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## THE IMPACT OF ONLINE GAMING ADDICTION ON MENTAL HEALTH AMONG IIUM STUDENTS

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### Abstract:

This study was designed to examine the impact of online gaming addiction on mental health among International Islamic University Malaysia (IIUM) students. The objectives of this study are to determine: (a) the exposure to online gaming, (b) the levels of online gaming addiction and mental health, and (c) the relationship between online gaming addiction and mental health, particularly depression, anxiety, and loneliness. This study employed a quantitative research design with the network sampling procedure applied as the sampling technique for data selection and an online survey questionnaire as the research instrument. A total of 210 respondents participated in this study, comprising both undergraduate and postgraduate students. The findings show that the most popular type of online game is PlayerUnknown's Battlegrounds (PUBG), followed by Mobile Legend (ML), Call of Duty (CoD), Defense of the Ancients (DotA), and Free Fire. The levels of online gaming addiction and mental health among IIUM students were found to be significantly low. The relationships between online gaming addiction and mental health components, namely depression, anxiety, and loneliness, were found to be significant and positive. Based on the social cognitive theory tested, all the developed hypotheses were accepted. This study suggests that future research should examine the impact of online gaming addiction on academic performance and physical health. Besides, future research can investigate other theories such as agenda-setting theory, cultivation theory, dependency theory, and media effect theory.

### Keywords:

Anxiety, Depression, Loneliness, Mental Health, Online Gaming Addiction

## Introduction

In this modern era, the use of the Internet has become widely popular. The Internet has taken center stage in many people's lives as they can obtain a myriad of information from it. The 2018 statistics issued by the Malaysia Communications and Multimedia Commission (MCMC) shows that the percentage of Internet users increased from 76.9% in 2016 to 87.4% in 2018 at the national level.

Fadil, Mohd, and Abdul (2010) indicated that 95% of Internet users are adults with college or graduate degrees. Meanwhile, on the global platform, online games have become very popular, especially among the young generation, leading to the proliferation of online game addiction. Indeed, the most addictive Internet activities nowadays are online gaming (Wan & Chiou, 2006).

Newzoo (2017) mentioned that more than two billion people spend their leisure-time activity by playing online games. This is because the players are provided with entertainment and fun, which may lead to addiction. Some tasks are given to the players to discover and solve. They have to play until they win to move to the next level, and if they lose, they can make other attempts to win. This scenario may result in health problems, both physically and mentally.

## Problem Statement

The Internet can drastically turn from a productive to a destructive endeavor. It serves as an enabler for people to play online games, disrupting everyday life, personal relationships, and work. Syracuse University on the Science Daily website (2007) stated that Internet games might have negative implications, particularly in students' lives, since it can adversely affect mental health, social life, and academic performance.

Hazar and Hazar (2018) indicated that attractions to video games among young people could lead them to many problems involving social, emotional, and physical health. These effects trigger mental and physical damage, violence, anger, and social isolation. Such issues have caught the attention of mental health professionals and psychologists to focus on the effects of online games. Do IIUM students suffer from gaming addiction, specifically depression, anxiety, and loneliness? Is there any relationship between online gaming addiction and depression, anxiety, and loneliness among IIUM students?

## Objectives of the Study

The objectives of the study are:

1. To find out the exposure to online gaming among IIUM students;
2. To determine the level of online gaming addiction among IIUM students;
3. To determine the levels of depression, anxiety, and loneliness among IIUM students;  
and
4. To determine the relationship between online gaming addiction and depression, anxiety, and loneliness among IIUM students.

### **Significance of the Study**

Online gaming addiction among students in universities is not a trivial issue as it can lead to mental health if not addressed properly. Thus, the Ministry of Education (MOE) might gain by looking at the seriousness of online gaming among students, especially Muslim students who are not supposed to waste time unnecessarily, which can harm their physical and mental health.

Given that students can obtain a vast amount of knowledge from the new media, they should be able to control themselves by using their spare time beneficially as long as the new media helps in their academic performance and in maintaining their physical health. Therefore, the university authority should organize talks if students' health is deteriorating and they cannot focus in class. An intervention strategy should be planned if there is any complaint from lecturers regarding poor concentration and focus among the students.

### **Literature Review**

There are six points will be discussed in Literature Review in which online game addiction, mental health, depression and internet gaming disorder, social anxiety and online gaming addiction, loneliness and mobile game addiction and social cognitive theory.

#### ***Online Game Addiction***

Online games are a popular technology that has lately become a concern, especially among youths, as it can lead to addiction (Charlton & Danforth, 2010; Huh & Bowman, 2008). In general, this technology addiction involves a maladaptive psychological aspect, although its adaptability depends on the types of online games that offer different kinds of obsessive-compulsive patterns, which may attract a player to the extent of neglecting their important duty in life.

Jeong and Kim (2011) found that young people nowadays opt for the virtual world rather than the real world to satisfy their desire in gaming. Therefore, addiction to Internet gaming is a mental disorder that has been identified and described in several ways. Griffiths (2005) claimed that bio-psychosocial mechanisms contribute to addiction. Such addiction may include Internet gaming, which comprises actions in adjusting the mood through individual behavior, tolerance, the occurrence of symptoms of withdrawal at the end of the activity, and interpersonal and intrapersonal issues as a result of the individual's actions and experience.

Choi and Kim (2004) argued that the young generation looks at online gaming as a very popular trend from an electronic entertainment point of view. In addition, Block (2008) echoed that since there are no official determinants for identifying an individual as an addict, several studies in this area look at online game addiction as a continuous concept where its addiction levels range from low to high (Ferraro, Caci, & Di, 2007; Hur, 2006).

#### ***Mental Health***

Mental disorders are general and exist in every country (World Health Organization [WHO], 2001). According to Fowlerr, Tompsett, and Braciszewski (2009), a relationship between depression and violent content in video games is possible. This implies that adults and children tend to be exposed to violence in real-life, whether as witnesses or victims. They also have poor mental health outcomes, including depression, anxiety, and post-traumatic stress disorder

(PSD). WHO recently recognized gaming disorder as a mental health condition and added it to the international medical list.

Playing online games incessantly is not enough to be recognized as a disease. Instead, mental illness always arises when the players play online games for an extended period to the extent that it affects their daily lives (Rettner, 2019). Therefore, gaming disorder is a “pattern of chronic or repetitive gaming activity,” which causes the players to lose control of their gaming actions; they start considering gaming as a priority over all other interests and behaviors, leading to continued playing even though they may suffer from its negative consequences. Such consequences may include disabilities in social life as well as in education and family relationships (Rettner, 2019).

Internet Gaming Disorder (IGD) is an addictive behavior (Choi et al., 2014), and various psychological and health issues are associated with it such as social anxiety, depression, loneliness, fatigue, and negative self-esteem. Mannikko, Billieux, and Kaariainen (2015) found that IGD occurs with varying medical disorders leading to multiple negative impacts. For example, it may cause social problems including poor academic achievement (Brunborg, Mentzoni, & Froyland, 2014). IGD is also associated with some other addictions such as substance usage disorder (Kardefelt-Winther, 2014).

#### ***Depression and Internet Gaming Disorder***

Stetina (2011) found that depression positively relates to Internet Gaming Addiction (IGA) and technological addiction. However, IGD behaviors can also be favored because they are often considered to be less dangerous than other types of addiction (Yen, 2007).

Online games are often played by people who have emotional distress. In the long term, heavy usage can isolate people from real-life relationships, leading to a more serious mental health issue: depression (King & Delfabbro, 2016). A previous study supported a positive relationship between online gaming addiction and depression (Liu et al., 2018). Similarly, Wang, Sheng, and Wang (2019) revealed that online gaming addiction leads to severe depression. Therefore, this indicates that there is a positive relationship between online gaming addiction and depression.

#### ***Social Anxiety and Online Gaming Addiction***

Social anxiety among young people occurs because of their bad experience and tension (Rapee & Heimberg, 1997). Maldonado, Huang, Chen, Kasen, Cohen, and Shen (2016) found a relationship between adolescents' social anxiety and online gaming addiction. Online gaming addiction, smartphone addiction, and Internet addiction were also found to be related to social anxiety among adults (Griffiths, 2005; Griffiths, Kuss, Billieux, & Pontes, 2016; Khantzian, 1997). Addiction and anxiety can affect one another (Dalbudak, Evren, Aldemir, & Evren, 2014).

Internet addiction has five categories, which are online gaming addiction, net compulsions, cyber-relationship addiction, information overload, and cybersex addiction (Young, Pistner, O'mara, & Buchanan, 1999). Internet addiction increases anxiety, especially when the Internet is not available, or its accessibility is dysfunctional.

### ***Loneliness and Mobile Game Addiction***

Loneliness is a global issue faced by many people to some degree in their lives. It is a negative experience that people go through (Hojjati, Koochaki, & Sanagoo, 2012). The cause of loneliness is the lack of excitement in some people's lives, resulting from major defects in their social interaction network. Salehi and Seyf (2012) stated that loneliness is an uncomfortable feeling that triggers behavioral issues in which depression, sadness, withdrawal, and anger are exhibited.

Perlman (2004) claimed that loneliness occurs due to a lack of social experience. People have very low self-esteem if they feel very lonely, resulting from the absence of productive and supportive relationships. In this situation, they tend to use cyberspace and the Internet to play online games rather than communicating interpersonally through social interaction. They tend to use the Internet as a defense mechanism and as an alternative to avoid becoming lonely. Indeed, some previous studies have found an association between online game addiction and loneliness (Ackerman, 2009; Lemmens, Valkenburg, & Peter, 2010; Ream, Elliott, & Dunlap, 2013).

### ***Social Cognitive Theory***

Social cognitive theory (SCT) was introduced in 1986 by Bandura. The theory explains that human behavior results from dynamic relations between personal, behavioral, and environmental factors. People's thoughts and feelings are the major components of personal factors. Behavioral factors include health-related information and skills referred to as behavioral capability as well as skills in regulating and taking action.

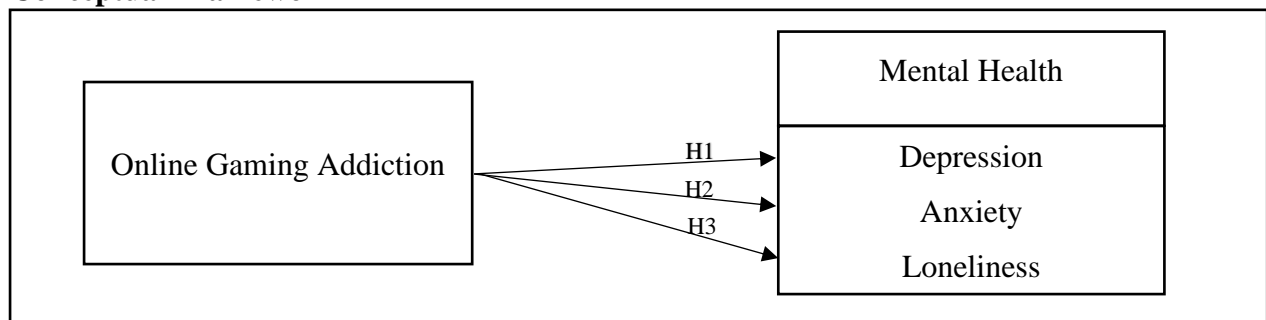
The theory explains that people can acquire knowledge by just observing others, for instance, by observing the skills, beliefs, strategy, rules, and attitudes of others. They learn about the utility and suitability of behaviors by observing other people's behavior and they end up acting based on what they believe will be the outcome. This theory is also a direct response to behaviorism.

SCT provides a comprehensive theoretical framework for understanding the determinants and mechanisms of human behavior. Further, it describes the potential mediators and procedures for behavioral change. Self-regulation and goal setting are the major components of SCT that are applied along with behavior capabilities.

SCT has a central role in cognitive, vicarious, self-regulatory, and self-reflective processes in human behavioral change (Bandura, 1986).

To relate it with this study, students who are addicted to playing online games can possibly be influenced by the characters they see in online games, and to some extent, the students may end up following the actions of the characters in the online games. In other words, their minds may lead them to violent acts as a result of imitating the character.

## Conceptual Framework



**Figure 1: Conceptual Framework**

Source: (The Researchers)

## Hypotheses of the Study

Based on the conceptual framework of the study, the following hypotheses are formulated:

H1: There is a positive relationship between online gaming addiction and depression.

H2: There is a positive relationship between online gaming addiction and anxiety.

H3: There is a positive relationship between online gaming addiction and loneliness.

## Methodology

### Research Design

The quantitative research design was employed in this study, along with the survey method involving an online questionnaire for data collection. This study selected IIUM students as the respondents. The respondents came from various backgrounds in terms of gender, age, education level, kulliyah (faculty), level of study, year of study, and their nationality.

### Population and Sampling Procedure

IIUM students from the Gombak campus were chosen as the target population of this study. The reason for choosing them is because this study is about the impact of online gaming addiction on mental health among students. Hence, IIUM students were good candidates to be the respondents in this study. A part from that, IIUM students can easily be reached compared to other university students. The data involved students from different disciplines, as reflected by the faculties in which they were enrolled.

This study applied the network sampling procedure. An online survey questionnaire was distributed through various WhatsApp groups since the time for data collection coincided with the Movement Control Order (MCO) due to the COVID-19 pandemic. Hence, it was not possible to reach the students face to face. Furthermore, Hassan (2016) mentioned that the network sampling procedure can be applied as it is a key statistical approach and it can help to solve challenges related to physical accessibility.

### Instrument and Measurement

The questionnaire consisted of six sections. Section 1 obtained the respondents' demographic information such as gender, age, education, nationality, faculty, and the year of study.

Section 2 covered the respondents' exposure to online gaming with 11 items that explored the patterns of online gaming, such as the types of online games; the time spent playing online

games per sitting, per day, and per week; and the device used to play online games. Section 3 consisted of 10 items that tried to assess online gaming addiction. An example of the items is 'I always find a way to play online games.' Section 4 explored depression, also with 10 items, to assess the extent of being depressed due to online gaming. An example of the items is 'I often feel upset whenever I cannot connect with the Internet to play online games.' Section 5 consisted of 10 items of the respondents' levels of anxiety where one of the items is 'I feel nervous if I cannot play online games.' Lastly, the items in section 6 tapped on the respondents' levels of loneliness, for example, 'I play online games because I have no friends to talk to.'

The items were all measured using a 5-point Likert scale, where 1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly agree*, 4 = *agree*, and 5 = *strongly agree*.

### **Validity and Reliability Test**

The questionnaire was validated and approved by an expert, and a pre-test was conducted involving 30 respondents via an online Google Form to ensure that the items for each variable are reliable before the actual study was conducted. Polit (2001) mentioned that before conducting the actual study, a small-scale version or test must be done as the pilot study.

The results of the pilot study are presented in Table 1. The items for loneliness ( $\alpha = .957$ ) depression ( $\alpha = .921$ ), anxiety ( $\alpha = .903$ ), and addiction ( $\alpha = .844$ ) were all found to be reliable. For the actual study, loneliness ( $\alpha = .950$ ), depression ( $\alpha = .862$ ), anxiety ( $\alpha = .858$ ), and addiction ( $\alpha = .834$ ) are also reliable. Therefore, no items were deleted for all variables.

**Table 1: Reliability Test for Online Gaming and Mental Health**

Variables	No. of Items	Cronbach Alpha	
		Pilot Study ( $N = 30$ )	Actual Study ( $N = 210$ )
Addiction	10	.844	.834
Depression	10	.921	.862
Anxiety	10	.903	.858
Loneliness	10	.957	.950

Source: (The Researchers)

### **Data Collection**

Data were collected from June 6 until June 16, 2020, after the pilot study was concluded. A total of 210 undergraduate and postgraduate IIUM students participated in this study. Data were collected using the Google Form. Social media platforms such as WhatsApp, Facebook, and Twitter were used to approach the respondents who were studying at the IIUM Gombak Campus. However, due to the COVID-19 pandemic, not many students were actively using social media since some of them might have a problem with Internet connection.

### **Data Analysis**

Statistical Package for the Social Sciences (SPSS) version 22 was used to analyze the data. Both descriptive and inferential statistical analyses were performed. For descriptive analysis, frequencies, percentages, means, and standard deviations were used; whereas inferential statistical analyses applied *t*-test and bivariate correlation. All the research objectives and research hypotheses were analyzed using one-sample *t*-tests and correlations.

## Findings

A total of 210 IIUM students took part in this study. Seven in ten respondents (71.4%) were male and the remaining respondents (28.6%) were female. The majority of the respondents (85.7) were from the age group of 21–25 years old, followed by 26 years old and above (10.0%), and the rest (4.3%) were 20 years old and younger. Almost all of the respondents (94.3%) were pursuing their degree programs while the rest (7.6%) were doing their Foundation Studies.

More than one-third of the respondents (36.7%) came from Kulliyah of Islamic Revealed Knowledge and Human Science (KIRKHS), followed by Kulliyah of Architecture and Environmental Design (KAED) with 13.8% and Kulliyah of Education (KOED) with 13.3%. Those from Kulliyah of Engineering (KOE), Kulliyah of Economics and Management Sciences (KENMS), and Kulliyah of Information Communication Technology (KICT) each made up 10% of the total number of respondents. The lowest number of students came from Ahmad Ibrahim Kulliyah of Law (AIKOL), with 6.2%. Almost three-quarters of the respondents (71.9%) were undergraduates and the remaining (28.1%) were postgraduates. Almost half of the respondents (49.5%) were first-year students, followed by second-year (34.8%), while third- and fourth-year students made up 14.3% and 1.4%, respectively. Slightly more than two-thirds of the respondents (69.0%) were Malaysian students and the rest (31.0%) were international students.

**Table 2: Demographic Characteristics of the Respondents**

Demographic Information	Category	Frequency	Percentage
Gender	Male	150	71.4
	Female	60	28.6
	<b>Total</b>	<b>210</b>	<b>100.0</b>
Age (years old)	Less than 20	9	4.3
	21–25	180	85.7
	26–30	20	9.5
	31 and above	1	0.5
	<b>Total</b>	<b>210</b>	<b>100.0</b>
Education	Foundation/MCE/SPM	12	5.7
	Degree	198	94.3
	<b>Total</b>	<b>210</b>	<b>100.0</b>
Kulliyah	AIKOL	13	6.2
	KAED	29	13.8
	KOE	21	10.0
	KENMS	21	10.0
	KICT	21	10.0
	KIRKHS	77	36.7
	KOED	28	13.3
	<b>Total</b>	<b>210</b>	<b>100.0</b>



Level of Study	Undergraduate	151	71.9
	Postgraduate	59	28.1
	<b>Total</b>	<b>210</b>	<b>100.0</b>
Year of Study	First	104	49.5
	Second	73	34.8
	Third	30	14.3
	Fourth	3	1.4
	<b>Total</b>	<b>210</b>	<b>100.0</b>
Nationality	Malaysian	145	69.0
	International	65	31.0
	<b>Total</b>	<b>210</b>	<b>100.0</b>

Source: (The Researchers)

### *Exposure to Online Games*

Table 3 shows the types of gadgets used by the students to play online games. The majority of the respondents (89.5%) preferred using a smartphone, besides a laptop (5.9%) and PC (4.8%) to play online games. The respondents might feel comfortable using a smartphone because it is easy to hold while playing online games compared to a laptop and PC.

**Table 3: Types of Gadget Used to Play Online Games**

Types of Gadget	Frequency	Percentage
PC	10	4.8
Laptop	12	5.7
Smartphone	188	89.5
<b>Total</b>	<b>210</b>	<b>100.0</b>

Source: (The Researchers)

Table 4 presents the types of online games that the respondents chose to play. The respondents preferred playing PlayerUnknown's Battlegrounds (PUBG) (65.1%) the most, followed by Mobile Legend (ML) (58.1%), Call of Duty (COD) (56.1%), Defense of the Ancients (DotA) (36.8%), and lastly, Free Fire (33.3%).

Overall, the IIUM students were not into online gaming ( $M = 2.450$ ,  $SD = 0.773$ ,  $t = -10.315$ ) with  $p = .000$ , indicating a low level of tendency to get addicted.

**Table 4: Types of Online Gaming**

Types of Online Gaming	Mean*	SD	%	$t^{**}$	Df	$p$
PlayerUnknown's Battlegrounds (PUBG)	3.257	1.493	65.1	2.495	209	.013
Mobile Legend (ML)	2.905	1.675	58.1	-0.824	209	.411
Call of Duty (CoD)	2.581	1.296	51.6	-4.685	209	.000

Defense of the Ancients (DotA)	1.838	1.187	36.8	-14.185	209	.000
Free Fire	1.667	1.146	33.3	-16.855	209	.000
<b>Overall</b>	<b>2.450</b>	<b>0.773</b>	<b>49.0</b>	<b>-10.315</b>	<b>209</b>	<b>.000</b>

\*On a 5-point scale, where 1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly agree*, 4 = *agree*, 5 = *strongly agree*.

\*\*Test value is 3.

Source: (The Researchers)

Table 5 shows the duration that the students had been playing online games since their first exposure to it. A total of 28.6% of the respondents had been playing online games for less than six months. Some of them (18.1%) had been playing online games for six months to one year. Another 27.1% of the respondents had been playing online games for one to five years, whereas 26.2% had been playing for more than five years.

More than half of the respondents (56.2%) spent one to three hours per sitting playing online games. Meanwhile, some of them (22.4%) spent less than an hour per sitting and the rest (21.5%) spent more than three hours per sitting playing online games. Almost half the number of respondents (46.2%) spent one to three hours playing online games in a day, followed by 34.3% who spent three to six hours, 10.5% who spent less than an hour, and 9% who spent more than six hours in a day playing online games. About two-fifths of the respondents (40.5%) played online games every day, followed by 23.3% who spent three days per week, 14.3% who spent four days per week, 12.4% who spent five to six days per week, and only 9.5% who spent one to two days per week playing online games.

**Table 5: Exposure to Online Gaming**

Exposure to Online Gaming	Category	Frequency	Percentage
Estimated period since the first time getting exposed to playing online games	Less than 6 months	60	28.6
	6 months–1 year	38	18.1
	1 year–5 years	57	27.1
	More than 5 years	55	26.2
	<b>Total</b>	<b>210</b>	<b>100.0</b>
Time spent playing online games per sitting	Less than an hour	47	22.4
	1 to 3 hours	118	56.2
	3 to 6 hours	35	16.7
	More than 6 hours	10	4.8
	<b>Total</b>	<b>210</b>	<b>100.0</b>
Time spent playing online games in a day	Less than an hour	22	10.5
	1 to 3 hours	97	46.2
	3 to 6 hours	72	34.3
	More than 6 hours	19	9.0
	<b>Total</b>	<b>210</b>	<b>100.0</b>
Time spent playing online games in a week	1 day per week	11	5.2
	2 days per week	9	4.3
	3 days per week	49	23.3
	4 days per week	30	14.3

5 days per week	18	8.6
6 days per week	8	3.8
Everyday	85	40.5
<b>Total</b>	<b>210</b>	<b>100.0</b>

### Addiction to Playing Online Games

Table 6 presents the level of addiction to playing online games among IIUM students. The top two priorities of the respondents are making sure that the Internet connection is always good so that they can play online games (87.6%) and always finding a way to play online games (69.9%). They placed lower priorities on the rest of the items, such as spending the whole night playing online games (56.0%), spending longer time playing online games rather than communicating with family (49.4%), spending more time playing online games than hanging out with friends (49.2%), and spending longer time playing online games rather than studying or doing assignments (48.4%). Further, some of them were willing to meet their friends to play online games (45.9%), kept thinking about playing online games all day long (44.4%), frequently neglected important activities (e.g., classes, studies, assignments) to play online games (37.5%), and always skipped meals because they preferred to play online games (34.5%).

In sum, the results show a significantly low level of addiction among the respondents. The overall score of 52.3% for addiction indicates that the respondents were not fully addicted to online games, meaning that they could still balance between studies and leisure time. This is supported by the negative  $t$  value of  $-7.666$  ( $p = .000$ ), with  $M = 2.615$  and  $SD = 0.728$ . Therefore, the respondents were not addicted to online games as their level of addiction was low.

**Table 6: One-Sample  $t$ -Test for the Addiction to Playing Online Games among IIUM Students**

No.	Variable ( $N = 210$ )	$M^*$	$SD$	%	$t^{**}$	$df$	$p$
1	I will make sure the Internet connection is always good so that I can play online games.	4.381	0.756	87.6	26.463	209	.000
2	I always find a way to play online games.	3.495	1.142	69.9	6.285	209	.000
3	I spend my whole night playing online games.	2.800	1.397	56.0	-2.075	209	.039
4	I spend a longer time playing online games rather than communicating with my family.	2.471	1.146	49.4	-6.686	209	.000
5	I spend a longer time playing online games rather than hanging out with my friends.	2.462	1.186	49.2	-6.572	209	.000
6	I spend a longer time playing online games rather	2.419	1.092	48.4	-7.711	209	.000

	than studying or doing assignments.						
7	I will only see my friends to play online games.	2.295	1.245	45.9	-8.206	209	.000
8	I keep on thinking about playing online games all day long.	2.219	1.272	44.4	-8.900	209	.000
9	I frequently neglected important activities (e.g., class, study, assignment) to play online games.	1.876	1.117	37.5	-14.579	209	.000
10	I always skip my meals because I want to play online games.	1.724	0.907	34.5	-20.387	209	.000
	<b>Overall Addiction</b>	<b>2.615</b>	<b>0.728</b>	<b>52.3</b>	<b>-7.666</b>	<b>209</b>	<b>.000</b>

\*On a 5-point scale, where 1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly agree*, 4 = *agree*, 5 = *strongly agree*.

\*\*Test value is 3.

Source: (The Researchers)

### ***Mental Health – Depression***

The results in Table 7 show the level of depression among the respondents. Overall, the respondents had a low level of depression, as only 44.7% of them are considered to be under the state of depression with the mean value of 2.235 ( $SD = 0.758$ ;  $t = -14.622$ ,  $p = .000$ ). The respondents reported that they would get angry if people were to call them when they were playing online games (61.8%), they would also get very angry if someone or something interrupted them while they were playing (56.1%), they often felt upset whenever they could not connect with the Internet to play online games (54.2%), and they would curse others if they lose the game (50.0%). Further, they always got angry and tended to insult other players who made mistakes (44.6%), they always had arguments with others (e.g., family, friends) over the time they spent on online games (40.8%), they rarely talked to their family if they could not connect with the Internet to play online games (37.5%), they would get angry easily if they could not play online games (35.9%), they suffered from more financial problems since they became obsessed with online games (33.8%), and they felt their life was nothing if they could connect with the Internet to play online games (32.4%).

Since the level of depression is low, the result indicates that online games did not cause depression among the respondents. Even though many students enjoyed playing online games, they still preferred to play online games for fun and only during their leisure time.

**Table 7: One-Sample *t*-Test for Depression among IIUM Students**

No.	Variable (N = 210)	M*	SD	%	t**	df	p
1	I will get angry if people call me during the time when I play online games.	3.091	1.336	61.8	0.981	209	.328
2	I get very angry when someone or something interrupts me when I am playing online games.	2.805	1.314	56.1	-2.153	209	.032

3	I often feel upset whenever I cannot connect with the Internet to play online games.	2.710	1.213	54.2	-3.472	209	.000
4	I will curse others if I lose when playing online games.	2.500	1.313	50.0	-5.517	209	.000
5	I always get angry and tend to insult other players who make mistakes.	2.229	1.220	44.6	-9.164	209	.000
6	I always had arguments with others (e.g., family, friends) over my time spent on online games.	2.038	1.071	40.8	-13.016	209	.000
7	I rarely talk to my family if I cannot connect with the Internet to play online games.	1.876	1.032	37.5	-15.774	209	.000
8	I will easily get angry if I cannot play online games.	1.795	0.979	35.9	-17.838	209	.000
9	I suffer from more financial problems since I get obsessed with online games.	1.691	0.935	33.8	-20.287	209	.000
10	I feel my life is nothing if I cannot connect with the Internet to play online games.	1.619	0.857	32.4	-23.349	209	.000
<b>11</b>	<b>Overall Depression</b>	<b>2.235</b>	<b>0.758</b>	<b>44.7</b>	<b>-14.622</b>	<b>209</b>	<b>.000</b>

\*On a 5-point scale, where 1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly agree*, 4 = *agree*, 5 = *strongly agree*.

\*\*Test value is 3.

Source: (The Researchers)

### ***Mental Health – Anxiety***

Table 8 shows the level of anxiety among IIUM students. Overall, the respondents did suffer anxiety due to online games (36.1%) with a mean value of 1.807 ( $SD = 0.615$ ;  $t = -28.102$ ,  $p = .000$ ). Specifically, they always felt that other people were better at playing online games (62.0%); they went through changes in mood that they could not explain while playing online games (47.9%); they were afraid that life without online games would be boring, empty, and joyless (39.3%); and they felt uncomfortable if they could not play online games (34.7%). Further, they became anxious if they could not play online games (33.0%); they felt scared thinking of a life without online games (30.2%); they felt worried if they could not play online games (29.5%); they felt nervous if they could not play online games (28.7%); they were not able to stop or control worrying if they could not play online games (28.6); and they had visible signs of nervousness (sweaty palms, shaky hands) if they could not play online games (27.6%).

Thus, it can be concluded that some of the respondents had low anxiety caused by online games, but the overall level of anxiety is low. Online games did not cause anxiety among some IIUM students since they were still able to differentiate between good and bad in their life.

**Table 8: One-Sample *t*-Test for Anxiety among IIUM Students**

No.	Variable ( <i>N</i> = 210)	<i>M</i> *	<i>SD</i>	%	<i>t</i> **	<i>df</i>	<i>p</i>
1	I always feel that other people are better at playing online games.	3.100	1.399	62.0	1.036	209	.301
2	I have changes in mood that I cannot explain while playing online games.	2.395	1.261	47.9	-6.951	209	.000
3	I am afraid that life without online games would be boring, empty, and joyless.	1.967	1.142	39.3	-13.108	209	.000
4	I feel uncomfortable if I cannot play online games.	1.733	1.019	34.7	-18.011	209	.000
5	I get anxious if I cannot play online games.	1.648	0.917	33.0	-21.361	209	.000
6	I feel scared when thinking of a life without online games.	1.510	0.802	30.2	-26.926	209	.000
7	I feel worried if I cannot play online games.	1.476	0.771	29.5	-28.624	209	.000
8	I feel nervous if I cannot play online games.	1.433	0.744	28.7	-30.531	209	.000
9	I am not being able to stop or control worrying if I cannot play online games.	1.429	0.717	28.6	-31.763	209	.000
10	I have visible signs of nervousness (sweaty palms, shaky hands) if I cannot play online games.	1.381	0.711	27.6	-33.019	209	.000
<b>11</b>	<b>Overall Anxiety</b>	<b>1.807</b>	<b>0.615</b>	<b>36.1</b>	<b>-28.102</b>	<b>209</b>	<b>.000</b>

\*On a 5-point scale, where 1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly agree*, 4 = *agree*, 5 = *strongly agree*.

\*\*Test value is 3.

Source: (The Researchers)

### ***Mental Health - Loneliness***

Table 9 shows the level of loneliness among IIUM students. Overall, the respondents suffered from some loneliness (41.9%) with a mean value of 2.096 (*SD* = 1.05; *t* = -28.102, *p* = .000). According to the respondents, they played online games because of reasons such as they felt bored with almost everything else in life (52.1%), they felt lonely (49.0%), they felt unhappy doing many things alone (44.5%), they had no friends to talk to (44.1%), they did not have much to be proud of in their real-life (40.9%), they felt shut out and excluded by others (39.8%), they felt it was difficult for them to make friends in real-life (39.4%), nobody understood them in real-life (38.7%), nobody cared about them (38.5%), and their family did not give them enough attention (32.3%).

Therefore, it can be concluded that the respondents did not play online games because of loneliness. Rather, they only played online games during their leisure time as they were aware of the impact of playing online games. They knew the right time for them to play, and perhaps, they played online games with their friends just to release their tension.

**Table 9: One-Sample *t*-Test for Loneliness among IIUM Students**

No.	Variable ( <i>N</i> = 210)	<i>M</i> *	<i>SD</i>	%	<i>t</i> **	<i>df</i>	<i>p</i>
1.	I play online games because I feel bored with almost everything else in life.	2.605	1.411	52.1	-4.059	209	.000
2.	I play online games because I feel lonely.	2.448	1.483	49.0	-5.396	209	.000
3.	I play online games because I feel unhappy doing so many things alone.	2.224	1.310	44.5	-8.589	209	.000
4.	I play online games because I have no friends to talk to.	2.205	1.298	44.1	-8.877	209	.000
5.	I play online games because I feel I do not have much to be proud of in my real life.	2.043	1.328	40.9	-10.444	209	.000
6.	I play online games because I feel shut out and excluded by others.	1.991	1.218	39.8	-12.012	209	.000
7.	I play online games because I feel it is difficult for me to make friends in real life.	1.971	1.271	39.4	-11.724	209	.000
8.	I play online games because nobody really understands me in real life.	1.933	1.277	38.7	-12.100	209	.000
9.	I play online games because nobody cares about me.	1.924	1.121	38.5	-13.908	209	.000
10.	I play online games because my family did not give me enough attention.	1.614	0.933	32.3	-21.533	209	.000
<b>11.</b>	<b>Overall Loneliness</b>	<b>2.096</b>	<b>1.050</b>	<b>41.9</b>	<b>-12.480</b>	<b>209</b>	<b>.000</b>

\*On a 5-point scale, where 1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly agree*, 4 = *agree*, 5 = *strongly agree*.

\*\*Test value is 3.

Source: (The Researchers)

### ***Hypothesis Testing***

The aim of this study is to look at the relationship between addiction to online games and depression, anxiety, and loneliness (Table 10). There was a positive and strong relationship between addiction to online games and depression among IIUM students ( $r = .687$ ,  $p = .000$ ). Hence, the result indicates that students who are addicted to playing online games are depressed. However, the respondents were not addicted to online games and they were not depressed. In other words, the less addicted they are, the less depressed they would become. Next, there existed a positive and strong relationship between addiction and anxiety ( $r = .637$ ,  $p = .000$ ). Therefore, the results indicate that students who are addicted to playing online games

do have anxiety. However, the respondents were neither addicted to online games nor suffering from anxiety. Therefore, it can be concluded that the less addicted the students are, the less they would suffer from anxiety. Next, there was a weak positive and significant relationship between addiction and loneliness ( $r = .325$ ;  $p = .000$ ). Since the respondents were neither addicted to online games nor suffering from loneliness, it can be said that the less addicted the students are, the less lonely they would become.

There was a positive moderate relationship between depression and anxiety ( $r = .529$ ;  $p = .000$ ). Since the respondents neither suffered from depression nor anxiety, it can be said that the less depressed the students are, the less they would suffer from anxiety. In addition, depression was also correlated with loneliness. The results show a weak positive and significant relationship between depression and loneliness ( $r = .272$ ;  $p = .000$ ). Since the respondents did not suffer from depression and loneliness, it can be concluded that the less depressed the students are, the less lonely they would become. Next, the relationship between anxiety and loneliness was positive and moderate ( $r = .453$ ;  $p = .000$ ). Since the respondents suffered from anxiety and loneliness, this finding implies that the less the students suffer from anxiety, the less lonely they become.

On a 5-point scale, the levels of addiction ( $M = 2.615$ ,  $SD = 0.728$ ), depression ( $M = 2.235$ ,  $SD = 0.758$ ), loneliness ( $M = 2.096$ ,  $SD = 1.050$ ), and anxiety ( $M = 1.807$ ,  $SD = 0.615$ ) are considered to be low.

**Table 10: Zero-order Correlation between Addiction, Depression, Anxiety, and Loneliness**

Variable (N = 210)	Mean	SD	Addiction	Depression	Anxiety	Loneliness
Addiction	2.615	0.728	1			
Depression	2.235	0.758	$r = .687, p = .000$	1		
Anxiety	1.807	0.615	$r = .637, p = .000$	$r = .529, p = .000$	1	
Loneliness	2.096	1.050	$r = .325, p = .000$	$r = .272, p = .000$	$r = .453, p = .000$	1

### Conclusion

The purpose of this study is to identify the impact of online gaming addiction on the mental health of IIUM students. A total of 210 students participated in this study. The male students were eager to participate in comparison to the female students. The majority of the respondents were young, mostly between 21–25 years old and comprised first-year undergraduates and postgraduates from Kulliyyah of Islamic Revealed Knowledge and Human Science (KIRKHS). Social cognitive theory was applied as a guide for testing the hypotheses, and positive and significant relationships were found between addiction and depression, anxiety, and loneliness. The conclusion from the findings is that the less addicted students are to online games, the less they would suffer from depression, anxiety, and loneliness. Similarly, the reverse holds true where the more addicted they are to online games, the more they suffer from depression, anxiety, and loneliness. Hence, the choice is in their hands.



This study is intended to explain the impact of online gaming addiction on mental health, namely depression, anxiety, and loneliness. Some students might think that they play online games just for fun without realizing that they have signs or symptoms that they are addicted to it, which might lead to depression, anxiety, and loneliness. This is because time displacement theory holds true, that is, when one spends too much time on online games, they cannot retrieve the loss time, thus potentially leading to depression, anxiety, and loneliness.

### ***Limitations of the Study***

This study was conducted during the peak of the COVID-19 pandemic in Malaysia. Hence, it was impossible to reach the respondents face to face since Malaysia was under the Movement Control Order (MCO) at that time. Thus, the main issue faced by this study was to find the respondents. The potential respondents could only be reached via online methods through social media such as WhatsApp, Telegram, and Facebook. The process of finding the respondents was also very challenging because some of the IIUM students did not want to cooperate. Thus, it took a long time to obtain 210 respondents for this study.

### ***Recommendations for Future Research***

Future researchers are recommended to start collecting their data early to have sufficient time to complete their research. Also, future research should study this issue from other angles, for example, the relationship between online gaming addiction and other variables such as academic performance and physical health. It is recommended to collect data face to face after the MCO is lifted to overcome the difficulty of collecting data via online methods as some students refused to cooperate. Lastly, future researchers are recommended to test other theories such as agenda setting theory, cultivation theory, dependency theory, and media effect theory.

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