Table of Multiple Linear Regression (Identification of Avatar, Achievement Motivation, Socialization Motivation, Immersion Motivation, and IGD's Symptoms)

Model summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.560	.313	.310	5.348

Table 4.8

Coefficients Table of Multiple Linear Regression (Identification of Avatar, Achievement Motivation, Socialization Motivation, Immersion Motivation, and IGD's Symptoms)

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
	Model	B	Std. Error	Beta	t	Sig
1	(Constant)	6.518	1.138		5.729	.000
	Identification of avatar	.222	.025	.366	8.953	.000
	Achievement	.033	.031	.049	1.047	.295
	Socialization	-.133	.041	-.143	-3.285	.001
	Immersion	.199	.031	.303	6.373	.000

a. Dependent variable: IGD

Multiple linear regression analysis was used to test if the identification of avatar, achievement motivation, socialization motivation, and immersion motivation significantly predicted IGD's symptoms. The model was statistically significant (refer to Table 4.6), $F(2,407) = 15.463, p < .001$, adjusted $R^2 = .313$ and accounted for 31.3% of the variance (refer to Table 4.7). It was found that identification of avatar ($\beta = .366, p < .001$), socialization motivation ($\beta = -.143, p = .001$) and immersion motivation ($\beta = .303, p < .001$) significantly predicted IGD's symptoms, but not achievement motivation ($\beta = .049, p = .295$) (refer to Table 4.8). Identification of avatar was found to be the strongest predictor of IGD's symptoms. The results indicated that hypotheses H3 and H4 were supported, while H1 and H2 were not supported (refer to Table 4.9).

Table 4.9

Table of Summary of Result

Hypotheses	Standardized Beta- β	p value	Decision
H1: Achievement motivation positively predicts the symptoms of IGD	.049	.295	Not supported

Table 4.9 (Continue)

Table of Summary of Result

Hypotheses	Standardized Beta- β	<i>p</i> value	Decision
H2: Social motivation positively predicts the symptoms of IGD	-.143	.001	Not supported
H3: Immersion motivation positively predicts the symptoms of IGD.	.303	.000	Supported
H4: Identification of avatar positively predicts the symptoms of IGD.	.366	.000	Supported

Chapter V

Discussion

H1: Achievement motivation positively predicts the symptoms of IGD

The multiple linear regression model shows that achievement motivation is not a significant predictor of IGD's symptoms. The current study has found an inconsistent finding as past studies which supported that achievement motivation was, in fact, a significant positive predictor of problematic gaming behaviour (Carlisle, 2017; Klimmt et al., 2009).

Some of the past findings explained that achievement motivation is a significant positive predictor of IGD's symptoms because the psychological needs of achievement of problematic gamers can be satisfied primarily through engaging in online games (Khan & Muqtadir, 2016). However, the inconsistency in the current study's finding may be due to the sense of achievement or feeling of competence can be widely gained in many other aspects in one's daily life other than merely from the perspective of gaming behaviour. A study shows that there are numerous motivations that could affect the achievement motivational level in people, for example, in terms of personal, social, and educational areas of motivations (Kavousipour et al., 2015). For instance, people are able to obtain a sense of achievement through their academic accomplishment (Singh, 2011), working experiences (Harmania & Nessa, 2016), volunteerism behaviours (Hamzah, Suandi, Shah, Ismail, & Hamzah, 2016) and also through gaming behaviour (Uysal & Yildirim, 2016). Thus, it could be possible that the gamers in the current study have already fulfilled their psychological needs of achievement in other areas of daily life.

Furthermore, achievement motivation plays an important role in an individual's life, such as it is associated with psychological well-being (Nisa, Qasim, & Sehar, 2017), impact on cognitive control (Zhao, Jia, & Maes, 2018), and produce better work performances

(Ogunleye & Osekita, 2016). It could be logically inferred that people will tend to seek the sense of achievement in different areas due to its importance in individuals' life and shift to another if the previous area does not provide such sense of achievement or feeling of competence. Thus, when online gaming does not provide the sense of achievement for the gamers, they would focus on the other areas to obtain their sense of achievement such as in working, academic or volunteer work.

H2: Social motivation positively predicts the symptoms of IGD

The multiple linear regression model shows that social motivation is a significant negative predictor of IGD's symptoms. The current study shows a consistent result with the past studies (Carras, Van Rooij, Van de Mheen, Musci, Xue, & Mendelson, 2017; Kim, Namkoong, Ku, & Kim, 2008), which the relationship refers to when an individual's social motivation increases, the IGD's symptoms decrease. However, several past studies showed contradict findings stated that social motivation is a significant positive predictor of online gaming addiction or IGD's symptoms (Carlisle, 2017; Blinka & Mikuška, 2014). One of the researchers explained that the positive predictive relationship could be due to gamers with high social motivation enjoy developing friendships, social support, and to obtain gratification for a sense of relatedness in the virtual gaming community, thus, lead to the development of IGD's symptoms (Carlisle, 2017).

However, social motivation was found to be a significant negative predictor of IGD's symptoms in the current study. One of the possible explanations could be due to gamers in the current study have satisfied their needs of relatedness with others in other aspects of daily life, therefore, engaging in the online gaming community to socialize is not the main priority for those players. For instance, people are also able to fulfil their psychological needs of relatedness by joining social work and belong to a certain group (Crisp, 2010), by developing

meaning in life (Stavrova & Luhmann, 2016), and interacting on social networking sites (Ryan, Allen, Gray, & McInerney, 2017).

Next, because if gamers have high social motivation towards gaming, it can be logically assumed that they will also have high IGD's symptoms, however; the contradict findings in the current study may be due to online gaming community does not provide sufficient opportunity for them to socialize, such as face-to-face interaction in offline world, therefore, their high social motivation cannot be fulfilled in the gaming community, as a consequent, they might have shifted their attention to other aspects of daily life. For instance, some studies found that Internet interactions, such as interaction on virtual gaming community, were viewed as being inferior overall as compared to face-to-face interactions (Baym, Zhang, & Lin, 2004; Green, Hilken, Friedman, Grossman, Gasiewski, Adler, & Sabini, 2005), thus, they might focus on other ways to obtain the sense of relatedness instead of continuing spending time on online game, and therefore, this may be able to explain why people with high social motivation in gaming will have a low IGD's symptoms in the current study.

H3: Immersion motivation positively predicts the symptoms of IGD

The multiple linear regression model shows that immersion motivation is a significant positive predictor of IGD's symptoms. Findings of the current study show a consistent result with the past studies, which immersion motivation was found to be a significant positive predictor of problematic online gaming behaviour (Khan & Muqtadir, 2016; Kneer & Glock, 2013; Kneer & Rieger, 2015).

One possible explanation for the current finding could be due to gamers in the study are immersion motivated because virtual gaming world is able to provide them appealing characteristics such as fantasy which cannot be found in the physical world. Therefore, they

are motivated to play as it provides them with the room for imagination. For example, online games allow gamers to “live” in the fantasy world and build their imaginative world in the virtual community (Steinkuehler & Williams, 2006). Moreover, when gamers are immersed in the virtual gaming world, they experience happiness and enjoyment, which serves as a positive reinforcement that encourages them to repeat the same way of coping with life problems. For instance, immersion engages the gamers because of the pleasant feelings, keeping them dedicated to the game, and later motivates them to return. Gamers will experience a sense of pleasure and satisfy their psychological needs when they are immersed in an online game (Teng, 2010).

Furthermore, this finding may be due to gamers use gaming as a coping mechanism that helps them to run away from real life’s negativity and then immerse themselves in the virtual world. For instance, whenever they experience negative issues in life, they choose to spend more time on gaming in order for them to escape and therefore, slowly develop into problematic gaming behaviour such as IGD’s symptoms. This explanation is further reinforced by a model known as compensatory Internet use which stating that people go online to escape real life issues or alleviate dysphoric moods and that sometimes leads to addiction negative outcome (Kardefelt-Winther, 2014b). This explanation is also supported by several past researchers (Khan & Muqtadir, 2016; Sheng-Wan & Bin-Chiou, 2006; Sterling, 2017; Suárez, Thio, & Singh, 2012).

H4: Identification of avatar positively predicts the symptoms of IGD.

In the current study, the multiple regression model shows that identification of avatar is a significant positive predictor of IGD’s symptoms. It is consistent with the past studies that showed identification of avatar had a significant positive predictive effect on IGD’s symptoms (Burleigh et al., 2017; Sioni et al., 2017).

MOBA games usually provide various different characters for gamers to choose as a representation of themselves in the game. Avatars in the games will often become more excel or advance as the levels go up, and as gamers gradually develop familiarity with the avatars, they might develop a psychological dependence on the avatars. Thus, they then identify themselves as the avatars in the game and form an emotional connection with it (Bessièrè, Seay, & Kiesler, 2007; Zhong & Yao, 2013). Therefore, it can be explained that as gamers spend more time in gaming, the emotional connection develops stronger and eventually leads to problematic gaming behaviour.

Another possible reason to explain the current result is gamers identify themselves with the avatar in order to meet some self-expectations where they cannot fulfil in reality, and then they behave and do things they wish to do in reality but unable to, in the gaming world. For example, gamers with a poor sense of selves will tend to identify with the avatars which helps them to minimize their self-discrepancy and form a desirable social identity they wish to have in the gaming community. This explanation is supported by past researchers Li, Liao, and Khoo (2011), they have proposed a model known as the discrepancy-reduction model of gaming which supports the idea of gamers are being motivated to engage in playing online games because it minimizes the gap between their actual selves and the ideal selves. Therefore, it is hypothesized that gamers in current study identify themselves with their avatars because it reduces their self-discrepancies between their real selves and avatar, therefore, this positive feeling will encourage them playing and eventually lead of the development of IGD's symptoms.

Limitations

The current study has provided a better and more in-depth understanding of the predictive relationship of identification of avatar, achievement, social and immersion

motivations on IGD's symptoms in Malaysia context. However, there are some inevitable limitations in the present study. Firstly, disproportionate of male and female participants in the current study. In the present study, there were 506 of male participants which consisted of 71.7% while 200 of female participants which consisted of 28.3%. It is known as a limitation because male and female have different gaming behaviours in terms of motivations for gameplay and also different game style preferences (Williams, Consalvo, Caplan, & Yee, 2009), meanwhile females are also having a higher probability to be underrepresented for the amount of time they use on Internet online games (Shaw, 2012). Therefore, the outnumber of male participants in the study may overrepresent the current findings and generalize to the population inaccurately.

Secondly, disproportionate races ratio. Malaysia is a multi-race country which consists of the ethnic groups of *Bumiputera* (61.7%), Chinese (20.8%), Indian (6.2%), other (0.9%) (Malaysia Demographics Profile, 2018). However, out of a total number of 706 respondents in the current study, there were 402 Chinese which accounted for 56.9%, 177 Malays which was 25.1%, 104 Indians which was 14.7%, and 23 others which consisted of 3.3%. Most of the respondents in the present study were Chinese and it showed a disproportion ratio as the population ratio. Therefore, the collection of data and information from other races in this study were insufficient compared to Chinese and hence, the findings from the current study might not be well fit to generalize into other races in Malaysia.

Thirdly, self-report questionnaire. This can raise the issue of some of the respondents might fake their responses in order to manage their impressions that fit with the societal norm. Some possible biased responses, for instance, social desirability bias and positivity bias may lead to inaccurate findings in the current study. Besides, the current study's questionnaire consisted a large number of total 63 items. Thus, another issue, acquiescence response bias may arise, which it refers to the tendency to agree with the questionnaire items

without considering its content, and it is an important concern in survey design (Lelkes & Weiss, 2015). As a consequence, participants may lose their patience while completing the long questionnaire and lead to simply responding to the items which may contribute to biased results.

Fourthly, inclusion of inadequate predictors. In the present study, there were only four predictors in predicting IGD's symptoms, which included identification of avatar, achievement, social and immersion motivations. In the findings of this study, it showed that the adjusted R squared was low, which refers to the percentage of total variance that is being explained by the predictors (Bar-Gera, 2017), it only explained 31.3% of the predictive effect of current study. Therefore, there are more than 60% of the relationship between the predictors and outcome variables which has not been explored by the present research.

Next, the use of cross-sectional study in current study. Cross-sectional study is a research method that collects data at one time and describes the features of a population or the variations exist among different populations at a specific time (Shaughnessy et al., 2012). However, because of IGD's symptoms are progression symptoms that may change across time, thus, using cross-sectional study design may not able to examine the nature of the progression of IGD's symptoms.

Lastly, the current study did not include adolescents in the sample. Adolescent is one of the groups that are susceptible to develop addiction towards online games, for instance, adolescents are remarkably vulnerable and interested during this phase and can use Internet as a medium of release and this can lead to an addiction (Karacic & Oreskovic, 2017), however, participants who are below 18 years old were excluded from current study due to difficulty to obtain parental consent. In Malaysia, literatures that study on MOBA games and

IGD's symptoms among adolescents is limited, therefore, there might be important information regarding adolescents and IGD's symptoms are yet to be explored.

Recommendations

There are several recommendations for future research to further consolidate and enrich the IGD's symptoms literature. Firstly, future research should collect a proportionate amount of male and female gamers in the study. This can ensure the generalizability of the results to the population more accurately instead of males overrepresenting in the findings. For instance, research design with disproportionate male and female or overrepresent a certain gender may cause systematic gender dependent errors to be produced in results because of gender insensitivity or androcentrism (Ruiz-Cantero et al., 2007).

Secondly, proportionate races ratio. Future study should collect the data in the ratio of similar to the population of Malaysia such as 7:2:1 in terms of Malay, Chinese and Indian population respectively. Furthermore, future study can also focus on minority ethnic in Malaysia such as Kadazan-Dusun and Iban. This can increase a more comprehensive understanding of the pattern of IGD's symptoms among these races as different cultural backgrounds and lifestyles might influence the relationship.

Thirdly, obtain measure of the predictor variables from different sources rather than only self-report method. Because self-report results may be affected by social desirability bias and one way of controlling for it is to collect the measures of these variables from different sources (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). For instance, when collecting data for the severity of IGD's symptoms, it can also include the data of the significant others in rating the target participant from their daily observation of the participants. Furthermore, interview can also be used to collect gaming information from the gamers. One of the advantages of using interview as data collection method is interviewees

can answer the questions based on what they truly think and experience, instead of choosing the most accurate item in the questionnaire. For instance, interviewees can express their viewpoint, freely, without a framework imposed by the researcher (Bolderston, 2012).

Fourthly, other potential variables could be examined in future research of IGD's symptoms in order to enrich the IGD literature. As the research of IGD's symptoms in Malaysia is still limited, there are more information still need to be explored. For example, future research could include sex, racial, or Big Five personality in predicting IGD's symptoms. For example, past studies have found that personality does play a role in predicting an individual's gaming behaviour (Seok & DaCosta, 2015; Worth & Book, 2015) and even different motivations for gameplay (Jeng & Teng, 2008). However, such research is limited, especially in the field of the MOBA game in Malaysia culture. Thus, including different variables in IGD's research can help to increase the understanding and the exploration of the development of IGD's symptoms.

Besides, different research design could be implemented in future research of IGD's symptoms such as longitudinal study, experimental study or interview study. For example, suggesting longitudinal study is because the development of gaming addiction behaviours might change across time due to the changing in stages of life and responsibilities. For example, using longitudinal research method may shed light on how does the development of IGD's symptoms progress according to the gamers' experience across life stages. Longitudinal study can also answer the question of what are the important risk factors for the development of IGD's symptoms, as there is little evidence to support who is most at risk of developing IGD's symptoms (Gentile et al., 2017). Several empirical past studies have applied longitudinal research method to study problematic Internet gaming behaviours (Scharnow, Festl, & Quandt, 2014; Wartberg, Kriston, Zieglmeier, Lincoln, & Kammerl, 2018).

Lastly, future research should widen the age group of the participants such as from adolescents to youths in Malaysia, therefore, future researchers can compare the findings regarding adolescent and youth in order for mental health professionals to design intervention that is suitable for different age groups. Furthermore, early detection of the possible risky participant in developing IGD's symptoms can also be helped by receiving appropriate treatment from professionals.

Implications

Theoretical implications. The theory applied in this study to explain the predictive effect of achievement, immersion and socialization motivations on IGD's symptoms was Self-Determination Theory (SDT). Furthermore, the current study contributes to the growth of literature of IGD's symptoms among MOBA gamers in Malaysia, a topic which has not been received adequate scholarly attention, particularly in Malaysia context. Hence, this helps to broaden and deepen the perspective literature which fits into the culture of Malaysian context.

Besides, the current study has found that achievement motivation is not a significant predictor of IGD's symptoms. However, there are past studies done in Western culture showed that achievement motivation is a significant positive predictor of IGD's symptoms or problematic gaming behaviour (Carlisle, 2017; King et al., 2018). Therefore, current study finding has provided an insight to this theory that cultural differences may play a role in affecting an individual's way to pursue achievement, for instance, different culture views achievement motivation in a different perspective (Trumbull & Rothstein-Fisch, 2011).

Moreover, the current study also helps to identify and understand high immersion motivation and low social motivation are the factors that driven gamers to develop IGD's symptoms. However, Self-Determination Theory did not support the insignificant predictive

relationship between achievement motivation and IGD's symptoms and also the negative predictive relationship between social motivation and IGD's symptoms which was found in this study. Therefore, this contradiction may serve as an insight for future researchers to search for possible explanations for this inconsistency and contribute to the growth of the theory.

Another theory used in the current study is Social Identity Theory. This theory is used to explain the predictive relationship of identification of avatar on IGD's symptoms. Based on the findings of the current study, Social Identity Theory is able to describe how identification of avatar significantly predicted IGD's symptoms. Gamers tend to identify themselves with their avatars and form their own desired social identity in the virtual gaming environment. Hence, it creates a sense of belongingness to a particular gaming group.

In addition, Social Identity Theory in the current study also able to provide a better understanding on the gaming trend such as the introduction of new in-game character whether or not will intensify the IGD's symptoms due to the psychological connection with the character and leads to over identification of avatar by a gamer. Therefore, further research on this theory with a similar topic is recommended.

Practical implications. Current study provides a better knowledge of the predictors of IGD's symptoms among Malaysia youths, thus, mental health practitioners are able to tailor and design better interventions with more extensive information and preventions in order to control the development of IGD's symptoms, especially for people in the age range of 18 to 29 years old.

Firstly, the present study has found that social motivation has a significant negative predictive effect on IGD's symptoms. Therefore, mental health professionals can design programmes or psychoeducation in order to teach people the ways to expand real-life social

contacts and promotion of social support, thus, gamers do not need to satisfy their relatedness needs merely from online gaming community. As a consequence, gamers' needs for relatedness can be gratified in real social life, thus, decreases the IGD's symptoms.

Secondly, the present study has found that immersion motivation is a significant positive predictor of IGD's symptoms. Therefore, mental health professionals can design their interventions that educate youth in Malaysia to adopt healthy coping mechanisms to deal with daily stress instead of immersing themselves in online game as an escape. Hence, a more beneficial and effective approach will be able to enhance the treatment in clinical setting.

Thirdly, the present study has found that identification of avatar is a significant positive predictor of IGD's symptoms. Thus, mental health services providers can use the current finding to provide interventions for youth in Malaysia regarding healthy identity formation and self-enhancement programs that encourage building a meaningful self-identity outside the virtual world.

Lastly, online service providers and system developers may have a different perspective that could also be informed by current findings. They may be interested in increasing gamers' engagement because their revenues are often associated with user activity. However, as present findings show, people who have high identification of avatar, immersion motivation and low social motivation will tend to develop IGD's symptoms. Thus, such service providers and developers can work with mental health practitioners in order to strike a balance such as promote playing, while avoiding yielding high addiction levels.

In conclusion, the present study has achieved the objectives to examine the predictive effects of achievement, social, immersion motivations and identification of avatar on IGD's symptoms among youth in Malaysia. The current finding has found that social motivation is a

significant negative predictor of IGD's symptoms, while immersion motivation and identification of avatar are significant positive predictor of IGD's symptoms, however, achievement motivation was found to be a not significant predictor of IGD's symptoms. The results indicated that the people with high immersion motivation, low social motivation and high identification of avatar will significantly predict the IGD's symptoms. Furthermore, the current study has provided a new finding that could enrich the IGD literature in Malaysia context, and also provide useful implications to relevant mental health professionals in order to implement effective interventions for youth in Malaysia, with the goal of promoting a healthy gaming behaviour.

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Appendix A

Questionnaire

Introduction

This research study is being conducted to examine “The Determinants of Internet Gaming Disorder’s Symptoms among Multiplayer Online Battle Arena (MOBA) Gameplayers”. Your participation in this survey is highly appreciated.

Procedures

The questionnaire consists of six sections, which are **Section A, Section B, Section C, Section D, Section E and Section F**. You are required to complete **ALL** the sections. This survey will take approximately 15 to 20 minutes to complete.

Potential Risks and Benefits

There are no foreseeable physical or non-physical risks from your participation in this study. There are no direct benefits from taking part in this research. However, your participation will help us get more information and learn more about the relationships between the selected key variables of the study.

Participation

Participation in this study is completely voluntary. If you decide not to participate there will not be any negative consequences. Please be aware that if you decide to participate, you may stop participating at any time.

Confidentiality

Your responses are completely anonymous and all information will be kept in confidential. The information given will only be used for academic purposes.

Contact

If you have any questions, or would like a copy of this consent letter, please contact me at tngst@utar.edu.my.

Please ensure that you have fulfilled the following criteria:

- Age between 18 and 29 years old
- Have experience playing MOBA games (DOTA 2, League of Legends, Mobile Legends etc) at least 12 months period
- Is NOT a professional gamer

Please provide your signature to indicate that you have agreed to participate in the present study.

Thank you in advance for your participation.

Signature : _____

Email address/contact number : _____

Section A

Please put on [✓] to answer the following questions:

- | | |
|---|------------------------------|
| 1. Age | [] |
| 2. Sex | Male [] |
| | Female [] |
| 3. Relationship Status | Single [] |
| | Married [] |
| | In relationship [] |
| | Separated/Divorced [] |
| 4. Race | Malay [] |
| | Chinese [] |
| | Indian [] |
| | Others: _____ [] |
| 5. Employment Status | Employed [] |
| | Unemployed [] |
| | Others (e.g., Student) [] |
| 6. Educational Level | Secondary School/Pre-U [] |
| | Diploma [] |
| | Bachelor Degree [] |
| | Postgraduate Degree [] |
| 7. Gaming Frequency (per week) | 0 – 1 time [] |
| | 2 – 4 times [] |
| | 5 – 8 times [] |
| | 9 times and above [] |
| 8. Average Gaming Duration (per day) | 1 hour and below [] |
| | 2 to 4 hours [] |
| | 5 to 7 hours [] |
| | 8 to 10 hours [] |
| | 11 hours and above [] |

9. Gaming Experience (in years)	1 year	[]
	2 to 4 years	[]
	5 to 7 years	[]
	8 to 10 years	[]
	11 years and above	[]
10. Starting Age of Playing Internet Games	[]	
11. Average Monthly Spend on Internet Games (RM)	0 – 100	[]
	101 – 200	[]
	201 – 300	[]
	301 – 400	[]
	401 - 500	[]
	501 and above	[]
12. Do you have family member(s) play Internet games?	Yes	[]
	No	[]

Section B

These questions will ask about your gaming activity during the past year:

	1 Never	2 Rarely	3 Sometimes	4 Often	5 Very Often
1	Do you feel preoccupied with your gaming behaviour? (Examples: Do you think about previous gaming activity or anticipate the next gaming session? Do you think gaming has become the dominant activity in your daily life?)				1 2 3 4 5
2	Do you feel more irritability, anxiety or even sadness when you try to either reduce or stop your gaming activity?				1 2 3 4 5
3	Do you feel the need to spend increasing amount of time engaged gaming in order to achieve satisfaction or pleasure?				1 2 3 4 5
4	Do you systematically fail when trying to control or cease your gaming activity?				1 2 3 4 5
5	Have you lost interests in previous hobbies and other entertainment activities as a result of your engagement with the game?				1 2 3 4 5

- | | | | | | | |
|---|--|---|---|---|---|---|
| 6 | Have you continued your gaming activity despite knowing it was causing problems between you and other people? | 1 | 2 | 3 | 4 | 5 |
| 7 | Have you deceived any of your family members, therapists or others because the amount of your gaming activity? | 1 | 2 | 3 | 4 | 5 |
| 8 | Do you play in order to temporarily escape or relieve a negative mood (e.g., helplessness, guilt, anxiety)? | 1 | 2 | 3 | 4 | 5 |
| 9 | Have you jeopardised or lost an important relationship, job or an educational or career opportunity because of your gaming activity? | 1 | 2 | 3 | 4 | 5 |

Section C

The following questions require you to report your feelings toward your main character (avatar) in your gameplay:

- | | | | | | | |
|----|---|---|---|---|---|-----------------------|
| | 1-----2-----3-----4-----5 | | | | | |
| | Strongly Disagree | | | | | Strongly Agree |
| 1 | When my character is facing danger in the game, I feel nervous. | 1 | 2 | 3 | 4 | 5 |
| 2 | I feel the same disappointment when my character experiences a failure in the game. | 1 | 2 | 3 | 4 | 5 |
| 3 | When my character achieves his/her goals, I feel happy. | 1 | 2 | 3 | 4 | 5 |
| 4 | I feel the same joy my character experiences when a task is accomplished. | 1 | 2 | 3 | 4 | 5 |
| 5 | I have forgotten my surroundings during the game. | 1 | 2 | 3 | 4 | 5 |
| 6 | I have forgotten myself during the game. | 1 | 2 | 3 | 4 | 5 |
| 7 | I feel as if I am physically in the game world during the game. | 1 | 2 | 3 | 4 | 5 |
| 8 | I never regret that I play my game character. | 1 | 2 | 3 | 4 | 5 |
| 9 | I am proud to play the character I am playing | 1 | 2 | 3 | 4 | 5 |
| 10 | Other gamers are happy to be friends with my game character. | 1 | 2 | 3 | 4 | 5 |
| 11 | My co-gamers have high respect for my character. | 1 | 2 | 3 | 4 | 5 |
| 12 | The characters I play reflect who I am. | 1 | 2 | 3 | 4 | 5 |

13	My character and I are one and the same.	1	2	3	4	5
14	The characters I play influence the way I feel about myself.	1	2	3	4	5
15	The characters I play are important to my sense of what kind of a person I am.	1	2	3	4	5

Section D

The following questions ask about your motivations of online gaming.

1) How interested are you in the precise numbers and percentages underlying the game mechanics? (i.e, chance of dodging an attack, the math comparing dual-wield to two-handed weapons, etc.)

- Not Important At All
- Slightly Important
- Somewhat Important
- Very Important
- Extremely Important

2) How important is it to you that your character is as optimized as possible for their profession / role?

- Not Important At All
- Slightly Important
- Somewhat Important
- Very Important
- Extremely Important

3) How often do you use a character builder or a template to plan out your character's advancement at an early level?

- Never
- Seldom
- Sometimes
- Often
- Always

4) Would you rather be grouped or soloing?

- Much Rather Group
- Rather Group
- In-Between
- Rather Solo
- Much Rather Solo

5) How important is it to you that your character can solo well?

- Not Important At All
- Slightly Important
- Somewhat Important
- Very Important

Extremely Important

6) How much do you enjoy working with others in a group?

Not At All

A Little

Some

A Lot

A Great Deal

7) How important is it to you to be well-known in the game?

Not Important At All

Slightly Important

Somewhat Important

Very Important

Extremely Important

8) How much time do you spend customizing your character during character creation?

Not At All

A Little

Some

A Lot

A Great Deal

9) How important is it to you that your character's armor / outfit matches in color and style?

Not Important At All

Slightly Important

Somewhat Important

Very Important

Extremely Important

10) How important is it to you that your character looks different from other characters?

Not Important At All

Slightly Important

Somewhat Important

Very Important

Extremely Important

11) How much do you enjoy exploring the world just for the sake of exploring it?

Not At All

A Little

Some

A Lot

A Great Deal

12) How much do you enjoy finding quests, NPCs or locations that most people do not know about?

Not At All

A Little

Some

A Lot

A Great Deal

13) How much do you enjoy collecting distinctive objects or clothing that have no functional value in the game?

- Not At All
 - A Little
 - Some
 - A Lot
 - A Great Deal*
-

How important are the following things to you in online games?

1) Levelling up your character as fast as possible.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

2) Acquiring rare items that most players will never have.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

3) Becoming powerful.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

4) Accumulating resources, items or money.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

5) Knowing as much about the game mechanics and rules as possible.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

6) Having a self-sufficient character.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

7) Being immersed in a fantasy world.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

8) Escaping from the real world.

- Not Important At All
- Slightly Important
- Moderately Important
- Very Important
- Tremendously Important

How much do you enjoy doing the following things in online games?

1) Helping other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

2) Getting to know other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

3) Chatting with other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

4) Competing with other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

5) Dominating/killing other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

6) Exploring every map or zone in the world.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

7) Being part of a friendly, casual guild.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

8) Being part of a serious, raid/loot-oriented guild.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

9) Trying out new roles and personalities with your characters.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

10) Doing things that annoy other players.

- Not Enjoyable At All
- Slightly Enjoyable
- Moderately Enjoyable
- Very Enjoyable
- Tremendously Enjoyable

How often do you do the following things in online games?

1) How often do you find yourself having meaningful conversations with other players?

- Never
- Seldom
- Sometimes
- Often
- Always

2) How often do you talk to your online friends about your personal issues?

- Never
- Seldom
- Sometimes
- Often
- Always

3) How often have your online friends offered you support when you had a real life problem?

- Never
- Seldom
- Sometimes
- Often
- Always

4) How often do you make up stories and histories for your characters?

- Never
- Seldom
- Sometimes
- Often
- Always

5) How often do you role-play your character?

- Never
- Seldom
- Sometimes
- Often
- Always

6) How often do you play so you can avoid thinking about some of your real-life problems or worries?

- Never
- Seldom
- Sometimes
- Often
- Always

7) How often do you play to relax from the day's work?

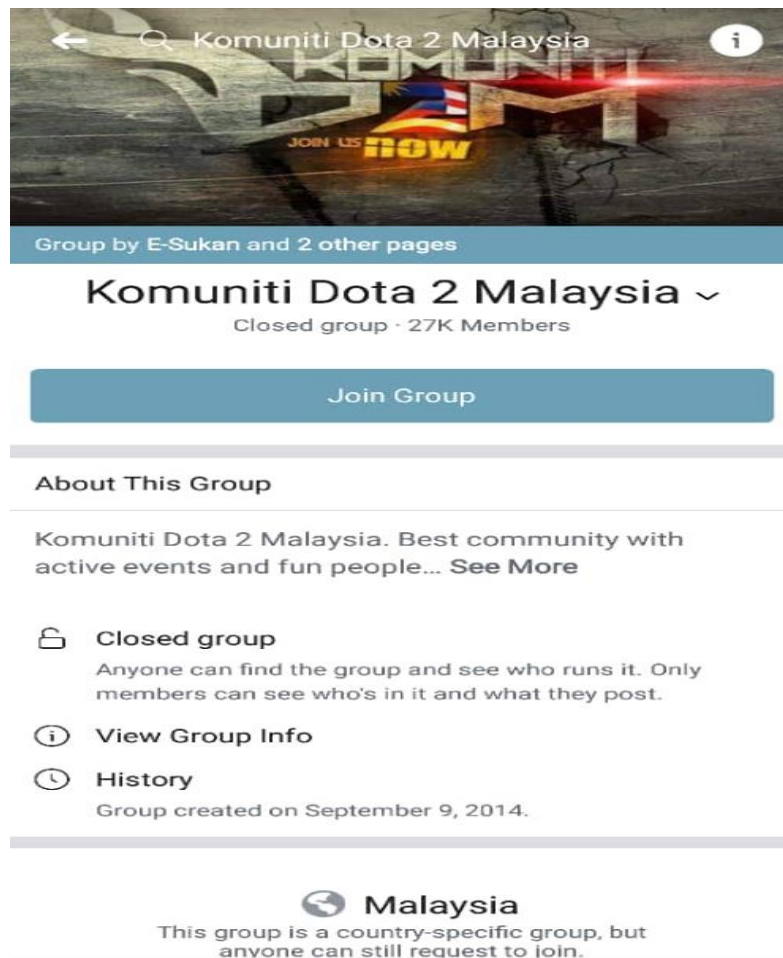
- Never
- Seldom
- Sometimes
- Often
- Always

8) How often do you purposefully try to provoke or irritate other players?

- Never
- Seldom
- Sometimes
- Often
- Always

-THE END-

Appendix B
Facebook Groups and Pages



The screenshot shows the Facebook group page for 'Komuniti Dota 2 Malaysia'. At the top is a cover image with the group name and a 'JOIN US NOW' call to action. Below the cover, it indicates the group is created by 'E-Sukan and 2 other pages'. The group name 'Komuniti Dota 2 Malaysia' is displayed with a dropdown arrow, and it is identified as a 'Closed group' with '27K Members'. A prominent blue 'Join Group' button is visible. The 'About This Group' section describes it as a community for active events and fun people. It lists the group type as 'Closed group', provides a 'View Group Info' link, and shows the group was created on September 9, 2014. At the bottom, a 'Malaysia' location tag is present, noting that it is a country-specific group where anyone can still request to join.

Komuniti Dota 2 Malaysia

Group by E-Sukan and 2 other pages


Komuniti Dota 2 Malaysia ▾


Closed group · 27K Members


Join Group


About This Group


Komuniti Dota 2 Malaysia. Best community with active events and fun people... [See More](#)

 **Closed group**
Anyone can find the group and see who runs it. Only members can see who's in it and what they post.

 **View Group Info**

 **History**
Group created on September 9, 2014.

 **Malaysia**
This group is a country-specific group, but anyone can still request to join.






Komuniti Dota 2 Ipoh/Perak ▾


Public group · 615 Members

[Join Group](#)

About This Group [SEE ALL](#)

Rules group ni sama macam group Komuniti Dota 2 Malaysia..sape yang dah biase dlm KD2M dah faham...

-  **Public group**
Anyone can find the group, see who's in it and what they post.
-  **View Group Info**
-  **History**
Group created on September 24, 2015.



Komuniti dota 2(zon malaysia) ▾




Public group · 932 Members


[Join Group](#)

About This Group [SEE ALL](#)

assalamualaikum dan salam sejahtera

group ini di tubu... [See More](#)

-  **Public group**
Anyone can find the group, see who's in it and what they post.
-  **View Group Info**
-  **History**
Group created on October 29, 2015.

 **Malaysia**
This group is a country-specific group, but anyone can still request to join.

This screenshot shows the Facebook group page for "League Of Legends Gamers". The group is a closed group. The cover image features the "LEAGUE OF LEGENDS" logo in a stylized, golden font. The left sidebar contains navigation options: About, Discussion, Chats, Members, Events, Videos, Photos, Find Players, and Files. Below the navigation is a search bar for the group and a list of shortcuts, including "League of Legends Mal...", "王者榮耀", "UAPP2073 Physiolo...", and "王者榮耀 首都古晋...". The main content area includes an "About This Group" section with a description: "Welcome to League of Legends Gamers group! This is an international League of Legends related group created for players from any server." It also provides a YouTube link: "Subscribe: https://www.youtube.com/lolwerze". To the right, there is a "HISTORY" section stating "Group created on August 7, 2014" and a "DISCOVER MORE ABOUT THIS GAME" section for "League of Legends" with 14,642,537 followers and an "Explore Game" button.

This screenshot shows the Facebook group page for "League of Legends Malaysia". The group is a public group. The cover image features a scene from the game with the "LEAGUE OF LEGENDS MALAYSIA" logo overlaid. The left sidebar contains navigation options: About, Discussion, Chats, Announcements, Members, Events, Videos, Photos, Find Players, and Files. Below the navigation is a search bar for the group and a list of shortcuts, including "League of Legends Mal...", "王者榮耀", "UAPP2073 Physiolo...", and "王者榮耀 首都古晋...". The main content area includes an "About This Group" section with a description: "League of Legends Malaysian Community. Share cool info and updates on LoL. See you on Summoner's Rift! P.S. We are following Garena and League of Legends Rules and Regulation (No Selling Acc PIs)". It also lists the "Group Type" as "Video Games" and shows "Members · 721". To the right, there is a "HISTORY" section stating "Group created on August 12, 2014" and a "DISCOVER MORE ABOUT THIS GAME" section for "League of Legends" with 14,642,540 followers and an "Explore Game" button. Below that is an "INVITE MEMBERS" section with a search bar and a "SUGGESTED MEMBERS" section with a "Hide" button.


Mobile Legends MoBa Malaysia
Closed group

- About
- Discussion
- Announcements
- Members
- Events
- Videos
- Photos
- Files

Search this group

Shortcuts

- League of Legends Mal...
- 王者荣耀
- UAPP2073 Physiolo...
- 王者荣耀 首都古晋文...
- UAPP3034 Abnormal P...



Joined ▾ Notifications Share More

About This Group

Description

JOIN Dengan Kami Dan Cari Teammate Anda Di Sini.

ATTENTION: SPAM ❌ IKLAN ❌ RACIST ❌

(Group ML Malaysia) Back To Classic Rules

HISTORY

Group created on October 1, 2016

Name last changed on January 21, 2017

[See More](#)

INVITE MEMBERS

+ Enter name or email address...


[OFFICIAL COMMUNITY] League of Legends Malaysia
Closed group

- About
- Discussion
- Chats
- Members
- Events
- Videos
- Photos
- Find Players
- Files

Search this group

Shortcuts

- League of Legends Mal...
- 王者荣耀
- UAPP2073 Physiolo...



Joined ▾ Notifications Share More

About This Group

Description

Welcome to the OFFICIAL group for League of Legends Malaysia Community.

◆NEVER GIVE UP TILL THE END OF THE GAME◆

✓STICKY RULES✓

1. This is NOT the place for you to express your anger and frustration in game.
2. Any post/c... See More

Group Type


HISTORY

Group created on February 2, 2011

Name last changed on August 15, 2018

[See More](#)


GROUP BY



League of Legends Malaysia Com
2,677 like this

[Shop Now](#)

DISCOVER MORE ABOUT THIS GAME

 League of Legends

Dota 2 大马华人玩家群 (D2CM)
Closed group

About

Discussion

Chats

Announcements

Members

Events

Videos

Photos

Search this group

Shortcuts

- League of Legends Mal...
- 王者荣耀
- UAPP2073 Physiolo... 1
- 王者荣耀 首都古晋交...
- UAPP3034 Abnormal P...

Joined ▾ Notifications ▾ Share ▾ More ▾

About This Group

Description

*****新公告*****
(入群必看!)
(卖家必看)

关于骗子最近依然猖狂
再次通知交易请小心 多面交
别再问我为什么不踢骗子出去
和踢我的假账号出去
这个假账号都没有在群裡面怎样踢呢? 骗子有十多个spy 户口, 我至少踢了300多个, 骗子依然存在其它户口在此群做spy, 然後用假户口pm你们, 请格外小心
多点和信誉卖家交易

我每天都爬贴搞好群, 结果到今天还有人觉得我那麼傻弄臭自己名字去骗人, 开玩笑也不是這樣的, 请大家成熟點, 尊重一下谢谢... [See More](#)

Group Type

Video Games

HISTORY

Group created on December 13, 2012

Name last changed on April 18, 2017

[See More](#)

INVITE MEMBERS

+ Enter name or email address...

SUGGESTED MEMBERS [Hide](#)

Friends

- Oscar Thong [Invite Member](#)
- Chang Dixon [Invite Member](#)

CREATE NEW GROUPS

Groups make it easier than ever to share with friends, family and teammates.

[Create Group](#)

王者荣耀吹水站
Closed group

About

Discussion

Announcements

Members

Events

Videos

Photos

Search this group

Shortcuts

- League of Legends Mal...
- 王者荣耀
- UAPP2073 Physiolo... 1
- 王者荣耀 首都古晋交...
- UAPP3034 Abnormal P...
- Dota 2 大马华人玩家... 1
- 王者荣耀 马来西亚交流群

Joined ▾ Notifications ▾ Share ▾ More ▾

About This Group

Description

本群群规与注意事项如下:

1. 禁止各种乞讨行为包括评论和私聊。
2. 禁发与游戏无关的离题贴。
3. 交易帖全面禁止, 除非通过审核。
需邀请20位朋友进群可以通过
4. 装B装大神炫耀贴可以发但别争执。
5. 找队友开黑请留下你的微信号。
6. 禁止分享或转载第三方网站无论和王者有没有关系。
需邀请30位朋友进群就可以通过
7. 交易请三思
8. 禁止微信扫描送皮肤文章

加发物内容有问题请立即举报。谢谢大家合作。

HISTORY

Group created on June 30, 2017

Name last changed on March 15, 2018

[See More](#)

GROUP BY

王者荣耀 最强攻略
55,921 like this

[Watch Video](#)

INVITE MEMBERS


+ Enter name or email address...

王者荣耀 Closed group

About Discussion Chats Members Events Videos Photos Find Players Files

Search this group

Shortcuts League of Legends Mal... 王者荣耀 UAPP2073 Physiolo... 王者荣耀 首都古晋... UAPP3034 Abnormal P... Dota 2 大马华人玩... See more



Joined Notifications Share More

About This Group


Group Type Video Games

HISTORY Group created on June 16, 2016 Name last changed on December 13, 2016 See More

GROUP BY 梦境商舖 400 like this Send Message


DISCOVER MORE ABOUT THIS GAME Arena of Valor 1,013,667 follow this game Explore Game

Members · 5,122



Shuhong is a member.

Admins



梦境商舖, 家贤 and 5 other members are admins.


INVITF MFMRFRS

王者荣耀—新交流区 Closed group

About Discussion Chats Announcements Members Events Videos Photos Files

Search this group

Shortcuts League of Legends Mal... 王者荣耀 UAPP2073 Physiolo... 王者荣耀 首都古晋交... UAPP3034 Abnormal P...



Joined Notifications Share More

About This Group

Description

欢迎加入马来西亚最大非官方王者荣耀手游FB群！

本群允许的贴必须与王者荣耀有关，其余文章一律视为离题贴！

不通过的帖子类型【无通知处理】

1. 没申请但在本群发买卖贴（删帖 禁言 拉黑）
2. 申请卖家了但没挂上编号（删帖，重犯附加禁言）
3. 吵架/爆粗/骂人/带节奏贴或评论（酌情处理）
4. 任何第三方网站链接（删帖，重犯附加禁言）
5. 申请卖家发帖超出3天2文（禁言12小时）
6. 任何扫码贴 红包群帖 乞讨帖 换其他游戏账号帖 游戏无... See More

Group Type

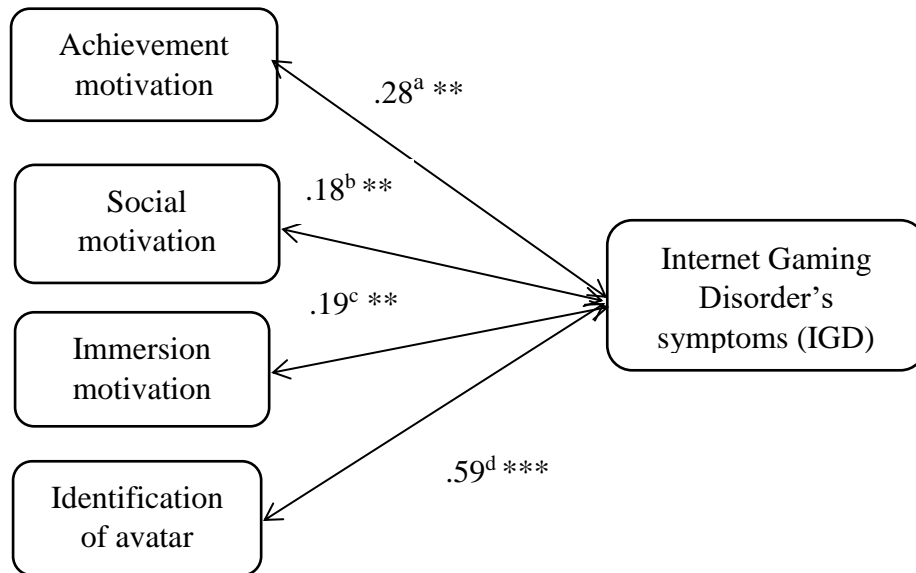
HISTORY Group created on December 9, 2015 Name last changed on November 28, 2017 See More

GROUP BY FS Production Online 194 like this Send Message

POPULAR TOPICS IN POSTS 战绩 (163) 佛系 (51) 福利 (39)

Appendix C

Pearson's Correlation of Variables from Past Studies



Correlation between Achievement Motivation, Social Motivation, Immersion Motivation and Identification of Avatar with Internet Gaming Disorder's symptoms

a, b, c adapted from Carlisle (2017) and d adapted from Sioni et al. (2017).

$$\text{Cohen's effect size, } f^2 = \frac{R^2}{1-R^2}$$

Effect size of achievement motivation, f_1^2

$$\begin{aligned} &= \frac{R^2}{1-R^2} \\ &= \frac{0.28^2}{1-0.28^2} \\ &= 0.0851 \end{aligned}$$

Effect size of social motivation, f_2^2

$$= \frac{R^2}{1-R^2}$$

$$= \frac{0.18^2}{1 - 0.18^2}$$

$$= 0.0335$$

Effect size of immersion motivation, f_3^2

$$= \frac{R^2}{1 - R^2}$$

$$= \frac{0.19^2}{1 - 0.19^2}$$

$$= 0.0375$$

Effect size of identification of avatar, f_4^2

$$= \frac{R^2}{1 - R^2}$$

$$= \frac{0.59^2}{1 - 0.59^2}$$

$$= 0.5339$$

Average effect size, f^2


$$= \frac{0.0851 + 0.0335 + 0.0375 + 0.5339}{4}$$

$$= 0.172$$

$$= 0.17$$

Appendix D

Soper's A-priori Sample Size Calculator for Multiple Regression

 A-priori Sample Size Calculator for Multiple Regression

This calculator will tell you the minimum required sample size for a multiple regression study, given the desired probability level, the number of predictors in the model, the anticipated effect size, and the desired statistical power level.

Please enter the necessary parameter values, and then click 'Calculate'.

Anticipated effect size (f^2): ?

Desired statistical power level: ?

Number of predictors: ?

Probability level: ?

Calculate!

Minimum required sample size: 122

▶ Related Resources

 Formulas  References  Related Calculators  Search

Appendix E

Critical Values Table for Mahalanobis Distance

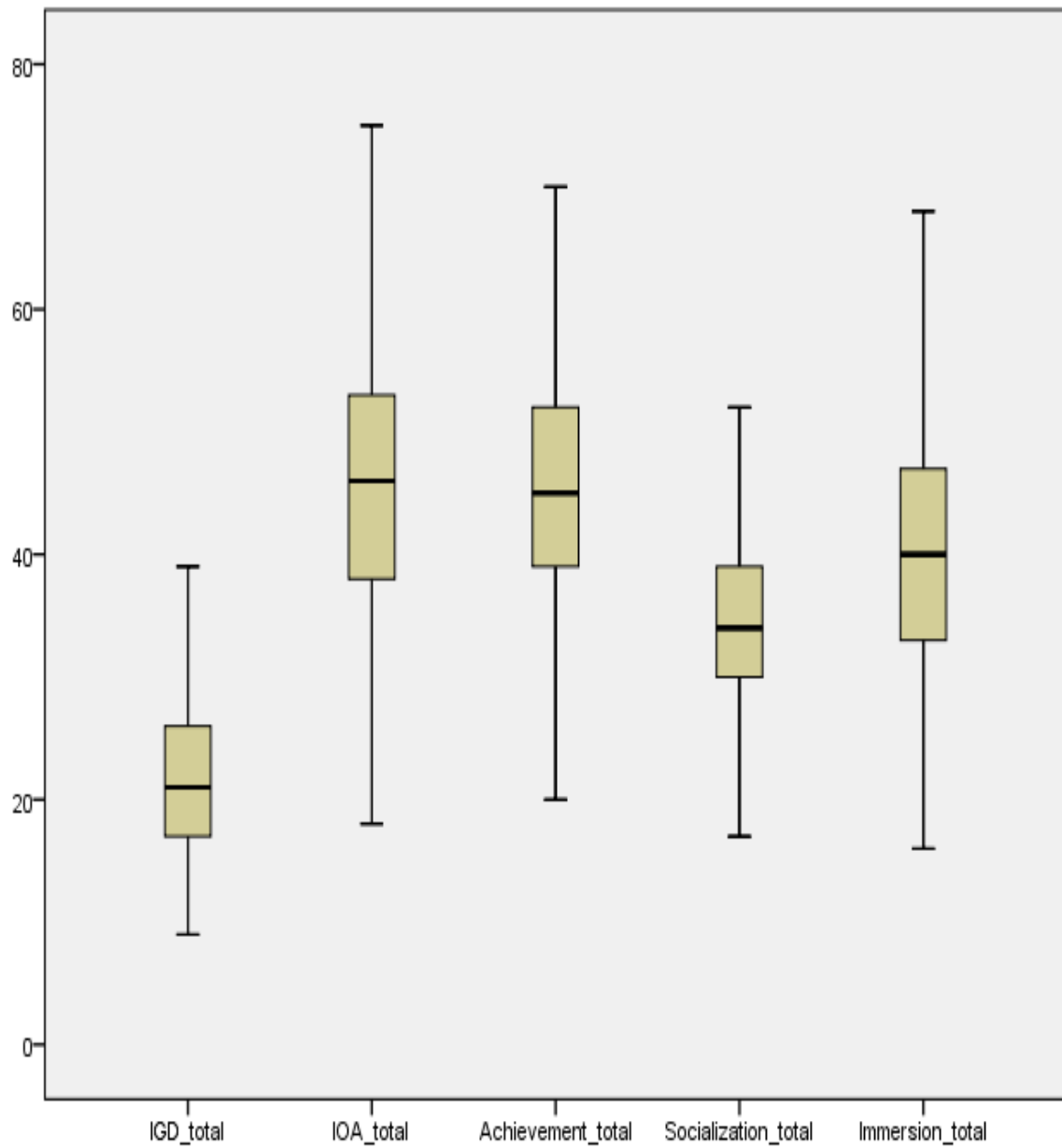
Critical Values for an Outlier on the Predictors as Judged by Mahalanobis D^2

<i>n</i>	<i>Number of Predictors</i>								
	<i>k = 2</i>		<i>k = 3</i>		<i>k = 4</i>		<i>k = 5</i>		
	5%	1%	5%	1%	5%	1%	5%	1%	
5	3.17	3.19							
6	4.00	4.11	4.14	4.16					
7	4.71	4.95	5.01	5.10	5.12	5.14			
8	5.32	5.70	5.77	5.97	6.01	6.09	6.11	6.12	
9	5.85	6.37	6.43	6.76	6.80	6.97	7.01	7.08	
10	6.32	6.97	7.01	7.47	7.50	7.79	7.82	7.98	
12	7.10	8.00	7.99	8.70	8.67	9.20	9.19	9.57	
14	7.74	8.84	8.78	9.71	9.61	10.37	10.29	10.90	
16	8.27	9.54	9.44	10.56	10.39	11.36	11.20	12.02	
18	8.73	10.15	10.00	11.28	11.06	12.20	11.96	12.98	
20	9.13	10.67	10.49	11.91	11.63	12.93	12.62	13.81	
25	9.94	11.73	11.48	13.18	12.78	14.40	13.94	15.47	
30	10.58	12.54	12.24	14.14	13.67	15.51	14.95	16.73	
35	11.10	13.20	12.85	14.92	14.37	16.40	15.75	17.73	
40	11.53	13.74	13.36	15.56	14.96	17.13	16.41	18.55	
45	11.90	14.20	13.80	16.10	15.46	17.74	16.97	19.24	
50	12.33	14.60	14.18	16.56	15.89	18.27	17.45	19.83	
100	14.22	16.95	16.45	19.26	18.43	21.30	20.26	23.17	
200	15.99	18.94	18.42	21.47	20.59	23.72	22.59	25.82	
500	18.12	21.22	20.75	23.95	23.06	26.37	25.21	28.62	

Stevens (p. 133, 2002)

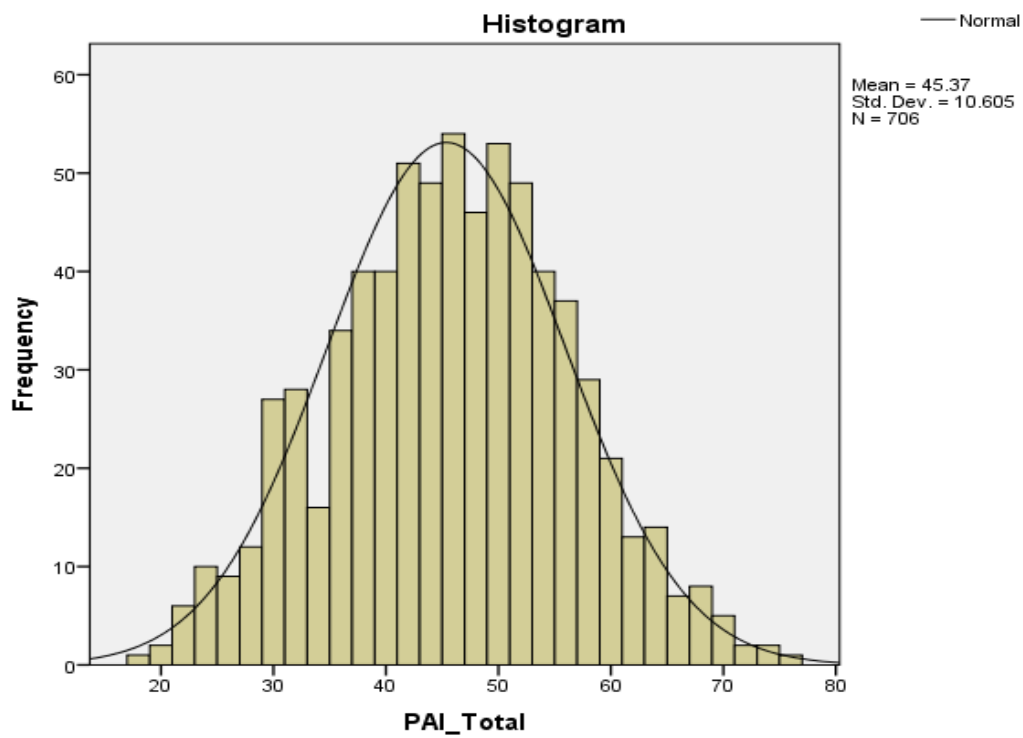
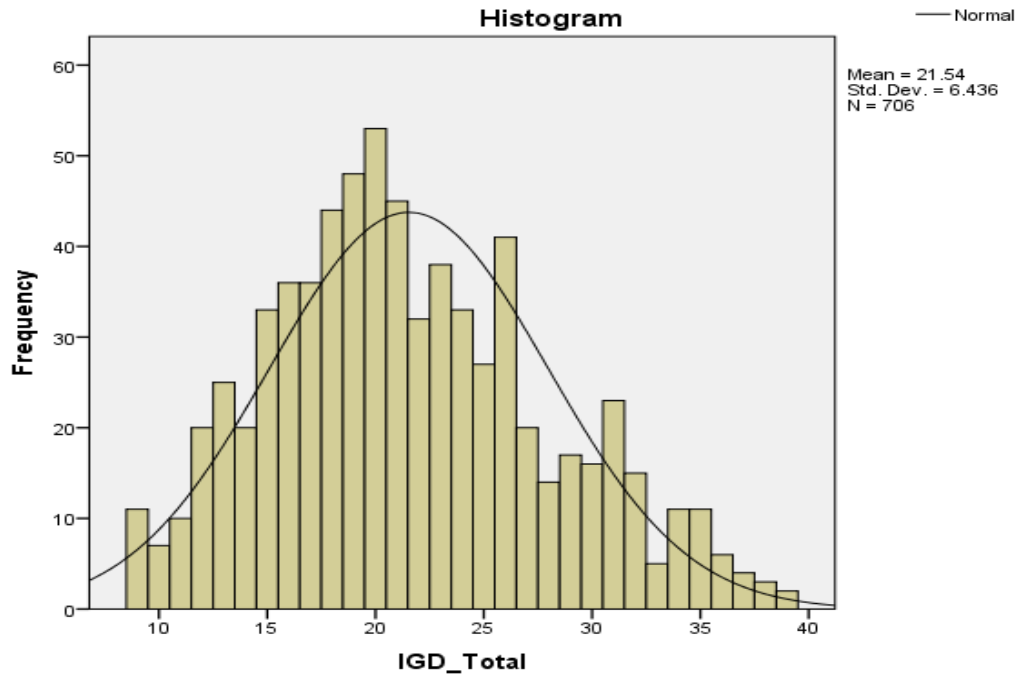
Appendix F

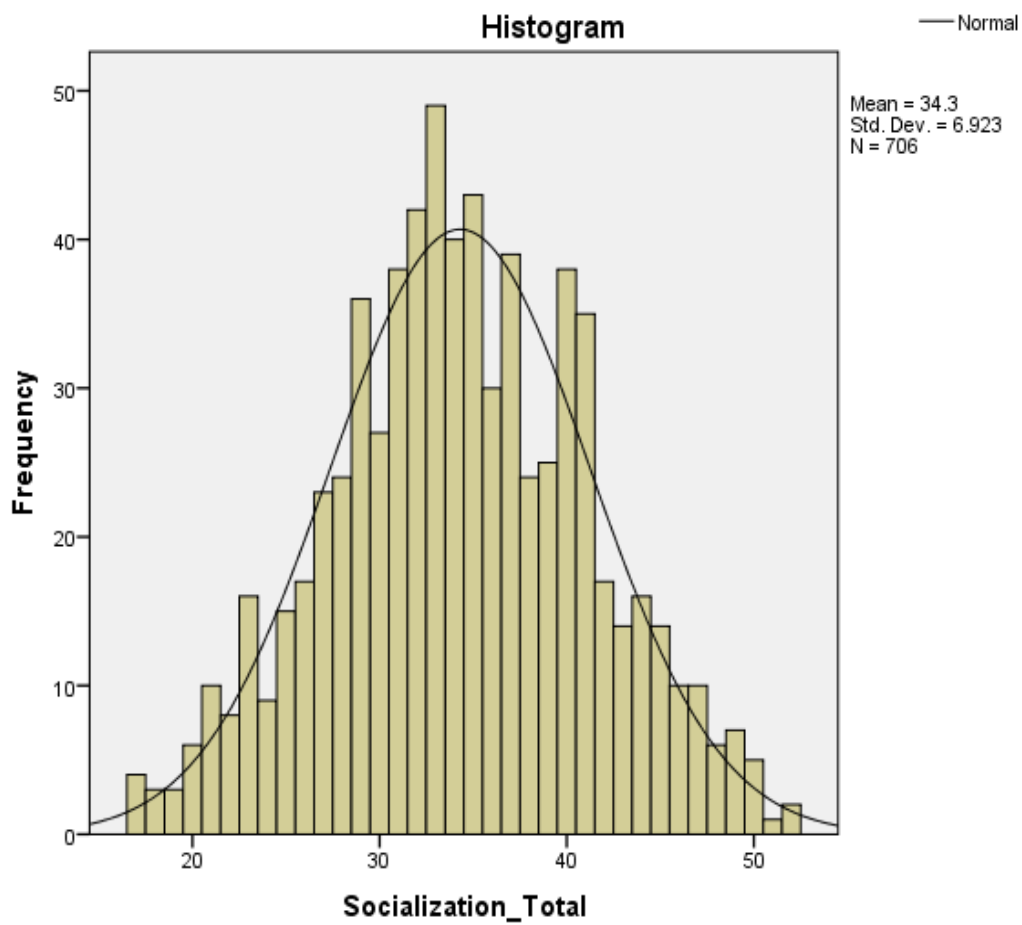
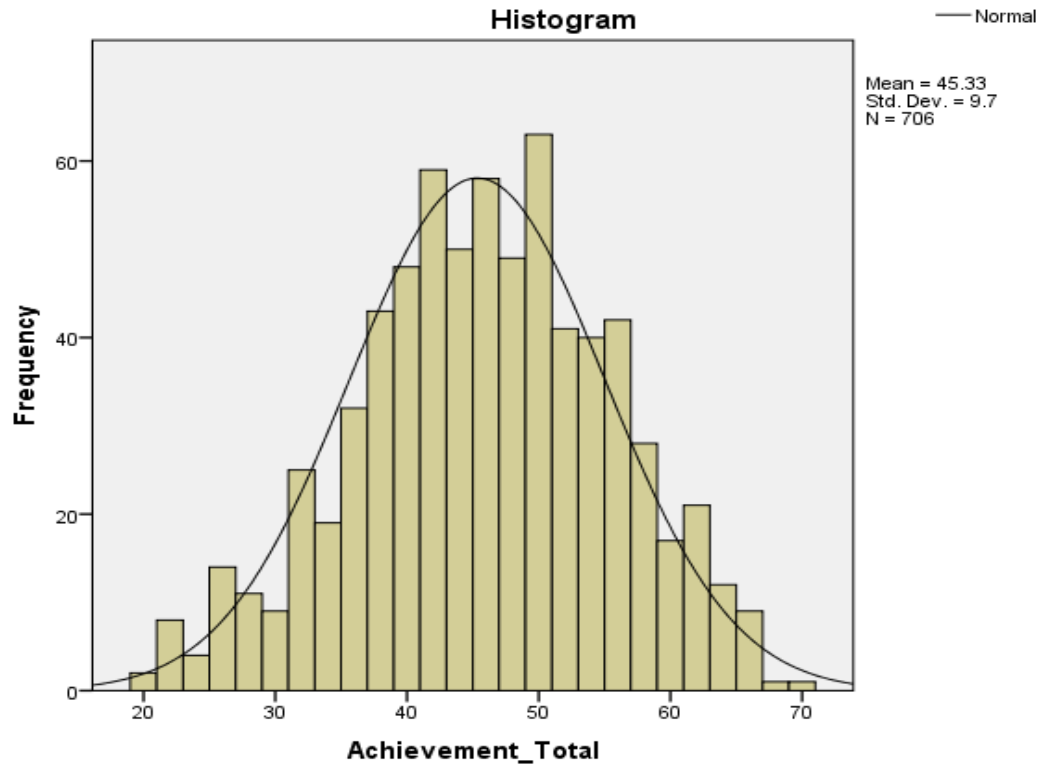
Boxplot After Univariate Outlier Cleaning

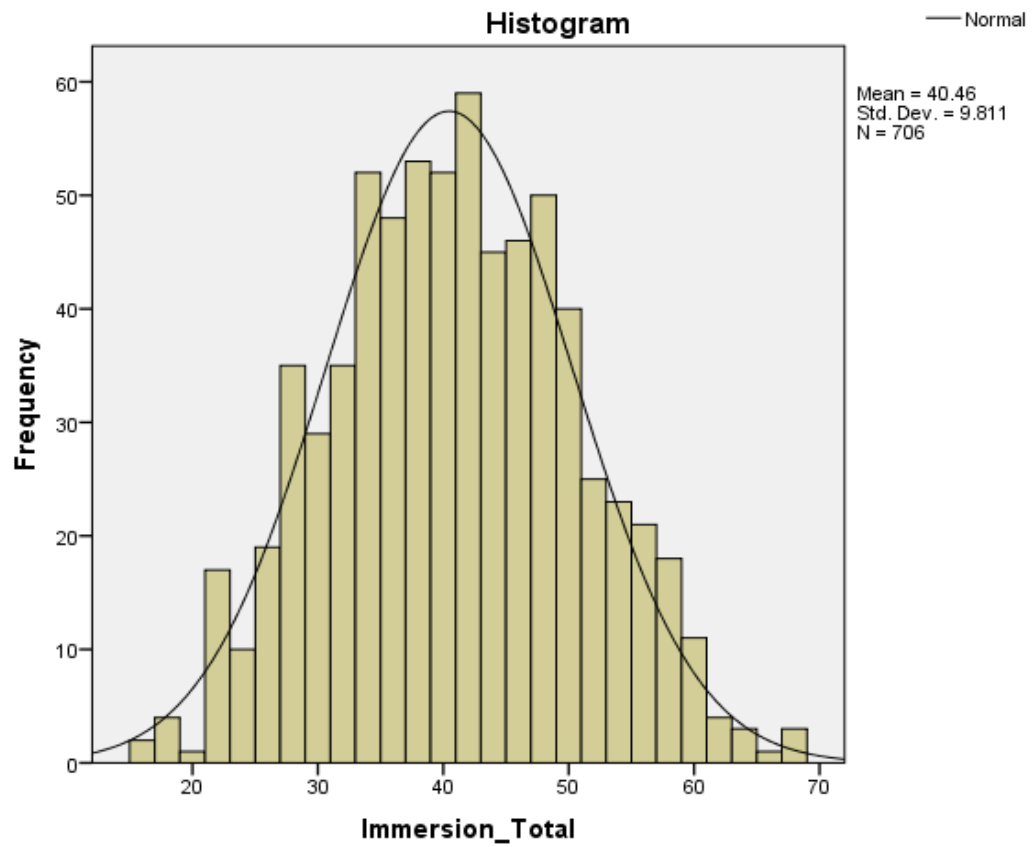


Appendix G

Histogram of Each Variable

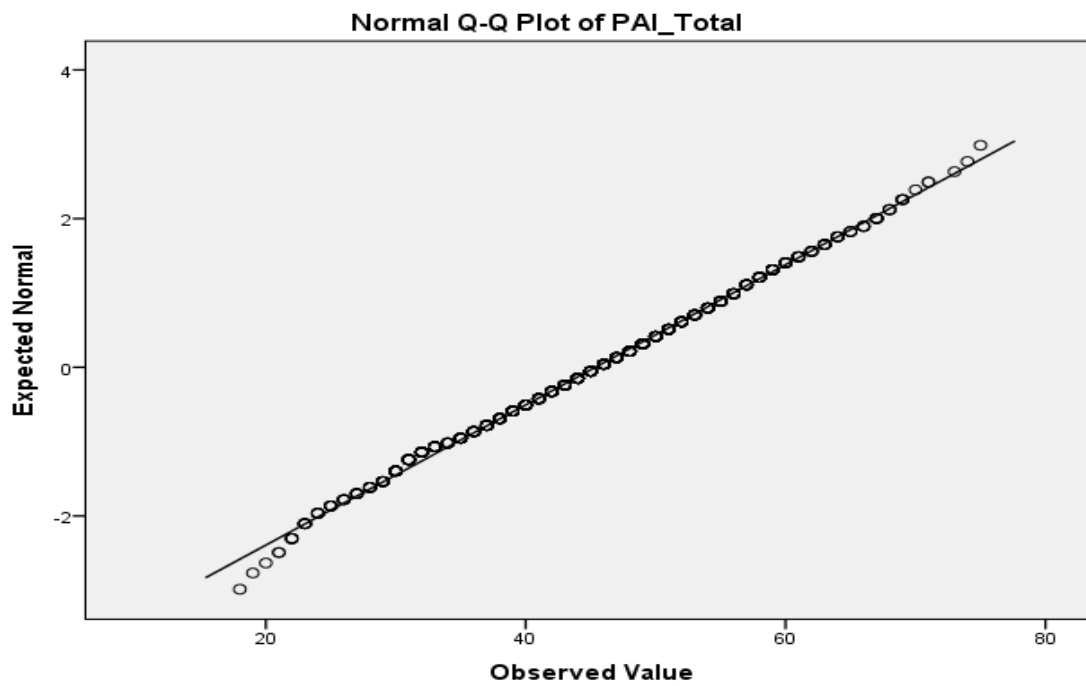
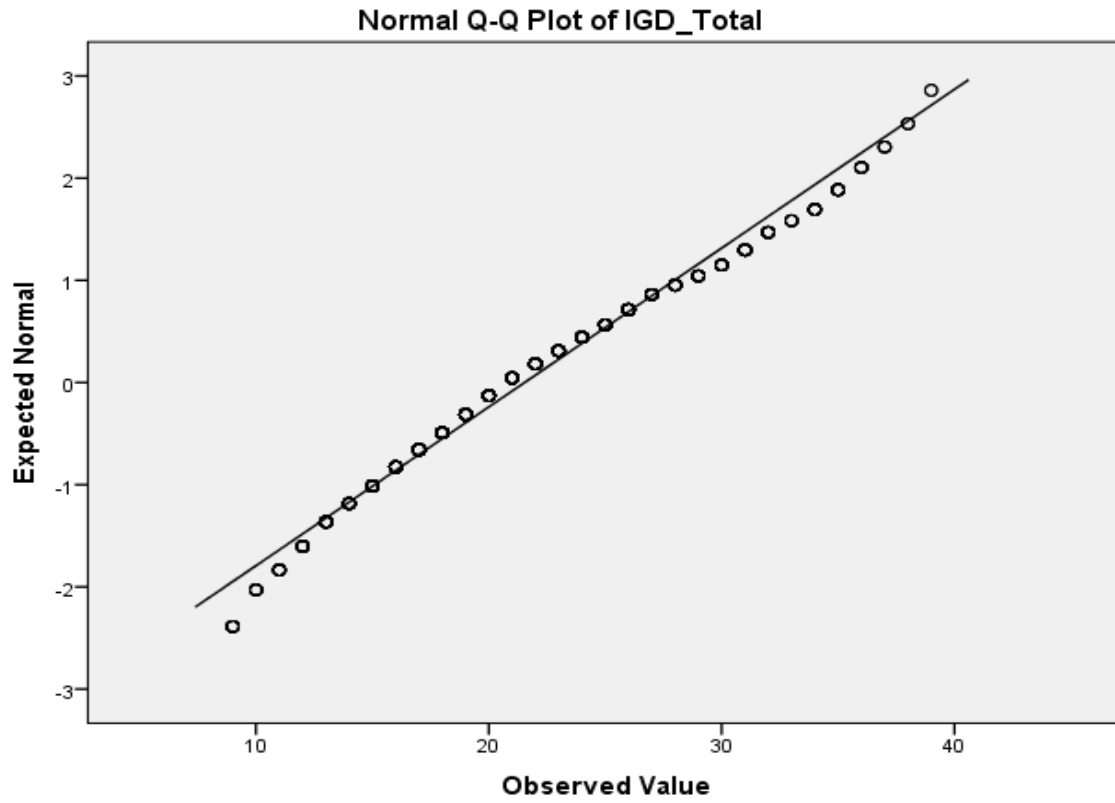


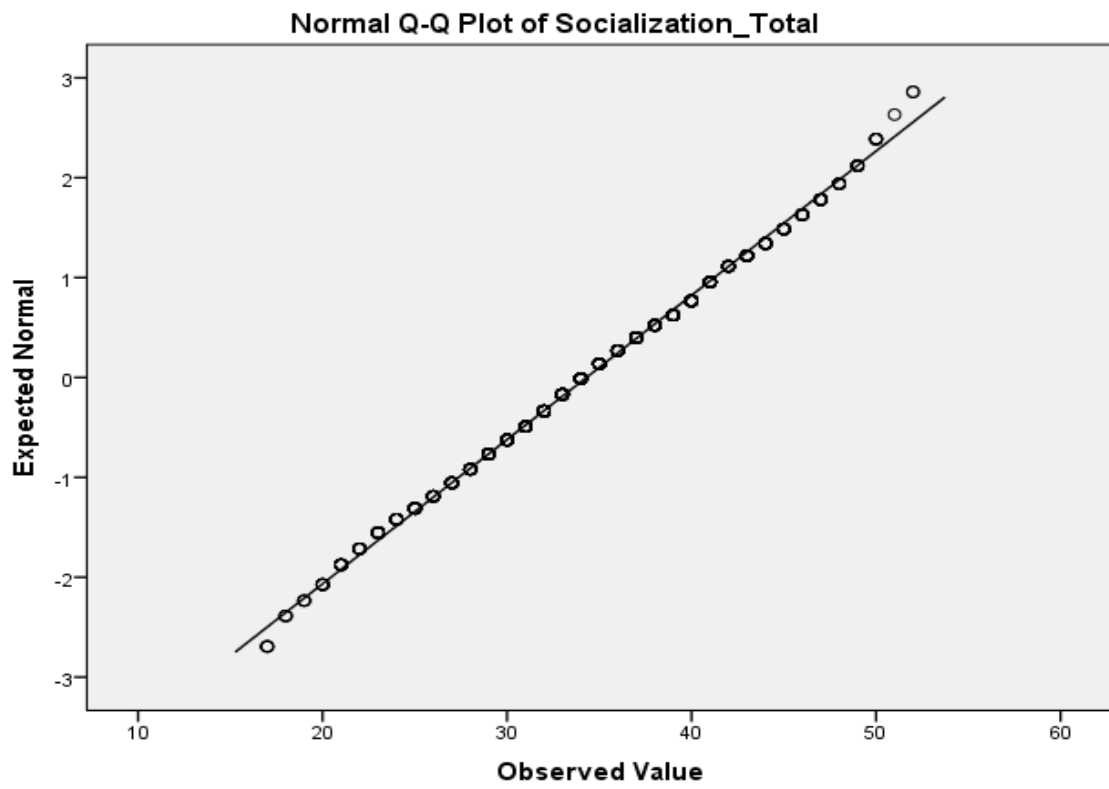
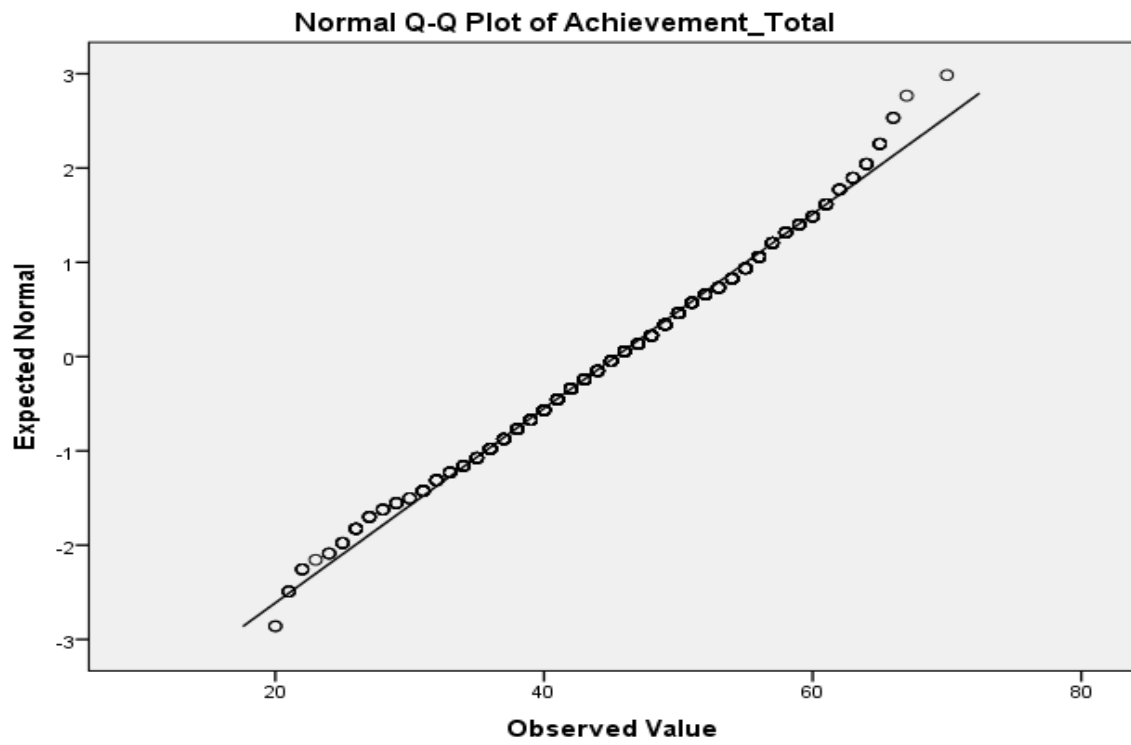


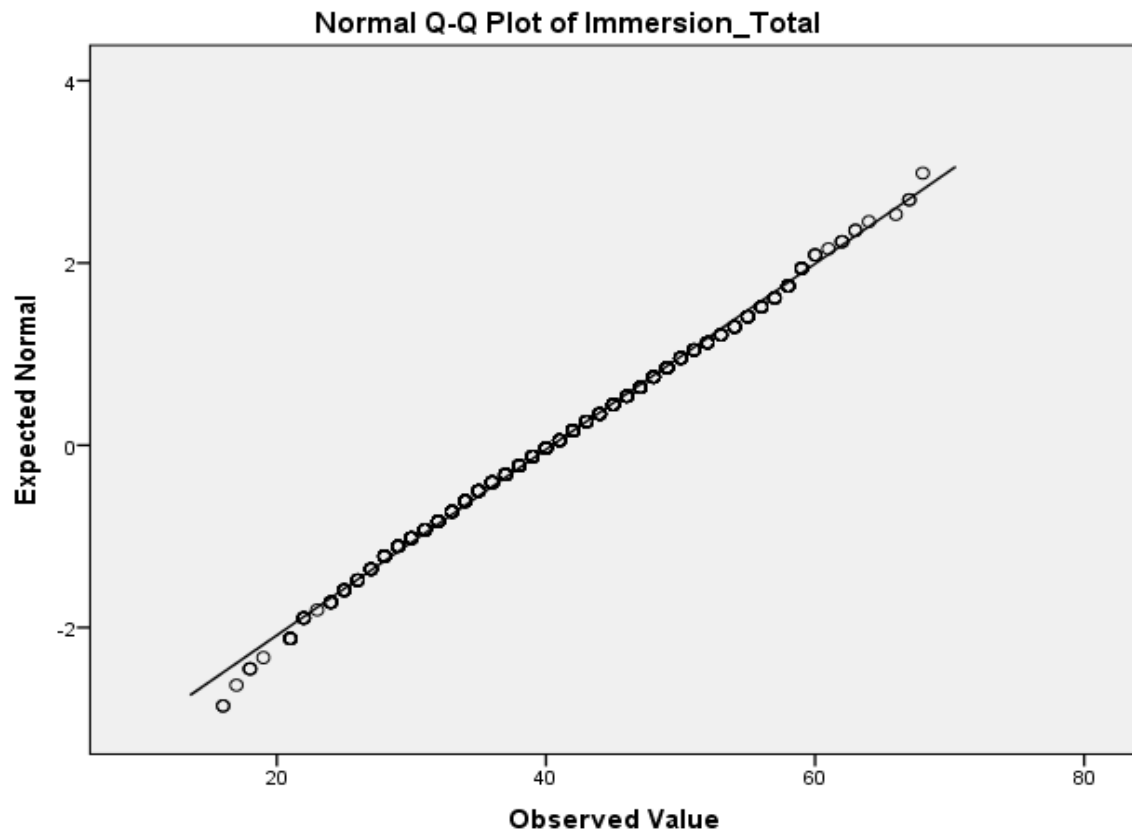


Appendix H

Q-Q Plot of Each Variable







Appendix I

Casewise Diagnostics for Multivariate Outlier

Casewise Diagnostics^a

Case Number	ID	Std. Residual	IGD_Total	Predicted Value	Residual
30	B33	2.845	36	20.79	15.212
81	B86	-2.153	11	22.51	-11.514
84	B89	2.572	36	22.25	13.752
136	B146	2.998	34	17.97	16.030
152	B172	2.475	32	18.77	13.233
166	B192	2.064	34	22.96	11.036
172	B198	2.402	33	20.16	12.844
189	B218	2.161	31	19.45	11.554
248	B284	2.760	28	13.24	14.759
250	B286	2.809	30	14.98	15.023
300	P2	2.301	32	19.70	12.305
334	P38	-2.166	9	20.58	-11.582
336	P40	-2.051	9	19.97	-10.971
363	P68	2.732	37	22.39	14.607
424	P129	2.069	35	23.93	11.067
462	P169	2.173	39	27.38	11.622
506	S13	-2.189	17	28.71	-11.709
539	S49	-2.388	13	25.77	-12.769
544	S54	3.372	35	16.97	18.033
547	S57	2.099	27	15.77	11.227
569	J17	-2.941	9	24.73	-15.728
641	J92	2.300	31	18.70	12.299
677	J128	2.527	32	18.49	13.513
683	J134	-2.380	10	22.73	-12.729

a. Dependent Variable: IGD_Total

Appendix J

Turnitin Report

Match Overview			×
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Notice:

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

- For assessment of any application to UTAR
- For processing any benefits and services
- For communication purposes
- For advertorial and news
- For general administration and record purposes
- For enhancing the value of education
- For educational and related purposes consequential to UTAR
- For the purpose of our corporate governance
- For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/ study loan

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

3. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

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

Consent:

1. By submitting this form you hereby authorise and consent to us processing (including disclosing) your personal data and any updates of your information, for the purposes and/or for any other purposes related to the purpose.

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

3. You may access and update your personal data by writing to us at _____.

Acknowledgment of Notice

[] I have been notified by you and that I hereby understood, consented and agreed per UTAR above notice.

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

.....
Name:

Date:

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- For enhancing the value of education
- For educational and related purposes consequential to UTAR
- For the purpose of our corporate governance
- For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/ study loan

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

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

Consent:

1. By submitting this form you hereby authorise and consent to us processing (including disclosing) your personal data and any updates of your information, for the purposes and/or for any other purposes related to the purpose.

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

3. You may access and update your personal data by writing to us at _____.

Acknowledgment of Notice

[] I have been notified by you and that I hereby understood, consented and agreed per UTAR above notice.

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

.....
Name:

Date:

PERSONAL DATA PROTECTION STATEMENT

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

Notice:

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

- For assessment of any application to UTAR
- For processing any benefits and services
- For communication purposes
- For advertorial and news
- For general administration and record purposes
- For enhancing the value of education
- For educational and related purposes consequential to UTAR
- For the purpose of our corporate governance
- For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/ study loan

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

3. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

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

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Date:

DEPARTMENT OF PSYCHOLOGY AND COUNSELLING

FACULTY OF ARTS AND SOCIAL SCIENCE

UNIVERSITI TUNKU ABDUL RAHMAN

UAPZ 3023 Final Year Project II

Research Project Evaluation Form

TURNITIN: *'In assessing this work you are agreeing that it has been submitted to the University-recognised originality checking service which is Turnitin. The report generated by Turnitin is used as evidence to show that the students' final report contains the similarity level below 20%.'*

Project Title:

Motivations of Online Gaming and Identification of Avatar Predict Internet Gaming Disorder's Symptoms among Youth in Malaysia.

Supervisor: Ms Grace T'ng Soo Ting

Student's Name:

1. Bong Wei Jian
2. Emilia Teh Yi Wen
3. Yon Da Yaw

Student's ID

1. 15AAB04932
2. 15AAB04614
3. 15AAB02566

INSTRUCTIONS:

Please score each descriptor based on the scale provided below:

1. For criteria **1, 2, 3,4, 5, 6:**
0 = no attempt, 1 = very poor, 2 = poor, 3 = average, 4 = good, 5 = very good

2. For criteria **3,4:**
0 = no attempt, 1 = very poor, 3 = poor, 5 = average, 7 = good, 10 = very good

3. For criteria **7:**
Please retrieve the mark from "**Oral Presentation Evaluation Form**".

1. ABSTRACT (5%)	Score
1. States clearly the research objectives. (5%)	
2. Describe briefly and clearly the approach/methodology of the study. (5%)	
3. Highlights the outcomes of the study. (5%)	
4. Highlights the significance of the study. (5%)	
5. Three relevant keywords mentioned. (5%)	
Sum	
Subtotal (Sum /5)	/ 5%
Remark:	
2. METHODOLOGY (20%)	
1. Appropriate research design/framework (5%)	
2. Appropriate sampling techniques (5%) - Sample size is justified. - Sampling method correctly mentioned - Location of how the subjects are selected	
3. Clear explanation of procedure (5%) - How is consent obtained - Description of how data was collected	
4. Explanation on the instruments/questionnaires used (5%) - Description of instrument measures, scoring system, meaning of scores, reliability and validity information.	
Subtotal	/ 20%
Remark:	

3. RESULTS (20%)	
1. Analyses used are appropriate for each hypothesis. (10%)	
2. Interpretations and explanations of the statistical analyses are accurate. (10%)	
Subtotal	/ 20%
Remark:	

4. DISCUSSION & CONCLUSION (25%)	
1. Constructive discussion of findings. - Explanation and critical analysis. Results were critically analyzed with similar and/or dissimilar results. (10%)	
2. Implication of the study. (5%)	
3. Limitations mentioned relevant and constructive to the study. (5%)	
4. Recommendations for future research. (5%)	
Subtotal	/ 25%
Remark:	

5. LANGUAGE & ORGANIZATION (5%)			
1. Comprehensiveness: Content Organization + Language			
Subtotal		/ 5%	
Remark:			
6. APA STYLE AND REFERENCING (5%)			
1. APA format is followed			
Subtotal		/ 5%	
Remark:			
7. *ORAL PRESENTATION (20%)		Score	
		Student 1	Student 2
		Student 3	
Subtotal			
Remark:			
PENALTY:			
Maximum 10 marks for LATE SUBMISSION, MISSING FORM or POOR ATTENDANCE for consultation with supervisor			
		Student 1	Student 2
		Student 3	
**FINAL MARK/TOTAL			

*****Overall Comments:**

Signature: _____

Date: _____

Notes:

1. **Subtotal:** The sum of scores for each assessment criteria
2. **FINAL MARK/TOTAL:** The summation of all subtotal score
3. Plagiarism is UNACCEPTABLE. Parameters of originality required and limits approved by UTAR are as follows:
 - (i) **Overall similarity index is 20% and below**, and
 - (ii) Matching of individual sources listed must be less than 3% each, and
 - (iii) Matching texts in continuous block must not exceed 8 words

Note: Parameters (i) – (ii) shall exclude quotes, references and text matches which are less than 8 words.

Any works violate the above originality requirements will NOT be accepted. Students have to redo the report and meet the requirements in **SEVEN (7)** days.

*The marks of “Oral Presentation” are to be retrieved from “**Oral Presentation Evaluation Form**”.

**It’s compulsory for the supervisor/reviewer to give the overall comments for the research projects with A- and above or F grading.