INTERNET GAMING DISORDER (IGD)

SELF-EFFICACY, GAMING MOTIVES, SOCIAL SUPPORT AND INTERNET GAMING

DISORDER AMONG EMERGING ADULTS IN MALAYSIA

CHANG KE JING

COLETTE ANG CHIEN YUEH

GOH HUI SHAN

A RESEARCH PROJECT SUBMITTED IN

PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR

THE BACHELOR OF SOCIAL SCIENCE (HONS) PSYCHOLOGY

FACULTY OF ARTS AND SOCIAL SCIENCE

UNIVERSITI TUNKU ABDUL RAHMAN

JUNE 2024

Self-efficacy, Gaming Motives, Socia Support and

Internet Gaming Disorder among Emerging Adults in Malaysia

Chang Ke Jing, Colette Ang Chien Yueh, and Goh Hui Shan

Universiti Tunku Abdul Rahman

This research project is submitted in partial fulfilment of the requirements for the Bachelor of

Social Science (Hons) Psychology, Faculty of Arts and Social Science, Universiti Tunku Abdul

Rahman. Submitted on June 2024.

ACKNOWLEDGEMENT

CHANG KE JING

COLETTE ANG CHIEN YUEH

GOH HUI SHAN

DECLARATION

We declare that the material contained in this paper is the end result of our own work and that due acknowledgment has been given in the bibliography and references to ALL sources be they printed, electronic or personal.

Name: Chang Ke Jing

Student ID: 20AAB05487

Signed:

Date: 20 August 2024

Name: Colette Ang Chien Yueh

Student ID: 20AAB02768

Signed:

Date: 20 August 2024

Name: Goh Hui Shan

Student ID: 21AAB06899

Signed:

Date: 20 August 2024

APPROVAL FORM

This research paper attached here, entitled "Self-efficacy, Gaming Motives, Social Support, and Internet Gaming Disorder Among Emerging Adults in Malaysia." prepared and submitted by "Chang Ke Jing, Colette Ang Chien Yueh, and Goh Hui Shan" in partial fulfillment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

_____   Date: 21 Aug 2024

Supervisor

(Dr. Grace T'ng Soo Ting)

Abstract

Nowadays, Internet games served as a leisure online activity for the public, but people still heavily utilise them, leading to addictive behaviours. This research aimed to investigate the predictive roles of self-efficacy, gaming motives (social motive, escape motive, competition motive, coping motive, skill development motive, fantasy motive, recreation motive), social support, and Internet gaming disorder (IGD) among emerging adults in Malaysia. Social Cognitive Theory (SCT) was used and suggested that addiction behaviour was influenced by the expectations regarding the reinforcement or consequences associated with a particular behaviour. A purposive sampling method was used to collect 354 Malaysian participants between 18 and 29 years old, with a minimum of 12 months of gaming experience. Internet Gaming Disorder Scale 9-Short-Form, New General Self-Efficacy Scale, Motives for Online Gaming Questionnaire, and Brief Form of the Perceived Social Support Questionnaire were utilised to measure the variables. The results showed that self-efficacy was a significant positive predictor of IGD, while escape motive, and competition motive were significant negative predictors of IGD. Social motive, coping motive, skill development motive, fantasy motive, recreation motive, and social support showed non-significant predicted IGD. In conclusion, the findings from this study have provided a better understanding of the predictive factor of IGD among emerging adults in the Malaysia context which was valuable in identifying gaps in the literature regarding the pathological issues of gaming in the education sector, early intervention, prevention, and treatment of IGD in Malaysia.

Keywords: Internet gaming disorder (IGD), Self-efficacy, Gaming motive, Social support, Emerging adults

Table of Contents

List of Figures

List of Tables

List of Abbreviations

Abbreviations

APA	American Psychiatry Association
WHO	World Health Organization
IGD	Internet Gaming Disorder
GD	Gaming Disorder
IA	Internet Addiction
PIU	Problematic Internet Use
SCT	Social Cognitive Theory
IGDS9-SF	Internet Gaming Disorder Scale 9-Short-Form
NGSES	New General Self-Efficacy Scale
MOGQ	Motives for Online Gaming Questionnaire
F-SozU K-6	Brief form of the Perceived Social Support Questionnaire
UTAR	Universiti Tunku Abdul Rahman
SERC	Scientific and Ethical Review Committee
SPSS	Statistical Package for Social Science
Q-Q Plot	Quantile-Quantile Plot
P-P Plot	Probability-Probability Plot
MLR	Multiple Linear Regression
VIF	Variance Inflation Factor
K-S Test	Kolmogorov-Smirnov Test

Chapter I

Introduction

Background of Study

The term "online games" known as "video games", is a form of digital interactive entertainment between players and game's visual display on several types of electronic devices (King & Delfabbro, 2018). Since the 2000s, it has shown a remarkable growth in the number of people who play video games with digital devices, especially as games were shifted to different online formats (Griffiths & Pontes, 2020). Addiction to online gaming is defined as a user may not have the ability to control his or her excessive use of video games in daily life (Almourad et al., 2020).

According to the American Psychiatric Association (2013), the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) has included video game addiction as a characteristic of Internet gaming disorder (IGD). It also encompassed persistent use in online or offline game activities and caused IGD in future. The World Health Organization (2019) incorporated Gaming disorder (GD) into the 11th edition of the International Classification of Diseases (ICD-11). From ICD-11, it describes that it is a behavioural pattern of gaming (either in 'digital gaming' or 'video gaming'), characterised by a lack of control over online gaming activities. Both DSM-5 and ICD-11 have defined IGD and GD as a repetitive or excessive pattern of playing games behaviour (APA, 2013; WHO, 2019). In this pattern, gaming becomes more significant to the point where it supersedes other interests and daily tasks.

In the early years, the Ministry of Youth and Sports (1997) announced that the youth development programs and activities should focus more on 18-25 year old. The Ministry of Youth and Sports (2018) announced that the new Malaysian Youth Policy was implemented in

2018 with the latest youth age range from 18 to 30 years to replace the old policy from National

Youth Development Policy (NYDP) in 1997. In the Malaysian context, Halik et al. (2019)

proposed that emerging adulthood is a transition stage for late adolescence and early adulthood

that are likely to search for love, work and other explorations in their life course. Video games

can adversely impact their mental health, potentially influencing cognitive functioning across

various aspects of life among emerging adults (Sala et al., 2018). Hence, IGD becomes

pathological among emerging adults, especially young adult males because it leads to poorer

physical and mental health and other addictive behaviours (Stockdale & Coyne, 2018).

Self-efficacy plays a predicting role in IGD among emerging adults. It is described as an

individual's belief in their abilities to control over the specific behaviours and achieve certain

outcome expectations in life (Bandura, 1977). According to Bandura (1977), the theory of self-

efficacy is linked to various behaviours because this term can be used to effectively predict an

individual's behaviour changes. Individuals have their own concepts of personal efficacy

because of their different life experiences to distinguish themselves from others (Bandura, 1994).

Furthermore, the next predictor chosen in the study to assess the relation of IGD is

gaming motives. Motives are defined as a set of knowledge that reflects emotional preferences

expressed through thoughts and ideas (McClelland, 1985). Motives of identified regulation are

characterised by engaging the activities that align with an individual's values and needs (Bäcklund

et al., 2022). Previous research by Demetrovics et al. (2011) clearly demonstrated that exploring

motives is vital in understanding the traits of online games and their player base. Demetrovics et

al. (2011) have suggested that gaming motives can be explored through the underlying needs and

motives that drive individuals to participate in them. These motives can be viewed as the driving

forces and decisive elements influencing our behaviour (Demetrovics et al., 2011).

According to Demetrovics et al. (2011), gaming motives were identified into different dimensions, including social, escape, competition, coping, skill development, fantasy, and recreation motive. Social motive involves the desire to engage in play and establish friendships with others. Escape motive entails using gaming as a means to evade real-life problems and challenges. Competition motive revolves around the drive to triumph over others. Coping motive involves using gaming as a way to alleviate stress, tension, or aggression, leading to an improved mood. Skill development motive focuses on improving a player's coordination, concentration, and other abilities. Fantasy motive is centred around exploring those latest and unachievable identities or scenarios in the players' daily life. Recreation motive refers to having fun in gaming. The seven dimensions of motives appear to encompass the entire spectrum of gaming motives (Demetrovics et al., 2011). Motives in online gaming play a crucial role in both the formation and perpetuation of addictive behaviour related to online games (Šporčić & Glavak-Tkalić, 2018). In the realm of digital gaming, individuals are motivated by diverse needs (Caplan et al., 2009). The ability to facilitate gaming group play and social interactions among players on Internet games is observed in order to have a higher potential for addiction (Griffiths et al., 2004).

Schwarzer et al. (2004) defined social support as an exchange resource with others, containing tangible (e.g., financial help), informational (e.g., provide feedback), and emotional (e.g., offer encouragement). It supports an individual's physical and mental condition through social networks in society, such as family, teachers, and friends. Social support is individuals' coping resources and refers to a source of emotion and information to provide assistance to encounter certain situations or negative emotional states from parents, friends or others (Thoits, 2010). Additionally, social support is perceived as a protective factor of IGD because people can

seek for support in the positive interpersonal relationships (Yang et al., 2020). According to

Yildirim and Zeren (2021), perceived social support is an essential variable associated with IGD

since it can either increase or decrease players' basic psychological needs in online gaming.

Stockdale and Coyne (2018) found out that social support is used to measure emerging adult's

physical, mental and emotional health, just like cognitive process, arousal response and impulse

control on gaming behaviour. This shows that social support systems can determine an

individual's gaming engagement behaviour.

All these predictors contribute to addictive patterns, which is IGD. Hellman et al. (2013)

explained that excessive online gaming behaviour can be named as ''addiction'', just as

addiction-like behavioural disorders. It also can be as well as Internet gaming disorder (IGD).

However, this present study aims to investigate the Internet gaming disorder among emerging

adults in Malaysia by the predictors, which are self-efficacy, gaming motives and social support

that constitute critical IGD risk factors.

Problem Statement

Nowadays, Internet games serve as a leisure online activity for the public, but some

people may heavily utilise it and lead to addictive behaviours. IGD plays an important

contributor to the public health implications (Naskar et al., 2016). Männikkö et al. (2020) stated

that IGD has significant with severe negative consequences for health-related problems in

individuals, including functional impairment in their development (Jo et al., 2019), low

psychosocial well-being (Lemmens et al., 2011; Teng et al., 2020), presence of other comorbid

disorders (Evren et al., 2019; Wichstrøm et al., 2019), psychological distress and sleep

problems (Lin et al., 2021; Wang et al., 2021a), lack of social skills (Fumero et al., 2020) and

other possible impacts. Despite adverse outcomes, individuals with IGD may still persist in

gaming or experience an escalation in their gaming behaviour (Stavropoulos et al., 2021). These negative consequences must be considered seriously since they will increase the rate of IGD.

The Department of Statistics Malaysia (2021) reported that 99% of the Malaysian population participated in Internet activities, followed by the highest Internet engagement is to play or download games (91.8%). The Malaysian Communications and Multimedia Department (2022) also has analysed Internet usage statistics, as online games activities (35.7%) were one of the Internet consumptions for Malaysians. According to Roslan et al. (2021), 18.26% of 20 to 24 age groups significantly contribute to the high prevalence of online gaming addiction, especially as most of the males have a high prevalence (35.72%) of online gaming addiction, which can be related to IGD. Thence, it proposed that there is a high percentage of Malaysian Internet users, especially those who engage in online gaming.

On top of that, there is less literature about IGD with emerging adults in Malaysia as the target population. In Malaysia, studies focused more on the population of young adolescents from aged 10 to 19 (Mohamed et al., 2023; Tan, 2022), university students between 19 to 27 years old (Ismail et al., 2021; Jaafar et al., 2021) when studying the topic of Internet gaming disorder (IGD), but there is a need to investigate further on IGD among Malaysia emerging adults in order to find the best control and treatment for the disorder. Among the age range of Malaysia, Wider et al. (2014) summarised that the Malaysian government did not specifically state the development period for emerging adults in Malaysian populations. According to Arnett et al. (2014), they introduced the widespread culture that emerging adults occurred between adolescence and full-fledged adulthood, from those who are within the age of 18 to 29. In this case, this study aims to delve into IGD among the target participants, Malaysian emerging adults to fill the notable gap.

Furthermore, there are few knowledge gaps that need to be emphasised in this present study. The knowledge gaps are the controversy surrounding Internet addiction (IA) and IGD. A study published by Zajac et al. (2017) clarified that the controversial issues of IA and IGD are hindered behind methodological problems. Studies carried out to debate the differences between IA and IGD are totally uncomparable (Griffiths & Pontes, 2014; Griffiths, 2018), but few studies still conflated both addictive behaviours (Chang et al., 2022; Cho et al., 2014; Xiuqin et al., 2010). This frequent blending of the two disorder terms has made it more confusing and ambiguous in the study field. Furthermore, a theoretical gap has been found as previous studies (e.g., Abedini et al., 2023; Yang, 2020; Yu et al., 2013) examined IA or problematic Internet use (PIU) as the outcome variable of Social Cognitive Theory (SCT), which showed limited study on IGD. This leads to a knowledge gap in the present study, which has set an expectation of the theoretical framework. Hence, there is a need to fulfill the theoretical gap of SCT with self-efficacy, gaming motives, social support and IGD.

In addition, there is a literature gap about self-efficacy and IGD among emerging adults in Malaysia. In the Malaysia context, several studies have only explained self-efficacy in the academic context, which about the role of self-efficacy and online learning among Malaysian university students (Ahmad & Salim, 2021; Latip et al., 2020; Ramayah & Aafaqi, 2004). Past research has attempted to discover and disclose why individuals have exceptional self-efficacy and focus on specific intentions of behaviour to the accomplishment of success (Klimmt & Hartmann, 2006; Sharma et al., 2022). Moreover, there is a need to fill the literature gaps on self-efficacy and IGD in Malaysia, and also focus on emerging adult populations. Therefore, self-efficacy is an important predictor towards IGD as it may influence an individual's belief in Internet gaming. In order to identify and address the literature gap effectively, a wider range of

emerging adult population should be needed to investigate the elements of self-efficacy and IGD in Malaysia.

There is a limited existing research gap about gaming motives that need to emphasise on. The research gap is that there is limited studies utilising gaming motives with Social Cognitive Theory (SCT) in Malaysia. Increased Malaysian studies have adopted other motivational typologies with other theories, such as using Yee's Motivations for Playing in Online games (Yee, 2006a), in combining with Social Determination Theory (SDT) and Uses and Gratifications Theory (UGT) that are different from this present study (Bong et al, 2019; Fam et al., 2021; Khor et al., 2019; Sanmugam et al., 2016; T'ng & Pau, 2021). Comparing those discrepancies, this study can explore a diversified scope of motivational typology by using SCT with seven motivational elements from Demetrovics et al. (2011), in which to develop a broad view on individuals' playing motives in online gaming. It can present research gaps regarding the nature of gaming motives and IGD with SCT. Hence, a new finding is needed to incorporate gaming motives and use this variable together as a predictive variable of IGD in the SCT.

Furthermore, there are few inconsistencies in the relationship between social support and IGD. Studies have shown that social support has a negative correlation with IGD or problematic gaming use (Uçur & Dönmez, 2021; Yildirim & Zeren, 2021; Zhang et al., 2019), while results from another study indicated a positively significant relationship between social support and IGD (Wartberg et al., 2017). From those discrepancies in results, there is a need to consolidate past findings and also determine whether social support predicts IGD in the Malaysian context.

The purpose of this research is to investigate the predictive roles of self-efficacy, gaming motives (social motive, escape motive, competition motive, coping motive, skill development motive, fantasy motive, and recreation motive), social support on IGD among emerging adults in

Malaysia. In this study, it is to determine whether self-efficacy, gaming motives and social support will negatively or positively predict the IGD, but also strengthen the knowledge gap for Bandura's Social Cognitive Theory. An online survey consisting of four inventories is conducted to collect information and used to perform analysis.

Research Questions

1. Do self-efficacy, recreation motive and social support negatively predict Internet gaming disorder among emerging adults in Malaysia?

2. Do social motive, escape motive, competition motive, coping motive, skill development motive, and fantasy motive positively predict Internet gaming disorder among emerging adults in Malaysia?

Research Objectives

To examine the predictive roles of self-efficacy, gaming motives (social motive, escape motive, competition motive, coping motive, skill development motive, fantasy motive, recreation motive), social support on Internet gaming disorder among emerging adults in Malaysia.

Hypotheses

> *H_1:* Self-efficacy negatively predicts Internet gaming disorder among emerging adults in Malaysia.
>
> *H_2:* Social motive positively predicts Internet gaming disorder among emerging adults in Malaysia.
>
> *H_3:* Escape motive positively predicts Internet gaming disorder among emerging adults in Malaysia.
>
> *H_4:* Competition motive positively predicts Internet gaming disorder among emerging adults in Malaysia.

H_5: Coping motive positively predicts Internet gaming disorder among emerging adults

in Malaysia.

H_6: Skill development motive positively predicts Internet gaming disorder among

emerging adults in Malaysia.

H_7: Fantasy motive positively predicts Internet gaming disorder among emerging adults

in Malaysia.

H_8: Recreation motive negatively predicts Internet gaming disorder among emerging

adults in Malaysia.

H_9: Social support negatively predicts Internet gaming disorder among emerging adults

in Malaysia.

Significance of Study

Theoretical Contribution

The prevalence of IGD is still rising among emerging adults, primarily attributed to the

extensive engagement in Internet gaming. This research stands to gain valuable insights by

investigating the factors that anticipate the consequences of IGD. Furthermore, this study aims to

enhance comprehension within the domain of factors that hinder self-efficacy, social support,

gaming motives, and IGD, particularly in the context of emerging adults. This focus is crucial as

emerging adults are identified as the main demographic engaged in Internet gaming and are

susceptible to developing IGD. The conceptual framework of the current study aligns with the

Social Cognitive Theory (SCT), offering pertinent research insights into the selected independent

variables of self-efficacy, gaming motives, and social support in the context of IGD.

Notably, there is a scarcity of research on the specified variables as predictors of IGD.

Through the implementation of this study, it becomes possible to investigate particular sets of

variables, thereby addressing knowledge gaps related to IGD and its predictors. The result of this

study is to address the gaps in the existing literature, providing valuable insights for academic

purposes and the general public. Additionally, this study presents an opportunity to bridge

existing gaps in the literature within the cultural context of Malaysian studies. The Malaysian

viewpoint in this study adds a multicultural and collectivistic dimension to the literature.

Moreover, through guiding the present review, researchers can attain a deeper understanding of

the anticipated underlying mechanisms, as this study elucidates how the chosen variables

influence the consequences of IGD. The significance of scrutinising this study should be

underscored among mental health professionals and academic scholars. Through the execution of

this study, the broader audience will gain a clearer and more relatable understanding of the

aspects and issues discussed, bringing them closer to home. Therefore, further research is

warranted to achieve a comprehensive understanding, which has manifested in diverse settings.

Practical Contribution

From a practical standpoint, the present study holds significance in raising awareness

among emerging adults and the general public about the factors that lead to IGD. Particularly,

emerging adults may perceive daily online gameplay as a routine part of their lives. However,

the addictive aspects of such usage might not be widely recognized by emerging adults and the

general public. Hence, the practical insights gained from this empirical research could serve as a

foundation for crafting holistic interventions or campaigns aimed at assisting individuals dealing

with IGD. The study's findings hold potential benefits for various stakeholders involved in the

creation of intervention programs, including hospitals, parents, educators, psychologists, and

potentially the government sector. The mentioned parties would have the capacity to mitigate the

adverse effects of IGD. Additionally, emerging adult online players could leverage the insights

from this study to foster awareness about their own gaming habits, or in certain instances,

consider seeking professional assistance to address their personal challenges.

Conceptual Definition

Internet Gaming Disorder

American Psychological Association (APA) has defined Internet Gaming Disorder in the

DSM-5 as persistent, repetitive use of the Internet for gaming, usually with other players,

resulting in clinically significant impairment or distress (APA, 2013). The DSM-5 stated that

IGD can be identified over a 12-month period by five or more of nine criteria, which include: (1)

becoming addicted to playing online/digital games; (2) experiencing withdrawal symptoms when

online games are unavailable; (3) developing tolerance due to the increased time spent playing

games; (4) relapsing due to unsuccessful gaming abstinence; (5) losing interest in other previous

hobbies/recreational behaviours due to online gaming, with the exception of online gaming; (6)

knowing that online gaming may lead to psychosocial problems, but still continues to use online

games excessively; (7) misrepresentation of gaming time to relatives, therapists, or others; (8)

alteration of mood by using online games to escape or alleviate negative emotions; and (9) loss

of significant interpersonal, work, educational, or vocational opportunities as a result of

participation in online games. IGD can be defined as an excessive pattern of pathological video

gaming. It is characterised by symptoms similar to substance use disorders and gambling

disorders (Kuss et al., 2012). It's safe to say that the digital game has become a daily routine that

takes up a lot of time (Yildirim & Zeren, 2021).

Self-Efficacy

Self-efficacy is defined as the belief that a person can successfully accomplish the

behaviours needed to produce an outcome (Bandura, 1978). From the perspective of social

cognitive theory, self-efficacy pertains to an individual's confidence in their ability to possess the necessary skills to successfully complete a task or attain a goal (Bandura, 2002). Self-efficacy influences how individuals feel, think, and it is an important determinant of behaviour (Schunk & Pajares, 2002).

Gaming Motives

A motive is characterised as behaviour inspired by conscious or unconscious intention, or personality created for certain actions and to achieve a specific goal (Beck, 1966). For the video game aspects, different people are driven by different needs when playing the same game, so the process of playing the game will have a unique meaning and outcome for each player (Caplan et al., 2009; Zhong & Yao, 2012). There are four types of players proposed by Bartle (1996) and Wang et al. (2021b), which are killers, achievers, socializers, and explorers.

Furthermore, Demetrovics et al. (2011) defined the motivational foundations of online games using seven dimensions, which are social motive (players need to interact with others, be with others, play with others), escape motive (a player's desire to escape from challenging life situations), competition motive (players are eager to beat others and get a sense of achievement in the game), coping motive (players cope with difficult situations and improve their mood by engaging in games), skill development motive (a player's desire to learn or improve their gaming skills), fantasy motive (immerse themselves in attractive virtual game worlds and try things they can't do in the real world to get intense satisfaction), and recreation motive (players want to play games to relax, enjoy and relieve boredom). When motivational needs become more persistent, frequent, and intense, a person is likely to play games compulsively when playing games often fulfill his or her certain needs (Robinson & Berridge, 2003; Zhong & Yao, 2012). Therefore, gaming motives may refer to a person's intentions to continue playing online games.

Social Support

Social support can be defined as fostering a sense of commitment that one is loved, cared for, accepted, and valued by others, and that one is helped by others when necessary (Cobb, 1976). It is a psychological resource that helps individuals to cope with obstacles or challenges in their life. Karuppaswamy and Verma (2018) mentioned that these resources of support can manifest as emotional (such as parenting), tangible (like financial assistance), informational (such as advice), companionship (for instance, a sense of belonging), and intangible (including personal guidance). Social support measures may encompass an individual's perception of the accessibility of help, the tangible assistance received, or the degree to which a person is integrated into their social network.

Operational Definition

Internet Gaming Disorder

The Internet Gaming Disorder Scale 9-Short-Form (IGDS9-SF) developed by Pontes and Griffiths (2015) was used to detect whether the participants have endorsed at least five out of the nine diagnostic criteria of IGD. The scale consists of 9 items ranging from 1 (*never*) to 5 (*very often*). The total score was calculated by averaging all 9 items. The total score lies between 9 to 45. The higher score indicates a high degree of IGD.

Self-Efficacy

The New General Self-Efficacy Scale developed by Chen et al. (2001) was used to assess the extent to which individuals believe they can achieve their goals, even in the face of challenges. The scale consists of 8 items and is rated using a 5-point rating scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The total score was estimated by taking the average scores of the ratings. A higher score indicates greater self-efficacy in an individual.

Gaming Motives

The Motives for Online Gaming Questionnaire (MOGQ) developed by Demetrovics et al. (2011) was used to measure seven dimensions of gaming motives: social, escape, competition, coping, skill development, fantasy and recreation motive. The scale consists of 27 items and is rated using a 5-point Likert-type scale ranging from 1 (*almost never*) to 5 (*almost always*). The total score was computed by summing up all the items. A higher score indicates a greater level of motives.

Social Support

The brief form of the perceived social support questionnaire (F-SozU K-6) developed by Kliem et al. (2015) was used to measure general perceived social support. The scale consists of 6 items ranging from 1 (*not true at all*) to 5 (*very true*). The total score was calculated by summing up all items. The higher score indicates high levels of perceived social support.

Chapter II

Literature Review

Conceptualizing on Internet Gaming Disorder

According to Nasution et al. (2019), Internet gaming disorder (IGD) is categorised with specific diagnostic criteria as Internet games often interrupt people's work and academic life. The Department of Statistics Malaysia (2020) reported that gaming markets have increased by 3.1% and also positively flourished other digital platforms. According to Espina and Lapates (2016), Internet games are wide-spreading and primarily built on the top of digital social networks by game developers to entertain or target the global population. In recent times, there is still an increased number of online game users, and greatly expanding the current situation with lot of online video game.

However, the usage of Internet games is still being coordinated as a common leisure choice as people can explore more aspects of themselves and gain more experiences (Wang et al., 2015). With online games, people are used to spending their leisure time with significant ramifications for their overall health and development, just like improving relationship quality (Padilla-Walker et al., 2010). It can assist some people increase interactions with friends and family, relax mental conditions, advance self-perceptions, cognitive abilities in gaming and others. Prochnow et al. (2020) mentioned that online games function as a network that offers social connections to link people around.

Conversely, online games are Internet activities related to IGD since they negatively impact an individual's well-being and cognitive function. When video games are used excessively, people tend to face cognitive dissonance as gaming may not activate the brain's reactivity in cognitive control, leading to substance or drug use (Ko, 2014). IGD encompasses

the addictive gaming behaviour of individuals but if they could optimise their game use, video

games either help them to reduce stress or cause some kind of risky online behaviours.

Conceptualizing on Self-Efficacy

Self-efficacy is a source of personal belief in self in terms of regulating the affective and

cognitive processes to activate their action and exert their efforts (Bandura, 1994). It is a

person's belief in his or her capabilities to interfere in his or her life by maintaining commitment,

persistence in efforts, and the purpose of motivation. Self-efficacy can influence behavioural

changes in the amount of time individuals spend on online games, heighten their specific

maladaptive traits, modify emotional characteristics and many more, pushing individuals toward

IGD (Chung et al., 2020). As claimed by Blair (2011), self-efficacy may directly articulate a

goal-oriented behaviour in gaming, as they feel confident with their ability to accomplish the

gaming performance and gaming achievements.

Bandura and Adams (1977) successfully investigated that self-efficacy has the control to

either increase or decrease certain behaviours based on the individuals' expectations of personal

efficacy. From the perspective of social cognitive theory (Bandura et al., 1999; Bandura, 2006),

self-efficacy can lead to various effects that produce either optimistic or adverse outcomes. Stirin

et al. (2016) pointed out that self-efficacy had both positive and negative effects on a person's

performance. The intensity to which individuals' self-beliefs in efficacy contribute to their

competence in changing some desirable or undesirable behaviours of themselves. The following

actions properly generate two extremes of differentiation between low self-efficacy and high

self-efficacy.

In addition, Heslin and Klehe (2006) concluded that people with low self-efficacy easily

felt lost and hopeless since something provokes their abilities to cope with the behaviours; in

turn, a high degree of self-efficacy causes a sense of striving in people to overcome, react

actively and even prepare proactively to the behaviours before the dangers come. It is a key

competence to determine an individual's self-mastery in performing specific tasks without

others' coaching or guidance. Subsequently, self-efficacy is a basic mechanism in human agency

to interfere with the behaviours or situations by establishing different personal modes of intrinsic

interest, resistance, self-debilitating and etc, in order to gain more self-referent thought in self

(Bandura, 1982).

In particular, self-efficacy helps to examine a sense of self-concept and self-perception,

and whether an individual is more prone to develop or resist those positive and negative

behaviours. Therefore, people with high self-efficacy tend to be more confident as they believe

that there are positive consequences for them, while people with low self-efficacy often perceive

negative consequences since they are less spurred to perform better in the face of obstacles.

Conceptualizing on Gaming Motives

According to Khan and Muqtadir (2016), motives for playing digital games are a series of

factors that activate an individual's behaviour to achieve some desirable goals or objectives.

According to Demetrovics et al. (2011), gaming motives are presented in terms of good or bad

for some individuals, but it was mainly developed to define the motives and needs behind

playing online games. Individuals' gaming motives for engaging in online games have been

classified into seven motivational components, encompassing (1) social motive, (2) escape

motive, (3) competition motive, (4) coping motive, (5) skill development motive, (6) fantasy

motive, and (7) recreation motive (Demetrovics et al., 2011).

For the first component of gaming motives, the social motive in an individual is fuelled

by a strong in gaming use of video games to connect with new people and seek companionship

during gaming. Escape motive refers to individuals who use video games to escape from reality

and seek refuge from everyday challenges or unpleasant thoughts by using gaming as a coping

mechanism for stress and tension relief. Competitive players with the competition motive are

likely to find enjoyment in winning, defeating opponents, and experiencing a sense of

superiority. Coping motive is used to involve the individual's ability to deal with their stress and

psychological distress. Skill development motive involves playing to enhance senses, skills,

concentration, and coordination. As for fantasy motive, some individuals engage in online

gaming to partake in virtual activities not feasible in real life or to adopt different roles in

alternate worlds. Recreation motive in gaming includes playing games for entertainment and

enjoyment purposes (Demetrovics et al., 2011).

In addition, gaming motives also play a crucial role in explaining individual variations in

video game-related behaviours (López-Fernández et al., 2020). Motives recently have been a key

construct in comprehending Internet gaming, offering a framework to distinguish between

gamers based on usage patterns and behaviours (Moudiab & Spada, 2019). Correspondingly,

López-Fernández et al. (2021) obtained that gaming motives hold significance at both a

theoretical and applied level. On the practical side, motives represent crucial psychological

factors upon which strategies for prevention and intervention can be directed (Steadman, 2019).

Theoretically, motives are acknowledged as a essential etiological factor contributing to

behavioural disorders and addictions (Cooper et al., 2016). Moreover, individuals possess

diverse motives for engaging in online games, and exploring these various motives is critical to

comprehend gaming behaviour (Demetrovics et al., 2011). Gaming motives reported in past

research have been consistently identified as the most robust predictors of a clinically significant

IGD (Kuss et al., 2012). Therefore, online gaming motives have been proposed as another

potential factor influencing the connection between excessive use in gaming and social

consequences.

Conceptualizing on Social Support

Social support is characterised as a social interaction or relationship that provides

practical assistance to an individual or integrates an individual into a social system perceived as a

source of love, care, or a sense of attachment within a valued social group or binary relationship

(Hobfoll, 1988). According to Thoits (2010), social support serves as a robust measure of the

interpersonal resources at an individual's disposal, encompassing emotional, informational, and

practical assistance from parents, friends, and other significant individuals in society. Social

support involves the perception or sensation that an individual is being cared for, typically

leading to feelings of closeness and belonging (Legault et al., 2006), and basic psychological

needs that contribute to an individual's well-being (Deci & Ryan, 2008). Lack of social support

can lead to physical and mental problems. Moreover, when individuals have a lack of social

support, gaming may become a way for them to escape from their own problems, which then

makes video games more interesting and attractive to them. As a result, individuals who

experience a deficiency in real-life social support may resort to excessive gaming as

compensatory behaviour (Davis, 2001).

Perceived social support can be defined as a person's subjective feelings of being cared

for, helped and supported by others (Teng et al., 2020). According to Li et al. (2023), perceived

social support creates positive attitudes, which in turn influence some specific behaviours and

beliefs in a positive way. Therefore, perceived social support can alleviate those addictive

behaviours. The higher the level of perceived social support, the more positive the emotional

experience, and the more stable the emotional and psychological state, which in turn affects

psychological resilience and promotes healthy behaviours. Hence, perceived social support may be one of the potential factors associated with addictive gaming behaviour, such as IGD.

Self-efficacy and Internet Gaming Disorder

Self-efficacy plays a significant role in predicting the IGD as it can influence an individual's belief or engagement in Internet gaming. Self-efficacy is a type of proxy variables that contributes to IGD caused by online games (Jin et al., 2021). A person's self-efficacy can truly shape gaming behaviour, addiction and IGD. Chen et al. (2020) believed that self-efficacy is indeed effective for IGD as it creates some advantages of emotional warmth in oneself to manage excessive online gaming addiction. Research have concluded that self-efficacy has a negative correlation and a direct effect on online gaming addiction (Arslan, 2022; Chung et al., 2020; Verrastro et al., 2021). People who extensively play video games may lack personal efficacy since video games act as a protector to stay away from social activities and create excuses to quit social activities (Chung et al., 2020). It can be seen that people who have low self-efficacy are more likely to insert themselves into the usage of Internet games since playing online games can be free from society, thereby leading to IGD.

On the other hand, the higher the intensity of self-efficacy, the higher the rate of being diagnosed with IGD by playing Internet games. Ahsan et al. (2019) completed a study that showed a notable correlation between self-efficacy and IGD. The study illustrated that people with high self-efficacy easily suffer from IGD since Internet games give those people a better fulfilling state through a computer-generated environment. Jeong and Kim (2011) also concluded that self-efficacy has a positive association with IGD as people can seek companionship needs through the Internet. As for some people, they tend to feel more pleasure and relaxed when they play with their online gaming partners and experience game engagement. Additionally, Dindar

and Akbulut (2015) supported that players with high self-efficacy are more likely to enjoy the

online game setting as they like to overcome the challenging tasks assigned in the virtual world.

As an example, players with high self-efficacy have better gaming performance than those with

low- self-efficacy, as they focus more on higher-order game playing strategies, eye-hand

coordination skills, critical information in games, visual attention distribution and more (Hsu et

al., 2019). This may strengthen the self-efficacy to involve in online games activities as well as

give more attention in engaging in the favourable online games, leading to severe IGD.

Gaming Motives and Internet Gaming Disorder

Gaming motives manifest as noteworthy contributors to the risk of developing IGD

(Kneer & Rieger, 2015). In general, a past study conducted by Demetrovics et al. (2011) clearly

indicated that investigating motives is a key element in comprehending the characteristics of

online games and their players. Gaming motives vary significantly among players, and the root

causes of IGD are often attributed to players' over-reliance on gaming to satisfy specific

psychological needs (Laconi et al., 2017). For the significance of gaming motives, a previous

study has emphasised the elucidating aspects of gaming disorder through various methodologies

and measurements (Sherry et al., 2012). The findings of a study suggested that Internet players

select their play based on variety of motives, which underscores the idea that Internet games may

carry distinct meanings and consequences for different players (Yee, 2006a). This proposition is

supported by past evidence, indicating that they correlate with various types of gaming motives

and IGD (Ballabio et al., 2017). Therefore, all the elements of gaming motives are associated

with IGD symptoms.

In addition, the seven dimensions of motives were notably higher in the risk group which

indicated there is a significant relationship with IGD (Kim et al., 2016). Firstly, López-

Fernández et al. (2020) suggested that social motive plays a significant role in IGD. Social motive is closely correlated with increased gaming frequency which may lead to IGD (De Hesselle et al., 2021). Despite this, Zanetta Dauriat et al. (2011) found that social motive was correlated with an elevated experience of symptomatology related to IGD. Furthermore, subsequent studies demonstrated that social motive was linked to higher levels of IGD compared to all other conventional gaming motives (Hilgard et al., 2013). Therefore, individuals with higher social motives are associated with higher IGD.

Conversely, a gamer who plays for social motive demonstrates a lower risk of IGD development (Ramos-Diaz et al., 2018). A prior study by Hellström et al. (2012) discovered that the most prevalent motives for online gaming include seeking fun or social interactions. Hence, an individual who engages in gaming for fun or social motive was associated with a decreased likelihood of developing IGD (Hellström et al., 2012). As a result, people who play online games for social motive were found to have less association with IGD.

Secondly, Kim et al. (2016) mentioned that the escape motive in online games has high risk development of IGD. Escapism is a part of DSM-5 criteria and is suggested to be distinct from social motive (APA, 2013). Escapism is often employed to relax or alleviate stress from the real world (Yee, 2006a). Gaming is driven by external pressures or status, and gaming is a means of escaping challenges in one's everyday life (Hellström et al., 2012). Thirdly, research findings (Kircaburun et al., 2020; Laconi et al., 2017) indicated that competition motives have been associated with IGD. Gaming motives related to gaming competence, such as competition, have consistently shown associations with the problematic use of gaming (Kircaburun et al., 2020). People who are high in competition motive have a strong desire for victory, which causes them to continuously engage in gaming, leading to the development of IGD.

Fourthly, coping motive is one of the specific gaming motives that has been found to be correlated with IGD (Laconi et al., 2017). Individuals who have a high level of coping motive result in a stronger connection with IGD (Kim et al., 2016). Coping motive is the most strongly linked with IGD since it is a mechanism to confront daily issues and boost emotions by playing online games (Kircaburun et al., 2020). Thus, an individual with a high coping motive tends to have excessive Internet gaming, which leads to IGD. The fifth gaming motive is the skill development motive, which was found to have a correlation with IGD. Skill development in gaming comprises those elements, indicating that individuals engage in gaming activities to enhance their coordination, concentration, or other gaming skills. For instance, Laconi et al. (2017) found that women were found to have lower skill development motives than males. Therefore, an individual's skill development motive significantly depends on his or her ability and engagement in online gaming activities. Likewise, skill development motives can also predict IGD.

Lastly, previous research has shown that fantasy motive is strongly associated with IGD, while recreational motive is found to have less association with IGD (Ballabio et al., 2017; De Hesselle et al., 2021; Bányai et al., 2019). Hence, people who have fantasy motives were associated with higher IGD symptoms compared to individuals with social motive and recreational motive. An individual with a fantasy motive engages in online gaming because of the enjoyment of seeking exploration with new roles in an alternate imaginative realm, and engaging in activities beyond the scope of real-life possibilities (Montag et al., 2019). However, recreational motive allows individuals to be involved in the relaxing aspects of online gaming such as playing games for entertainment and relaxation purposes. As a result, fantasy motive and recreational motive are associated with IGD.

Social Support and Internet Gaming Disorder

Perceived social support refers to an individual's subjective feelings of being cared for, helped and supported by others (Teng et al., 2020). Social support is a protective factor in students' lives, providing them with coping mechanisms and helping them adapt to various psychological challenges in the face of stress. Liu et al. (2022) found that social support, including family and peer support, mitigated the effects of depressive symptoms on IGD. High levels of social support were less likely to develop high levels of IGD. Some studies have found that perceived social support has a positive association with IGD. According to Shan et al. (2023), the result of the study showed that perceived social support increases the risk of IGD. Previous research indicated that those individuals engage in games as a way to seek social approval (King & Delfabbro, 2014), leading to high social support and IGD. For instance, individuals build their social networks and communicate with others to fulfill their needs and obtain social support in gaming environments. Hence, the findings indicate that social support is associated with IGD when individuals obtain social support from online gaming.

Conversely, previous studies have documented a negative association between perceived social support and IGD (e.g., Festl et al., 2013; Yu et al., 2018). It is due to social support can buffer the negative effects of IGD (Malak et al., 2023), which reduces IGD symptoms. When individuals feel that their social networks are being noticed, they fulfill the need to belong to a larger group or related population. Hence, individuals who receive more support are likely to have good personal development and less boredom and isolation, which reduces the chances of problematic Internet gaming use when they experience adversity (Mo et al., 2018; Liu et al., 2022). Similarly, if social support is negatively correlated with IGD, it also suggests that low social support may contribute to IGD. Low social support from families, friends, or even

teachers can have a predisposition to gaming disorder. Kaya et al. (2023) highlighted that if individuals' psychological needs are not fulfilled by their social support systems, they tend to seek other sources, as in the case of increased online game usage to satisfy their needs through online games. Previous research has shown that individuals who lack social support tend to experience difficulties with their interpersonal relationships and health-related problems (Macur & Pontes, 2021). Inadequate social support may lead people to suffer from unhealthy or stressful events, so they play video games to escape everything in life to create a sense of relaxation and relief for themselves (Tariq & Majeed, 2022).

Theoretical Framework

Social Cognitive Theory (SCT) is widely embraced as a comprehensive framework that offers a profound perspective for scrutinising the underlying reasons why individuals adopt specific behaviours (Bandura, 1986). SCT serves as a thorough theoretical framework for understanding human behaviour. According to SCT, human behaviour is intentionally guided by one's perceived goals and regulated through the exercise of control over Internal cognitions, actions, and external sources of influence within this framework (Bandura, 1991). SCT incorporates an individual's past experiences as a determinant of whether a behavioural action occurs. In spite, SCT suggested that behaviour is influenced by the expectations regarding the reinforcement or consequences associated with a particular behaviour (Mobley & Sandoval, 2008).

According to Bandura (1986), SCT proposes learning occurs within a social context through dynamic and reciprocal interactions. The triadic reciprocal model revolves around three factors: (1) personal factors, (2) environmental factors, and (3) behavioural factors. These three elements exert reciprocal influences on each other, signifying that each factor influences the

others while also being influenced by them (Schunk & DiBenedetto, 2019). Individual behaviour

is guided by personal factors (Bandura, 1989). The emotional and cognitive dimensions of

individuals include their feelings, emotions, and thoughts, constituting personal factors. Lerner

(1982) noted that characteristics like age, gender, race, and physical appearance are also regarded

as personal factors. On the other hand, environmental factors are related to the physical and

social surroundings of the individuals. Thøgersen and Grønhøj (2010) supplemented that

environmental factors can be described as external elements to the individual in a physical sense,

including factors like access to particular facilities, the presence of others, and the beliefs held by

others. Meanwhile, behavioural factors involve an individual's actions, comprising the exerted

effort, employed strategies, and conducted activities. Despite their reciprocal influences, the

impact may vary, and they may not operate simultaneously (Bandura, 1989).

SCT integrates the idea of triadic reciprocal determinism, shedding light on and

considering other SCT concepts like self-efficacy, behavioural capability, observational learning,

reinforcements, expectations, and outcome expectancies. The interaction between individuals

and their behaviour is shaped by the interplay of ideas, beliefs, feelings, and actions. Hence,

one's beliefs, expectations, and experiences play a reciprocal role in influencing how one acts

and behaves. SCT has been broadly employed in various psychological domains with Internet

gaming. Additionally, SCT has been utilised to investigate the online gaming context (Chang et

al., 2014; Chen et al., 2018; Ee & Cho, 2012; Saritepeci et al., 2022). This current study tends to

extend the online gaming context by applying the SCT in IGD.

Consequently, this study applied SCT to examine the personal and environmental factors

towards addictive behaviour. SCT may offer various perspectives, including personal,

environmental, and behavioural factors to enhance the comprehension of the development of

IGD. Online games have played a crucial role in instigating noteworthy changes in both human

behaviour and the social environment at present (Xanthopoulou & Papagiannidis, 2012).

Participating in online games fundamentally constitutes an individual behaviour, a phenomenon

that the SCT has been consistently and extensively used to clarify (Bandura, 1986; Compeau et

al., 1999; Rao Hill & Troshani, 2010). However, SCT provides specific advantages in

elucidating online gaming behaviour by viewing human behaviour as a dynamic interplay of

personal cognition, environmental influence, and behavioural action (Hmieleski & Baron, 2009).

Liu (2016) emphasised that using SCT to comprehend the factors that influence online gaming

behaviour is a crucial theory for academic research and online gaming markets to expand gaming

development. Hence, SCT is a useful theoretical framework to further study the mechanisms

underlying IGD.

Figure 2.1

Theoretical Framework of Present Study
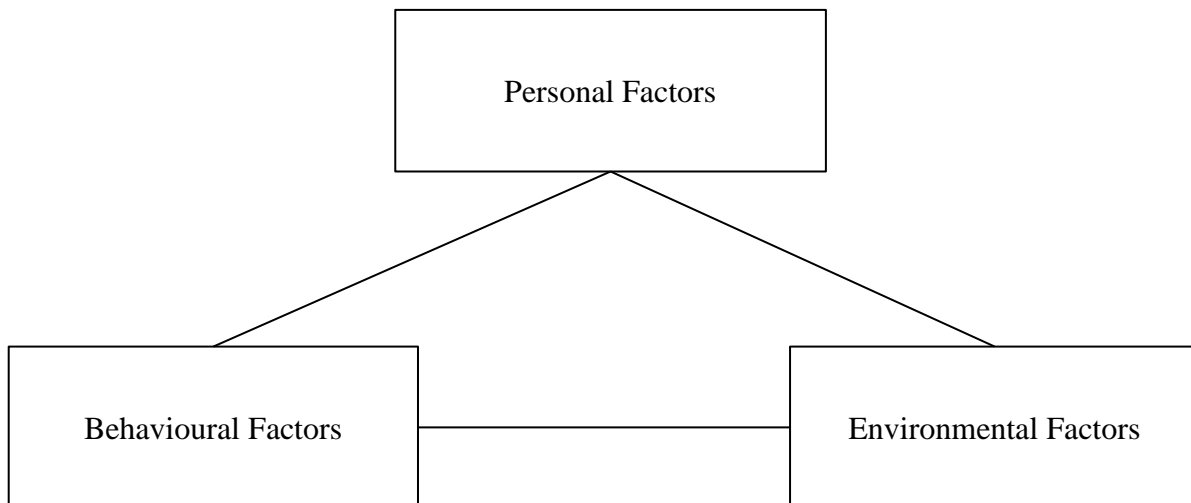
Conceptual Framework

SCT is primarily based on the assumption that all individual behaviours, cognitive and other personal factors, and environmental influences are interacting determinants and interact in both directions. In this research study, self-efficacy, gaming motives (social, escape, competition, coping, skill development, fantasy, recreation), and perceived social support are hypothesised to be predictors of Internet gaming disorder among emerging adults in Malaysia. This study is based on the SCT theory, in which self-efficacy and gaming motives are personal factors, perceived social support is an environmental factor, and IGD is a behavioural outcome. As an example, individuals with high levels of self-efficacy, perceived social support, and recreation motive are predicted to have lower levels of IGD. Conversely, a person with high levels of social motive, escape motive, competition motive, coping motive, skill development motive, and fantasy motive are predicted to have more IGD.

Self-efficacy is considered as a personal factor. Self-efficacy is the core component of SCT (Bandura, 2012). According to Bandura (1986), self-efficacy is defined in the SCT as people's judgments about their ability to organise and execute the course of action required to achieve a certain performance (Harrison et al., 1997). Past research has also categorized self-efficacy as an individual's personal beliefs about his or her ability to successfully complete specific tasks (Sharma & Nasa, 2014). While the desire to accomplish a task and self-belief in IGD is tallying with the personal factors. According to Schunk and DiBenedetto (2019), personal factors include processes that facilitate the initiation and maintenance of motivational outcomes. Utilising SCT in self-efficacy provides a view of an individual's capacity and the roots of their skills and abilities. The finding has indicated that lower self-efficacy can be related to a higher association of IGD (Gazo et al., 2020; Zhang et al., 2022). Hence, self-efficacy can predict IGD

as it assesses an individual's skills and abilities behind the development of IGD.

Gaming motives have been a key concept in SCT to understand online gaming behaviour. Gaming motives can regulate behaviour by modulating cognitive processes that influence pattern formation, use, and recall of patterns (Eagly & Chaiken, 1993). According to Király et al. (2015), gaming motives are helpful in understanding when the behaviour becomes problematic. Hence, gaming motives are also considered as the personal factors in SCT. They provide a framework for distinguishing between the patterns of gaming use and players' gaming behaviour (Moudiab & Spada, 2019). Utilising SCT as a conceptual framework to comprehend gaming motives offers distinct advantages (De Grove et al., 2014). The reason is that SCT has shown its effectiveness in providing a flexible framework for positioning and outlining the diverse factors that impact digital play (Lee & LaRose, 2007). Gaming motives can project the IGD symptoms as they provide insights into the natural cause behind IGD (Demetrovics et al., 2011).

In this present study, perceived social support is considered an environmental factor in SCT. According to Gülaçtı (2010), perceived social support refers to the support resources that exist at the time of need, and it can be identified from a subjective qualitative perspective. In society, perceived social support measures the adequacy levels of social relations, which can refer to the development or persistence of IGD. Within the context of social support, SCT has demonstrated its utilisation of influencing human behaviour, it may also offer insights into comprehending problematic behaviours (Lin & Bhattacherjee, 2009). The finding has indicated that sufficient social support serves as a protective factor against behavioural addictions and exerts positive effects on the development of these issues (Mazzoni et al., 2016). Hence, social support can predict IGD as it offers valuable insights to understand the underlying cause of social support with IGD.

This study aims to apply and extend the implementation of SCT to include IGD as a behavioural outcome, in which self-efficacy and gaming motives are personal factors and perceived social support is an environmental factor. All these are to examine whether self-efficacy, gaming motives, and perceived social support could predict IGD among emerging adults in Malaysia.

Figure 2.2

Conceptual Framework of Present Study
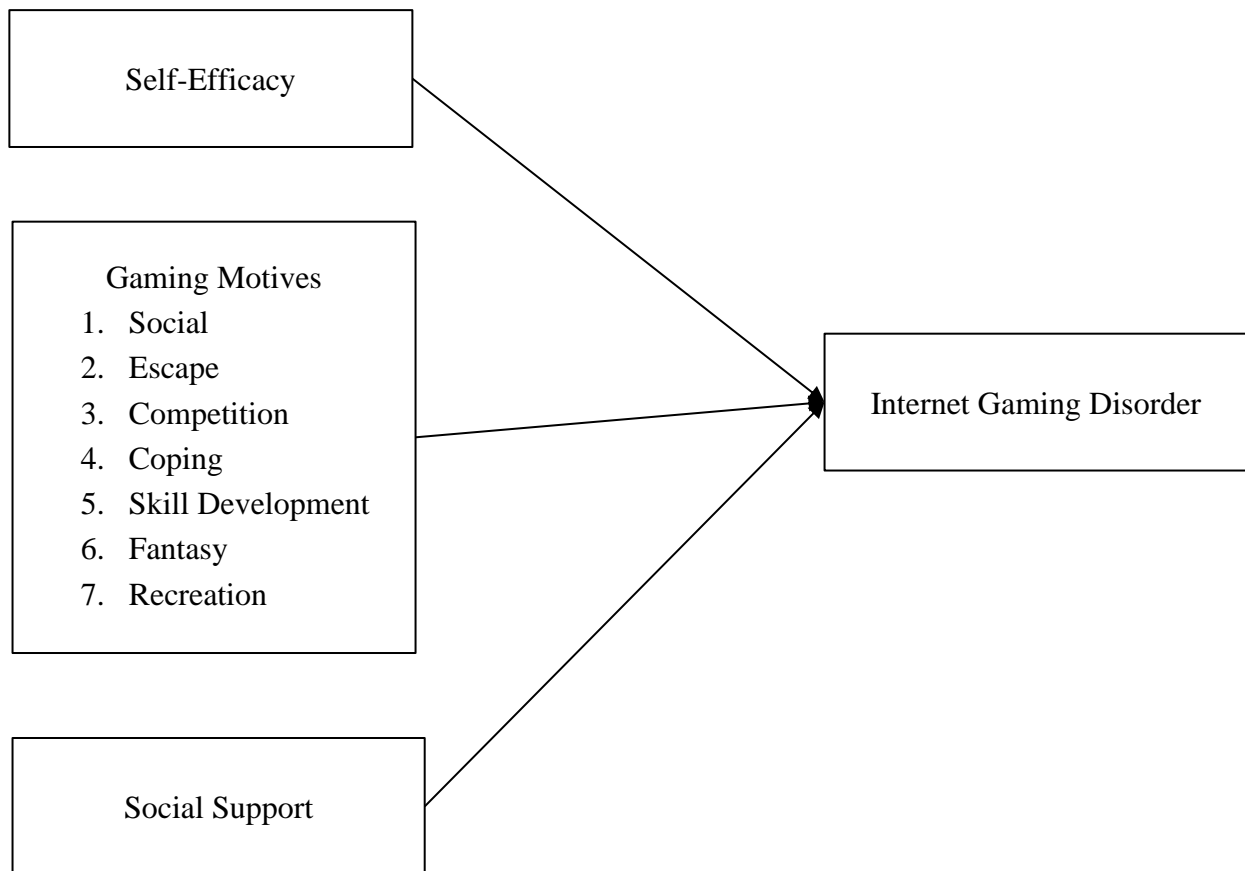
Chapter III

Methodology

Research Design

A quantitative research approach was utilised in the current study through cross-sectional study design and descriptive research. These research designs were used to explore the predictive role of self-efficacy, gaming motives and social support on IGD among emerging adults in Malaysia. According to Kenton (2020), a quantitative study involves measuring and analysing human behaviour through numerical research methods. Therefore, the quantitative approach was utilised in this research as it aligned with the study's design. By establishing the quantitative research study, the numerical data was analysed to answer the research questions and hypothesis by using statistical software tools like SPSS (Rana et al., 2021).

One of the research designs is cross-sectional approach, which is used to gather the datasets within a specific or fixed period of time (Asiamah et al., 2019). A cross-sectional research study can be categorised into two types, which are descriptive and analytical studies (Kesmodel, 2018). The collected data comprises numerical scores that can be analysed and interpreted. It was a relatively easy study method to apply. In contrast, descriptive research has focused on obtaining a description of the characteristics of a specific group (Nelson et al., 2017). According to Thelle and Laake (2015), cross-sectional study design facilitated the simultaneous investigation of multiple variables. In this study, the independent variables analysed included self-efficacy, gaming motives and social support, and the dependent variable, IGD which related to addictive behaviours in both cognitive and behavioural aspects. The reasons for implementing the cross-sectional design for this study were driven by its cost-effectiveness and ability to obtain a larger number of sample sizes efficiently in a short period of time frame (Setia, 2016).

Sampling Method

Sampling methods are differentiated into two types, including probability and non-probability methods (Berndt, 2020). Based on these two sampling methods, the non-probability sampling method was utilised to investigate the predictive roles of self-efficacy, gaming motives, and social support on IGD. Etikan and Bala (2017) acknowledged that the non-probability sampling technique described as a random sample procedure that needed to select participants from a wide range of populations without any basis of probability, as whoever also had the opportunity to be included. More specifically, the present study used a type of non-probability sampling method, purposive sampling to select the required participants effectively.

Purposive sampling method also referred to as judgmental sampling, relies on the researcher's judgement to select participants who represent a specific type or characteristic (Vehovar et al., 2016). Hence, the requirements or characteristics of all participants should align with the study's topic of interest. Purposive sampling was identified as involving multiple phases in the selection, less costly, reduced in time-consuming, and more convenient for different types of sampling techniques to involve sample sizes of interest and block those who did not meet the criteria (Rai & Thapa, 2015).

In present study, purposive sampling method was employed to address various challenges in different contexts, such as gaming setting. According to Campbell et al. (2020), the sampling frame has not truly been identified across different backgrounds and contexts as every study had its purpose for nominating participants. Klar and Leeper (2019) mentioned that the exact number of large populations would not be well-defined as the coverage and representativeness of participants might present some source of sampling survey or respondent errors. For instance, the targeted participants who were gamers under emerging adult ranges might not be limited to

specific settings, such as the workplace, but could also be found playing online games at home during their leisure time. Previous empirical studies adopted the purposive sampling methods to gather responses from emerging adult gamers (Junus et al., 2023; Moreno et al., 2022) on IGD through online gaming platforms, which showed that purposive sampling methods tend to recruit samples in a purposeful way to obtain the data they need. Likewise, a purposive sampling method was suitable for this study since the participants were targeted and geographically diverse (Vehovar et al., 2016), with emerging adult gamers located in various regions across Malaysia. Therefore, the study deliberately reached these participants by distributing online surveys via social media.

The aim of purposive sampling was to select individuals who met the study's criteria (Etikan & Bala, 2017). Participants who met inclusion criteria would be only involved in the present study. Inclusion criteria of the study were: (i) emerging adults who are Malaysian, (ii) between 18 and 29 years old, and (iii) a minimum of 12 months of gaming experience according to IGD criteria in DSM-5. Meanwhile, the exclusion criteria of the study comprised: (i) individuals who were non-players or professional players, (ii) age below 18 or above 29, and (iii) less than 12 months of gaming experience. Therefore, individuals meeting the inclusion criteria were definitely selected, while those who met any of the exclusion criteria were excluded from the study.

Sample Size

An effect size is an interpretable number that calculates the differences between data and the hypothesis. G*Power version 3.1.9.7 software was used to calculate the sample size of participants needed for this study, ensuring that the minimum sample size necessary to achieve significant statistical power was determined. Erdfelder et al. (1996) developed the G*Power as a

statistical power analysis programme. The formula used to calculate the effect size is $f^2 = \frac{R^2}{1-R^2}$.

The sample effect size, the probability of alpha error, the number of predictors, and the statistical power were determined by G*Power. The effect size for each predictor was calculated according to the formula $f^2 = \frac{R^2}{1-R^2}$, and the overall effect size was calculated as the average of all nine predictor effect sizes (refer to Appendix A).

Subsequently, the average effect size was 0.07937, the probability of alpha error was 0.05, the statistical power was 0.95, and there were nine predictors. The correlation coefficient scores are -0.030, 0.12, 0.44, 0.20, 0.28, 0.13, 0.31, -0.02, and -0.28 respectively. Based on the final G*Power calculation, the minimum number required for this sample is 306 (refer to Appendix B).

Participants

Participants must meet the inclusion criteria of emerging adults from age 18 to 29 years old, including university students and working adults. Participants were required to have a minimum of 12 months of gaming experience with online gaming. Conversely, several exclusion criteria were established for this current study. Individuals who were younger than 18 or older than 29 were not considered for the study, as the focus was on emerging adults. Moreover, participants who did not engage in gaming activities or had less than 12 months of gaming experience been excluded. This study intentionally excluded professional gamers, as their gaming experiences and behaviours might differ significantly from those of casual or semi-regular players.

The final sample comprised 354 respondents who were online gaming players aged 18 and 29 years old ($M = 21.82$, $SD = 2.21$). Male players ($n = 250$, 70.6%) were more than female

players (n = 104, 29.4%) who participated in the present study. There were 329 Chinese (92.9%), 11 Malays (3.1%), 9 Indians (2.5%), followed by 5 participants from other racial groups (1.4%).

Location

This study was opened across all Malaysian states through a variety of social networking sites, like Facebook, Instagram, WhatsApp, and others. This study might deliver the survey questionnaire across various states of Malaysia. The targeted participants were emerging adults who met the inclusion criteria. Furthermore, physical requirements were also included in this study. The location of physical recruitment was in the different buildings within Universiti Tunku Abdul Rahman (UTAR) to broaden the participant base.

Instruments

Internet Gaming Disorder Scale 9-Short-Form (IGDS9-SF). IGDS9-SF established by Pontes and Griffiths (2015) to identify participants who met a minimum of five out of the nine diagnostic criteria for IGD. It assessed the respondents' online gaming engagements during the previous 12 months. Furthermore, this scale enabled an additional detailed classification of disordered gamers and non-disordered gamers. Disordered gamers were defined as those scoring between 36 and 45 points, whereas non-disordered gamers fell within the remaining score range of 9 to 35 (Ko et al., 2014). The scales included nine items such as "Do you feel more irritability, anxiety, or even sadness when you try to either reduce or stop your gaming activity?", "Do you feel the need to spend an increasing amount of time engaged in gaming to achieve satisfaction or pleasure?", and "Have you lost interests in previous hobbies and other entertainment activities as a result of your engagement with the game?". The instrument used a 5-point Likert scale to range from 1 (*never*) to 5 (*very often*). The total scores were summed up by a total of nine items together. The highest score indicated a greater degree of IGD with a score of 45, while the lowest

score indicated a poorer degree of IGD with a score of 9. The highest point of IGDS9-SF

reflected a substantial extent of occurrence concerning the items. In the reliability analysis of this

study, there is a strong reliability in IGDS9-SF with Cronbach's alpha value of 0.89 (refer to

Table 3.1).

New General Self-Efficacy Scale (NGSES). NGSES was constructed by Chen et al.

(2001) to evaluate the degree to which individuals believe in their ability to accomplish their

goals, even when confronting challenges. The scales included eight items such as "I will be able

to achieve most of the goals that I set for myself.", "In general, I think that I can obtain outcomes

that are important to me.", and "I will be able to successfully overcome many challenges.". This

scale was rated by using a 5-point rating scale, which ranged between 1 (*strongly disagree*) to 5

(*strongly agree*). The total score was calculated by taking the average of the rating scores. A high

level of self-efficacy was due to the high scores, whereas a low level of self-efficacy was

indicated by the low scores on this scale. However, Cronbach's alpha of NGSES demonstrated

strong reliability with the value of 0.90 (refer to Table 3.1).

Motives for Online Gaming Questionnaire (MOGQ) Scale. Demetrovics et al. (2011)

developed the MOGQ Scale and examined the seven dimensions of gaming motives which were

social motive, escape motive, competition motive, coping motive, skill development motive,

fantasy motive and recreation motive. There are 27 items consisted in this scale such as "I play

online games because gaming helps me to forget about daily hassles.", "I play online games

because I can meet many different people.", "I play online games because it is good to feel that I

am better than others.", and "I play online games because it reduces tension.". A Likert scale

with five points was employed in this scale to rate from 1 (*almost never*) to 5 (*almost always*).

The overall score was estimated by adding the scores of all 27 items. The higher scores the

higher the gaming motives, while the lower the scores the lower the gaming motives. In this study, the overall MOGQ Scale has demonstrated a strong reliability with Cronbach's alpha value of 0.95. Meanwhile, the reliability scores for each subscale were calculated and showed a good Cronbach's alpha reliability ranging from .70 to 0.80, which are social motive (α =.83), escape motive (α =.83), competition motive (α =.86), coping motive (α =.78), skill development motive (α =.86), fantasy motive (α =.84) and recreation motive (α =.72) (refer to Table 3.1).

Brief form of the Perceived Social Support Questionnaire (F-SozU K-6). F-SozU K-6 Scale was created by Kliem et al. (2015) to assess general perceived social support. There are six items in this scale such as "I receive a lot of understanding and security from others.", "There is someone very close to me whose help I can always count on.", "If I need to, I can borrow something from friends or neighbours without any problems.", and "I know several people with whom I like to do things.". The scale scores of F-SozU K-6 Scale ranged from 1 (*not true at all*) to 5 (*very true*). A total score of this scale was calculated by summing up the six items together. The higher scores in the F-SozU K-6 Scale showed an individual with a high level of perceived social support. In the reliability analysis, Cronbach's alpha value of F-SozU K-6 Scale was 0.86 (refer to Table 3.1).

Table 3.1

Reliability in Actual Study.

Variables	Quantity of Items	Cronbach's Alpha
IGDS9-SF	9	.891
Self-efficacy	8	.902
Gaming motive	27	.945
Social motive	4	.832
Escape motive	4	.834

Table 3.1

Reliability in Actual Study (Continued)

Variable	Quantity of Items	Cronbach's Alpha
Competition motive	4	.864
Coping motive	4	.777
Skill development motive	4	.862
Fantasy motive	4	.841
Recreation motive	3	.724
Social Support	6	.861

Procedures

Before proceeding to the pilot and actual study, the researchers tend to protect participants' privacy and confidentiality for their personal information. Hence, an ethical clearance was required from Universiti Tunku Abdul Rahman (UTAR) in order to carry out an investigation for this study. In January 2024, approval for ethical clearance was granted by the Scientific and Ethical Review Committee (SERC) in UTAR by submitting a completed survey questionnaire. (refer to Appendix C). Firstly, with the assistance of the supervisor, the Qualtrics questionnaire sample was successfully submitted to the SERC. Due to the inaccessibility of the questionnaire, we submitted our application twice before successfully receiving the approval letter. The reference number of the approval letter for this study is U/SERC/78-186/2024. Our ethical approval letter was only valid for one year, from 10 January 2024 to 9 January 2025. Data collection commenced once the ethical clearance was received from all relevant authorities. This ethical clearance was to ensure that all procedures were conducted in accordance with research ethical standards.

Pilot Study. It was implemented to assess the feasibility of the study before the actual

research began. Andrade (2020) emphasised that an appropriate set of sample size in pilot study

is totally important as it can bring out the scientific and ethical assumptions for the researchers

before starting the actual study. The effect size of every instrument was calculated and applied

into a formula to collect an average effect size. In this present study, the average effect size

values were applied in G*Power version 3.1.9.7 software to analyse the sample size needed.

When the minimum number of participants was determined, Qualtrics was utilised to design an

online survey, and allocated to eligible respondents through social media platforms such as

Facebook, Instagram, WhatsApp, and other online platforms. Prior to the actual study, a

Qualtrics online survey was created to recruit the gaming participants online (refer to Appendix

D). In the pilot study, 41 sample data were collected but only 30 cases were used in pilot data

analyses. Most of the participants were eliminated due to incomplete responses. Those questions

included in the survey were the research objectives, informed consent, demographic information,

and items from the instruments used in the pilot research.

     Actual Study. After reviewing the pilot study, an actual study was conducted to discover

if there were significant issues that required modification by the researchers. In the survey,

respondents were provided with information about the nature of the study. The first page of

Qualtrics surveys was aligned with the Personal Data Protection and informed consent to keep

data private and confidential. Respondents had the right to voluntarily state their position before

proceeding with the rest of the survey. When answering the survey, the agreement of using

personal information data on respondents' age, gender, and race required their prior consent.

Several questions to identify potential participants and filter out the exclusion, such as "What is

your nationality?", "What is your age?", "Have you been playing online video games for at least

1 year?" and more. Participants needed to fully complete the five sections of Qualtrics survey in

around 20 minutes. The survey consisted of the demographic profile, IGDS9-SF, NGSES,

MOGQ Scale and F-SozU K-6 Scale.

Additionally, a link and QR code of Qualtrics online questionnaire have been generated

and distributed to the target participants through personal WhatsApp accounts, Telegram,

Discord groups and etc. The examples of Facebook groups such as PC & Gaming Community

(MALAYSIA), Dota 2 Malaysia Community, Gaming Mamak, 大马 Steam 游戏群 M'sia Steam

Group, [D.I.Y] PC GAMING GROUP MALAYSIA, Malaysian PC/Laptop & Gaming

Community, Malaysia League of Legends, Gaming Community, Malaysia Survey Group, Survey

Malaysia, Malaysia University Student Survey Group, whereas the Discord groups are Malaysia

Dota 2 Community, RITO MYSG Community and MY PC gaming (refer to Appendix E).

Another method of data collection was to physically reach out to the large pool of potential

respondents in UTAR for approximately two weeks. When a sufficient sample size was reached,

the online survey was paused, and the data from Qualtrics was exported to SPSS software.

Data Analyses

Internal Consistency Reliability

The IBM SPSS Statistic Version 23 computer software was utilised in this study to

analyse the collected data. Reliability analyses for all variables were conducted in both pilot and

actual study (refer to Appendix F and Appendix G). A study done by Taber (2018) stated that

Cronbach's alpha coefficient value within .70 and .79 is considered "acceptable" or "fair,"

followed by between .80 and .89 is evaluated as "good," and values of .90 or above are regarded

as "excellent." However, some scholars suggest that the generally accepted range for Cronbach's

alpha is within the range of 0.6 to 0.7 (Hajjar, 2018; Raharjanti et al., 2022; Ursachi et al., 2015).

Sürücü and Maslakci (2020) proved that the reliability of the measuring instruments was

essential to bring beneficial results and guarantee the study's quality. The reliability data analysis

in the pilot study revealed that each subscale of Cronbach's alpha (α) had a good internal

consistency which was above 0.7, ranging from 0.71 to 0.94, except for coping motive (α = .66)

(refer to Table 3.2). By taking these measures, it was to test the workability of the actual study.

Table 3.2

Reliability in Pilot Study

Variable	Quantity of Items	Cronbach's Alpha
IGDS9-SF	9	.869
Self-efficacy	8	.873
Gaming motives	27	.944
Social motive	4	.709
Escape motive	4	.751
Competition motive	4	.893
Coping motive	4	.662
Skill development motive	4	.849
Fantasy motive	4	.895
Recreation motive	3	.750
Social Support	6	.771

Normality Test

According to Peat and Barton (2008), there are five indicators used to assess the

assumptions of normality. The first indicator is the histogram. This graphical representation, also

referred to as frequency distribution, depicts values and provides a visual assessment of the

distribution's shape and the presence of outlier data (Peat & Barton, 2008). The second and third

indicators are skewness and kurtosis. Skewness and Kurtosis are used to measure the symmetry

and peakedness of distribution respectively (Kim, 2013). In addition, a research study done by

Garson (2012) emphasised that the acceptable range for both measurements is within ±2. The

fourth indicator, Kolmogorov-Smirnov (K-S) test was used to examine the distribution of

gathered data, with its significance value being critical for assessing normality. A *p*-value

below .05 indicates a departure from normal distribution (Zubir et al., 2017). The fifth indicator

is Quantile-Quantile plot (Q-Q plot) which involves a scatterplot featuring a straight line along

with data points. When the points closely align with the straight line, it indicates a normal

distribution (Zubir et al., 2017).

Multiple Linear Regression (MLR) Assumptions

The multiple linear regression (MLR) assumption was employed to explore the predictive

role of self-efficacy, gaming motives and social support to IGD. The assessment of MLR

assumptions promptly followed the examination of normality.

Multivariate Outliers. Outliers have referred to anomalies, deviants, peculiarities,

abnormalities, exceptions, discordant points, aberrations, contaminants, and novelties across

various domains and represent uncommon cases that diverged from the general patterns within

the data (Alimohammadi & Chen, 2022). Multivariate outliers are characterised by abnormal

data involving multiple variables, distinct from extreme values represented by high or low scores

(Foorthuis, 2021). Hence, outliers are infrequent and surprising occurrences that exhibit

significant dissimilarity from normal instances. The existence of outliers introduces considerable

uncertainties in the interpretation of results (Alimohammadi & Chen, 2022). Therefore, it is

crucial to eliminate outliers accurately before proceeding with further analysis (Alimohammadi

& Chen, 2022).

The three primary tests were Mahalanobis Distance, Cook's Distance, and Centered-

Leverage Distance. According to Li et al. (2019), Mahalanobis Distance involves evaluating the

sample means and covariance matrix to detect outliers. The reference threshold for Mahalanobis

Distance is a value below 15 (Barnett & Lewis, 1994). Zhu et al. (2012) suggested that Cook's

Distance aims to identify individual scores impacting the regression model. Cook and Weisberg

(1982) disclosed that the outliers meeting the criterion (<1) are considered as deemed acceptable

points. Centered-Leverage value analyses the distance between points and mean values. Hoaglin

and Welsch (1978) suggest that potential outliers can be identified using a cut-off calculation

of $2 \times [\frac{(p+1)}{n}]$, where p denotes the number of predictors, and n represents the final sample size.

In summary, potential outliers must be detected within the specified cut-off range for each

method.

Types of Variables. The type of variables was used to label variables into two groups

which were discrete and continuous. The examples of discrete variables were ordinal and

nominal, while the continuous variables were known as interval and ratio (Kaliyadan &

Kulkarni, 2019). The present study employs ordinal variables, which represents the ranked order

of a specific attribute (Casacci & Pareto, 2015).

Independent responses. The independent responses were assigned as the non-correlation

between predicted variables, allowing for the examination of various research fields (Ali &

Younas, 2021). This study employs self-efficacy, gaming motives, and social support which are

the non-correlation of predictors for IGD.

Multicollinearity. Shrestha (2020) defined multicollinearity as the multiple correlation

of different predictors. Multicollinearity might be raised if an independent variable exhibited a

high correlation with one variable or even more other variables, leading to a potential

misinterpretation of its association with the dependent variable (Srinivasan et al., 2017). The

presence of multicollinearity was identified by two indicators: Tolerance and Variance Inflation

Factors (VIF) (Oke et al., 2019). Correlated predictors impact the standard error and variances of

the coefficient for the predictors, directly affecting VIF and the potential for multicollinearity

(Lavery et al., 2019). Tolerance is the inverse of the VIF (Miles, 2014). The acceptable range for

Tolerance was larger than 0.10, whereas the VIF must be below 10 (Kyriazos & Poga, 2023).

Independence of Residuals. It signifies no correlation between the examined variables

and the residuals. The Durbin-Watson test was used to assess this assumption about residuals.

According to Champion et al. (1998), the acceptable range for the Durbin-Watson value is

between 1 and 3, with a value near 2 generally considered ideal.

The normality of error, linearity between variables, and homoscedasticity.

According to Zach (2020), normality of error means that the residuals followed by a normal

distribution, linearity signified the linear relationship between X and Y, and homoscedasticity

indicated that the residuals had consistent variances at each level of X. Srinivasan et al. (2017)

mentioned that scatter plot assessed the normality, linearity, and homoscedasticity of residuals.

When the points in the scatterplot were uniformly distributed around the zero line and the

variances were relatively consistent, it led to the meaning that residuals were not apparent

(Osborne & Waters, 2002).

<center>**Chapter IV**</center>

<center>**Result**</center>

Data Cleaning

Data cleaning was conducted to maintain the integrity and precision of the results before analysis using IBM SPSS Statistics Version 23. Any personal information that did not align with the acknowledgement notice was destroyed or deleted, as it was no longer needed for data analysis. After exporting the data into the SPSS, every respondent was accordingly assigned to a number for record purpose.

A total of 492 responses were collected from different platforms. Initially, 24 respondents were removed as they did not consent to the study. After addressing these cases, 112 respondents were excluded due to missing values, as they might not have fully completed the questionnaire or their data were not recorded. Additionally, one respondent was removed for not meeting the age requirement. In total, 138 cases were removed from the data collection process. Finally, 354 responses were retained for the actual study analysis.

Assumption of Normality

Normality

The assumptions of normality were assessed using five indicators: histogram, Quantile-Quantile plot (Q-Q plot), values of skewness and kurtosis, and the Kolmogorov-Smirnov (K-S) test. Skewness, kurtosis, and the K-S test provided numerical assessments, while the histogram and Probability-Probability plot (P-P plot) offered visual representations.

Histogram

According to Barton and Peat (2014), when a graph displayed a roughly bell-shaped and symmetric distribution around the mean, the data could be reasonably assumed to follow a

normal distribution. Based on the histogram obtained from the results, there were no violations

of normality observed from the nine variables, including self-efficacy, social motive, escape

motive, competition motive, coping motive, skill development motive, fantasy motive, social

support, and IGD (refer to Appendix H). Each histogram depicting the continuous variables

demonstrated a bell-shaped curve, indicating that the collected data closely resembled the mean

values. However, for the recreation motive, the tail of the histogram was negatively skewed.

Q-Q Plot

According to Zubir et al. (2017), the points that were closely aligned to the diagonal line,

indicating a strong linear relationship between them. Based on the Q-Q plots obtained from the

results (refer to Appendix I), no normality violations were observed for all variables, self-

efficacy, social motive, escape motive, competition motive, coping motive, skill development

motive, fantasy motive, recreation motive, social support, and IGD as the data were evenly

distributed on the diagonal line.

Skewness and Kurtosis

According to Hair (2022), all skewness and kurtosis values fell within the standard range

of ±2. From Table 4.1, skewness values ranged from -.714 to .466, and kurtosis values ranged

from -.875 to 1.018 (refer to Appendix J). Therefore, these indicators for each variable indicated

a satisfactory level of assumption of normality.

Table 4.1

Skewness and Kurtosis value for each variable

	Skewness	Kurtosis
IGD	.466	-.049
Self-efficacy	-.714	1.018
Social motive	-.019	-.593
Escape motive	-.109	-.667

Table 4.1

Skewness and Kurtosis value for each variable (Continued)

	Skewness	Kurtosis
Competition motive	-.013	-.837
Coping motive	-.202	-.490
Skill development motive	-.151	-.716
Fantasy motive	.034	-.875
Recreation motive	-.476	-.314
Social Support	-.261	-.258

Kolmogorov-Smirnov Test (K-S Test)

Table 4.2 below presents the normality test results for the variables of IGD, self-efficacy, social motive, escape motive, competition motive, coping motive, skill development motive, fantasy motive, recreation motive, and social support. According to Mishra et al. (2019), a *p*-value from the K-S test that is less than .05 indicates that the variables conform to a normal distribution and meet acceptable standards. However, the test values in Table 4.2 showed that all variables are non-normally distributed.

Table 4.2

Kolmogorov-Smirnov (K-S) Test

Variables	Significant value
IGD	.000
Self-efficacy	.000
Social motive	.000
Escape motive	.000
Competition motive	.001
Coping motive	.000
Skill development motive	.000
Fantasy motive	.000

Table 4.2

Kolmogorov-Smirnov (K-S) Test (Continued)

Variables	Significant value
Recreation motive	.000
Social Support	.000

Summary

      In concluding the assumptions of normality, all variables exhibited no deviations in terms of histogram, Q-Q Plot, skewness, and kurtosis. The K-S test assumption was not fully met for all variables. As a consequence, Mishra et al. (2019) defined that the K-S test as sensitive to sample size when it applied to the sample size $n \geq 50$. Nevertheless, the K-S test is a form of non-parametric technique used to assess goodness of fit, as its detectors deliver enhanced detection performance and quicker results which are more resilient to channel uncertainty (Zhang et al., 2010). Given that the skewness and kurtosis values for all variables were within the acceptable range of ±2, minor deviations in the K-S test were deemed acceptable, thus confirming no violation of normality for this variable. Consequently, it concluded that all three variables examined in this study exhibited a normal distribution.

Descriptive Statistics

      After eliminating the participants who did not meet the inclusion criteria in the data cleaning, a total of 354 respondents remained, who were emerging adults retained in the present study. Table 4.3 offers a detailed overview of the demographic profile of the study's respondents, covering a range of characteristics including nationality, age, gender, race, occupation, and gaming habits. All participants are Malaysian citizens who (1) had at least 12 months gaming experience, and (2) aged from 18 to 29 years old ($n = 354$, 100%). The range of the respondents' age for this study was between 18 and 29 years old ($M = 21.82$, $SD = 2.21$). More than half

respondents were male (n = 250, 70.6%), with a minority of respondents were female (n = 104,

29.4%). Compared with the other races, Chinese are the largest race of respondents in this study.

Nevertheless, the majority of the respondents were students, with a minority of employed and

unemployed. Predominantly, the participants were Chinese (n = 329, 92.9%) and students (n =

277, 78.2%).

In Table 4.3, a significant disparity is observed among participants in gaming times,

gaming hours, types of game genres, and number of game genres played. The majority number

of respondents reported playing online games more than 6 times a week (n = 115, 32.5%). Daily

gaming varied, with above average of respondents playing for 1-2 hours a day (n = 164, 46.3%).

Gaming genre preferences were notably diverse. Predominantly, most respondents engage in

Multiplayer Online Battle Arena (MOBA) games (n = 203, 28.1%), indicating a strong

preference for this genre among many respondents. Furthermore, more than half respondents

played 1-2 games each day (n = 258, 72.9%).

Table 4.3

Descriptive Statistics for Respondents' Demographic Information (N = 354)

	N	%	M	SD
Nationality				
Malaysian	354	100		
Age			21.82	2.214
Gender				
Male	250	70.6		
Female	104	29.4		

Table 4.3

Descriptive Statistics for Respondents' Demographic Information (N = 354) (Continued)

	N	%	M	SD
Race				
Chinese	329	92.9		
Malay	11	3.1		
Indian	9	2.5		
Others	5	1.4		
Occupation				
Students	277	78.2		
Employed	66	18.6		
Unemployed	11	3.1		
Have you been playing online games for at least 1 year?	354	100		
How frequently do you play online video games?				
1-2 times a week	102	28.8		
3-4 times a week	93	26.3		
5-6 times a week	44	12.4		
more than 6 times a week	115	32.5		
How many hours do you spend playing online games each day?				
1-2 hours per day	164	46.3		
3-4 hours per day	131	37.0		
5-6 hours per day	35	9.9		
7-8 hours per day	10	2.8		
more than 8 hours per day	14	4.0		

Table 4.3

Descriptive Statistics for Respondents' Demographic Information (N = 354) (Continued)

	N	%	M	SD
What types of online games genre do you play?				
First-person Shooter game (FPS)	134	18.6		
Multiplayer Online Battle Arena game (MOBA)	203	28.1		
Battle Royal game	129	17.9		
Massively Multiplayer Online Role-Playing game (MMORPG)	51	7.0		
Role-playing game (RPG)	128	17.7		
Others	77	10.7		
How many games do you play in a day?				
1-2 games	258	72.9		
3-4 games	69	19.5		
5-6 games	9	2.5		
more than 6 games	18	5.1		

Assumptions of Multiple Linear Regression

Multiple Linear Regression (MLR)

A Multiple linear regression (MLR) was to evaluate both the overall model fit and the specific contributions of individual independent variables to the dependent variable. This study assessed five assumptions of MLR: (1) independence of errors, (2) multicollinearity, (3) normality of residuals, (4) linearity of residuals, and (5) homoscedasticity.

Independence of Errors

In the current study, Durbin-Watson statistics was used to assess the independence of errors. The Durbin-Watson value obtained was 1.902 (refer to Appendix M), falling within the acceptable range of one to three and closer to two, suggesting consistency with the assumption (Durbin & Watson, 1971). Thus, the results indicated that the assumption of independent errors was satisfied.

Multicollinearity

Tolerance and Variance Inflation Factor (VIF) were employed to evaluate the correlation among each independent variable. Tolerance and VIF values for the nine independent variables were shown in Table 4.4, self-efficacy, social motive, escape motive, competition motive, coping motive, skill development motive, fantasy motive, recreation motive, and social support. According to Shieh (2010), the cutoff values for Tolerance are above .10, and for VIF are below 10. Therefore, the assumptions showed no violation (refer to Appendix M).

Table 4.4

Tolerance and VIF values

	Tolerance	VIF
Self-efficacy	.731	1.368
Social Motive	.457	2.187
Escape Motive	.330	3.031
Competition Motive	.499	2.004
Coping Motive	.316	3.166
Skill Development Motive	.339	2.947
Fantasy Motive	.406	2.464
Recreation Motive	.632	1.582
Social Support	.757	1.321

Normality of Residuals, Linearity of Residuals, and Homoscedasticity

A residual scatterplot was applied to figure out the linearity, residual normality, and homoscedasticity (refer to Appendix M). The scatterplot showed no violations, with residuals randomly and uniformly scattered around the zero line. This confirmed that the criteria of linearity, residual normality, and homoscedasticity between the variables were satisfied.

Multivariate Outliers

In the present study, Cook's Distance, Mahalanobis Distance, and Centered-Leverage range, each set with a threshold of two standard deviations, were utilised as analytical tools to identify multivariate outliers. According to Table 4.5 below, there are 14 cases exceeding 2 standard deviations, which were identified as potential outliers in the initial sample size ($n = 355$) of the present study. According to Barnett and Lewis (1978), the cutoff point for the Mahalanobis distance is 15. Hence, a violation observed in Table 4.6 below is case 320 with a value of 23.915. Additionally, there were no violations in Cook's distance, as the values for all three cases were less than 1 (Cook & Weisberg, 1982). For calculating the leverage values in the current study, the formula was utilised $\frac{(p+1)}{n}$ resulting in $\frac{(9+1)}{355} = 0.0282$. According to Hoaglin and Welsch (1978), it is recommended to multiply the leverage value by two for testing cases, resulting in a value of .0564 after calculation. However, a violation observed in Table 4.6 below, which is case 320 with the value of .0676 has exceeded the cut-off value of .0564 for the leverage distance. As a result, one influential case (case 320) was detected from Mahalanobis value and Centered Leverage value. Hence, case 320 was removed from the sample data (refer to Appendix M). After removing the influential case, the total number of final sample sizes for hypothesis testing was 354.

Table 4.5

Casewise Diagnostic

Case Number	Std. Residual	T_IGD	Predicted Value	Residual
17	2.253	39.00	25.4677	13.5323
57	-2.397	9.00	23.4018	-14.4018
65	-3.042	9.00	27.2745	-18.2745
104	2.644	33.00	17.1178	15.8822
132	-2.642	9.00	24.8703	-15.8703
189	-2.364	13.00	27.2018	-14.2018
195	2.174	41.00	24.6981	16.3019
199	2.601	39.00	23.3729	15.6271
219	2.190	34.00	20.8448	13.1552
223	2.404	39.00	24.5568	14.1132
242	2.270	39.00	25.3621	13.6379
365	-2.776	9.00	25.6764	-16.6764
320	-2.407	11.00	25.4616	-14.4616
330	3.269	45.00	25.3621	19.6379

Table 4.6

Case Summaries

	Case Number	Mahalanobis Distance	Cook's Distance	Centered Leverage Value
1	17	8.33295	.01411	.02354
2	57	1.17166	.00357	.00331
3	65	4.83124	.01575	.01365
4	104	4.44800	.01109	.01256
5	132	2.97368	.00801	.00840
6	189	8.41431	.01568	.02377
7	195	7.86479	.01940	.02222
8	199	13.03171	.02908	.03681
9	219	2.91816	.00542	.00824

Table 4.6

Case Summaries (Continued)

	Case Number	Mahalanobis Distance	Cook's Distance	Centered Leverage Value
10	223	5.78516	.01151	.01634
11	242	11.01854	.01875	.03113
12	265	1.93426	.00649	.00546
13	320	23.91474	.04719	.06756
14	330	11.01854	.03887	.03113

Multiple Linear Regression Analysis

Multiple linear regression analysis was performed to determine the predictive roles of self-efficacy, social motive, escape motive, competition motive, coping motive, skill development motive, fantasy motive, recreation motive, and social support on IGD among emerging adults in Malaysia. From Table 4.7 below, the multiple linear regression model demonstrated statistical significance, with $F(9, 344) = 19.228$, $p < .001$, explaining 35.5% of the variance. For calculating the effect size, the formula utilised is Cohen's effect size formula, $f^2 = \frac{R^2 adj}{1-R^2 adj}$, resulting in $f^2 = \frac{.317}{1-.317} = .47$. According to Cohen (2013), the thresholds for small, medium, and large values were .02, .15, and .35, respectively. The result obtained is .47 suggesting that the effect size is large.

The findings from Table 4.8 indicate that self-efficacy ($\beta = -.273$, $p < 0.01$) does significantly and negatively predict IGD among emerging adults in Malaysia. Furthermore, the escape motive ($\beta = .556$, $p < .001$), and competition motive ($\beta = .497$, $p < .001$) significantly and positively predict IGD among emerging adults in Malaysia. The results from Table 4.9 reveal that H_1, H_3 and H_4 are supported. Hence, they have predictive power on IGD for emerging adults

in Malaysia. Additionally, the findings indicate that social motive (β = .120, p = .297), coping

motive (β = .094, p = .540), skill development motive (β = -.228, p = .087), fantasy motive (β =

-.003, p = .980), recreation motive (β = -.272, p = .057), and social support (β = -.065, p = .359)

are not significantly predict IGD among emerging adults in Malaysia. The result showed

inconsistent with the hypotheses; therefore, the hypotheses are not supported (refer to Appendix

M). From the result of this study, it shows that social motive, coping motive, skill development

motive, fantasy motive, recreation motive and social support do not have predictive roles in IGD

among Malaysian emerging adults. Table 4.9 reveals that all these results summarise the

hypotheses H_1, H_3 and H_4 are supported, while H_2, H_5, H_6, H_7, H_8 and H_9 are not supported.

Table 4.7

Anova Table

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6149.619	9	683.291	19.228	.000
	Residual	12224.584	344	35.537		
	Total	18374.203	353			

Table 4.8

Coefficient Table

	Coefficients				
	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	t	Sig.
Self-efficacy	-.273	.070	-.201	-3.900	.000
Social Motive	.120	.115	.068	1.044	.297
Escape Motive	.556	.137	.311	4.058	.000
Competition Motive	.497	.103	.301	4.829	.000
Coping Motive	.094	.154	.048	.613	.540

Table 4.8

Coefficient Table (Continued)

	Coefficients				
	Unstandardized Coefficients	Standardized Coefficients			
Model	B	Std. Error	Beta	t	Sig.
Skill Development Motive	-.228	.133	-.130	-1.719	.087
Fantasy Motive	-.003	.113	-.002	-0.25	.980
Recreation Motive	-.272	.142	-.106	-1.911	.057
Social Support	-.065	.071	-.046	-9.18	.359

Table 4.9

Summary of Result

Hypotheses	Standardized Beta-β	p	Decision
H_1: Self-efficacy negatively predicts Internet gaming disorder among emerging adults in Malaysia.	-.273	.000	Supported
H_2: Social motive positively predicts Internet gaming disorder among emerging adults in Malaysia.	.120	.297	Not supported
H_3: Escape motive positively predicts Internet gaming disorder among emerging adults in Malaysia.	.556	.000	Supported
H_4: Competition motive positively predicts Internet gaming disorder among emerging adults in Malaysia.	.497	.000	Supported

Table 4.9

Summary of Result (Continued)

Hypotheses	Standardized Beta-β	p	Decision
H_5: Coping motive positively predicts Internet gaming disorder among emerging adults in Malaysia.	.094	.540	Not supported
H_6: Skill development motive positively predicts Internet gaming disorder among emerging adults in Malaysia.	-.228	.087	Not supported
H_7: Fantasy motive positively predicts Internet gaming disorder among emerging adults in Malaysia.	-.003	.980	Not supported
H_8: Recreation motive negatively predicts Internet gaming disorder among emerging adults in Malaysia.	-.272	.057	Not supported
H_9: Social support negatively predicts Internet gaming disorder among emerging adults in Malaysia.	-.065	.359	Not supported

Chapter V

Discussion and Conclusion

H_1: Self-efficacy negatively predicts Internet gaming disorder among emerging adults in Malaysia.

The result shows that self-efficacy is a significant and negative predictor of IGD among emerging adults in Malaysia. As a consequence, the first hypothesis is supported. Previous studies (Berte et al., 2021; Festl et al., 2013; Liu, 2016; Yilmaz & Tunca, 2024) supported these findings, revealing a significant negative correlation between self-efficacy and IGD. The lower the self-efficacy of excessive gamers who are diagnosed with IGD, the higher the maladaptive gaming-related expectancies, so they have an addiction tendency to online gaming (Chung et al., 2020). As emerging adult players with low self-efficacy have poor emotion regulation abilities in social interactions, which lead them to extensively play online games as they have the authority to control the gaming environment (Cudo et al., 2019).

According to Han et al. (2024), they found out that individuals with low self-efficacy are likely to engage more with video games as they are disposed to form a positive online identity through gaming. A study by Yang et al. (2021) may also help in exploring the negative expectancies of IGD, they emphasised that low self-efficacy in gaming behaviours since most of the young adults suffer from interpersonal conflicts, loneliness, and lack of offline social connection or support in the real world. All of these effects may directly lead to gaming addictive behaviour as the individuals' abilities are deprived and not able to function well in society. For example, IGD often has negative self-concepts between actual self and ideal self in society, which can discourage them from having any goals or motivations to achieve in future (Kim et al., 2018).

From another perspective, an individual who has high self-efficacy can effectively control and regulate their gaming behaviours, thereby decreasing the diagnosis of IGD. Research by Christoph and Tilo (2012) mentioned that individuals with high levels of self-efficacy have better control of their gaming behaviour and time spent in gaming, which can effectively avoid the temptations of IGD. Hence, the importance of self-efficacy is about one's ability to make intentional and conscious decisions to prevent certain addictive behaviours, including gaming behaviour (Yan et al., 2021). According to O'Neil et al. (2021), there are some constructs like engagement, interest and enjoyment to determine a player's self-efficacy level, where the players decide to continue playing or quit the video games. However, people with high self-efficacy are likely to reduce or change their addictive behaviours like gaming time, as well as decrease the symptoms of IGD (Sakuma et al., 2017; Stevens et al., 2021).

In short, video game players with high self-efficacy experience low levels of IGD symptoms from online games, while video game players with low self-efficacy engage in high IGD symptoms. This is due to people with more self-efficacy can get better control of their gaming activities which reduces IGD, compared to individuals with less self-efficacy.

H_2: Social motive positively predicts Internet gaming disorder among emerging adults in Malaysia.

The results point out that the social motive does not significantly predict IGD among emerging adults in Malaysia. The second hypothesis is not supported. A study done by Marino et al. (2020) found a consistent result with this finding, social motive was not significantly correlated with IGD as the video game players were often driven by the satisfaction of social needs. In contrast with a past study, it suggested that social motive did not significantly predict IGD symptoms (Laconi et al., 2017). Among the other motives in gaming motives, the social

motive players often use online games to socialise, like creating bonds with others, widening

social networks and strengthening social relationships. In other circumstances, social motive is

less motivated in highly educated and older players (Zsila et al., 2018). As a consequence, they

may have stronger social support networks and not rely on gaming as a means to achieve goals

or to fulfill personal needs.

In addition, players who like to socialise may underlie specific personal dysfunction

factors in their social life rather than utilising the social motives in persistent gaming. A study by

Kochuchakkalackal and Reyes (2020) highlighted that individuals who used to suffer from

psychosocial function and psychological well-being might have IGD symptoms. For example,

the risk factors are social anxiety (Karaca et al., 2020; Lehenbauer-Baum et al., 2015; Sioni et

al., 2017), personality traits (Gervasi et al., 2017; González-Bueso et al., 2020; Liao et al., 2020),

social exclusion (Paulus et al., 2018; Warburton et al., 2022) and more. It is due to the fact that

most gaming players cannot find any offline psychosocial support, so they use video games to

receive social acceptance from others. Therefore, social motives may not help players seek

affiliation through video games, but it provides them an online practice in social interaction.

On top of that, many studies also supported this perspective by identifying online social

capital in gaming, which indicated the sense of belonging and community that fosters social

interaction with other players in the virtual world (Meriläinen et al., 2023; Ni et al., 2023; Yang

& Liu, 2017). As a result, it reduces the likelihood of IGD symptoms by mitigating the negative

effects of gaming behaviours. Spottswood and Wohn (2020) examined that online games acted

as virtual sources for players to bridge their social connection with heterogeneous populations,

like online gaming communities through online social capital. Players who like to form

relationships with online or offline individuals are inclined to bond online social capital since

they tend to mutually share information, interest, support and gaming resources (Raith et al., 2021). Hence, online social capital can assist with players' communication skills, in order to better interact with their offline players or friends. In this way, the social motive has only stimulated better social ties in gaming, but not having access to the support networks and enjoyment in social interaction within the gaming environment.

H_3: Escape motive positively predicts Internet gaming disorder among emerging adults in Malaysia.

In the result part, escape motive is a significant and positive predictor of IGD among emerging adults in Malaysia. Thus, the third hypothesis is supported. The result obtained in this study is consistent with the findings of research (Billieux et al., 2015; Biolcati et al., 2021a; Laconi et al., 2017; Melodia et al., 2020), where they concluded that a high level of escape motive is associated with more severe symptoms of IGD. Based on the DSM-5, it conceptualised one of the diagnostic criteria of IGD was to escape (APA, 2013). Correspondingly, past studies have suggested that the escape motive is a component of escapism, as both are interchangeably linked to the IGD criterion (Giardina et al., 2021; Lee, 2017). Apart from this, the concept of escape has similar meaning to the eighth diagnosis of IGD, which point out that gaming habits offer a platform for players to escape their negative feelings and obstacles (Kim et al., 2017; Tullett-Prado et al., 2021).

A study done by Deleuze et al. (2019) have explained that escape motive in online game players plays a means of distraction, avoidance and relaxation to develop positive attitudes for virtual worlds over the real worlds. Similarly, escape motive as an avoidance strategy and cognitive distraction for escapism, they normally use online games to positively repair negative emotions and release stress in those life difficulties (Caro & Popovac, 2021). People with IGD or

problematic game addiction might like to escape from the state of cognitive deconstruction about self (Kwon et al., 2011), dissatisfactory relationships (Estévez et al., 2017), and reality or real-life issues (Billieux et al., 2013; Carlisle, 2017; Larrieu et al., 2022). From this way, individuals facilitate the continuation of problem gaming, since Internet games serve as an online coping option to satisfy their offline needs (Hellström et al., 2012).

According to Marques et al. (2023), they have evidenced that escape motive is connected with gaming escapism in motivating game practices, as well as elevating the IGD. Along the same line, it is also a sense of immersion that allows video game players to experience an alternative world through self-suppression from several problems, which lead to serious gaming outcomes (Hussain et al., 2021). If players face stressors in society, they start to transfer their attention into video games with a momentary distraction strategy to divert their attention from adverse emotions (Deleuze et al., 2019). Kim et al. (2016) analysed that IGD group of people employed escape motives to confront or escape the episodes of psychiatric symptoms. Thus, individuals with escape motive may positively experience IGD due to the negative stimulation and social problems in reality, which poses a risk for their well-being.

H_4: Competition motive positively predicts Internet gaming disorder among emerging adults in Malaysia.

The result shows that competition motive is a significant and positive predictor of IGD among emerging adults in Malaysia. Hence, the fourth hypothesis is supported. According to Ballabio et al. (2017), they had indicated the consistent findings as the competition motive predicted problematic gaming behaviour directly, which suggested the influence of the competition motive on gaming behaviour and potential concerns related to problematic usage. Similar results are also obtained, indicating that competition motive is a positive predictor and is

related to IGD (Király et al., 2014; Kuss, 2013). A past study indicated that the psychiatric

symptoms were directly linked to problematic online gaming through the competition motive,

suggesting that the competition motive was a positive and significant predictor of IGD (Király et

al., 2015).

Competition motive frequently involved both facing challenges from other players,

including provoking them, and deriving enjoyment from these competitive encounters (Bäcklund

et al., 2022). For example, gaming motives in First Person Shooter gamers are often linked to

competition motive and a sense of control (Kuss, 2013). According to Jansz and Tanis (2007),

the greater level of competitiveness was observed among the most dedicated gamers compared to

casual gamers. Consequently, video game players who are motivated by competition motive may

have difficulty accepting losses, which could lead them to prioritise ongoing gameplay to

achieve victories over meeting responsibilities outside of gaming (Bäcklund et al., 2022).

Similarly, previous research has shown that competitiveness is a strong predictor of pathological

gambling, where people frequently struggle to accept losses since they are motivated to be

competitive (Parke et al., 2004). As a result, competitive video game players may focus on

extending their gameplay and striving for victory, often at the expense of attending to

responsibilities outside the game (Bäcklund et al., 2022).

Furthermore, competition motive encountered a majority of male players, which resulted

in a high likelihood of IGD. According to Biolcati et al. (2021b), competition motive in males

were significantly more common than in females. For example, women are generally more

inclined to play games for the purpose of building intimacy, while men typically favour

competitive gameplay (Yee, 2006b). Similar results were found by Cudo et al. (2022),

suggesting that male gamers were more motivated by competition than female gamers. Thus, the

competition motive appears to reflect a gender-related need among players of virtual multiplayer games (Biolcati et al., 2021b).

H_5: Coping motive positively predicts Internet gaming disorder among emerging adults in Malaysia.

The results indicate that the coping motive is not a significant predictor of IGD among emerging adults in Malaysia. Thus, the fifth hypothesis is not supported. Similar results were found by a previous study, where coping motive was not a significant predictor of problematic gaming when psychiatric symptoms were taken into account (Király et al., 2015). Unlike the escape motive players, players with coping motive engage in online gaming to forget certain problems or stress in daily life. In this context, Kim and Kang (2021) have shown that the coping motive involves playing to manage negative moods and stress arising from real-world issues.

In practical contexts, the escape motive and coping motive can easily overlap since Internet game players potentially use avoidant coping strategies to address real-life challenges while also seeking temporary escape from reality (Melodia et al., 2020). Past studies have examined the questionnaire content and revealed that the escape motive and coping motive of MOGQ Scale overlap in their focus on using video games as a means of emotional regulation (Demetrovics et al., 2011; Lafrenière et al., 2012). Consequently, a past study of psychological risk factors for Internet addiction found that problematic Internet players typically used the Internet to avoid issues, perceiving the behaviour as a coping strategy rather than an addiction (Armstrong et al., 2000). As an example, Wan and Chiou (2006) investigated the conscious and unconscious motivations of gamers and discovered that participants utilised Internet gaming as a way to gain power, achievement and a sense of control in the virtual world. For instance, problematic video game players who have emotional vulnerabilities are likely to use coping

motives as a strategy to distract themselves from negative emotions or thoughts, especially

during COVID-19 pandemic (Lewinson et al., 2023).

Therefore, gaming can serve as a strategy to cope with these difficulties by providing an

avenue for some gamers to alleviate their psychiatric distress (Dowran et al., 2022). In this case,

gamers might use gaming to maintain their sense of self, using the virtual world and its

achievements or social interactions as a coping mechanism (Moudiab & Spada, 2019).

Additionally, although using gaming as a way to escape daily problems might contribute to

problematic usage, it can also function as an effective coping strategy to reduce stress and

tension without leading to problematic behaviour (Ballabio et al., 2017). Subsequently, the

coping motive is a strategy or method employed by gaming players to decline their personal

psychological distress instead of contributing to the IGD.

H_6: Skill development motive positively predicts Internet gaming disorder among emerging

adults in Malaysia.

Skill development motive does not significantly predict IGD among emerging adults in

Malaysia. It does not significantly predict IGD, thereby the sixth hypothesis is not supported.

The result is consistent with a previous study suggesting that skill development motive showed

no significant association with psychiatric distress or problematic gaming (Ballabio et al., 2017).

The finding of this present study is in contrast with past study, lower levels of skill development

were connected with higher IGD scores (Wu et al., 2016). Low levels of skill development

motive tend to have lower levels of GD symptoms compared to those driven by other gaming

motives (Király et al., 2015).

On the other hand, skill development motive is considered fundamental among e-sports

gamers (Kim & Thomas, 2015; Bányai et al., 2019). Skill development motive involves the

desire to enhance concentration, coordination, or other abilities through video gaming, reflecting

players' motivation to engage in gaming as a means to improve their skills (Demetrovics et al.,

2011). According to T'ng et al. (2023), achieving a high level of skill, such as hand-eye

coordination, mental acuity and attention, were essential for being successful in the gaming

world. Therefore, gaming skills may help players gain deeper knowledge of the game, strategize

effectively, make swift, and informed decisions (Himmelstein et al., 2017). Online games may

also provide players with cognitive and perceptual benefits such as enhancing attention and

coordination skills (Green & Bavelier, 2003; Green & Bavelier, 2006). Therefore, players engage

in online games that tend to enhance these skills may not be susceptible to IGD (Wu et al.,

2016).

Furthermore, higher levels of skill development motive can be advantageous for

individuals starting their e-sports career or striving to sustain it, even during periods of difficulty

or setbacks (Wu et al., 2016; Bányai et al., 2019). As a way to achieve success in e-sports

necessitated a high level of skill development motive, including extensive game knowledge

acquisition, strategic thinking, quick decision-making, staying motivated to continue playing,

and maintaining an informed mindset. According to Montag et al. (2022), e-sports gamers

demonstrated higher levels of skill development motives compared to both non-professional

gamers and those aspiring to become professional gamers. In line with this current study, the

participants involved were mostly emerging adults, which are university students and working

adults who were also mostly non-professional and casual gamers. Therefore, Malaysian

emerging adults in this present study are less likely to develop IGD, since they are not driven by

the skills development motive to play video games.

In other ways, cultural factors might influence the predictive relationship of gaming

motives on IGD. Berry (2002) explained that people's thoughts and behaviours were frequently

influenced by the culture in which they live. The cultural context is important as it places the

gamers within a gaming community that shares common beliefs and practices, giving their

gaming experiences specific meaning and significance (Kuss, 2013). For instance, the increased

rate of GD in Asia may be attributed to cultural differences (Chia et al., 2020; Liao et al., 2022).

The cultural risk factors like cultural values and societal norms might shape gaming behaviour

differently compared to Malaysia and other countries, but not the skill development motive. In

the Malaysian context, individuals who engage in IGD often do not perceive cultural acceptance

and normalcy in virtual worlds even if they have developed high gaming skills. The main reason

to explain the cultural difference between Malaysia and other countries is the individualist and

collectivist cultures.

Previous studies have reported that Malaysia exhibits a collectivist culture (Bochner,

1994; Burns & Brady, 1992). The collectivist nature of Malaysian culture can contribute to a

higher level of IGD, as communal and social influences may increase the likelihood of engaging

in online gaming behaviours. As a consequence, Malaysian individuals with IGD are mostly

dominated by social influence and culture difference, rather than the skills development motive

to continue playing the online games. In collectivist cultures, individuals often seek to connect

with others and work as a team in games to foster social interaction and build alliances

(Stavropoulos et al., 2021). As a result, in the current study, the skill development motive is not

significantly related to IGD since engaging in games for social purposes does not necessarily

require advanced gaming skills.

Conversely, individualism may appear differently depending on the collectivist culture in

Malaysia. Individualism is characterised by a focus on personal values and the perception of

one's social context or group as separate from oneself (Li & Aksoy, 2007; Triandis & Gelfand, 1998). In this framework, an individual's thoughts, feelings, and interests primarily shape his or her goal-oriented behaviours and decisions (Li & Aksoy, 2007; Triandis & Gelfand, 1998). For example, individualism emphasises competitive and achievement-based rankings to determine personal worth, which can drive individuals to engage excessively in activities to impress their peers (Hamlen, 2010). As a result, people in individualist cultures may seek to develop extensive gaming skills to achieve higher status and success in online gaming. The heightened individualism may help explain why gaming disorders are less prevalent in Western countries compared to Southeast Asia (Chia et al., 2020). A meta-analysis study conducted by Chia et al. (2020) revealed that the prevalence of Gaming Disorder (GD) seemed to be higher in Southeast Asia, mainly in the populations of Singapore and Thailand. Players in other countries may utilise skill development motive to assert online identity or achieve success, as gaming is a way to improve their personal gaming development, possibly leading to IGD.

In summary, e-sports gamers exhibit higher levels of skill development motive than emerging adults, which both non-professional gamers and those who are aiming to become professional gamers. However, Malaysian players are influenced by collectivist culture as the social influence contributes to IGD symptoms, while players with individualism in other countries have a sense of skill development motive to enhance their online identity and achieve success, leading to high levels of IGD.

H_7: Fantasy motive positively predicts Internet gaming disorder among emerging adults in Malaysia.

The results indicated that the fantasy motive does not significantly predict IGD among emerging adults in Malaysia. The seventh hypothesis is not supported by this study. The finding

is inconsistent with the previous studies, which have shown that fantasy motive significantly and positively predicted IGD (Laconi et al., 2017; Moudiab & Spada, 2019; Šporčić & Glavak-Tkalić, 2023). Ramos-Diaz et al. (2018) found that fantasy motive positively predicted IGD which is inconsistent with our study, suggesting that players with IGD create new identities to escape from real-life issues. In this present study, the result shows fantasy motive is not a significant predictor of IGD and more research should be done to confirm this area of validation.

Since fantasy motive is about stepping outside of an individual's regular identity in a fantasy world and trying out certain new identities, which he or she can not do in real life (Demetrovics et al., 2011). Fantasy motives might not be as directly linked to the compulsive aspects of gaming behaviours since players are more likely to explore their personality creativity in the online world. Players create an avatar character with a personality similar to themselves when playing online games. Players feel more satisfied with their avatar character when their personality is similar to their own avatars (Zhong & Yao, 2012). The extent to which players perceive their avatars to represent them shortens the psychological distance between human players and their artificial avatars, making game playing a self-relevant activity (Lim & Reeves, 2009).

In line with the personality exploration and creativity of IGD players, they often engage in online games for the enjoyment of various unique gameplay experiences rather than for the purpose of creating new identities within a fantasy world. As an example, people with high openness would rather make a plan to cope with their problems instead of blindly escaping into the online world and creating a new identity to avoid them. Similarly, De Hesselle et al. (2021) mentioned that openness personality traits are negatively associated with fantasy motives. Gamers with high openness scores may find excitement and new experiences in real-world

environments, which might not need to turn exclusively to the online world (McCrae, 1993);

thus, lowering IGD levels. Hence, engaging in fantasy-driven activities can be a healthy and

creative outlet to understand more personality or creativity.

People engaged with fantasy motive may not predict fantasy since the act of identity

creation might help in satisfying some psychological and emotional needs. Fantasy motives can

be viewed as a form of cognitive transference, particularly as a way to divert or escape from

oneself. This may occur due to the gamers using online games as a tool to alleviate perceived life

stress (Snodgrass et al., 2014). Many people who have stress problems may utilise online video

games as one of the paths for maladaptation to manage their stress. Bäckman (2022) identified

that online players like to express their virtual character or self in terms of wearable items of

clothing through fashion and appearance. In the gaming setting, gamers also can set up cameras

and perform photoshoots with their characters. Therefore, players with a fantasy motive who use

Internet games as a means of self-expression to shield themselves from life stress, rather than

increasing the game use to create their virtual identities.

H_8: Recreation motive negatively predicts Internet gaming disorder among emerging adults in Malaysia.

The result showed that recreation motive is not a significant predictor of IGD among

emerging adults in Malaysia. This hypothesis is not supported in the present study. It showed

that this result of present study had contradictory issues with the finding of previous studies

(Bäcklund et al., 2022), where they mentioned that there is a strong and positive association

between recreation motives and IGD. In this way, IGD players have recreational motive who are

likely to enjoy the joy brought by video games. Different from competitive gamers, recreational

players tend to perceive online games as a platform of entertainment and enjoyment, where they

just want to play for fun and use it as a relaxation technique (Yang et al., 2023).

Recreation motive in IGD includes playing games for entertainment and enjoyment purposes, but many leisure activities can be done instead of playing online games. According to Lee et al. (2020), online players engage in a variety of activities in their free time instead of online gaming. They can participate in other leisure activities instead of playing online games, such as hanging out with friends, participating in sports or extracurricular activities, and more. Kristensen et al. (2021) supported the view that participating in various leisure activities, just like recreational outdoor activities as a key motive to experience nature. This might be due to the choice of leisure activities by the players. Therefore, players can expand their range of leisure activities by being more exposed to new alternative ways to online gaming, which reduces their addiction to online games.

Moreover, game genres can also influence the development of recreation motive. Toth et al. (2021) found that each game genre is connected to distinct gameplay preferences as individuals tended to play FPS and MOBA games more frequently. For instance, individuals who play FPS games more often prefer games that are fast paced, demand quick inputs, and require precise reactions (Clarke & Duimering, 2006). These preferences have been previously noted as crucial for FPS games (Buckley et al., 2013). Previous research has also highlighted that FPS games require the use of both vision (Riesenhuber, 2004) and sound (Grimshaw, 2007) for effective spatial perception. However, the frequency of playing MOBA games is distinctly linked to the game preferences that emphasise teamwork (Kou et al., 2016). Numerous studies have highlighted the critical role of teamwork for success in MOBA games (Johnson et al., 2015; Neidhardt et al., 2015). Additionally, increasing MOBA play frequency is significantly associated with the perceived importance of adaptable game strategies (Toth et al., 2021). Hence,

MOBA genre's evolution from real-time strategy games which necessitate the ability to adjust strategies based on shifting in-game conditions.

Therefore, in this study, individuals may not develop recreation motive as the majority of the individuals prefer FPS and MOBA games, which are inclined towards competitive games that require precise and rapid reactions, as well as those that involve a high degree of in-game spatial awareness. Players who play FPS and MOBA games need to maintain intense focus and apply considerable skill to succeed. However, this level of engagement is in stark contrast to recreational gaming, which typically emphasises relaxation and casual enjoyment. Hence, the competitive and skill-intensive nature of FPS and MOBA games means they are less about leisurely play and more about challenging oneself and competing, which does not align with a focus on recreation.

H_9: Social support negatively predicts Internet gaming disorder among emerging adults in Malaysia.

The results revealed that social support does not significantly predict IGD among emerging adults in Malaysia. This hypothesis is not supported in this study. This finding diverged with the previous studies, which show that social support negatively predicted IGD (Liu et al., 2022; Uçur & Dönmez, 2021; Yu et al., 2018). According to Zhang et al. (2019), the finding viewed that social support did not significantly predict IGD, which suggested that purpose in life mediates the effect of social support on IGD. It defined people's perceptions of or aspirations for meaning in their lives, including goals, missions or ambitions aimed at achievement (Zhang et al., 2015). The purpose in life is enhanced by the satisfaction of basic psychological needs, which protect individuals against problematic game playing (Wu et al., 2013). Those who do not have their psychological needs met often feel a lack of competence and

doubt that their actions will achieve the desired outcomes (Wu et al., 2013). As a consequence, they can struggle to grasp the importance of the work they are currently doing or will do in the future. A low level of purpose in life may lead to an increased vulnerability of IGD.

High levels of social support are less likely to lead to IGD. Social support refers to the perception or feeling of being cared for, which fosters a sense of connection and belonging (Inguglia et al., 2014; Legault et al., 2006; Tian et al., 2015). It is a fundamental psychological need that is essential for an individual's physical and mental well-being (Deci & Ryan, 2008). According to Malak et al. (2023), social support acts as a protective factor against stressful situations in a person's life, offering a coping mechanism to help manage psychological challenges. A person who receives a lot of support from their parents, peers, and society will help them to adapt to the psychological problems. For instance, parental support helps an individual to build a strong bond with family members and cope with the issues together. The way parents respond to their children's quest for autonomy may influence their children's ability to develop a greater sense of individuality and a positive, mutually supportive parent-child relationship (Inguglia et al., 2014). Individuals who are supported and cared for by teachers and peers also tend to have fewer negative emotions such as depression and anxiety, which reduces the chances of causing IGD (Tian et al., 2015).

Nevertheless, one reason for the lack of a significant predictive role of social support on IGD can be related to the nature of the games themselves. This may be influenced by the diversity of online game genres. According to Kuss (2013), the significance of the game context can differ for players based on their circumstances and gaming preferences. Most participants prefer FPS and MOBA games. Both FPS and MOBA games offer collaborative (within teams) and competitive (between teams) gaming experiences to the players (Tyack et al., 2016; Wang et

al., 2020). Players need to have a shared intention and agreement to communicate effectively, accomplish tasks successfully, and foster a mutual desire to keep playing together (Wang et al., 2020). Consequently, playing in a team can forge new friendships and engage in meaningful communication with their gaming teammates, which can fulfil their social support needs. As a result, the team-oriented nature of FPS and MOBA games enables players to build relationships and obtain social support through in-game interactions.

Implications

Theoretical Implication

The results of this study have several implications for theory, research, and practice within the field of psychology. This research study aims to enhance the theoretical understanding of IGD by applying SCT in this study to examine the predictive roles of self-efficacy, social motive, escape motive, competition motive, coping motive, skill development motive, fantasy motive, recreation motive, and social support towards IGD among emerging adults in Malaysia. This approach does not only address a significant gap in the literature but also provides more detailed insights into the various factors influencing gaming behaviours among emerging adults in Malaysia. These may enhance a comprehension of the underlying dynamics of IGD in the Malaysian context.

Social Cognitive Theory (SCT) as a human agency developed by Bandura (1986) was applied to examine several gaps within the existing theoretical framework. In this study, it provides valuable understanding on an emerging adult's self-efficacy, gaming motives, and social support as predictors of IGD in Malaysia. Since most of the previous studies focused more on Social Determination Theory (SDT) and IGD (Bender & Gentile, 2020; Gomez et al., 2022; Hui et al., 2019; Mills & Allen, 2020; T'ng et al., 2023; Weinstein et al., 2017). This

contribution of study is essential as this theoretical framework was instrumental in examining the complex interplay between these variables and their influence on IGD. By applying SCT, the study aimed to provide a deeper understanding of how self-efficacy, gaming motives, and social support contribute to IGD. This application of SCT helps elucidate the mechanisms through which these factors affect IGD, contributing valuable insights to the field.

Nevertheless, following the proposed SCT theory, the personal factor, self-efficacy was predicting IGD. Few recent research have predominantly concentrated on the predictive role of self-esteem and IGD (Sevelko et al., 2018; She et al., 2024; Teng et al., 2020; Warburton et al., 2022; Wartberg et al., 2021), leaving the predictive role of self-efficacy in relation to IGD largely unexplored. Consequently, it is crucial to investigate the predictive role between self-efficacy and IGD. Such an examination would enhance the existing literature by offering new insights into how self-efficacy significantly impacts IGD. Although the study found self-efficacy to be a significant predictor of IGD, reinforcing theoretical frameworks and further research is necessary to deepen our understanding of this relationship and its implications.

The results of the present study have contributed new knowledge into SCT, as behavioural and environmental factors are the non-significant predictors associated with IGD among emerging adults in Malaysia. The non-significant predictors were social motive, coping motive, skill development motive, fantasy motive, recreation motive and social support showed that these factors have less direct impact on IGD. In the SCT theoretical field, all these independent variables have explored the areas of research, but also shedding some new insight that deserve further research efforts. It is also an interesting finding analysed in the present study. Therefore, these discrepancies may draw researchers' attention to this field, prompting an investigation into the underlying reasons for these inconsistencies in SCT. This indicates a need

for additional research to explore why these motives and social support did not emerge as

significant predictors and how they might influence IGD through different mechanisms or in

different contexts. Hence, this study could provide new insights and understand the aetiology of

IGD context in Malaysia.

In summary, this study has offered new insights and plausible explanations within the

SCT theory, enabling researchers to further investigate the predictive role between self-efficacy,

gaming motives, social support, and IGD. There are existing possible reasons and contradictory

findings in both present study and past study. Hence, identifying the theoretical implication

would also help extend the perspective on SCT if other further studies were conducted on the

similar research title.

Practical Implications

The findings of this study carried several practical implications for addressing the

negative impact of self-efficacy, escape motive and competition motive on IGD among emerging

adults in Malaysia. Excessive gaming habits could bring public mental health concerns, negative

physical and psychological consequences, such as impulsivity, loneliness, depression and anxiety

(Moore et al., 2022). In Malaysia, people with online gaming addiction are poor in interpersonal

connection quality and academic performance due to a lack of self-control and regulation in

gaming, which increases the development of IGD (Kamal & Wok, 2020; Mohamed et al., 2023).

Thus, this current study could help in conducting more IGD research studies with different

contexts, as well as imposing various risk and protective factors to develop appropriate

treatments and prevention measures for IGD.

Firstly, the results from the current study revealed that lower levels of self-efficacy

contribute to higher levels of IGD. Developing key skills is essential for building confidence and

capability in individuals with low self-efficacy. These skills include self-awareness to understand

strengths and weaknesses, cognitive restructuring to challenge negative thoughts, and goal

setting to create and track achievable objectives. Furthermore, enhancing problem-solving and

effective communication skills is crucial, as is mastering stress management techniques to

maintain emotional balance. Cultivating resilience helps individuals bounce back from setbacks,

while self-compassion fosters a positive self-view. By nurturing these abilities, the

implementation of programs can significantly boost self-confidence and help mitigate

problematic gaming behaviours. Additionally, collaborating with parents and friends is crucial in

enhancing self-efficacy among emerging adults. Parents can support their children by

encouraging goal setting, providing constructive feedback, modelling resilience, and promoting

independence. Friends contribute by offering positive reinforcement, sharing personal

experiences, and being empathetic listeners. Together, these supportive actions can help

emerging adults build a stronger sense of self-efficacy, which is essential for reducing IGD and

fostering overall well-being.

Moreover, the results from the current study indicate that higher levels of the escape

motive are linked to increased levels of IGD. Individuals who like to use gaming as a means of

escape often avoid dealing with stress or emotional difficulties. Therefore, encouraging

alternative coping mechanisms like coping flexibility, and lived experiences of an individual

helps address this issue by offering healthier ways to manage these challenges without relying on

gaming (Nalwoga et al., 2024; Wu et al., 2022). For instance, practices such as meditation,

physical exercise, or engaging in creative hobbies like drawing, dancing, or singing provide

constructive outlets for stress and emotions. These activities can fulfil the same emotional needs

as gaming but in a healthier manner. Nevertheless, fostering strong social connections is crucial

in reducing reliance on gaming. By encouraging participation in social activities or community events, emerging adults can build meaningful relationships and support networks. These social interactions offer a sense of belonging and support, which can diminish the appeal of gaming as a solitary escape. Building a strong social network and engaging in fulfilling activities can create a more balanced and satisfying lifestyle, helping in reducing the need to turn to gaming as a coping mechanism. Thus, these approaches help replace problematic gaming behaviour with more positive and enriching alternatives.

Additionally, the current study revealed that higher levels of the competition motive are associated with increased levels of IGD. To address this, it is important to emphasise personal effort and self-improvement rather than focusing solely on winning or surpassing others. Therefore, parents, educators, and community leaders should foster a balanced perspective on competition. For example, parents can model and promote personal effort over victory, educators can encourage collaborative learning and group projects, and community leaders can organise activities that highlight teamwork. By fostering a mindset where competition is seen as a tool for personal growth rather than just a means to outdo others, individuals can reduce the intensity of their competitive drive. Moreover, encouraging engagement in activities that highlight teamwork and collaboration, such as group sports, team projects, and cooperative games is crucial to shift the focus from individual competition to collective achievement. These collaborative activities foster a sense of shared purpose and mutual support, which helps participants value the success of the group as a whole rather than individual accomplishments. By prioritising teamwork and collective effort, individuals can experience the satisfaction of contributing to a group's success, which reduces the emphasis on personal competition. Hence, this approach encourages a more balanced and supportive perspective on competition, which can effectively diminish the

competition motive tied to excessive gaming.

The study provides valuable insights into the factors contributing to IGD, offering practical applications for various stakeholders. For parents and friends, this knowledge helps them identify early signs of problematic gaming and intervene effectively. Parents can address the issue by discussing the need to balance gaming with other activities and suggesting alternative hobbies or stress-relief techniques, while friends can support each other in developing healthy gaming habits. For instance, educators can use these insights to create targeted strategies for managing gaming habits alongside academic responsibilities, such as implementing workshops on time management and stress reduction. This can also improve academic support by providing personalised advice and additional educational resources.

Last but not least, the study's findings can guide the development of effective regulations and industry standards to address IGD. In Malaysia, the Ministry of Youths and Sports, Ministry of Women, Family and Community can collaborate with gaming companies to establish industry standards and practices that promote healthy gaming by encouraging the development of features that help users manage and limit their gaming time. For example, in China, the government has implemented a forced offline system for individuals who exceed gaming time limits, encouraging breaks and reducing excessive gaming behaviour (Boni, 2021). In short, understanding IGD aids in forming a holistic approach involving government agencies, mental health professionals, educators, and families to promote prevention and manage the risk factors associated with IGD.

Limitations

There are some limitations in this study. The first limitation is the self-report scales questionnaire. Fryer and Dinsmore (2020) identified that respondents may generalise their

cognitive processing, emotions and beliefs when answering self-report scales, which can negatively affect the study's result. Participants may not be completely accurate or truthful with their responses, as they need to recall their memory when responding to the online questionnaire. This is also subjected to various biases such as response bias, memory bias, acquiescent response, self-serving bias, social desirability bias and others. Kreitchmann et al. (2019) pointed out that single-statement items, Likert-scale-based measures, forced-choice format and others in self-report scales can subjectively influence the response styles of the population. All these elements from self-report measurement could cause the quality of the self-report data. It also caused invalid and unreliable research results.

Secondly, the limitation of this study is that the participants were not equally distributed in the targeted population, such as gender, occupation and races. It means that the ratio of population was not proportionate. The process of selecting participants may result in a sample that does not represent the population, causing selection bias. In this study, 250 of the participants were male, while 104 participants were females. In the total number of 354 respondents, a majority of them are Chinese races (329) and students (277). This may lead to invalid outcomes due to gender bias, occupational bias and racial bias.

Thirdly, the length of the survey questionnaire and the complexity of the question items are also one of the limitations. In this study, the questionnaire consisted of five parts and those instruments used had too lengthy question items, which easily made the researcher receive a lot of incomplete data and low response rate. Similarly, the participants may feel impatient and fatigue when filling in the questionnaires and end up not answering all the questions. According to Pontes and Griffiths (2015), item one in IGDS9-SF may display different examples of question styles for research to select, which easily made the researcher confused about which one

was better to use in the survey questionnaire. IGDS9-SF has been translated into 17 languages, and then might be slightly different in interpreting the question items across different cultures (Poon et al., 2021). Moreover, poorly worded questions may lead to misinterpretation by respondents which may cause the participants to answer wrongly, and data collected to be inaccurate.

Recommendations

A potential recommendation for improving the reliability of self-report scales is to incorporate encouraging statements at the beginning of the questionnaire. Research by Larson (2019) suggests that including positive attribution statements can remind participants to respond honestly and discourage random or deceptive answering, thereby reducing response biases. Examples of such statements might include phrases like "Please answer questions honestly" or "Your truthful responses are crucial for accurate results.". de Oliveira Maraldi (2020) also suggested that integrating self-administered techniques like question randomization in self-report scale can address the bias issues. By these two recommendations, it can help enhance the accuracy of the responses and a result base. Additionally, integrating such affirmations and the research technique can contribute to more reliable data collection by reinforcing the importance of integrity in the survey process.

Nevertheless, another recommendation for selection bias is to use representativeness and statistical distribution analyses (Dickinson et al., 2012; McEwan, 2020). To achieve a more balanced sample, researchers should consider adjusting participant selection to address any gender, occupation and racial imbalances, such as by recruiting a more diverse group when one gender is overrepresented. Additionally, distributing surveys across universities and workplaces in different states can help to ensure a broader and more representative sample. This approach

not only enhances the accuracy of the data collected but also mitigates issues related to gender, occupational, and racial biases. By implementing these strategies, researchers can improve the generalizability of their findings and ensure that their outcomes reflect a more diverse and representative population.

Lastly, shortening the survey questionnaire and worded questions can increase more responses rate and internal validity of the research. Gonzalez (2021) suggested that researchers can utilise psychometric framework and machine learning algorithms to select the most important items, develop a static short-form from the lengthy instrument scales, and then estimate the precious score. It can be convenient and beneficial in conducting several types of study as it reduces the item set and makes the survey questionnaire become more simple and short. This approach ensures that there are only a few question items for the respondents to answer and save their time. From the researcher's perspective, it not only can increase the survey response rates, but also help to validate the response quality.

Not only that, recommendation for further research is to explore more on the non-significant roles of gaming motives and social support on IGD. This present study may explain that both gaming motives and social support have less direct effect on IGD. By understanding their predictive roles, researchers should develop more tailored interventions that address the specific needs and challenges in IGD among Malaysian emerging adults. Past studies have only presented both are mediating element to influence IGD, as such mediating role of gaming motives (Chang et al., 2018; Király et al., 2015; Kircaburun et al., 2018; Kircaburun et al., 2020), and the mediating role of social support (Malak et al., 2023; Yu et al., 2022). Hence, exploring the potential predictive role of gaming motives and social support may address the literature gap and gaming factors in IGD among emerging adults in Malaysia. With a comprehensive analysis

of these gaming factors, several protective factors that mitigate the negative effects of gaming

behaviours on mental well-being with the development of effective support strategies, ultimately

promoting healthier outcomes for emerging adults in Malaysia.

Conclusion

In conclusion, this present study aimed to investigate the predictive role of self-efficacy,

gaming movies and social support on IGD among emerging adults in Malaysia. Self-efficacy,

escape motive, and competition motive did significantly predict IGD among emerging adults in

Malaysia, while social motive, coping motive, skills development motive, recreation motive,

fantasy motive, and social support were not.

Since there is an increased Malaysian emerging adult population involved in extensive

use of video games, players' gaming behaviour are still being understudied in the Malaysia

context. Hence, the new discoveries and insights on the IGD topic is important to enhance

awareness, knowledge and understanding of the public. This study was valuable in identifying

gaps in the literature regarding the pathological issues of gaming in the education sector, early

intervention, prevention, and treatment of IGD in Malaysia. It has established a new reference

for future research, laying the groundwork for further exploration of IGD findings. It not only

provides research study to different institutions, and also promotes a healthier and positive well-

being towards gaming behaviour.

References

Abedini, S., Hassani, L., Daneshvar, S., Ghanbarnejad, A., & Sayadi, A. (2023). Investigating

      the effect of educational intervention based on social cognitive theory on reducing

      internet addiction in students of University of Medical Sciences. *Health Education and*

      Health Promotion, *11*(3), 1001-1009. http://dx.doi.org/10.58209/hehp.11.3.357

Ahmad, N. A., & Salim, Z. (2021). Individual Innovativeness, Emotional Intelligence and Self-

      Efficacy Towards Online Learning Readiness. *International Journal of Advanced*

      Research in Education and Society, 3(4), 109-122.

      https://doi.org/10.55057/ijares.2021.3.4.12

Ahsan, S., Rasheed, A., & Zonash, R. (2019). Impact of internet gaming disorder on self-efficacy

      and self-doubt among university students. *Pakistan Journal of Physiology*, *15*(4), 38-

      41.

Ali, P., & Younas, A. (2021). Understanding and interpreting regression analysis. *Evidence-*

      Based Nursing, 24(4), 116-118. http://dx.doi.org/10.1136/ebnurs-2021-103425

Alimohammadi, H., & Chen, S. N. (2022). Performance evaluation of outlier detection

      techniques in production timeseries: A systematic review and meta-analysis. *Expert*

      Systems with Applications, *191*, 116371. https://doi.org/10.1016/j.eswa.2021.116371

Almourad, M. B., McAlaney, J., Skinner, T., Pleya, M., & Ali, R. (2020). Defining digital

      addiction: Key features from the literature. *Psihologija*, *53*(3), 237-253.

      http://dx.doi.org/10.2298/PSI191029017A

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*

      (5th ed.). Washington, DC: Author.

Andrade, C. (2020). Sample size and its importance in research. *Indian journal of psychological*

   medicine, *42*(1), 102-103. https://doi.org/10.4103%2FIJPSYM.IJPSYM_504_19

Armstrong, L., Phillips, J. G., & Saling, L. L. (2000). Potential determinants of heavier internet

   usage. *International journal of human-computer studies*, *53*(4), 537-550.

Arnett, J. J., Nelson, L. J., & Luster, S. S. (2014). *"Adulthood" by whose definition? the*

   complexity of emerging adults' conceptions of adulthood. Oxford University Press.

Arslan, A. (2022). The Effect of Secondary School Students' Digital Game Addictions on Self-

   Efficacy Levels: A Structural Equation Model Study. *E-International Journal of*

   Educational Research, *13*(5). https://doi.org/10.19160/e-ijer.1135981

Asiamah, N., Mends-Brew, E., & Boison, B. K. T. (2019). A spotlight on cross-sectional

   research: Addressing the issues of confounding and adjustment. *International Journal of*

   Healthcare Management, 14(1), 183-196.

   https://doi.org/10.1080/20479700.2019.1621022

Bäcklund, C., Elbe, P., Gavelin, H. M., Sörman, D. E., & Ljungberg, J. K. (2022). Gaming

   motivations and gaming disorder symptoms: A systematic review and meta-analysis.

   Journal of Behavioral Addictions, *11*(3), 667-688.

   https://doi.org/10.1556/2006.2022.00053

Bäckman, C. J. (2022). *Fashion an d player retention in MMORPGs: A case study of Final*

   Fantasy XIV: A realm reborn.

Ballabio, M., Griffiths, M. D., Urbán, R., Quartiroli, A., Demetrovics, Z., & Király, O. (2017).

   Do gaming motives mediate between psychiatric symptoms and problematic gaming? An

   empirical survey study. *Addiction Research & Theory*, *25*(5), 397-408.

   https://doi.org/10.1080/16066359.2017.1305360

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological review*, *84*(2), 191-215. https://doi/10.1037/0033-295X.84.2.191

Bandura, A. (1978). Self-efficacy: Toward a unifying theory of behavioral change. *Advances in Behaviour Research and Therapy*, *1*(4), 139–161. https://doi.org/10.1016/0146-6402(78)90002-4

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American psychologist*, *37*(2), 122-147. https://psycnet.apa.org/doi/10.1037/0003-066X.37.2.122

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ, Prentice-Hall.

Bandura, A. (1989). Human agency in social cognitive theory. *American psychologist*, *44*(9), 1175-1184. https://doi.org/10.1037/0003-066X.44.9.1175

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational behavior and human decision processes*, *50*(2), 248-287. https://doi.org/10.1016/0749-5978(91)90022-L

Bandura, A. (1994). Self-efficacy. *Encyclopedia of human behavior*. Academic Press.

Bandura, A. (2002). Social Cognitive Theory in Cultural context. *Applied Psychology*, *51*(2), 269–290. https://doi.org/10.1111/1464-0597.00092

Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on psychological science*, *1*(2), 164-180. https://doi.org/10.1111/j.1745-6916.2006.00011.x

Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited. *Journal of management*, *38*(1), 9-44. https://doi.org/10.1177/0149206311410606

Bandura, A., & Adams, N. E. (1977). Analysis of self-efficacy theory of behavioral change. *Cognitive therapy and research*, *1*(4), 287-310. https://doi.org/10.1007/BF01663995

Bandura, A., Freeman, W. H., & Lightsey, R. (1999). Self-efficacy: The exercise of control. *Journal of Cognitive Psychotherapy, 13* (2), 158-166. https://doi.org/10.1891/0889-8391.13.2.158

Bányai, F., Griffiths, M. D., Demetrovics, Z., & Király, O. (2019). The mediating effect of motivations between psychiatric distress and gaming disorder among esport gamers and recreational gamers. *Comprehensive psychiatry*, *94*, 152117. https://doi.org/10.1016/j.comppsych.2019.152117

Barnett, V., & Lewis, T. (1978). *Outliers in statistical data.* Wiley.

Barnett, V., & Lewis, T. (1994). *Outliers in statistical data* (3rd ed.). J. Wiley & Sons

Bartle, R. (1996). Hearts, clubs, diamonds, spades: Players who suit MUDs. *Journal of MUD research*, *1*(1), 19.

Barton, B., & Peat, J. (2014). *Medical statistics: A guide to SPSS, data analysis and critical appraisal*. John Wiley & Sons.

Beck, L. W. (1966). Conscious and unconscious motives. *Mind*, *75*(298), 155-179.

Bender, P. K., & Gentile, D. A. (2020). Internet gaming disorder: Relations between needs satisfaction in-game and in life in general. *Psychology of Popular Media, 9*(2), 266. https://psycnet.apa.org/doi/10.1037/ppm0000227

Berndt, A. E. (2020). Sampling methods. *Journal of Human Lactation*, *36*(2), 224-226. https://doi.org/10.1177/0890334420906850

Berry, J. W. (2002). *Cross-cultural psychology: Research and applications*. Cambridge University Press.

Berte, D. Z., Mahamid, F. A., & Affouneh, S. (2021). Internet addiction and perceived self-efficacy among university students. *International Journal of Mental Health and Addiction*, *19*(1), 162-176. https://doi.org/10.1007/s11469-019-00160-8

Billieux, J., Thorens, G., Khazaal, Y., Zullino, D., Achab, S., & Van der Linden, M. (2015). Problematic involvement in online games: A cluster analytic approach. *Computers in Human Behavior*, *43*, 242-250. https://doi.org/10.1016/j.chb.2014.10.055

Billieux, J., Van der Linden, M., Achab, S., Khazaal, Y., Paraskevopoulos, L., Zullino, D., & Thorens, G. (2013). Why do you play World of Warcraft? An in-depth exploration of self-reported motivations to play online and in-game behaviours in the virtual world of Azeroth. *Computers in Human Behavior*, *29*(1), 103-109. https://doi.org/10.1016/j.chb.2012.07.021

Biolcati, R., Passini, S., & Pupi, V. (2021a). The role of video gaming motives in the relationship between personality risk traits and Internet Gaming Disorder. *Journal of Gambling Issues*, *46*, 221-241. https://dx.doi.org/10.4309/jgi.2021.46.12

Biolcati, R., Pupi, V., & Mancini, G. (2021b). Massively multiplayer online role-playing game (MMORPG) player profiles: Exploring player's motives predicting internet addiction disorder. *International Journal of High Risk Behaviors and Addiction*, *10*(1). http://dx.doi.org/10.5812/ijhrba.107530

Blair, L. (2011). *The use of video game achievements to enhance player performance, self-efficacy, and motivation* (Doctoral Dissertation). University of Central Florida, 1–30. Retrieved from https://stars.library.ucf.edu/etd/1827

Bochner, S. (1994). Cross-cultural differences in the self-concept: A test of Hofstede's

    individualism/ collectivism distinction. Journal of Cross-Cultural Psychology, 25, 273-

    83. https://doi.org/10.1177/0022022194252007

Bong, W. J., Teh, E. Y. W., & Yon, D. Y. (2019). *Motivations of online gaming and*

    identification of avatar predict internet gaming disorder's symptoms among youth in

    Malaysia (Doctoral dissertation, UTAR). Retrieved from

    http://eprints.utar.edu.my/id/eprint/3214

Boni, G. (2021). *Legal regulation and IP rights protection of online games in China.*

    http://hdl.handle.net/10579/1937

Buckley, D., Chen, K., & Knowles, J. (2013). Predicting skill from gameplay input to a first-

    person shooter. *IEEEExplore*. https://doi.org/10.1109/cig.2013.6633655

Burns, D. J., & Brady, J. (1992). Cross-cultural comparison of the need for uniqueness in

    Malaysia and the United States. *Journal of Social Psychology, 132,* 487-495.

    https://doi.org/10.1080/00224545.1992.9924728

Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., ... & Walker, K.

    (2020). Purposive sampling: complex or simple? Research case examples. *Journal of*

    research in Nursing, *25*(8), 652-661. https://doi.org/10.1177/1744987120927206

Caplan, S. E., Williams, D., & Yee, N. (2009). Problematic Internet use and psychosocial well-

    being among MMO players. *Computers in Human Behavior*, *25*(6), 1312–1319.

    https://doi.org/10.1016/j.chb.2009.06.006

Carlisle, K. L. (2017). *Personality, motivation, and Internet gaming disorder: Understanding the*

    addiction. Old Dominion University.

Caro, C., & Popovac, M. (2021). Gaming when things get tough? Examining how emotion

      regulation and coping self-efficacy influence gaming during difficult life situations.

      Games and Culture, *16*(5), 611-631. https://doi.org/10.1177/1555412020944622

Casacci, S., & Pareto, A. (2015). Methods for quantifying ordinal variables: a comparative

      study. *Quality & Quantity*, *49*, 1859-1872.

Champion, R. & Lenard, C., & Mills, T. (1998). Demonstrating the Durbin-Watson statistic.

      Journal of the Royal Statistical Society Series D-the Statistician, 47(4), 643-644.

      http://doi.org:10.1111/1467-9884.00161

Chang, C. H., Chang, Y. C., Yang, L., & Tzang, R. F. (2022). The comparative efficacy of

      treatments for children and young adults with internet addiction/internet gaming disorder:

      An updated meta-analysis. *International journal of environmental research and public

      health*, *19*(5), 2612. https://doi.org/10.3390/ijerph19052612

Chang, I. C., Liu, C. C., & Chen, K. (2014). The effects of hedonic/utilitarian expectations and

      social influence on continuance intention to play online games. *Internet Research*, *24*(1),

      21-45. https://doi.org/10.1108/IntR-02-2012-0025

Chang, S. M., Hsieh, G. M., & Lin, S. S. (2018). The mediation effects of gaming motives

      between game involvement and problematic Internet use: Escapism, advancement and

      socializing. *Computers & Education*, *122*, 43-53.

      https://doi.org/10.1016/j.compedu.2018.03.007

Chen, G., Gully, S. M., & Eden, D. (2001). Validation of a new General Self-Efficacy scale.

      Organizational Research Methods, *4*(1), 62–83.

      https://doi.org/10.1177/109442810141004

Chen, I. H., Lee, Z. H., Dong, X. Y., Gamble, J. H., & Feng, H. W. (2020). The influence of

   parenting style and time management tendency on internet gaming disorder among

   adolescents. *International Journal of Environmental Research and Public Health*, *17*(23),

   9120. https://doi.org/10.3390/ijerph17239120

Chen, L., Liu, R., Zeng, H., Xu, X., Zhu, R., Sharma, M., & Zhao, Y. (2018). Predicting the time

   spent playing computer and mobile games among medical undergraduate students using

   interpersonal relations and social cognitive theory: a cross-sectional survey in

   Chongqing, China. *International journal of environmental research and public health*,

   15(8), 1664. https://doi.org/10.3390/ijerph15081664

Chia, D. X., Ng, C. W., Kandasami, G., Seow, M. Y., Choo, C. C., Chew, P. K., ... & Zhang, M.

   W. (2020). Prevalence of internet addiction and gaming disorders in Southeast Asia: A

   meta-analysis. *International journal of environmental research and public health*, *17*(7),

   2582. https://doi.org/10.3390/ijerph17072582

Cho, H., Kwon, M., Choi, J. H., Lee, S. K., Choi, J. S., Choi, S. W., & Kim, D. J. (2014).

   Development of the Internet addiction scale based on the Internet Gaming Disorder

   criteria suggested in DSM-5. *Addictive behaviors*, *39*(9), 1361-1366.

   https://doi.org/10.1016/j.addbeh.2014.01.020

Christoph, K., & Tilo, H. (2012). Effectance, self-efficacy, and the motivation to play video

   games. In *Playing video games* (pp. 153-168). Routledge.

Chung, S. J., Jang, J. H., Lee, J. Y., Choi, A., Kim, B. M., Park, M. K., Jung, M. H., & Choi, J.

   S. (2020). Self-efficacy and clinical characteristics in casual gamers compared to

   excessive gaming users and non-gamers in young adults. *Journal of clinical medicine*,

   9(9), 2720. https://doi.org/10.3390/jcm9092720

Clarke, D., & Duimering, P. R. (2006). How computer gamers experience the game situation.

   Computers in Entertainment, *4*(3), 6. https://doi.org/10.1145/1146816.1146827

Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, *38*(5),

   300–314. https://doi.org/10.1097/00006842-197609000-00003

Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Routledge.

Compeau, D., Higgins, C. A., & Huff, S. (1999). Social cognitive theory and individual reactions

   to computing technology: A longitudinal study. *MIS quarterly*, 145-158.

   https://doi.org/10.2307/249749

Cook, R. D., & Weisberg, S. (1982). Criticism and influence analysis in regression. *Sociological

   methodology*, *13*, 313-361. https://doi.org/10.2307/270724

Cooper, M. L., Kuntsche, E., Levitt, A., Barber, L. L., & Wolf, S. (2016). Motivational models

   of substance use: A review of theory and research on motives for using alcohol,

   marijuana, and tobacco. *The Oxford handbook of substance use and substance use

   disorders*, *1*, 375-421. https://doi.org/10.1093/oxfordhb/9780199381678.013.017

Cudo, A., Kopiś, N., & Zabielska-Mendyk, E. (2019). Personal distress as a mediator between

   self-esteem, self-efficacy, loneliness and problematic video gaming in female and male

   emerging adult gamers. *Plos one*, *14*(12), e0226213.

   https://doi.org/10.1371/journal.pone.0226213

Cudo, A., Wojtasiński, M., Tużnik, P., Fudali-Czyż, A., & Griffiths, M. D. (2022). The

   relationship between depressive symptoms, loneliness, self-control, and gaming disorder

   among Polish male and female gamers: The indirect effects of gaming

   motives. *International Journal of Environmental Research and Public Health*, *19*(16),

   10438. https://doi.org/10.3390/ijerph191610438

Davis, R. W. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in*

    Human Behavior, *17*(2), 187–195. https://doi.org/10.1016/s0747-5632(00)00041-8

De Grove, F., Cauberghe, V., & Van Looy, J. (2014). In pursuit of play: Toward a social

    cognitive understanding of determinants of digital play. *Communication Theory*, *24*(2),

    205-223. https://doi.org/10.1111/comt.12030

De Hesselle, L. C., Rozgonjuk, D., Sindermann, C., Pontes, H. M., & Montag, C. (2021). The

    associations between Big Five personality traits, gaming motives, and self-reported time

    spent gaming. *Personality and Individual Differences*, *171*, 110483.

    https://doi.org/10.1016/j.paid.2020.110483

de Oliveira Maraldi, E. (2020). Response bias in research on religion, spirituality and mental

    health: A critical review of the literature and methodological recommendations. *Journal*

    of religion and health, *59*(2), 772-783. https://doi.org/10.1007/s10943-018-0639-6

Deci, E. L., & Ryan, R. M. (2008). Self-determination theory: A macrotheory of human

    motivation, development, and health. *Canadian Psychology*, *49*(3), 182–185.

    https://doi.org/10.1037/a0012801

Deleuze, J., Maurage, P., Schimmenti, A., Nuyens, F., Melzer, A., & Billieux, J. (2019).

    Escaping reality through videogames is linked to an implicit preference for virtual over

    real-life stimuli. *Journal of affective disorders*, *245*, 1024-1031.

    https://doi.org/10.1016/j.jad.2018.11.078

Demetrovics, Z., Urbán, R., Nagygyörgy, K., Farkas, J., Zilahy, D., Mervó, B., Reindl, A.,

    Ágoston, C., Kertész, A., & Harmath, E. (2011). Why do you play? The development of

    the motives for online gaming questionnaire (MOGQ). *Behavior Research Methods*,

    43(3), 814–825. https://doi.org/10.3758/s13428-011-0091-y

Department of Statistics Malaysia. (2020). *Statistics of International Trade In Services 2020*.

Retrieved from

https://v1.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=331&bul_id=VmZa

K0lNVFdZWmtXWXY4eEJ2eFpGdz09&menu_id=azJjRWpYL0VBYU90TVhpclByWj

dMQT09

Department of Statistics Malaysia. (2021). *ICT Use and Access by Individuals and Households

Survey Report, Malaysia, 2021.* Retrieved from

https://v1.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=395&bul_id=bCs4U

lNSQktybTR3THZ3a0RzV2RkUT09&menu_id=amVoWU54UTl0a21NWmdhMjFMM

WcyZz09

Dickinson, E. R., Adelson, J. L., & Owen, J. (2012). Gender balance, representativeness, and

statistical power in sexuality research using undergraduate student samples. *Archives of

Sexual Behavior*, *41*, 325-327. https://doi.org/10.1007/s10508-011-9887-1

Dindar, M., & Akbulut, Y. (2015). Role of self-efficacy and social appearance anxiety on

gaming motivations of MMOFPS players. *Computers & Education*, *81*, 26-34.

https://doi.org/10.1016/j.compedu.2014.09.007

Dowran, B., Yekta, F. F., & Aghaie, E. (2022). Psychometric characteristics of the Iranian

version of the Motives for Online Gaming Questionnaire (I-MOGQ). *Iranian Journal of

Psychiatry*, *17*(4), 469. https://doi.org/10.18502%2Fijps.v17i4.10697

Durbin, J., & Watson, G. S. (1971). Testing for serial correlation in least squares regression.

London School of Economics and Political Science, 58(1), 1-9. https://doi.org/

10.2307/2334313

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes.* Harcourt Brace Jovanovich

    College Publishers.

Ee, A., & Cho, H. (2012). What makes an MMORPG leader? A social cognitive theory-based

    approach to understanding the formation of leadership capabilities in massively

    multiplayer online role-playing games. *Eludamos: Journal for computer game culture*,

    6(1), 25-37. https://doi.org/10.7557/23.6136

Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program.

    Behavior Research Methods Instruments & Computers, *28*(1), 1–11.

    https://doi.org/10.3758/bf03203630

Espina, M. O., & Lapates, J. M. (2016). Social Network Behaviours to Explain the Spread of

    Online Game. *Asia Pacific Journal of Social and Behavioral Sciences*, *13*.

    https://doi.org/10.57200/apjsbs.v13i0.125

Estévez, A. N. A., Jáuregui, P., Sánchez-Marcos, I., López-González, H., & Griffiths, M. D.

    (2017). Attachment and emotion regulation in substance addictions and behavioral

    addictions. *Journal of behavioral addictions*, *6*(4), 534-544.

    https://doi.org/10.1556/2006.6.2017.086

Etikan, I., & Bala, K. (2017). Sampling and sampling methods. *Biometrics & Biostatistics

    International Journal*, *5*(6), 00149. https://dx.doi.org/10.15406/bbij.2017.05.00149

Evren, C., Evren, B., Dalbudak, E., Topcu, M., & Kutlu, N. (2019). Relationships of Internet

    addiction and Internet gaming disorder symptom severities with probable attention

    deficit/hyperactivity disorder, aggression and negative affect among university students.

    ADHD Attention Deficit and Hyperactivity Disorders, *11*, 413-421.

    https://doi.org/10.1007/s12402-019-00305-8

Fam, J. Y., Juhari, R., Daud, M. N., & Madon, Z. (2021). Psychometric properties of internet

gaming motives scale gaming motives as predictor of internet gaming disorder.

International Journal of Academic Research in Business and Social Sciences, *11*(12).

http://dx.doi.org/10.6007/IJARBSS/v11-i12/11797

Festl, R., Scharkow, M., & Quandt, T. (2013). Problematic computer game use among

adolescents, younger and older adults. *Addiction*, *108*(3), 592–599.

https://doi.org/10.1111/add.12016

Foorthuis, R. (2021). On the nature and types of anomalies: a review of deviations in data.

International journal of data science and analytics, *12*(4), 297-331.

https://doi.org/10.1007/s41060-021-00265-1

Fryer, L. K., & Dinsmore, D. L. (2020). The Promise and Pitfalls of Self-report: Development,

research design and analysis issues, and multiple methods. *Frontline Learning Research*.

http://dx.doi.org/10.14786%2Fflr.v8i3.623

Fumero, A., Marrero, R. J., Bethencourt, J. M., & Peñate, W. (2020). Risk factors of internet

gaming disorder symptoms in Spanish adolescents. *Computers in human behavior*, *111*.

https://doi.org/10.1016/j.chb.2020.106416

Garson, G. D. (2012). *Testing statistical assumptions* (2012 ed.). Statistical Publishing

Associates.

Gazo, A. M., Mahasneh, A. M., Abood, M. H., & Muhediat, F. A. (2020). Social Self-Efficacy

and its Relationship to Loneliness and Internet Addiction among Hashemite University

Students. *International Journal of Higher Education*, *9*(2), 144.

https://doi.org/10.5430/ijhe.v9n2p144

Gervasi, A. M., La Marca, L., Costanzo, A., Pace, U., Guglielmucci, F., & Schimmenti, A.

    (2017). Personality and internet gaming disorder: A systematic review of recent

    literature. *Current Addiction Reports*, *4*, 293-307. https://doi.org/10.1007/s40429-017-

    0159-6

Giardina, A., Starcevic, V., King, D. L., Schimmenti, A., Di Blasi, M., & Billieux, J. (2021).

    Research directions in the study of gaming-related escapism: a commentary to Melodia,

    Canale, and Griffiths (2020). *International Journal of Mental Health and Addiction*, 1-

    7. https://doi.org/10.1007/s11469-021-00642-8

Gomez, R., Stavropoulos, V., Tullett-Prado, D., Schivinski, B., & Chen, W. (2022). Network

    analyses of internet gaming disorder symptoms and their links with different types of

    motivation. BMC psychiatry, 22(1), 76. https://doi.org/10.1186/s12888-022-03708-6

Gonzalez, O. (2021). Psychometric and machine learning approaches to reduce the length of

    scales. *Multivariate Behavioral Research*, *56*(6), 903-919.

    https://doi.org/10.1080/00273171.2020.1781585

González-Bueso, V., Santamaría, J. J., Oliveras, I., Fernández, D., Montero, E., Baño, M., ... &

    Ribas, J. (2020). Internet gaming disorder clustering based on personality traits in

    adolescents, and its relation with comorbid psychological symptoms. *International*

    journal of environmental research and public health, *17*(5), 1516.

    http://dx.doi.org/10.3390/ijerph17051516

Green, C. S., & Bavelier, D. (2003). Action video game modifies visual selective

    attention. *Nature*, *423*(6939), 534-537. https://doi.org/10.1038/nature01647

Green, C. S., & Bavelier, D. (2006). The cognitive neuroscience of video games. *Digital media:*

    Transformations in human communication, *1*(1), 211-223.

Griffiths, M. D. (2018). Conceptual issues concerning internet addiction and internet gaming

disorder: Further critique on Ryding and Kaye (2017). *International journal of mental

health and addiction*, *16*, 233-239. https://doi.org/10.1007/s11469-017-9818-z

Griffiths, M. D., & Pontes, H. M. (2014). Internet addiction disorder and Internet gaming

disorder are not the same. *Journal of Addiction Research & Therapy, 5*(4), 1-3.

http://dx.doi.org/10.4172/2155-6105.1000e124

Griffiths, M. D., & Pontes, H. M. (2020). *A history and overview of video game addiction.* The

Oxford handbook of digital technologies and mental health.

Griffiths, M. D., Davies, M. N., & Chappell, D. (2004). Online computer gaming: a comparison

of adolescent and adult gamers. *Journal of adolescence*, *27*(1), 87-96.

https://doi.org/10.1016/j.adolescence.2003.10.007

Grimshaw, M. (2007). Sound and immersion in the first-person shooter.

Gülaçtı, F. (2010). The effect of perceived social support on subjective well-being. *Procedia -

Social and Behavioral Sciences*, *2*(2), 3844–3849.

https://doi.org/10.1016/j.sbspro.2010.03.602

Hair, J. F., Jr. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)*

/ Joe F. Hair, Jr., G. Tomas M. Hult, Christian M. Ringle, Marko Sarstedt. SAGE

Publications.

Hajjar, S. T. (2018). Statistical analysis: Internal-consistency reliability and construct validity.

International Journal of Quantitative and Qualitative Research Methods, *6*(1), 27-38.

Halik, M., Wider, W., Bullare Bahari, M. I., Mustapha, M., & Japil, A. R. (2019). Exploring the

emerging adulthood experiences among young adults in Sabah, Malaysia: A preliminary

study. *Education Sciences & Psychology*, *52*(2).

Hamlen, K. R. (2010). Re-examining gender differences in video game play: Time spent and

feelings of success. *Journal of Educational Computing Research*, *43*(3), 293-308.

https://doi.org/10.2190/EC.43.3.b

Han, E. S., Park, Y., Yurgelun-Todd, D., Renshaw, P. F., & Han, D. H. (2024). Comparing the

effectiveness of game literacy education and game coding education in improving

problematic internet gaming. *Frontiers in Psychiatry*, *15*, 1377231.

https://doi.org/10.3389/fpsyt.2024.1377231

Harrison, A. W., Rainer Jr, R. K., Hochwarter, W. A., & Thompson, K. R. (1997). Testing the

self-efficacy—performance linkage of social—cognitive theory. *The Journal of social

psychology*, *137*(1), 79-87. https://doi.org/10.1080/00224549709595415

Hellman, M., Schoenmakers, T. M., Nordstrom, B. R., & Van Holst, R. J. (2013). Is there such a

thing as online video game addiction? A cross-disciplinary review. *Addiction Research &

Theory, 21*(2), 102-112. https://doi.org/10.3109/16066359.2012.693222

Hellström, C., Nilsson, K. W., Leppert, J., & Åslund, C. (2012). Influences of motives to play

and time spent gaming on the negative consequences of adolescent online computer

gaming. *Computers in human behavior*, *28*(4), 1379-1387.

https://doi.org/10.1016/j.chb.2012.02.023

Heslin, P. A., & Klehe, U. C. (2006). Self-efficacy. *Encyclopedia Of Industrial/Organizational

Psychology*, *2*, 705-708. Thousand Oaks, CA: Sage.

Hilgard, J., Engelhardt, C. R., & Bartholow, B. D. (2013). Individual differences in motives,

preferences, and pathology in video games: the gaming attitudes, motives, and

experiences scales (GAMES). *Frontiers in psychology*, *4*, 608.

https://doi.org/10.3389/fpsyg.2013.00608

Himmelstein, D., Liu, Y., & Shapiro, J. L. (2017). An exploration of mental skills among

    competitive league of legend players. *International Journal of Gaming and Computer-*

    Mediated Simulations (IJGCMS), *9*(2), 1-21.

Hmieleski, K. M., & Baron, R. A. (2009). Entrepreneurs' optimism and new venture

    performance: A social cognitive perspective. *Academy of management Journal*, *52*(3),

    473-488. https://doi.org/10.5465/amj.2009.41330755

Hoaglin, D. C., & Welsch, R. E. (1978). The hat matrix in regression and ANOVA. *The*

    American Statistician, 32(1), 17-22. https://doi.org/10.1080/00031305.1978.10479237

Hobfoll, S. E. (1988). *The ecology of stress.* Hemisphere Publishing Corp.

Hsu, C. Y., Chiou, G. L., & Tsai, M. J. (2019). Visual behavior and self-efficacy of game

    playing: An eye movement analysis. *Interactive Learning Environments*, *27*(7), 942-952.

    https://doi.org/10.1080/10494820.2018.1504309

Hui, B. P. H., Wu, A. M., Siu, N. Y., Chung, M. L., & Pun, N. (2019). The effects of need

    satisfaction and dissatisfaction on flourishing among young Chinese gamers: The

    mediating role of internet gaming disorder. *International Journal of Environmental*

    Research and Public Health, *16*(22), 4367. http://dx.doi.org/10.3390/ijerph16224367

Hussain, U., Jabarkhail, S., Cunningham, G. B., & Madsen, J. A. (2021). The dual nature of

    escapism in video gaming: A meta-analytic approach. *Computers in Human Behavior*

    Reports, *3*, 100081. https://doi.org/10.1016/j.chbr.2021.100081

Inguglia, C., Ingoglia, S., Liga, F., Lo Coco, A., & Lo Cricchio, M. G. (2014). Autonomy and

    Relatedness in Adolescence and Emerging Adulthood: Relationships with Parental

    Support and Psychological Distress. *Journal of Adult Development*, *22*(1), 1–13.

    https://doi.org/10.1007/s10804-014-9196-8

Ismail, N., Tajjudin, A. I., Jaafar, H., Nik Jaafar, N. R., Baharudin, A., & Ibrahim, N. (2021).

    The relationship between internet addiction, internet gaming and anxiety among medical

    students in a Malaysian public university during COVID-19 pandemic. *International*

    Journal of Environmental Research and Public Health, *18*(22), 11870.

    https://doi.org/10.3390/ijerph182211870

Jaafar, N. R. N., Baharudin, A., Tajjudin, I., Ling, L. S., Safarudin, M. A., Sufia, D. S., ... & Tan,

    K. A. (2021). Factors Correlated With Internet Gaming Disorder Among Malaysian

    University Students. *Malaysian Journal of Medicine & Health Sciences*, *17*(2), 54-62.

Jansz, J., & Tanis, M. (2007). Appeal of playing online first person shooter

    games. *Cyberpsychology & behavior*, *10*(1), 133-136.

    https://doi.org/10.1089/cpb.2006.9981

Jeong, E. J., & Kim, D. H. (2011). Social activities, self-efficacy, game attitudes, and game

    addiction. *Cyberpsychology, Behavior, and Social Networking*, *14*(4), 213-221.

    https://doi.org/10.1089/cyber.2009.0289

Jin, Y., Qin, L., Zhang, H., & Zhang, R. (2021). Social factors associated with video game

    addiction among teenagers: School, family and peers. In *2021 4th International*

    Conference on Humanities Education and Social Sciences (ICHESS 2021) (pp. 763-768).

    Atlantis Press. https://doi.org/10.2991/assehr.k.211220.131

Jo, Y. S., Bhang, S. Y., Choi, J. S., Lee, H. K., Lee, S. Y., & Kweon, Y. S. (2019). Clinical

    characteristics of diagnosis for internet gaming disorder: comparison of DSM-5 IGD and

    ICD-11 GD diagnosis. *Journal of clinical medicine*, *8*(7), 945.

    https://doi.org/10.3390/jcm8070945

Johnson, D., Nacke, L. E., & Wyeth, P. (2015, April). All about that base: differing player

    experiences in video game genres and the unique case of moba games. In *Proceedings of*

    the 33rd Annual ACM Conference on Human Factors in Computing Systems (pp. 2265-

    2274).

Junus, A., Hsu, Y. C., Wong, C., & Yip, P. S. (2023). Is internet gaming disorder associated with

    suicidal behaviors among the younger generation? Multiple logistic regressions on a

    large-scale purposive sampling survey. *Journal of psychiatric research*, *161*, 2-9.

    https://doi.org/10.1016/j.jpsychires.2023.02.038

Kaliyadan, F., & Kulkarni, V. (2019). Types of variables, descriptive statistics, and sample size.

    Indian dermatology online journal, *10*(1), 82-86.

    https://doi.org/10.4103/idoj.idoj_468_18

Kamal, N. S. Z., & Wok, S. (2020). The impact of online gaming addiction on mental health

    among iium students. *International Journal of Heritage, Art and Multimedia*, *3*(11), 01-

    20. http://dx.doi.org/10.35631/IJHAM.311001

Karaca, S., Karakoc, A., Can Gurkan, O., Onan, N., & Unsal Barlas, G. (2020). Investigation of

    the online game addiction level, sociodemographic characteristics and social anxiety as

    risk factors for online game addiction in middle school students. *Community Mental*

    Health Journal, *56*(5), 830-838. https://doi.org/10.1007/s10597-019-00544-z

Karuppaswamy, B., & Verma, V. (2018). Loneliness as a function of Internet addiction among

    young adults. *Multidisciplinary peer reviewed journal*, *3*(3), 126–144.

Kaya, Z., Vangölü, M. S., Marufoğlu, M., & Özdemir, M. (2023). Predicting Digital Addiction

    in Adolescents: The Role of Perceived Social Support and Well-Being Variables.

International Journal of Progressive Education, *19*(3).

http://dx.doi.org/10.29329/ijpe.2023.546.2

Kenton, W. (2020). *Quantitative analysis (QA): What is it and how it's used in finance*.

Investopedia. Retrieved from

https://www.investopedia.com/terms/q/quantitativeanalysis.asp

Kesmodel, U. S. (2018). Cross-sectional studies–what are they good for?. *Acta obstetricia et gynecologica Scandinavica*, *97*(4), 388-393. https://doi.org/10.1111/aogs.13331

Khan, A., & Muqtadir, R. (2016). Motives of Problematic and Nonproblematic Online Gaming among Adolescents and Young Adults. *Pakistan Journal of Psychological Research*, *31*(1), 119-138.

Khor, J. H., Poh, L. S., & Tee, R. Y. (2019). *Depression and motivation of gaming as predictors of Internet Gaming Disorder (IGD) symptoms among Malaysian youths* (Doctoral dissertation, UTAR). Retrieved from http://eprints.utar.edu.my/id/eprint/3223

Kim, B. N., & Kang, H. S. (2021). Korean validation of the Motives for Online Gaming Questionnaire: Focusing on its factor structure and incremental validity. *Addictive Behaviors*, *122*, 107019. https://doi.org/10.1016/j.addbeh.2021.107019

Kim, D. J., Kim, K., Lee, H. W., Hong, J. P., Cho, M. J., Fava, M., ... & Jeon, H. J. (2017). Internet game addiction, depression, and escape from negative emotions in adulthood: a nationwide community sample of Korea. *The Journal of nervous and mental disease*, *205*(7), 568-573. https://doi.org/10.1097/nmd.0000000000000698

Kim, H. Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *Restor Dent Endod, 38*(1), 52-54. http://doi.org/10.5395/rde.2013.38.1.52

Kim, M. K., Jung, Y. H., Kyeong, S., Shin, Y. B., Kim, E., & Kim, J. J. (2018). Neural correlates

of distorted self-concept in individuals with internet gaming disorder: a functional MRI

study. *Frontiers in psychiatry*, *9*, 330. https://doi.org/10.3389/fpsyt.2018.00330

Kim, N. R., Hwang, S. S. H., Choi, J. S., Kim, D. J., Demetrovics, Z., Király, O., ... & Choi, S.

W. (2016). Characteristics and psychiatric symptoms of internet gaming disorder among

adults using self-reported DSM-5 criteria. *Psychiatry investigation*, *13*(1), 58.

https://doi.org/10.4306%2Fpi.2016.13.1.58

Kim, S. H., & Thomas, M. K. (2015). A stage theory model of professional video game players

in South Korea: The socio-cultural dimensions of the development of expertise. *Asian

Journal of Information Technology*, *14*(5), 176-186.

King, D. L., & Delfabbro, P. (2014). The cognitive psychology of Internet gaming disorder.

Clinical Psychology Review, *34*(4), 298–308. https://doi.org/10.1016/j.cpr.2014.03.006

King, D., & Delfabbro, P. (2018). *Internet gaming disorder: Theory, assessment, treatment, and

prevention*. Academic Press.

Király, O., Nagygyörgy, K., Griffiths, M. D., & Demetrovics, Z. (2014). Problematic online

gaming. In *Behavioral addictions* (pp. 61-97). Academic Press.

Király, O., Urbán, R., Griffiths, M. D., Ágoston, C., Nagygyörgy, K., Kökönyei, G., &

Demetrovics, Z. (2015). The mediating effect of gaming motivation between psychiatric

symptoms and problematic online gaming: An online survey. *Journal of medical Internet

research*, *17*(4), e88. https://doi.org/10.2196/jmir.3515

Kircaburun, K., Demetrovics, Z., Griffiths, M. D., Király, O., Kun, B., & Tosuntaş, Ş. B. (2020).

Trait emotional intelligence and internet gaming disorder among gamers: The mediating

role of online gaming motives and moderating role of age groups. *International Journal*

of Mental Health and Addiction, *18*, 1446-1457. https://doi.org/10.1007/s11469-019-00179-x

Kircaburun, K., Jonason, P. K., & Griffiths, M. D. (2018). The Dark Tetrad traits and problematic online gaming: The mediating role of online gaming motives and moderating role of game types. *Personality and Individual Differences*, *135*, 298-303. https://doi.org/10.1016/j.paid.2018.07.038

Klar, S., & Leeper, T. J. (2019). Identities and intersectionality: a case for Purposive sampling in Survey-Experimental research. *Experimental methods in survey research: Techniques that combine random sampling with random assignment*, 419-433. https://doi.org/10.1002/9781119083771.ch21

Kliem, S., Mößle, T., Rehbein, F., Hellmann, D. F., Zenger, M., & Brähler, E. (2015). A brief form of the Perceived Social Support Questionnaire (F-SozU) was developed, validated, and standardized. *Journal of Clinical Epidemiology*, *68*(5), 551–562. https://doi.org/10.1016/j.jclinepi.2014.11.003

Klimmt, C., & Hartmann, T. (2006). Effectance, self-efficacy, and the motivation to play video games. *Playing video games*: *Motives, responses, and consequences*. Lawrence Erlbaum Associates, Inc.

Kneer, J., & Rieger, D. (2015). Problematic game play: The diagnostic value of playing motives, passion, and playing time in men. *Behavioral Sciences*, *5*(2), 203-213. https://doi.org/10.3390/bs5020203

Ko, C. H. (2014). Internet gaming disorder. *Current Addiction Reports*, *1*, 177-185. https://doi.org/10.1007/s40429-014-0030-y

Ko, C. H., Yen, J. Y., Chen, S. H., Wang, P. W., Chen, C. S., & Yen, C. F. (2014). Evaluation of

the diagnostic criteria of Internet gaming disorder in the DSM-5 among young adults in

Taiwan. *Journal of psychiatric research*, *53*, 103-110.

https://doi.org/10.1016/j.jpsychires.2014.02.008

Kochuchakkalackal, G. K., & Reyes, M. E. S. (2020). An emerging mental health concern: risk

factors, symptoms, and impact of internet gaming disorder. *Journal of Technology in

Behavioral Science*, *5*(1), 70-78. https://doi.org/10.1007/s41347-019-00117-7

Kou, Y., Gui, X., & Kow, Y. M. (2016, October). Ranking practices and distinction in league of

legends. In *Proceedings of the 2016 annual symposium on computer-human interaction

in play* (pp. 4-9). https://doi.org/10.1145/2967934.2968078

Kreitchmann, R. S., Abad, F. J., Ponsoda, V., Nieto, M. D., & Morillo, D. (2019). Controlling for

response biases in self-report scales: Forced-choice vs. psychometric modeling of Likert

items. *Frontiers in psychology*, *10*, 2309. https://doi.org/10.3389/fpsyg.2019.02309

Kristensen, M. S., Arvidsen, J., Elmose-Østerlund, K., & Iversen, E. B. (2021). Motives for

shelter camping. A survey-study on motivational differences across group composition

and experience level. *Journal of Outdoor Recreation and Tourism*, *33*, 100333.

https://doi.org/10.1016/j.jort.2020.100333

Kuss, D. J. (2013). Internet gaming addiction: current perspectives. *Psychology research and

behavior management*, 125-137. https://doi.org/10.2147/PRBM.S39476

Kuss, D. J., Louws, J., & Wiers, R. W. (2012). Online Gaming Addiction? Motives Predict

addictive play behavior in massively multiplayer online Role-Playing games.

Cyberpsychology, Behavior, and Social Networking, *15*(9), 480–485.

https://doi.org/10.1089/cyber.2012.0034

Kwon, J. H., Chung, C. S., & Lee, J. (2011). The effects of escape from self and interpersonal

    relationship on the pathological use of Internet games. *Community mental health journal*,

    47, 113-121. https://doi.org/10.1007/s10597-009-9236-1

Kyriazos, T., & Poga, M. (2023). Dealing with Multicollinearity in Factor Analysis: The

    Problem, Detections, and Solutions. *Open Journal of Statistics*, *13*(3), 404-424.

    https://doi.org/10.4236/ojs.2023.133020

Laconi, S., Pirès, S., & Chabrol, H. (2017). Internet gaming disorder, motives, game genres and

    psychopathology. *Computers in Human Behavior, 75*, 652–659.

    https://doi.org/10.1016/j.chb.2017.06.012

Lafrenière, M. A. K., Verner-Filion, J., & Vallerand, R. J. (2012). Development and validation of

    the Gaming Motivation Scale (GAMS). *Personality and individual differences*, *53*(7),

    827-831. https://doi.org/10.1016/j.paid.2012.06.013

Larrieu, M., Billieux, J., & Decamps, G. (2022). Problematic gaming and quality of life in online

    competitive videogame players: Identification of motivational profiles. *Addictive*

    Behaviors, *133*, 107363. https://doi.org/10.1016/j.addbeh.2022.107363

Larson, R. B. (2019). Controlling social desirability bias. *International Journal of Market*

    Research, *61*(5), 534-547. https://doi.org/10.1177/1470785318805305

Latip, M. S. A., Noh, I., Tamrin, M., & Latip, S. N. N. A. (2020). Students' acceptance for e-

    learning and the effects of self-efficacy in Malaysia. *International Journal of Academic*

    Research in Business and Social Sciences, 10(5), 658-674.

    http://dx.doi.org/10.6007/IJARBSS/v10-i5/7239

Lavery, M. R., Acharya, P., Sivo, S. A., & Xu, L. (2019). Number of predictors and

    multicollinearity: What are their effects on error and bias in regression? *Communications*

in Statistics-Simulation and Computation, *48*(1), 27-38.

https://doi.org/10.1080/03610918.2017.1371750

Lee, D., & LaRose, R. (2007). A socio-cognitive model of video game usage. *Journal of*

Broadcasting & Electronic Media, 51(4), 632–650.

https://doi.org/10.1080/08838150701626511

Lee, N., Kim, J., Shin, Y., Eom, H., Kim, M., Kyeong, S., Jung, Y. H., Min, S., Kwon, J. H., &

Kim, E. (2020). Choice of leisure activities by adolescents and adults with internet

gaming Disorder: Development and feasibility study of a virtual reality program. *JMIR*

Serious Games, *8*(4), e18473. https://doi.org/10.2196/18473

Lee, Y. (2017). *Exploring the role of escapism in the DSM-V criteria for internet gaming*

disorder: A meta-analytic investigation. State University of New York at Albany.

Legault, L., Green-Demers, I., & Pelletier, L. (2006). Why do high school students lack

motivation in the classroom? Toward an understanding of academic amotivation and the

role of social support. *Journal of Educational Psychology*, *98*(3), 567–582.

https://doi.org/10.1037/0022-0663.98.3.567

Lehenbauer-Baum, M., Klaps, A., Kovacovsky, Z., Witzmann, K., Zahlbruckner, R., & Stetina,

B. U. (2015). Addiction and engagement: An explorative study toward classification

criteria for internet gaming disorder. *Cyberpsychology, Behavior, and Social*

Networking, *18*(6), 343-349. https://doi.org/10.1089/cyber.2015.0063

Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2011). Psychosocial causes and consequences of

pathological gaming. *Computers in human behavior*, *27*(1), 144-152.

https://doi.org/10.1016/j.chb.2010.07.015

Lerner, R. M. (1982). Children and adolescents as producers of their own development.

> *Developmental Review, 2*, 342–370. https://doi.org/10.1016/0273-2297(82)90018-1

Lewinson, R., Wardell, J., Kronstein, N., Rapinda, K., Kempe, T., Katz, J., ... & Keough, M.

> (2023). Gaming as a coping strategy during the COVID-19 pandemic. *Cyberpsychology:*
> *Journal of Psychosocial Research on Cyberspace*, *17*(3).
> https://doi.org/10.5817/CP2023-3-3

Li, F., & Aksoy, L. (2007). Dimensionality of individualism–collectivism and measurement

> equivalence of Triandis and Gelfand's scale. *Journal of Business and Psychology*, *21*,
> 313-329. https://doi.org/10.1007/s10869-006-9031-8

Li, N., Zhao, S., Liu, C., Dai, K., & Huang, W. (2023). Exploring the relationship between

> perceived social support and college students' autonomous fitness behavior: Chain
> mediating effect test. *Frontiers in Psychology*, *13*.
> https://doi.org/10.3389/fpsyg.2022.1036383

Li, X., Deng, S., Li, L., & Jiang, Y. (2019). Outlier detection based on robust Mahalanobis

> Distance and its application. Open Journal of Statistics, 9(1), 15-26.
> https://doi.org/10.4236/ojs.2019.91002

Liao, Z., Chen, X., Huang, Q., & Shen, H. (2022). Prevalence of gaming disorder in East Asia: A

> comprehensive meta-analysis. *Journal of Behavioral Addictions*, *11*(3), 727-738.
> https://doi.org/10.1556/2006.2022.00050

Liao, Z., Huang, Q., Huang, S., Tan, L., Shao, T., Fang, T., ... & Shen, H. (2020). Prevalence of

> internet gaming disorder and its association with personality traits and gaming
> characteristics among Chinese adolescent gamers. *Frontiers in Psychiatry*, *11*, 598585.
> https://doi.org/10.3389/fpsyt.2020.598585

Lim, S., & Reeves, B. (2009). Being in the game: Effects of avatar choice and point of view on psychophysiological responses during play. *Media Psychology*, *12*(4), 348–370. https://doi.org/10.1080/15213260903287242

Lin, C. P., & Bhattacherjee, A. (2009). Understanding online social support and its antecedents: A socio-cognitive model. *The social science journal, 46*(4), 724-737. https://doi.org/10.1016/j.soscij.2009.03.004

Lin, C. Y., Potenza, M. N., Broström, A., & Pakpour, A. H. (2021). Internet gaming disorder, psychological distress, and insomnia in adolescent students and their siblings: An actor-partner interdependence model approach. *Addictive behaviors reports*, *13*, 100332. https://doi.org/10.1016/j.abrep.2020.100332

Liu, C. C. (2016). Understanding player behavior in online games: The role of gender. *Technological Forecasting and Social Change*, *111*, 265-274. https://doi.org/10.1016/j.techfore.2016.07.018

Liu, F., Deng, H., Zhang, Q., Fang, Q., Liu, B., Yang, D., Tian, X., & Wang, X. (2022). Symptoms of internet gaming disorder among male college students in Nanchong, China. *BMC Psychiatry*, *22*(1). https://doi.org/10.1186/s12888-022-03778-6

López-Fernández, F. J., Mezquita, L., Griffiths, M. D., Ortet, G., & Ibáñez, M. I. (2020). The development and validation of the Videogaming Motives Questionnaire (VMQ). *PLoS One*, *15*(10), e0240726. https://doi.org/10.1371/journal.pone.0240726

López-Fernández, F. J., Mezquita, L., Ortet, G., & Ibanez, M. I. (2021). Mediational role of gaming motives in the associations of the Five Factor Model of personality with weekly and disordered gaming in adolescents. *Personality and Individual Differences*, *182*, 111063. https://doi.org/10.1016/j.paid.2021.111063

Macur, M., & Pontes, H. M. (2021). Internet Gaming Disorder in adolescence: investigating

profiles and associated risk factors. *BMC Public Health*, *21*(1).

https://doi.org/10.1186/s12889-021-11394-4

Malak, M. Z., Shuhaiber, A., Alsswey, A., & Tarawneh, A. (2023). Social support as the

mediator for the relationship between internet gaming disorder and psychological

problems among university students. *Journal of Psychiatric Research*, *164*, 243–250.

https://doi.org/10.1016/j.jpsychires.2023.06.007

Malaysian Communications and Multimedia Department. (2022). *Internet users survey 2022*.

Retrieved from https://www.mcmc.gov.my/skmmgovmy/media/General/IUS-2022.pdf

Männikkö, N., Ruotsalainen, H., Miettunen, J., Pontes, H. M., & Kääriäinen, M. (2020).

Problematic gaming behaviour and health-related outcomes: A systematic review and

meta-analysis. *Journal of Health Psychology*, *25*(1), 67-81.

https://doi.org/10.1177/1359105317740414

Marino, C., Canale, N., Vieno, A., Caselli, G., Scacchi, L., & Spada, M. M. (2020). Social

anxiety and Internet gaming disorder: The role of motives and metacognitions. *Journal of

Behavioral Addictions*, *9*(3), 617-628. https://doi.org/10.1556/2006.2020.00044

Marques, L. M., Uchida, P. M., Aguiar, F. O., Kadri, G., Santos, R. I., & Barbosa, S. P. (2023).

Escaping through virtual gaming—what is the association with emotional, social, and

mental health? A systematic review. *Frontiers in psychiatry*, *14*, 1257685.

https://doi.org/10.3389%2Ffpsyt.2023.1257685

Mazzoni, E., Baiocco, L., Cannata, D., & Dimas, I. (2016). Is internet the cherry on top or a

crutch? Offline social support as moderator of the outcomes of online social support on

Problematic Internet Use. *Computers in human behavior, 56*, 369-374.

https://doi.org/10.1016/j.chb.2015.11.032

McClelland, D. C. (1985). How motives, skills, and values determine what people do. *American psychologist*, *40*(7), 812. https://doi.org/10.1037/0003-066X.40.7.812

McCrae, R. R. (1993). Openness to experience as a basic dimension of personality. *Imagination Cognition and Personality*, *13*(1), 39–55. https://doi.org/10.2190/h8h6-qykr-keu8-gaq0

McEwan, B. (2020). Sampling and validity. *Annals of the International Communication Association*, *44*(3), 235-247. https://doi.org/10.1080/23808985.2020.1792793

Melodia, F., Canale, N., & Griffiths, M. D. (2020). The role of avoidance coping and escape motives in problematic online gaming: A systematic literature review. *International Journal of Mental Health and Addiction*, 1-27. https://doi.org/10.1007/s11469-020-00422-w

Meriläinen, M., Hietajärvi, L., Aurava, R., & Stenros, J. (2023). Games in everyday life: Profiles of adolescent digital gaming motives and well-being outcomes. *Telematics and Informatics Reports*, *12*, 100104. https://doi.org/10.1016/j.teler.2023.100104

Miles, J. (2014). Tolerance and variance inflation factor. *Wiley statsref: statistics reference online*. https://doi.org/10.1002/9781118445112.stat06593

Mills, D. J., & Allen, J. J. (2020). Self-determination theory, internet gaming disorder, and the mediating role of self-control. Computers in Human Behavior, 105, 106209. https://doi.org/10.1016/j.chb.2019.106209

Ministry of Youth and Sports Malaysia. (2018). *Malaysia Youth Policy 2018.* Retrieved from file:///C:/Users/User/Downloads/Ringkasan%20Eksekutif%20Dasar%20Belia%20Malaysia.pdf

Ministry of Youth and Sports. (1997). *National Youth Development Policy*. Retrieved from

     https://www.youthpolicy.org/national/Malaysia_1997_National_Youth_Development_Po

     licy.pdf

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive

     statistics and normality tests for statistical data. *Annals of cardiac anaesthesia*, *22*(1), 67-

     72.

Mo, P. K. H., Chan, V., Chan, S. W. K., & Lau, J. T. F. (2018). The role of social support on

     emotion dysregulation and Internet addiction among Chinese adolescents: A structural

     equation model. *Addictive Behaviors*, *82*, 86–93.

     https://doi.org/10.1016/j.addbeh.2018.01.027

Mobley, C. C., & Sandovel, V. A. (2008). Integrating risk and health-promotion counseling.

     Prevention in Clinical Oral Health Care, 122-133. http://dx.doi.org/10.1016/B978-0-

     323-03695-5.50014-8

Mohamed, N. F., Ab Manan, N., Muhammad Firdaus Chan, M. F., Rahmatullah, B., Abd

     Wahab, R., Baharudin, S. N. A., ... & Abdulla, K. (2023). The prevalence of internet

     gaming disorders and the associated psychosocial risk factors among adolescents in

     Malaysian secondary schools. *Clinical Child Psychology and Psychiatry*, *28*(4), 1420-

     1434. https://doi.org/10.1177/13591045231164870

Montag, C., Schivinski, B., Kannen, C., & Pontes, H. M. (2022). Investigating gaming disorder

     and individual differences in gaming motives among professional and non-professional

     gamers: An empirical study. *Addictive Behaviors*, *134*, 107416.

     https://doi.org/10.1016/j.addbeh.2022.107416

Montag, C., Schivinski, B., Sariyska, R., Kannen, C., Demetrovics, Z., & Pontes, H. M. (2019).

      Psychopathological symptoms and gaming motives in disordered gaming—A

      psychometric comparison between the WHO and APA diagnostic frameworks. *Journal of*

      clinical medicine, *8*(10), 1691. https://doi.org/10.3390/jcm8101691

Moore, S., Satel, J., & Pontes, H. M. (2022). Investigating the role of health factors and

      psychological well-being in gaming disorder. *Cyberpsychology, Behavior, and Social*

      Networking, *25*(2), 94-100. https://doi.org/10.1089/cyber.2021.0050

Moreno, M., Riddle, K., Jenkins, M. C., Singh, A. P., Zhao, Q., & Eickhoff, J. (2022). Measuring

      problematic internet use, internet gaming disorder, and social media addiction in young

      adults: Cross-sectional survey study. *JMIR public health and surveillance*, *8*(1), e27719.

      https://doi.org/10.2196/27719

Moudiab, S., & Spada, M. M. (2019). The relative contribution of motives and maladaptive

      cognitions to levels of Internet Gaming Disorder. *Addictive Behaviors Reports*, *9*,

      100160. https://doi.org/10.1016/j.abrep.2019.100160

Nalwoga, V., Kizito, S., Kigongo, E., Atwine, P., & Kabunga, A. (2024). The lived experiences

      of individuals and coping strategies in the context of internet gaming disorder: A

      qualitative study within higher education setting in Uganda. *Neuropsychiatric Disease*

      and Treatment, 823-834. https://doi.org/10.2147/NDT.S454304

Naskar, S., Victor, R., Nath, K., & Sengupta, C. (2016). "One level more:" A narrative review on

      internet gaming disorder. *Industrial psychiatry journal*, *25*(2), 145.

      https://doi.org/10.4103%2Fipj.ipj_67_16

Nasution, F. A., Effendy, E., & Amin, M. M. (2019). Internet gaming disorder (IGD): A case report of social anxiety. *Open access Macedonian journal of medical sciences*, *7*(16), 2664. https://doi.org/10.3889%2Foamjms.2019.398

Neidhardt, J., Huang, Y., & Contractor, N. (2015). Team vs. team: Success factors in a multiplayer online battle arena game. In *Academy of management proceedings* (Vol. 1, No. 2015, p. 18725). Briarcliff Manor, NY 10510: Academy of Management.

Nelson, D. L., Kielhofner, G., & Taylor, R. R. (2017). Quantitative research designs: Defining variables and their relationships with one another. *Research in occupational therapy: Methods of inquiry for enhancing practice*, 244-273.

Ni, S., Dong, R., & Ueichi, H. (2023). The influence of online multiplayer games on social capital and interdependent well-being in Japan. *Entertainment Computing*, *47*, 100587. https://doi.org/10.1016/j.entcom.2023.100587

Oke, J., Akinkunmi, W. B., & Etebefia, S. O. (2019). Use of correlation, tolerance and variance inflation factor for multicollinearity test. *Global Scientific Journals*, *7*(5).

O'Neil, H. F., Mayer, R. E., Rueda, R., & Baker, E. L. (2021). Measuring and Increasing Self-Efficacy in a Game. In *Using Cognitive and Affective Metrics in Educational Simulations and Games* (pp. 131-158). Routledge. https://psycnet.apa.org/doi/10.4324/9780429282201-6

Osborne, J. W., & Waters, E. (2002). Four assumptions of multiple regression that researchers should always test. *Practical assessment, research, and evaluation, 8*(2), 1-6. https://doi.org/10.7275/r222-hv23

Padilla-Walker, L. M., Nelson, L. J., Carroll, J. S., & Jensen, A. C. (2010). More than a just a game: video game and internet use during emerging adulthood. *Journal of youth and adolescence*, *39*, 103-113. https://doi.org/10.1007/s10964-008-9390-8

Parke, A., Griffiths, M., & Irwing, P. (2004). Personality traits in pathological gambling: Sensation seeking, deferment of gratification and competitiveness as risk factors. *Addiction Research & Theory*, *12*(3), 201-212. https://doi.org/10.1080/1606635310001634500

Paulus, F. W., Ohmann, S., Von Gontard, A., & Popow, C. (2018). Internet gaming disorder in children and adolescents: a systematic review. Developmental Medicine & Child Neurology, 60(7), 645-659. https://doi.org/10.1111/dmcn.13754

Peat, J., & Barton, B. (2008). *Medical statistics: A guide to data analysis and critical appraisal*. Hoboken, New Jersey: John Wiley & Sons.

Pontes, H. M., & Griffiths, M. D. (2015). Measuring DSM-5 internet gaming disorder: Development and validation of a short psychometric scale. *Computers in Human Behavior*, *45*, 137–143. https://doi.org/10.1016/j.chb.2014.12.006

Poon, L. Y., Tsang, H. W., Chan, T. Y., Man, S. W., Ng, L. Y., Wong, Y. L., ... & Pakpour, A. H. (2021). Psychometric properties of the internet gaming disorder scale–short-form (IGDS9-SF): Systematic review. *Journal of medical Internet research*, *23*(10), e26821. http://dx.doi.org/10.2196/26821

Prochnow, T., Patterson, M. S., & Hartnell, L. (2020). Social support, depressive symptoms, and online gaming network communication. *Mental Health and Social Inclusion*, *24*(1), 49-58. https://doi.org/10.1108/MHSI-11-2019-0033

Raharjanti, N. W., Wiguna, T., Purwadianto, A., Soemantri, D., Indriatmi, W., Poerwandari, E.
K., ... & Levania, M. K. (2022). Translation, validity and reliability of decision style scale
in forensic psychiatric setting in Indonesia. *Heliyon*, *8*(7).
https://doi.org/10.1016/j.heliyon.2022.e09810

Rai, N., & Thapa, B. (2015). *A study on purposive sampling method in research*. Kathmandu:
Kathmandu School of Law.

Raith, L., Bignill, J., Stavropoulos, V., Millear, P., Allen, A., Stallman, H. M., ... & Kannis-
Dymand, L. (2021). Massively multiplayer online games and well-being: A systematic
literature review. *Frontiers in Psychology*, *12*, 698799.
https://doi.org/10.3389/fpsyg.2021.698799

Ramayah, T., & Aafaqi, B. (2004). Role of self-efficacy in e-library usage among students of a
public university in Malaysia. *Malaysian Journal of Library & Information Science, 9*(1),
39-57. Retrieved from https://mojes.um.edu.my/index.php/MJLIS/article/view/8391

Ramos-Diaz, J., Ramos-Sandoval, R., Kiraly, O., Demetrovics, Z., & Griffiths, M. D. (2018). An
exploratory study on motivational predictors in internet gaming disorder among Peruvian
gamers. *IEEE*. https://doi.org/10.1109/shircon.2018.8593048

Rana, J., Gutierrez, P. L., & Oldroyd, J. C. (2021). Quantitative Methods. *Global Encyclopedia
of Public Administration, Public Policy, and Governance*, 1-6.
https://doi.org/10.1007/978-3-319-31816-5_460-1

Rao Hill, S., & Troshani, I. (2010). Factors influencing the adoption of personalisation mobile
services: empirical evidence from young Australians. *International Journal of Mobile
Communications*, *8*(2), 150-168. https://doi.org/10.1504/IJMC.2010.031445

Riesenhuber, M. (2004). An action video game modifies visual processing. *TRENDS in*

     Neurosciences, *27*(2), 72-74. https://doi.org/10.1016/j.tins.2003.11.004

Robinson, T. E., & Berridge, K. (2003). Addiction. *Annual Review of Psychology*, *54*(1), 25–53.

     https://doi.org/10.1146/annurev.psych.54.101601.145237

Roslan, A. A., Maalim, A. N., Sabri, S. S. A., Qing, J. E. S., & Nor, M. H. M. (2021). The

     relationship between game addiction, psychosocial effects and academic performance

     among undergraduate students of university of cyberjaya. *Malaysian Journal of Medicine*

     & Health Sciences, 17.

Sakuma, H., Mihara, S., Nakayama, H., Miura, K., Kitayuguchi, T., Maezono, M., Hashimoto,

     T., & Higuchi, S. (2017). Treatment with the Self-Discovery Camp (SDiC) improves

     Internet Gaming Disorder. *Addictive Behaviors, 64,* 357–362.

     https://doi.org/10.1016/j.addbeh.2016.06.013

Sala, G., Tatlidil, K. S., & Gobet, F. (2018). Video game training does not enhance cognitive

     ability: A comprehensive meta-analytic investigation. *Psychological bulletin*, *144*(2),

     111. https://doi/10.1037/bul0000139

Sanmugam, M., Abdullah, Z., Zaid, N. M., Mohamed, H., & Aris, B. (2016). The Relationship

     Between Player Motivation And Gamification Elements In Learning Science Among

     Secondary School Students In Malaysia. *INTED2016 Proceedings*, pp. 2512-2521.

     http://dx.doi.org/10.21125/inted.2016.1538.

Saritepeci, M., Yildiz Durak, H., & Atman Uslu, N. (2022). A latent profile analysis for the

     study of multiple screen addiction, mobile social gaming addiction, general mattering,

     and family sense of belonging in university students. *International Journal of Mental*

     Health and Addiction, 1-22. https://doi.org/10.1007/s11469-022-00816-y

Schunk, D. H., & DiBenedetto, M. K. (2019). Motivation and social cognitive theory.

    Contemporary Educational Psychology, 60, 1-10.

    https://doi.org/10.1016/j.cedpsych.2019.101832

Schunk, D. H., & Pajares, F. (2002). The development of academic Self-Efficacy. In *Elsevier*

    eBooks (pp. 15–31). https://doi.org/10.1016/b978-012750053-9/50003-6

Schwarzer, R., Knoll, N., & Rieckmann, N. (2004). Social support. *Health psychology* (pp. 158–

    181). Blackwell Publishing.

Setia, M. S. (2016). Methodology series module 3: Cross-sectional studies. *Indian Journal of*

    Dermatology, 61(3), 261-264. https://doi.org/10.4103/0019-5154.182410

Sevelko, K., Bischof, G., Bischof, A., Besser, B., John, U., Meyer, C., & Rumpf, H. J. (2018).

    The role of self-esteem in Internet addiction within the context of comorbid mental

    disorders: Findings from a general population-based sample. *Journal of behavioral*

    addictions, *7*(4), 976-984. https://doi.org/10.1556/2006.7.2018.130

Shan, H., Su, H., Guo, L., Li, X., Huang, C., Jiang, H., Du, J., Zhong, N., & Zhao, M. (2023).

    Network analysis of time perspective and its interaction with internet gaming disorder in

    college students. *Computers in Human Behavior*, *147*, 107844.

    https://doi.org/10.1016/j.chb.2023.107844

Sharma, H. L., & Nasa, G. (2014). Academic self-efficacy: a reliable predictor of educational

    performances. *British Journal of Education, 2*(3), 57-64.

Sharma, T. G., Hamari, J., Kesharwani, A., & Tak, P. (2022). Understanding continuance

    intention to play online games: roles of self-expressiveness, self-congruity, self-efficacy,

    and perceived risk. *Behaviour & Information Technology*, *41*(2), 348-364.

    https://doi.org/10.1080/0144929X.2020.1811770

She, R., Lin, J., Wong, K. M., & Yang, X. (2024). Cognitive-behavioral statuses in depression

and internet gaming disorder of adolescents: A transdiagnostic approach. *Plos one, 19*(7),

e0304715. https://doi.org/10.1371/journal.pone.0304715

Sherry, J. L., Greenberg, B. S., Lucas, K., & Lachlan, K. (2012). Video game uses and

gratifications as predictors of use and game preference. In *Playing video games* (pp. 248-

262). Routledge.

Shieh, G. (2010). On the misconception of multicollinearity in detection of moderating effects:

Multicollinearity is not always detrimental. Multivariate Behavioral Research, 45(3),

483-507. https://doi.org/10.1080/00273171.2010.483393

Shrestha, N. (2020). Detecting multicollinearity in regression analysis. *American Journal of

Applied Mathematics and Statistics*, *8*(2), 39-42. http://dx.doi.org/10.12691/ajams-8-2-1

Sioni, S. R., Burleson, M. H., & Bekerian, D. A. (2017). Internet gaming disorder: Social phobia

and identifying with your virtual self. *Computers in Human Behavior*, *71*, 11-15.

https://doi.org/10.1016/j.chb.2017.01.044

Snodgrass, J. G., Lacy, M. G., Dengah, H. F., Eisenhauer, S., Batchelder, G., & Cookson, R. J.

(2014). A vacation from your mind: Problematic online gaming is a stress response.

Computers in Human Behavior, *38*, 248–260. https://doi.org/10.1016/j.chb.2014.06.004

Šporčić, B., & Glavak-Tkalić, R. (2018). The relationship between online gaming motivation,

self-concept clarity and tendency toward problematic gaming. *Cyberpsychology: Journal

of Psychosocial Research on Cyberspace*, *12*(1). https://doi.org/10.5817/CP2018-1-4.

Šporčić, B., & Glavak-Tkalić, R. (2023). The moderating role of Well-Being in the relationship

between gaming motivation and problematic gaming. *International Journal of Gaming

and Computer-Mediated Simulations*, *15*(1), 1–16. https://doi.org/10.4018/ijgcms.320516

Spottswood, E. L., & Wohn, D. Y. (2020). Online social capital: recent trends in

  research. *Current opinion in psychology*, *36*, 147-152.

  https://doi.org/10.1016/j.copsyc.2020.07.031

Srinivasan, R., Lohith, C. P., Srinivasan, R., & Lohith, C. P. (2017). Main study—detailed

  statistical analysis by multiple regression. *Strategic marketing and innovation for Indian*

  MSMEs, 69-92. https://doi.org/10.1007/978-981-10-3590-6_9

Stavropoulos, V., Frost, T. M. J., Brown, T., Gill, P., Footitt, T. A., & Kannis-Dymand, L.

  (2021). Internet gaming disorder behaviours: a preliminary exploration of individualism

  and collectivism profiles. *BMC psychiatry*, *21*(1), 262. https://doi.org/10.1186/s12888-

  021-03245-8

Steadman, J. L. (2019). Gaming motivations as a guide to treating problematic gaming

  behaviors. *Journal Of Technology In Behavioral Science*, *4*(4), 332-339.

  https://doi.org/10.1007/s41347-019-00103-z

Stevens, M. W., Delfabbro, P. H., & King, D. L. (2021). Prevention strategies to address

  problematic gaming: An evaluation of strategy support among habitual and problem

  gamers. *The Journal of Primary Prevention*, *42*(2), 183-201.

  https://doi.org/10.1007/s10935-021-00629-0

Stirin Tzur, K., Ganzach, Y., & Pazy, A. (2016). On the positive and negative effects of self-

  efficacy on performance: Reward as a moderator. *Human Performance*, *29*(5), 362-377.

  https://doi.org/10.1080/08959285.2016.1192631

Stockdale, L., & Coyne, S. M. (2018). Video game addiction in emerging adulthood: Cross-

  sectional evidence of pathology in video game addicts as compared to matched healthy

controls. *Journal of affective disorders*, *225*, 265-272.

    https://doi.org/10.1016/j.jad.2017.08.045

Sürücü, L., & Maslakci, A. (2020). Validity and reliability in quantitative research. *Business &*

    Management Studies: An International Journal, *8*(3), 2694-2726.

    http://dx.doi.org/10.15295/bmij.v8i3.1540

T'ng, S. T., & Pau, K. (2021). Identification of avatar mediates the associations between

    motivations of gaming and internet gaming disorder among the Malaysian youth.

    International Journal of Mental Health and Addiction, 19, 1346-1361.

    https://doi.org/10.1007/s11469-020-00229-9

T'ng, S. T., Ho, K. H., & Pau, K. (2023). Need frustration, gaming motives, and internet gaming

    disorder in mobile multiplayer online battle arena (MOBA) games: Through the lens of

    self-determination theory. *International Journal of Mental Health and Addiction, 21*(6),

    3821-3841. https://doi.org/10.1007/s11469-022-00825-x

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research

    instruments in science education. *Research in science education, 48,* 1273-1296.

    https://doi.org/10.1007/s11165-016-9602-2

Tan, S. C. (2022). An exploration study of family functioning, parent-child relationship, and

    online game addiction among Malaysian young adolescents. *Monash University*.

    https://doi.org/10.26180/20960467.v1

Tariq, I., & Majeed, S. (2022). Poor Family-Functioning and Lack of Interpersonal Support as

    Predictors of Online Gaming Addiction in Adolescents. *Journal of Professional &*

    Applied Psychology, *3*(1), 53-68. https://doi.org/10.52053/jpap.v3i1.97

Teng, Z., Pontes, H. M., Nie, Q., Xiang, G., Griffiths, M. D., & Guo, C. (2020). Internet gaming

disorder and psychosocial well-being: A longitudinal study of older-aged adolescents and

emerging adults. *Addictive Behaviors*, *110*, 106530.

https://doi.org/10.1016/j.addbeh.2020.106530

Thelle, D. S., & Laake, P. (2015). Epidemiology. In P. Laake, H. B. Benestad, & B. R. Olsen

(Eds.), *Research in Medical and Biological Sciences* (2nd ed, pp. 275-320). Elsevier.

Thøgersen, J., & Grønhøj, A. (2010). Electricity saving in households—A social cognitive

approach. *Energy Policy, 38*(12), 7732–7743. https://doi.org/10.1016/j.enpol.2010.08.025

Thoits, P. A. (2010). Stress and Health: major findings and policy implications. *Journal of

Health and Social Behavior*, *51*(1_suppl), S41–S53.

https://doi.org/10.1177/0022146510383499

Tian, L., Tian, Q., & Huebner, E. S. (2015). School-Related Social Support and Adolescents'

School-Related Subjective Well-Being: The mediating role of basic psychological needs

satisfaction at school. *Social Indicators Research*, *128*(1), 105–129.

https://doi.org/10.1007/s11205-015-1021-7

Toth, A. J., Conroy, E., & Campbell, M. J. (2021). Beyond action video games: Differences in

gameplay and ability preferences among gaming genres. *Entertainment Computing*, *38*,

100408. https://doi.org/10.1016/j.entcom.2021.100408

Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical

individualism and collectivism. *Journal of personality and social psychology*, *74*(1), 118.

Tullett-Prado, D., Stavropoulos, V., Mueller, K., Sharples, J., & Footitt, T. A. (2021). Internet

gaming disorder profiles and their associations with social engagement behaviours.

Journal of Psychiatric Research, *138*, 393-403.

https://doi.org/10.1016/j.jpsychires.2021.04.037

Tyack, A., Wyeth, P., & Johnson, D. (2016). The Appeal of MOBA Games. *Science &*

Engineering Faculty, 313–325. https://doi.org/10.1145/2967934.2968098

Uçur, Ö., & Dönmez, Y. E. (2021). Problematic internet gaming in adolescents, and its

relationship with emotional regulation and perceived social support. *Psychiatry research*,

296. https://doi.org/10.1016/j.psychres.2020.113678

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How reliable are measurement scales? External

factors with indirect influence on reliability estimators. *Procedia Economics and*

Finance, *20*, 679-686. https://doi.org/10.1016/S2212-5671(15)00123-9

Vehovar, V., Toepoel, V., & Steinmetz, S. (2016). *Non-probability sampling* (Vol. 1, pp. 329-

345). The Sage handbook of survey methods.

https://doi.org/10.4135/9781473957893.n22

Verrastro, V., Albanese, C. A., Ritella, G., Gugliandolo, M. C., & Cuzzocrea, F. (2021).

Empathy, social self-efficacy, problematic internet use, and problematic online gaming

between early and late adolescence. *Cyberpsychology, Behavior, and Social Networking*,

24(12), 806-814. https://doi.org/10.1089/cyber.2021.0042

Wan, C. S., & Chiou, W. B. (2006). Why are adolescents addicted to online gaming? An

interview study in Taiwan. *Cyberpsychology & behavior*, *9*(6), 762-766.

https://doi.org/10.1089/cpb.2006.9.762

Wang, C. C., Chen, C. F., & Chen, C. T. (2015). Exploring the different aspects of Internet

leisure use by college students. *Information Development*, *31*(1), 5-12.

https://doi.org/10.1007/s10964-008-9390-8

Wang, K., Chang, K. C., & Chang, Z. W. (2020, October). Determinants of we-intention for

continue playing FPS game: Cooperation and competition. In *Proceedings of the 7th

multidisciplinary in international social networks conference and the 3rd international

conference on economics, management and technology* (pp. 1-9).

https://doi.org/10.1145/3429395.3429406

Wang, Q., Mati, K., & Cai, Y. (2021a). The link between problematic internet use, problematic

gaming, and psychological distress: does sleep quality matter?. *BMC psychiatry*, *21*(1), 1-

11. https://doi.org/10.1186/s12888-021-03105-5

Wang, X., Abdelhamid, M., & Sanders, G. L. (2021b). Exploring the effects of psychological

ownership, gaming motivations, and primary/secondary control on online game

addiction. *Decision Support Systems*, *144*, 113512.

https://doi.org/10.1016/j.dss.2021.113512

Warburton, W. A., Parkes, S., & Sweller, N. (2022). Internet gaming disorder: Evidence for a

risk and resilience approach. *International Journal of Environmental Research and

Public Health*, *19*(9), 5587. https://doi.org/10.3390/ijerph19095587

Wartberg, L., Kriston, L., & Kammerl, R. (2017). Associations of social support, friends only

known through the internet, and health-related quality of life with internet gaming

disorder in adolescence. *Cyberpsychology, Behavior, and Social Networking*, *20*(7), 436-

441. https://doi.org/10.1089/cyber.2016.0535

Wartberg, L., Zieglmeier, M., & Kammerl, R. (2021). An empirical exploration of longitudinal

predictors for problematic internet use and problematic gaming behavior. Psychological

Reports, 124(2), 543-554. https://doi.org/10.1177/0033294120913488

Weinstein, N., Przybylski, A. K., & Murayama, K. (2017). A prospective study of the

    motivational and health dynamics of Internet Gaming Disorder. *PeerJ, 5,* e3838.

    https://doi.org/10.7717/peerj.3838

Wichstrøm, L., Stenseng, F., Belsky, J., von Soest, T., & Hygen, B. W. (2019). Symptoms of

    internet gaming disorder in youth: predictors and comorbidity. *Journal of abnormal child

    psychology*, *47*, 71-83. https://doi.org/10.1007/s10802-018-0422-x

Wider, W., Halik, M., Mustapha, M., & Bahari, F. (2014). Concept, dimensions and source of

    emerging adulthood: Reviewing this phenomenan among Malaysian youth. *International

    Multidisciplinary Conference (IMC)* (pp. 1-13).

World Health Organization. (2019). *International classification of diseases* (11th ed.). Geneva:

    World Health Organization.

Wu, A. M. S., Lei, L. L. M., & Ku, L. (2013). Psychological needs, purpose in life, and problem

    video game playing among Chinese young adults. *International Journal of Psychology*,

    48(4), 583–590. https://doi.org/10.1080/00207594.2012.658057

Wu, A. M., Lai, M. H., Yu, S., Lau, J. T., & Lei, M. W. (2016). Motives for online gaming

    questionnaire: Its psychometric properties and correlation with Internet gaming disorder

    symptoms among Chinese people. *Journal of Behavioral Addictions*, *6*(1), 11-20.

Wu, A. M., Lai, M. H., Zhang, M., Yogo, M., Yu, S. M., Mao, S., & Chen, J. H. (2022). Effects

    of psychological distress and coping Resources on Internet gaming disorder: Comparison

    between Chinese and Japanese university students. *International Journal of

    Environmental Research and Public Health*, *19*(5), 2951.

    https://doi.org/10.3390/ijerph19052951

Xanthopoulou, D., & Papagiannidis, S. (2012). Play online, work better? Examining the spillover

of active learning and transformational leadership. *Technological Forecasting and Social

Change*, *79*(7), 1328-1339. https://doi.org/10.1016/j.techfore.2012.03.006

Xiuqin, H., Huimin, Z., Mengchen, L., Jinan, W., Ying, Z., & Ran, T. (2010). Mental health,

personality, and parental rearing styles of adolescents with Internet addiction disorder.

Cyberpsychology, Behavior, and Social Networking, *13*(4), 401-406.

https://doi.org/10.1089/cyber.2009.0222

Yan, H., Zhao, G., Yu, K., & Sun, X. (2021). What lead gaming problematically addictive for

certain people instead of others? Correlates of personality, protective factors and biaxial

structure of Internet Gaming Disorder. https://doi.org/10.31234/osf.io/zdy9j

Yang, C. C., & Liu, D. (2017). Motives matter: motives for playing Pokémon Go and

implications for well-being. *Cyberpsychology, Behavior, and Social Networking*, *20*(1),

52-57. https://doi.org/10.1089/cyber.2016.0562

Yang, J., Wang, R., Cook, A., & Fuller, R. (2023). Gaming during the COVID-19 pandemic:

Examining its effect on loneliness & motivation, playing and gratification differences

between competitive and recreational gamers. *Telematics and Informatics Reports*, *11*,

100093. https://doi.org/10.1016/j.teler.2023.100093

Yang, S. Y. (2020). Effects of self-efficacy and self-control on internet addiction in middle

school students: A social cognitive theory-driven focus on the mediating influence of

social support. *Child Health Nursing Research, 26*(3), 357.

https://doi.org/10.4094%2Fchnr.2020.26.3.357

Yang, X., Jiang, X., Mo, P. K. H., Cai, Y., Ma, L., & Lau, J. T. F. (2020). Prevalence and

interpersonal correlates of internet gaming disorders among Chinese adolescents.

International journal of environmental research and public health, *17*(2), 579.

https://doi.org/10.3390/ijerph17020579

Yang, X., Wong, K. M., She, R., Zhao, C., Ding, N., Xu, H., ... & Zhang, G. (2021).

Relationship between illness representations and symptoms of internet gaming disorder

among young people: Cross-lagged model. *JMIR Serious Games*, *9*(4), e28117.

https://doi.org/10.2196/28117

Yee, N. (2006a). Motivations for play in online games. *CyberPsychology & behavior*, *9*(6), 772-

775. https://doi.org/10.1089/cpb.2006.9.772

Yee, N. (2006b). The psychology of MMORPGs: Emotional investment, motivations,

relationship formation, and problematic usage. In *R. Schroeder & A. Axelsson (Eds.).*

Avatars at Work and Play: Collaboration and Interaction in Shared Virtual Environments

(pp. 187-207). London: Springer-Verlag.

Yildirim, E., & Zeren, S. G. (2021). Video Game Addiction in Turkey: Does It Correlate

between Basic Psychological Needs and Perceived Social Support? *Psycho-Educational

Research Reviews*, *10*(2), 106-117. https://doi.org/10.52963/PERR_Biruni_V10.N2.07

Yilmaz, V., & Tunca, B. (2024). Structural model proposal to explain online game addiction.

Entertainment Computing, *48*, 100611. https://doi.org/10.1016/j.entcom.2023.100611

Yu, J. J., Kim, H., & Hay, I. (2013). Understanding adolescents' problematic Internet use from a

social/cognitive and addiction research framework. *Computers in Human Behavior*,

29(6), 2682-2689. https://doi.org/10.1016/j.chb.2013.06.045

Yu, S., Mao, S., & Wu, A. M. (2018). The interplay among stress, frustration tolerance,

mindfulness, and social support in Internet gaming disorder symptoms among Chinese

working adults. *Asia-Pacific Psychiatry*, *10*(4). https://doi.org/10.1111/appy.12319

Yu, Y., Peng, L., Mo, P. K., Yang, X., Cai, Y., Ma, L., ... & Lau, J. T. (2022). Association

between relationship adaptation and Internet gaming disorder among first-year secondary

school students in China: Mediation effects via social support and loneliness. *Addictive*

behaviors, *125*, 107166. https://doi.org/10.1016/j.addbeh.2021.107166

Zach. (2020). *The four assumptions of linear regression.* Statology. Retrieved from,

https://www.statology.org/linear-regression-assumptions/

Zajac, K., Ginley, M. K., Chang, R., & Petry, N. M. (2017). Treatments for Internet gaming

disorder and Internet addiction: A systematic review. *Psychology of Addictive Behaviors*,

31(8), 979-994. https://doi.org/10.1037/adb0000315

Zanetta Dauriat, F., Zermatten, A., Billieux, J., Thorens, G., Bondolfi, G., Zullino, D., &

Khazaal, Y. (2011). Motivations to play specifically predict excessive involvement in

massively multiplayer online role-playing games: evidence from an online survey.

European addiction research, *17*(4), 185-189. https://doi.org/10.1159/000326070

Zhang, G., Wang, X., Liang, Y. C., & Liu, J. (2010). Fast and robust spectrum sensing via

Kolmogorov-Smirnov test. *IEEE Transactions on Communications*, *58*(12), 3410-3416.

https://doi.org/10.1109/TCOMM.2010.11.090209

Zhang, H., Sang, Z., Chan, D. K., Teng, F., Liu, M., Yu, S., & Tian, Y. (2015). Sources of

meaning in life among Chinese university students. *Journal of Happiness Studies*, *17*(4),

1473–1492. https://doi.org/10.1007/s10902-015-9653-5

Zhang, M. X., Wang, X., Shu, M. Y., & Wu, A. M. (2019). Purpose in life, social support, and

internet gaming disorder among Chinese university students: A 1-year follow-up study.

Addictive behaviors, *99*, 106070. https://doi.org/10.1016/j.addbeh.2019.106070

Zhang, Y., Liang, T., Xiong, G., Zheng, X., Li, H., & Zhang, J. (2022). Social Self-Efficacy and

Internet Gaming Disorder among Chinese Undergraduates: The mediating role of

Alexithymia and the moderating role of empathy. *Frontiers in Psychology*, *13*.

https://doi.org/10.3389/fpsyg.2022.898554

Zhong, Z. J., & Yao, M. (2012). Gaming motivations, avatar-self identification and symptoms of

online game addiction. *Asian Journal of Communication*, *23*(5), 555–573.

https://doi.org/10.1080/01292986.2012.748814

Zhu, H., Ibrahim, J. G., & Cho, H. (2012). Perturbation and scaled Cook's Distance. *Annals of

Statistics, 40*(2), 785–811. https://doi.org/10.1214/12-AOS978

Zsila, Á., Orosz, G., Bőthe, B., Tóth-Király, I., Király, O., Griffiths, M., & Demetrovics, Z.

(2018). An empirical study on the motivations underlying augmented reality games: The

case of Pokémon Go during and after Pokémon fever. *Personality and individual

differences*, *133*, 56-66. https://doi.org/10.1016/j.paid.2017.06.024

Zubir, N. S. A., Abas, M. A., Ismail, N., Rahiman, M. H. F., Tajuddin, S. N., & Taib, M. N.

(2017). Statistical analysis of agarwood oil compounds in discriminating the quality of

agarwood oil. *Journal of Fundamental and Applied Sciences, 9*(4S), 45-61.

http://dx.doi.org/10.4314/fas.v9i4s.3

Appendixes

Appendix A

Calculation of Effect Size

Self-Efficacy

$$f^2 \text{Self-Efficacy} = \frac{(-0.30)^2}{1-(-0.30)^2} = 0.09890$$

Zhang, Y., Liang, T., Xiong, G., Zheng, X., Li, H., & Zhang, J. (2022). Social Self-Efficacy and

Internet Gaming Disorder among Chinese Undergraduates: The mediating role of

Alexithymia and the moderating role of empathy. *Frontiers in Psychology*, *13*.

https://doi.org/10.3389/fpsyg.2022.898554

Variables	M	SD	1	2	3	4	5	6	7
1 Gender	–	–	1						
2 Grade	–	–	0.34**	1					
3 Time spending on online game per day	2.53	2.37	−0.11**	−0.03	1				
4 Social self-efficacy	3.20	0.74	−0.34	0.07	−0.14**	1			
5 Alexithymia	2.93	0.47	−0.05	−0.07**	0.17**	−0.43**	1		
6 Empathy	2.58	0.47	0.02	0.02	−0.1**	0.24**	−0.43**	1	
7 IGD	2.57	0.94	−0.27**	−0.13**	0.43**	−0.30**	0.35**	−0.21**	1

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

Social Motive

$$f^2 \text{ Social Motive} = \frac{(0.12)^2}{1-(0.12)^2} = 0.01461$$

Escape Motive

$$f^2 \text{ Escape Motive} = \frac{(0.44)^2}{1-(0.44)^2} = 0.24008$$

Competition Motive

$$f^2 \text{ Competition Motive} = \frac{(0.20)^2}{1-(0.20)^2} = 0.06667$$

Coping Motive

$$f^2 \text{ Coping Motive} = \frac{(0.28)^2}{1-(0.28)^2} = 0.08507$$

Skill Development Motive

$$f^2 \text{ Skill Development Motive} = \frac{(0.13)^2}{1-(0.13)^2} = 0.01719$$

Fantasy Motive

$$f^2 \text{ Fantasy Motive} = \frac{(0.31)^2}{1-(0.31)^2} = 0.10632$$

Recreation Motive

$$f^2 \text{ Recreation Motive} = \frac{(-0.02)^2}{1-(-0.02)^2} = 0.00040$$

Kircaburun, K., Demetrovics, Z., Griffiths, M. D., Király, O., Kun, B., & Tosuntaş, Ş. B. (2019).

  Trait Emotional intelligence and Internet gaming Disorder among gamers: the mediating

  role of online gaming motives and moderating role of age groups. *International Journal*

  of Mental Health and Addiction, *18*(5), 1446–1457. https://doi.org/10.1007/s11469-019-

  00179-x

Table 1 Pearson's correlations reliability coefficients of the study variables

From: Trait Emotional Intelligence and Internet Gaming Disorder Among Gamers: The Mediating Role of Online Gaming Motives and Moderating Role of Age Groups

	1	2	3	4	5	6	7	8	9	10	11
1. Internet gaming disorder	–										
2. Trait emotional intelligence	−0.41***	–									
3. Depression	0.39***	−0.58***	–								
4. Loneliness	0.38***	−0.64***	0.61***	–							
5. Social	0.12**	0.09	0.01	−0.03	–						
6. Escape	0.44***	−0.37***	0.39***	0.39***	0.25***	–					
7. Competition	0.20***	−0.02	0.08	−0.01	0.22***	0.15**	–				
8. Coping	0.28***	−0.11*	0.15**	0.09	0.21***	0.54***	0.18***	–			
9. Skill development	0.13**	0.17***	−0.03	−0.05	0.42***	0.23***	0.31***	0.35***	–		
10. Fantasy	0.31***	−0.24***	0.24***	0.27***	0.20***	0.56***	0.14**	0.33***	0.24***	–	
11. Recreation	−0.02	0.16**	−0.08	−0.07	0.22***	0.00	0.13**	0.22***	0.25***	0.06	–
Mean	0.27	3.62	2.48	2.83	2.84	3.06	3.37	3.64	3.21	2.39	4.65
SD	0.24	0.69	1.06	0.95	1.30	1.26	1.22	1.13	1.29	1.41	0.57
Cronbach's α	0.77	0.84	0.88	0.73	0.86	0.74	0.77	0.78	0.82	0.86	0.76

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Social Support

$$f^2 \text{ Social Support} = \frac{(-0.28)^2}{1-(-0.28)^2} = 0.08507$$

Wartberg, L., Kriston, L., & Kammerl, R. (2017). Associations of Social Support, Friends Only

      Known Through the Internet, and Health-Related Quality of Life with Internet Gaming

      Disorder in Adolescence. *Cyberpsychology, Behavior, and Social Networking*, *20*(7),

      436–441. https://doi.org/10.1089/cyber.2016.0535

TABLE 1. CORRELATION MATRIX FOR ALL INCLUDED VARIABLES

Variable	Internet Gaming Disorder Scale	Gender of adolescent	Age of adolescent	Social support	Proportion of friends only known through the Internet	Health-related quality of life
Internet Gaming Disorder Scale	1					
Gender of adolescent[a]	−0.40**	1				
Age of adolescent	0.03	−0.01	1			
Social support	−0.28**	0.05	−0.13**	1		
Proportion of friends only known through the Internet	0.31**	−0.10**	0.17**	−0.24**	1	
Health-related quality of life	−0.42**	0.03	−0.10**	0.50**	−0.20**	1

[a]Male gender=0, female gender=1..
**$p<0.01$.

Total Effect Size

$$f^2 = \frac{(0.09890+0.01461+0.24008+0.06667+0.08507+0.01719+0.10632+0.00040+0.08507)}{9} = 0.07937$$

Appendix B

Calculation of Sample Size Using G*Power
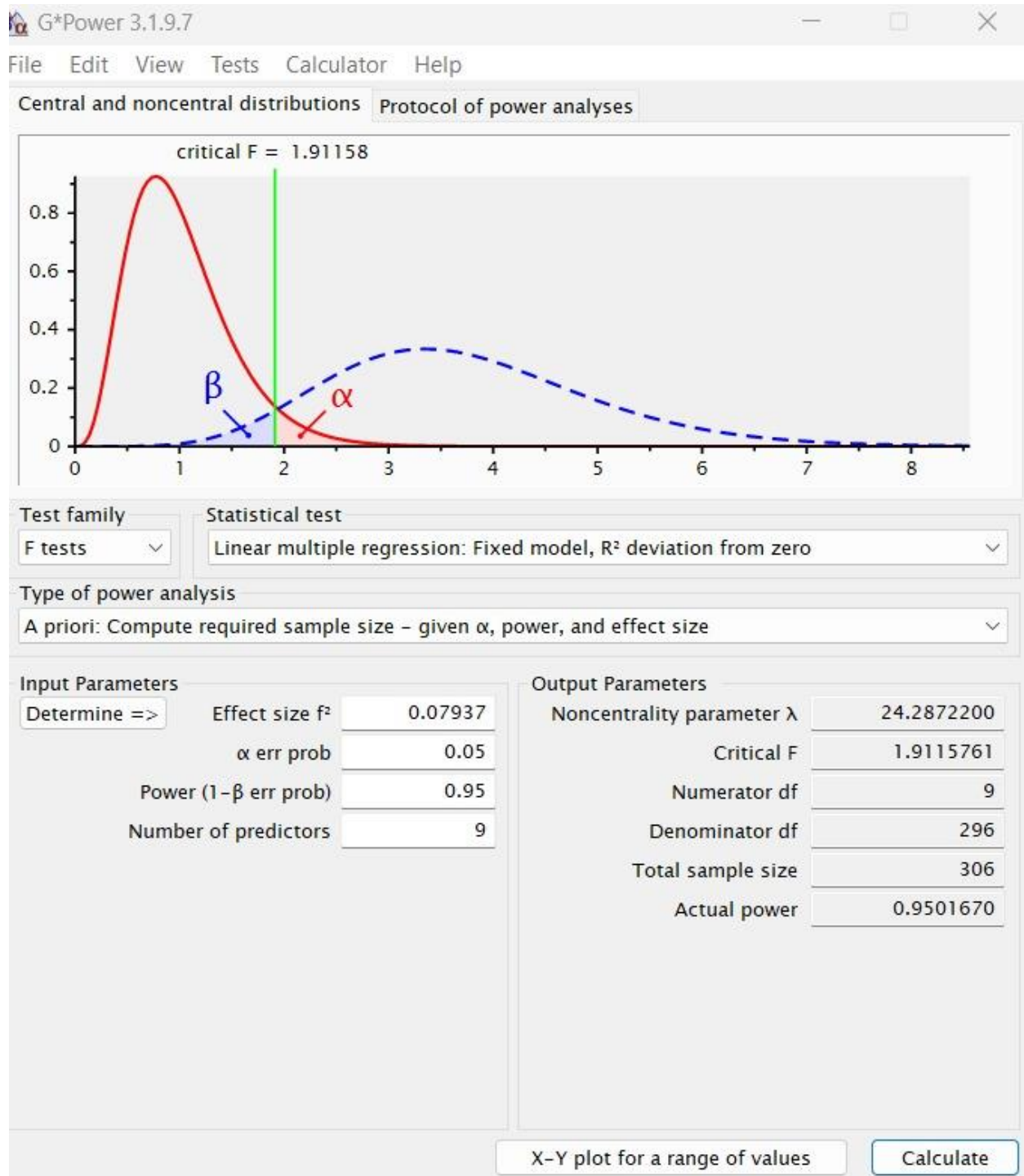
Appendix C

Ethical Clearance Approval

UNIVERSITI TUNKU ABDUL RAHMAN DU012(A)

Wholly owned by UTAR Education Foundation   Co. No. 578227-M

Re: U/SERC/78-186/2024

10 January 2024

Dr Pung Pit Wan
Head, Department of Psychology and Counselling
Faculty of Arts and Social Science
Universiti Tunku Abdul Rahman
Jalan Universiti, Bandar Baru Barat
31900 Kampar, Perak.

Dear Dr Pung,

Ethical Approval For Research Project/Protocol

We refer to the application for ethical approval for your students' research project from Bachelor of Social Science (Honours) Psychology programme enrolled in course UAPZ3023. We are pleased to inform you that the application has been approved under Expedited Review.

The details of the research projects are as follows:

No	Research Title	Student's Name	Supervisor's Name	Approval Validity
1.	Self-efficacy, Gaming Motives, Social Support and Internet Gaming Disorder Among Emerging Adults in Malaysia	1. Chang Ke Jing 2. Colette Ang Chien Yueh 3. Goh Hui Shan	Dr Grace T'ng Soo Ting	10 January 2024 – 9 January 2025

The conduct of this research is subject to the following:

(1)   The participants' informed consent be obtained prior to the commencement of the research;

(2)   Confidentiality of participants' personal data must be maintained; and

(3)   Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

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

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

Should the students collect personal data of participants in their studies, please have the participants sign the attached Personal Data Protection Statement for records.

Thank you.

Yours sincerely,

Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c   Dean, Faculty of Arts and Social Science
       Director, Institute of Postgraduate Studies and Research

Appendix D

Qualtrics Survey

Q1)
<u>PERSONAL DATA PROTECTION NOTICE</u>
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.

<u>Notice:</u>
1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes:
a) Name
b) Identity card
c) Place of Birth
d) Address
e) Education History
f) Employment History
g) Medical History
h) Blood type
i) Race
j) Religion
k) Photo
l) Personal Information and Associated Research Data

2. The purposes for which your personal data may be used are inclusive but not limited to:-
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 governances
For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/ study loan

3. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and 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 disclosure is necessary to comply with applicable laws.

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

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

Consent:

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

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

8. You may access and update your personal data by writing to us at:
a) Colette Ang Chien Yueh; Email: 02coletteang@1utar.my
b) Chang Ke Jing; Email: jingchang076@1utar.my
c) Goh Hui Shan; Email: hsgoh0208@1utar.my

▪▪

Q2)
<u>Acknowledgment of Notice</u>

    o I have been notified and that I hereby understood, consented and agreed per UTAR above notice. (1)

    o I disagree, my personal data will not be processed. (2)

Skip To: End of Survey If Acknowledgment of Notice = I disagree, my personal data will not be processe.
▪▪

----------------------------------*End of Block: Default Question Block*----------------------------------

Part A: Demographic Information

Here are some questions about your general demographic.

A1) Age

_____

¸¸¸

A2) Gender

    o Male (1)

    o Female (2)

¸¸¸

A3) Race

    o Chinese (1)

    o Malay (2)

    o Indian (3)

    o Others (4) _____

¸¸¸

A4) If "Others" is selected, please specify your race.

_____

¸¸¸

A5) Nationality

    o Malaysian (1)

    o Others (2)

Skip To: End of Survey If Nationality= Others.

A6) Occupation

    o Student (1)

    o Employed (2)

    o Unemployed (3)

A7) Have you been playing online video games for at least 1 year?

    o Yes (1)

    o No (2)

Skip To: End of Survey If Have you been playing online video games for at least 1 year? *=No.*

A8) How frequently do you play online video games?

    o 1-2 times a week (1)

    o 3-4 times a week (2)

    o 5-6 times a week (3)

    o more than 6 times a week (4)

A9) How many hours do you spend playing online games each day?

    o 1-2 hours per day (1)

    o 3-4 hours per day (2)

    o 5-6 hours per day (3)

    o 7-8 hours per day (4)

    o more than 8 hours per day (5)

A10) What types of online games genre do you play?

    o First-person shooter game (FPS) eg:Call of Duty, Counter Strike (1)

    o Multiplayer online battle arena game (MOBA) eg:League of Legends, Dota 2(2)

    o Battle Royale games eg: Player's UnknownBattlegrounds (PUBG) (3)

    o Massively multiplayer online role-playing game (MMORPG) eg: The Lord of the Rings Online, Star Wars: The Old Republic (4)

    o Role Playing Games (RPG) eg: Genshin Impact

    o Others

A11) If "Others" is selected, please specify the type of online game genre you played.

_____

A12) How many games do you play in a day?

    o 1-2 games (1)

    o 3-4 games (2)

    o 5-6 games (3)

    o more than 6 games (4)

--------------------------------*End of Part A: Demographic Information*---------------------------------

Part B: Internet Gaming Disorder Scale – Short-Form (IGDS9-SF)

Instructions: Please answer all the following questions. The following questions assess the severity of IGD and its detrimental effects.

1	2	3	4	5
Never	Rarely	Sometimes	Often	Very often

B1) Do you think gaming has become the dominant activity in your daily life?

   o Never (1)

   o Rarely (2)

   o Sometimes (3)

   o Often (4)

   o Very Often (5)

B2) Do you feel more irritability, anxiety or even sadness when you try to either reduce or stop your gaming activity?

   o Never (1)

   o Rarely (2)

   o Sometimes (3)

   o Often (4)

   o Very Often (5)

B3) Do you feel the need to spend increasing amount of time engaged gaming in order to achieve satisfaction or pleasure?

    o Never (1)

    o Rarely (2)

    o Sometimes (3)

    o Often (4)

    o Very Often (5)

B4) Do you systematically fail when trying to control or cease your gaming activity?

    o Never (1)

    o Rarely (2)

    o Sometimes (3)

    o Often (4)

    o Very Often (5)

B5) Have you lost interests in previous hobbies and other entertainment activities as a result of your engagement with the game?

    o Never (1)

    o Rarely (2)

    o Sometimes (3)

    o Often (4)

    o Very Often (5)

B6) Have you continued your gaming activity despite knowing it was causing problems between you and other people?

    o Never (1)

    o Rarely (2)

    o Sometimes (3)

    o Often (4)

    o Very Often (5)

B7) Have you deceived any of your family members, therapists or others because the amount of your gaming activity?

    o Never (1)

    o Rarely (2)

    o Sometimes (3)

    o Often (4)

    o Very Often (5)

B8) Do you play in order to temporarily escape or relieve a negative mood (e.g., helplessness, guilt, anxiety)?

    o Never (1)

    o Rarely (2)

    o Sometimes (3)

    o Often (4)

    o Very Often (5)

B9) Have you jeopardised or lost an important relationship, job or an educational or career opportunity because of your gaming activity?

    o Never (1)

    o Rarely (2)

    o Sometimes (3)

    o Often (4)

    o Very Often (5)

--------------End of Part B: Internet Gaming Disorder Scale – Short-Form (IGDS9-SF)--------------

Part C: New General Self-Efficacy Scale (NGSES)

Instructions: Please answer all the following questions. The following questions assess how much people believe they can achieve their goals, despite difficulties.

1	2	3	4	5
Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

C1) I will be able to achieve most of the goals that I have set for myself.

    O 1 – Strongly disagree

    o 2 – Disagree

    o 3 – Neither agree nor disagree

    o 4 – Agree

    o 5 – Strongly agree

C2) When facing difficult tasks, I am certain that I will accomplish them.

    O 1 – Strongly disagree

    o 2 – Disagree

    o 3 – Neither agree nor disagree

    o 4 – Agree

    o 5 – Strongly agree

C3) In general, I think that I can obtain outcomes that are important to me.

    O 1 – Strongly disagree

    o 2 – Disagree

    o 3 – Neither agree nor disagree

    o 4 – Agree

    o 5 – Strongly agree

C4) I believe I can succeed at most any endeavor to which I set my mind.

    O 1 – Strongly disagree

    o 2 – Disagree

    o 3 – Neither agree nor disagree

    o 4 – Agree

    o 5 – Strongly agree

C5) I will be able to successfully overcome many challenges.

    O 1 – Strongly disagree

    o 2 – Disagree

    o 3 – Neither agree nor disagree

    o 4 – Agree

    o 5 – Strongly agree

C6) I am confident that I can perform effectively on many different tasks.

  O 1 – Strongly disagree

  o 2 – Disagree

  o 3 – Neither agree nor disagree

  o 4 – Agree

  o 5 – Strongly agree

````````````````````````````````````````````````````````````````````````````````

C7) Compared to other people, I can do most tasks very well.

  O 1 – Strongly disagree

  o 2 – Disagree

  o 3 – Neither agree nor disagree

  o 4 – Agree

  o 5 – Strongly agree

````````````````````````````````````````````````````````````````````````````````

C8) Even when things are tough, I can perform quite well.

  O 1 – Strongly disagree

  o 2 – Disagree

  o 3 – Neither agree nor disagree

  o 4 – Agree

  o 5 – Strongly agree

````````````````````````````````````````````````````````````````````````````````

------------------------*End of Part C: New General Self-Efficacy Scale (NGSES)*---------------------

**Part D: Motives for Online Gaming Questionnaire (MOGQ)**

Instructions: Please answer all the following questions. The following questions assess the seven dimensions of gaming motives including social, escape, competition, coping, skill development, fantasy and recreation motive.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Almost never | Some of the time | Half of the time | Most of the time | Almost always |

D1) I play online games because I can get to know new people.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D2) I play online games because gaming helps me to forget about daily hassles.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D3) I play online games because I enjoy competing with others.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D4) I play online games because gaming helps me get into a better mood.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D5) I play online games because gaming sharpens my senses.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D6) I play online games because I can do things that I am unable to do or I am not allowed to do in real life.

- o 1 - Almost never

- o 2 - Some of the time

- o 3 - Half of the time

- o 4 - Most of the time

- o 5 - Almost always

D7) I play online games for recreation.

- o 1 - Almost never

- o 2 - Some of the time

- o 3 - Half of the time

- o 4 - Most of the time

- o 5 - Almost always

D8) I play online games because I can meet many different people.

- o 1 - Almost never

- o 2 - Some of the time

- o 3 - Half of the time

- o 4 - Most of the time

- o 5 - Almost always

D9) I play online games because it makes me forget real life.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D10) I play online games because I like to win.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D11) I play online games because it helps me get rid of stress.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D12) I play online games because it improves my skills.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D13) I play online games to feel as if I was somebody else.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D14) I play online games because it is entertaining.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D15) I play online games because it is a good social experience.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D16) I play online games because gaming helps me escape reality.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D17) I play online games because it is good to feel that I am better than others.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D18) I play online games because it helps me channel my aggression.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D19) I play online games because it improves my concentration.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D20) I play online games to be somebody else for a while.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D21) I play online games because I enjoy gaming.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D22) I play online games because gaming gives me company.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D23) I play online games to forget about unpleasant things or offences.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D24) I play online games for the pleasure of defeating others.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D25) I play online games because it reduces tension.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D26) I play online games because it improves my coordination skills.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

D27) I play online games because I can be in another world.

    o 1 - Almost never

    o 2 - Some of the time

    o 3 - Half of the time

    o 4 - Most of the time

    o 5 - Almost always

```````````````````````````````````````````````````````````````````````````````

-------------------*End of Part D: Motives for Online Gaming Questionnaire (MOGQ)*----------------

**Part E: Brief form of the Perceived Social Support Questionnaire (F-SozU K-6)**

Instructions: Please answer all the following questions. The following questions evaluate the degree of perceived social support. A higher score indicates the statement is true.

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| Not true at all | | | | Very true |

E1) I receive a lot of understanding and security from others.

    o 1-Not true at all

    o 2

    o 3

    o 4

    o 5-Very true

E2) There is someone very close to me whose help I can always count on.

    o 1-Not true at all

    o 2

    o 3

    o 4

    o 5-Very true

E3) If I need to, I can borrow something from friends or neighbors without any problems.

    o 1-Not true at all

    o 2

    o 3

    o 4

    o 5-Very true

E4) I know several people with whom I like to do things.

    o 1-Not true at all

    o 2

    o 3

    o 4

    o 5-Very true

E5) When I am sick, I can ask friends/relatives to handle important things for me without hesitation.

    o 1-Not true at all

    o 2

    o 3

    o 4

    o 5-Very true

E6) If I'm very depressed, I know who I can turn to.

    o 1-Not true at all

    o 2

    o 3

    o 4

    o 5-Very true

*-------End of Part E: Brief form of the Perceived Social Support Questionnaire (F-SozU K-6)-----*

*-----End of Qualtrics Questionnaire-----*

**Appendix E**

**Examples of Gaming Groups in Facebook and Discord**

**Appendix F**

**Reliability Test for Pilot Study**

**IGD**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .891 | .892 | 9 |

**Self-efficacy**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .902 | .902 | 8 |

**Social Motive**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .832 | .832 | 4 |

**Escape Motive**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .834 | .834 | 4 |

**Competition Motive**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .864 | .864 | 4 |

**Coping Motive**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .777 | .782 | 4 |

## Skill Development Motive

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .862 | .862 | 4 |

## Fantasy Motive

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .841 | .842 | 4 |

## Recreation Motive

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .724 | .730 | 3 |

**Gaming Motive**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .945 | .945 | 27 |

**Social Support**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .861 | .862 | 6 |

**Appendix G**

**Reliability Test for Actual Study**

**IGD**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .869 | .871 | 9 |

**Self-efficacy**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .873 | .873 | 8 |

**Social Motive**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .709 | .694 | 4 |

## Escape Motive

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .751 | .743 | 4 |

## Competition Motive

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .893 | .893 | 4 |

## Coping Motive

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .662 | .674 | 4 |

## Skill Development Motive

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .849 | .850 | 4 |

## Fantasy Motive

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .895 | .897 | 4 |

## Recreation Motive

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .750 | .769 | 3 |

**Gaming Motive**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .944 | .944 | 27 |

**Social Support**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| .771 | .782 | 6 |

**Appendix H**

**Histogram**

**IGD**



Histogram
Mean = 21.61
Std. Dev. = 7.215
N = 354

**Self-efficacy**



Histogram

Mean = 28.81
Std. Dev. = 5.307
N = 354

**Social Motive**



Histogram

Mean = 11.71
Std. Dev. = 4.069
N = 354

**Escape Motive**

**Competition Motive**

**Coping Motive**



Histogram

Mean = 12.76
Std. Dev. = 3.663
N = 354

**Skill Development Motive**

**Fantasy Motive**

**Recreation Motive**

**Social Support**



Histogram

Mean = 20.89
Std. Dev. = 5.124
N = 354

**Appendix I**

**Q-Q Plot**

**IGD**

**Self-efficacy**


Normal Q-Q Plot of T_SE

**Social Motive**



Normal Q-Q Plot of T_Social

**Escape Motive**



Normal Q-Q Plot of T_Escape

**Competition Motive**

**Coping Motive**



Normal Q-Q Plot of T_Coping

**Skill Development Motive**



Normal Q-Q Plot of T_Skill

**Fantasy Motive**

**Recreation Motive**



Normal Q-Q Plot of T_Recreation

**Social Support**



Normal Q-Q Plot of T_SS

**Appendix J**

**Skewness and Kurtosis**

**IGD**

**Statistics**

T_IGD

| | | |
|---|---|---|
| N | Valid | 354 |
| | Missing | 0 |
| Mean | | 21.6102 |
| Median | | 21.0000 |
| Mode | | 20.00 |
| Skewness | | .466 |
| Std. Error of Skewness | | .130 |
| Kurtosis | | -.049 |
| Std. Error of Kurtosis | | .259 |
| Minimum | | 9.00 |
| Maximum | | 45.00 |
| Sum | | 7650.00 |

**Self-efficacy**

**Statistics**

T_SE

| | | |
|---|---|---|
| N | Valid | 354 |
| | Missing | 0 |
| Mean | | 28.8051 |
| Median | | 30.0000 |
| Mode | | 32.00 |
| Skewness | | -.714 |
| Std. Error of Skewness | | .130 |
| Kurtosis | | 1.018 |
| Std. Error of Kurtosis | | .259 |
| Minimum | | 10.00 |
| Maximum | | 40.00 |
| Sum | | 10197.00 |

## Social Motive

**Statistics**

T_Social

| N | Valid | 354 |
|---|---|---|
| | Missing | 0 |
| Mean | | 11.7062 |
| Median | | 12.0000 |
| Mode | | 12.00 |
| Skewness | | -.019 |
| Std. Error of Skewness | | .130 |
| Kurtosis | | -.593 |
| Std. Error of Kurtosis | | .259 |
| Minimum | | 4.00 |
| Maximum | | 20.00 |
| Sum | | 4144.00 |

## Escape Motive

**Statistics**

T_Escape

| N | Valid | 354 |
|---|---|---|
| | Missing | 0 |
| Mean | | 12.1864 |
| Median | | 12.0000 |
| Mode | | 12.00 |
| Skewness | | -.109 |
| Std. Error of Skewness | | .130 |
| Kurtosis | | -.667 |
| Std. Error of Kurtosis | | .259 |
| Minimum | | 4.00 |
| Maximum | | 20.00 |
| Sum | | 4314.00 |

## Competition Motive

### Statistics

T_Competition

| | | |
|---|---|---|
| N | Valid | 354 |
| | Missing | 0 |
| Mean | | 12.1808 |
| Median | | 12.0000 |
| Mode | | 11.00[a] |
| Skewness | | -.013 |
| Std. Error of Skewness | | .130 |
| Kurtosis | | -.837 |
| Std. Error of Kurtosis | | .259 |
| Minimum | | 4.00 |
| Maximum | | 20.00 |
| Sum | | 4312.00 |

a. Multiple modes exist. The smallest

value is shown

## Coping Motive

### Statistics

T_Coping

| | | |
|---|---|---|
| N | Valid | 354 |
| | Missing | 0 |
| Mean | | 12.7627 |
| Median | | 13.0000 |
| Mode | | 12.00 |
| Skewness | | -.202 |
| Std. Error of Skewness | | .130 |
| Kurtosis | | -.490 |
| Std. Error of Kurtosis | | .259 |
| Minimum | | 4.00 |
| Maximum | | 20.00 |
| Sum | | 4518.00 |

## Skill Development Motive

**Statistics**

T_Skill

| | | |
|---|---|---|
| N | Valid | 354 |
| | Missing | 0 |
| Mean | | 12.9520 |
| Median | | 13.0000 |
| Mode | | 12.00 |
| Skewness | | -.151 |
| Std. Error of Skewness | | .130 |
| Kurtosis | | -.716 |
| Std. Error of Kurtosis | | .259 |
| Minimum | | 4.00 |
| Maximum | | 20.00 |
| Sum | | 4585.00 |

## Fantasy Motive

**Statistics**

T_Fantasy

| | | |
|---|---|---|
| N | Valid | 354 |
| | Missing | 0 |
| Mean | | 11.3672 |
| Median | | 12.0000 |
| Mode | | 12.00 |
| Skewness | | .034 |
| Std. Error of Skewness | | .130 |
| Kurtosis | | -.875 |
| Std. Error of Kurtosis | | .259 |
| Minimum | | 4.00 |
| Maximum | | 20.00 |
| Sum | | 4024.00 |

**Recreation Motive**

**Statistics**

T_Recreation

| N | Valid | 354 |
|---|---|---|
|  | Missing | 0 |
| Mean |  | 10.7853 |
| Median |  | 11.0000 |
| Mode |  | 12.00 |
| Skewness |  | -.476 |
| Std. Error of Skewness |  | .130 |
| Kurtosis |  | -.341 |
| Std. Error of Kurtosis |  | .259 |
| Minimum |  | 3.00 |
| Maximum |  | 15.00 |
| Sum |  | 3818.00 |

**Social Support**

**Statistics**

T_SS

| N | Valid | 354 |
|---|---|---|
|  | Missing | 0 |
| Mean |  | 20.8927 |
| Median |  | 21.0000 |
| Mode |  | 18.00 |
| Skewness |  | -.261 |
| Std. Error of Skewness |  | .130 |
| Kurtosis |  | -.258 |
| Std. Error of Kurtosis |  | .259 |
| Minimum |  | 6.00 |
| Maximum |  | 30.00 |
| Sum |  | 7396.00 |

**Appendix K**

**Test of Normality**

**IGD**

**Tests of Normality**

|  | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| T_IGD | .070 | 354 | .000 | .978 | 354 | .000 |

a. Lilliefors Significance Correction

**Self-efficacy**

**Tests of Normality**

|  | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| T_SE | .106 | 354 | .000 | .961 | 354 | .000 |

a. Lilliefors Significance Correction

**Social Motive**

**Tests of Normality**

|  | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| T_Social | .071 | 354 | .000 | .976 | 354 | .000 |

a. Lilliefors Significance Correction

**Escape Motive**

**Tests of Normality**

|  | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| T_Escape | .082 | 354 | .000 | .976 | 354 | .000 |

a. Lilliefors Significance Correction

## Competition Motive

**Tests of Normality**

|  | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| T_Competition | .066 | 354 | .001 | .972 | 354 | .000 |

a. Lilliefors Significance Correction

## Coping Motive

**Tests of Normality**

|  | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| T_Coping | .090 | 354 | .000 | .980 | 354 | .000 |

a. Lilliefors Significance Correction

## Skill Development Motive

**Tests of Normality**

|  | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| T_Skill | .068 | 354 | .000 | .974 | 354 | .000 |

a. Lilliefors Significance Correction

## Fantasy Motive

**Tests of Normality**

|  | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| T_Fantasy | .079 | 354 | .000 | .967 | 354 | .000 |

a. Lilliefors Significance Correction

**Recreation Motive**

**Tests of Normality**

|  | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| T_Recreation | .129 | 354 | .000 | .957 | 354 | .000 |

a. Lilliefors Significance Correction

**Social Support**

**Tests of Normality**

|  | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|
|  | Statistic | df | Sig. | Statistic | df | Sig. |
| T_SS | .080 | 354 | .000 | .980 | 354 | .000 |

a. Lilliefors Significance Correction

**Appendix L**

**Descriptive Statistics**

**Age**

**Age**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 18 | 24 | 6.8 | 6.8 | 6.8 |
| | 19 | 16 | 4.5 | 4.5 | 11.3 |
| | 20 | 66 | 18.6 | 18.6 | 29.9 |
| | 21 | 51 | 14.4 | 14.4 | 44.4 |
| | 22 | 87 | 24.6 | 24.6 | 68.9 |
| | 23 | 42 | 11.9 | 11.9 | 80.8 |
| | 24 | 25 | 7.1 | 7.1 | 87.9 |
| | 25 | 24 | 6.8 | 6.8 | 94.6 |
| | 26 | 8 | 2.3 | 2.3 | 96.9 |
| | 27 | 2 | .6 | .6 | 97.5 |
| | 28 | 6 | 1.7 | 1.7 | 99.2 |
| | 29 | 3 | .8 | .8 | 100.0 |
| | Total | 354 | 100.0 | 100.0 | |

**Gender**

**Gender**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 250 | 70.6 | 70.6 | 70.6 |
| | Female | 104 | 29.4 | 29.4 | 100.0 |
| | Total | 354 | 100.0 | 100.0 | |

**Race**

**Race**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Chinese | 329 | 92.9 | 92.9 | 92.9 |
| | Malay | 11 | 3.1 | 3.1 | 96.0 |
| | Indian | 9 | 2.5 | 2.5 | 98.6 |
| | Others | 5 | 1.4 | 1.4 | 100.0 |
| | Total | 354 | 100.0 | 100.0 | |

**If "Others" selected, please specify your race.**

**If "Others" selected, please specify your race.**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | | 349 | 98.6 | 98.6 | 98.6 |
| | cocos | 1 | .3 | .3 | 98.9 |
| | kadasan | 1 | .3 | .3 | 99.2 |
| | Punjabi | 1 | .3 | .3 | 99.4 |
| | Punjabi/Thai mix | 1 | .3 | .3 | 99.7 |
| | Sino Kadazan | 1 | .3 | .3 | 100.0 |
| | Total | 354 | 100.0 | 100.0 | |

**Nationality**

**Nationality**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Malaysian | 354 | 100.0 | 100.0 | 100.0 |

**Occupation**

**Occupation**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Students | 277 | 78.2 | 78.2 | 78.2 |
| | Employed | 66 | 18.6 | 18.6 | 96.9 |
| | Unemployed | 11 | 3.1 | 3.1 | 100.0 |
| | Total | 354 | 100.0 | 100.0 | |

**Have you been playing online video games for at least 1 year?**

**Have you been playing online video games for at least 1 year?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 354 | 100.0 | 100.0 | 100.0 |

**How frequently do you play online video games?**

**How frequently do you play online video games?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1-2 times a week | 102 | 28.8 | 28.8 | 28.8 |
| | 3-4 times a week | 93 | 26.3 | 26.3 | 55.1 |
| | 5-6 times a week | 44 | 12.4 | 12.4 | 67.5 |
| | more than 6 times a week | 115 | 32.5 | 32.5 | 100.0 |
| | Total | 354 | 100.0 | 100.0 | |

**How many hours do you spend playing online games each day?**

**How many hours do you spend playing online games each day?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1-2 hours per day | 164 | 46.3 | 46.3 | 46.3 |
| | 3-4 hours per day | 131 | 37.0 | 37.0 | 83.3 |
| | 5-6 hours per day | 35 | 9.9 | 9.9 | 93.2 |
| | 7-8 hours per day | 10 | 2.8 | 2.8 | 96.0 |
| | more than 8 hours per day | 14 | 4.0 | 4.0 | 100.0 |
| | Total | 354 | 100.0 | 100.0 | |

**First-person Shooter Game (FPS)**

**What types of online games genre do you play? First-person shooter game (FPS) eg: Call of Duty, Counter Strike**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | First-person shooter game (FPS) eg: Call of Duty, Counter Strike | 134 | 37.9 | 100.0 | 100.0 |
| Missing | System | 220 | 62.1 | | |
| Total | | 354 | 100.0 | | |

**Multiplayer Online Battle Arena Game (MOBA)**

**What types of online games genre do you play? Multiplayer online battle arena game (MOBA) eg: League of Legends, Dota 2**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Multiplayer online battle arena game (MOBA) eg: League of Legends, Dota 2 | 203 | 57.3 | 100.0 | 100.0 |
| Missing | System | 151 | 42.7 | | |
| Total | | 354 | 100.0 | | |

## Battle Royal Games

**What types of online games genre do you play? Battle Royale games eg: Player's Unknown Battlegrounds (PUBG)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Battle Royale games eg: Player's Unknown Battlegrounds (PUBG) | 129 | 36.4 | 100.0 | 100.0 |
| Missing | System | 225 | 63.6 | | |
| Total | | 354 | 100.0 | | |

## Massively Multiplayer Online Role-Playing Gane (MMORPG)

**What types of online games genre do you play? Massively multiplayer online role-playing game (MMORPG) eg: The Lord of the Rings Online, Star Wars: The Old Republic**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Massively multiplayer online role-playing game (MMORPG) eg: The Lord of the Rings Online, Star Wars: The Old Republic | 51 | 14.4 | 100.0 | 100.0 |
| Missing | System | 303 | 85.6 | | |
| Total | | 354 | 100.0 | | |

## Role-Playing Games

**What types of online games genre do you play? Role Playing Games (RPG) eg: Genshin Impact**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Role Playing Games (RPG) eg: Genshin Impact | 128 | 36.2 | 100.0 | 100.0 |
| Missing | System | 226 | 63.8 | | |
| Total | | 354 | 100.0 | | |

**Others Game**

**What types of online games genre do you play? Others**

|         |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|---------|--------|-----------|---------|---------------|--------------------|
| Valid   | Others | 77        | 21.8    | 100.0         | 100.0              |
| Missing | System | 277       | 78.2    |               |                    |
| Total   |        | 354       | 100.0   |               |                    |

**If "Other" is selected, please specify the type of online game genre you played.**

**If "Other" is selected, please specify the type of online game genre you played.**

|       |                                                | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|------------------------------------------------|-----------|---------|---------------|--------------------|
| Valid |                                                | 277       | 78.2    | 78.2          | 78.2               |
|       | -                                              | 1         | .3      | .3            | 78.5               |
|       | 3A PC GAME                                     | 1         | .3      | .3            | 78.8               |
|       | Adventure and single                           | 1         | .3      | .3            | 79.1               |
|       | Arcade                                         | 1         | .3      | .3            | 79.4               |
|       | ark                                            | 1         | .3      | .3            | 79.7               |
|       | augmented reality                              | 1         | .3      | .3            | 79.9               |
|       | Blackshot, Mobile Legends, and other mobile games | 1      | .3      | .3            | 80.2               |
|       | Candy Crush                                    | 1         | .3      | .3            | 80.5               |
|       | Car racing: Asphalt                            | 1         | .3      | .3            | 80.8               |
|       | Card game, shadowverse                         | 1         | .3      | .3            | 81.1               |
|       | Cards game                                     | 1         | .3      | .3            | 81.4               |
|       | Catering and Food                              | 1         | .3      | .3            | 81.6               |
|       | Clash of clans                                 | 1         | .3      | .3            | 81.9               |
|       | clash of clans （COC）                         | 1         | .3      | .3            | 82.2               |
|       | clash royal , clash of clan                    | 1         | .3      | .3            | 82.5               |
|       | Clash royale                                   | 1         | .3      | .3            | 82.8               |
|       | coc                                            | 2         | .6      | .6            | 83.3               |
|       | D&D                                            | 1         | .3      | .3            | 83.6               |
|       | Dragon City                                    | 1         | .3      | .3            | 83.9               |
|       | Fifa                                           | 1         | .3      | .3            | 84.2               |

| | | | | |
|---|---|---|---|---|
| Forza Horizon 5,Euro Truck Simulator 2 | 1 | .3 | .3 | 84.5 |
| gacha game | 1 | .3 | .3 | 84.7 |
| hay day | 1 | .3 | .3 | 85.0 |
| hayday | 1 | .3 | .3 | 85.3 |
| Honor Of King | 1 | .3 | .3 | 85.6 |
| IDLE RPG | 1 | .3 | .3 | 85.9 |
| indie and strategy | 1 | .3 | .3 | 86.2 |
| kitchen | 1 | .3 | .3 | 86.4 |
| leisure | 1 | .3 | .3 | 86.7 |
| Master Duel | 1 | .3 | .3 | 87.0 |
| Mini game | 1 | .3 | .3 | 87.3 |
| Mobile legends | 1 | .3 | .3 | 87.6 |
| monopoly | 1 | .3 | .3 | 87.9 |
| Monopoly | 1 | .3 | .3 | 88.1 |
| Multiplayer Killing game | 1 | .3 | .3 | 88.4 |
| Nil | 1 | .3 | .3 | 88.7 |
| No Man's Sky | 1 | .3 | .3 | 89.0 |
| Open world, action adventure, indie | 1 | .3 | .3 | 89.3 |
| other | 1 | .3 | .3 | 89.5 |
| Otome game | 1 | .3 | .3 | 89.8 |
| Peace duty | 1 | .3 | .3 | 90.1 |
| Plants vs zombie | 1 | .3 | .3 | 90.4 |
| Plants vs Zombie | 1 | .3 | .3 | 90.7 |
| Platformer | 1 | .3 | .3 | 91.0 |
| pubg | 1 | .3 | .3 | 91.2 |
| PVP: brawl star, Strategic game: Clash of Clan | 1 | .3 | .3 | 91.5 |
| racing game | 1 | .3 | .3 | 91.8 |
| real time strategy game (clash of clans) | 1 | .3 | .3 | 92.1 |
| Rhythm, my horse prince | 1 | .3 | .3 | 92.4 |
| Rhythms games | 1 | .3 | .3 | 92.7 |
| Roblox, Rhythm | 1 | .3 | .3 | 92.9 |
| Rummy pop, clash of clan | 1 | .3 | .3 | 93.2 |

| | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Sims 4 | 1 | .3 | .3 | 93.5 |
| Simulation games, Sandbox games | 1 | .3 | .3 | 93.8 |
| Simulator, Co-op | 1 | .3 | .3 | 94.1 |
| Single player | 1 | .3 | .3 | 94.4 |
| Soulslike series | 1 | .3 | .3 | 94.6 |
| sports | 1 | .3 | .3 | 94.9 |
| Sports | 2 | .6 | .6 | 95.5 |
| sports games(FC24,NBA2K24) | 1 | .3 | .3 | 95.8 |
| Story rich, souls like, 2d platform, horror | 1 | .3 | .3 | 96.0 |
| Strategic video game/ Action game | 1 | .3 | .3 | 96.3 |
| strategy | 1 | .3 | .3 | 96.6 |
| Strategy like Clash of Clans | 1 | .3 | .3 | 96.9 |
| Street fighter 6, fighting game | 1 | .3 | .3 | 97.2 |
| sudoku | 1 | .3 | .3 | 97.5 |
| Survival games/action game | 1 | .3 | .3 | 97.7 |
| third-person hero shooter, real time strategy | 1 | .3 | .3 | 98.0 |
| Turn-based RPG | 1 | .3 | .3 | 98.3 |
| wangzhe | 1 | .3 | .3 | 98.6 |
| 天下布魔 | 1 | .3 | .3 | 98.9 |
| 王者 | 1 | .3 | .3 | 99.2 |
| 王者荣耀 | 2 | .6 | .6 | 99.7 |
| 金铲铲 | 1 | .3 | .3 | 100.0 |
| Total | 354 | 100.0 | 100.0 | |

**How many games do you play in a day?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1-2 games | 258 | 72.9 | 72.9 | 72.9 |
| | 3-4 games | 69 | 19.5 | 19.5 | 92.4 |
| | 5-6 games | 9 | 2.5 | 2.5 | 94.9 |
| | more than 6 games | 18 | 5.1 | 5.1 | 100.0 |
| | Total | 354 | 100.0 | 100.0 | |

**Appendix M:**

**Model Summary Table**

**Model Summary^b**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .579^a | .335 | .317 | 5.96126 | 1.902 |

a. Predictors: (Constant), T_SS, T_Fantasy, T_Recreation, T_SE, T_Competition,

T_Social, T_Coping, T_Skill, T_Escape

b. Dependent Variable: T_IGD

**Coefficients Table**

**Coefficients^a**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 21.312 | 2.228 | | 9.564 | .000 | | |
| | T_SE | -.273 | .070 | -.201 | -3.900 | .000 | .731 | 1.368 |
| | T_Social | .120 | .115 | .068 | 1.044 | .297 | .457 | 2.187 |
| | T_Escape | .556 | .137 | .311 | 4.058 | .000 | .330 | 3.031 |
| | T_Competition | .497 | .103 | .301 | 4.829 | .000 | .499 | 2.004 |
| | T_Coping | .094 | .154 | .048 | .613 | .540 | .316 | 3.166 |
| | T_Skill | -.228 | .133 | -.130 | -1.719 | .087 | .339 | 2.947 |
| | T_Fantasy | -.003 | .113 | -.002 | -.025 | .980 | .406 | 2.464 |
| | T_Recreation | -.272 | .142 | -.106 | -1.911 | .057 | .632 | 1.582 |
| | T_SS | -.065 | .071 | -.046 | -.918 | .359 | .757 | 1.321 |

a. Dependent Variable: T_IGD

**Scatterplot**



Scatterplot
Dependent Variable: T_IGD

**Casewise Diagnostic**

**Casewise Diagnostics[a]**

| Case Number | Std. Residual | T_IGD | Predicted Value | Residual |
|---|---|---|---|---|
| 17 | 2.253 | 39.00 | 25.4677 | 13.53232 |
| 57 | -2.397 | 9.00 | 23.4018 | -14.40182 |
| 65 | -3.042 | 9.00 | 27.2745 | -18.27454 |
| 104 | 2.644 | 33.00 | 17.1178 | 15.88215 |
| 132 | -2.642 | 9.00 | 24.8703 | -15.87032 |
| 189 | -2.364 | 13.00 | 27.2018 | -14.20180 |
| 195 | 2.714 | 41.00 | 24.6981 | 16.30190 |
| 199 | 2.601 | 39.00 | 23.3729 | 15.62713 |
| 219 | 2.190 | 34.00 | 20.8448 | 13.15522 |
| 223 | 2.404 | 39.00 | 24.5568 | 14.44323 |
| 242 | 2.270 | 39.00 | 25.3621 | 13.63791 |
| 265 | -2.776 | 9.00 | 25.6764 | -16.67641 |
| 320 | -2.407 | 11.00 | 25.4616 | -14.46164 |
| 330 | 3.269 | 45.00 | 25.3621 | 19.63791 |

a. Dependent Variable: T_IGD

**Case Summaries**

| | | | Case Number | Mahalanobis Distance | Cook's Distance | Centered Leverage Value |
|---|---|---|---|---|---|---|
| Grouping | 0 | 1 | 17 | 8.33295 | .01411 | .02354 |
| | | 2 | 57 | 1.17166 | .00357 | .00331 |
| | | 3 | 65 | 4.83124 | .01575 | .01365 |
| | | 4 | 104 | 4.44800 | .01109 | .01256 |
| | | 5 | 132 | 2.97368 | .00801 | .00840 |
| | | 6 | 189 | 8.41431 | .01568 | .02377 |
| | | 7 | 195 | 7.86479 | .01940 | .02222 |
| | | 8 | 199 | 13.03171 | .02908 | .03681 |
| | | 9 | 219 | 2.91816 | .00542 | .00824 |
| | | 10 | 223 | 5.78516 | .01151 | .01634 |
| | | 11 | 242 | 11.01854 | .01875 | .03113 |
| | | 12 | 265 | 1.93426 | .00649 | .00546 |
| | | 13 | 320 | 23.91474 | .04719 | .06756 |
| | | 14 | 330 | 11.01854 | .03887 | .03113 |
| | | Total    N | | 14 | 14 | 14 |
| | 1 | 1 | 1 | 8.32716 | .00515 | .02352 |
| | | 2 | 2 | 5.75983 | .00025 | .01627 |
| | | 3 | 3 | 8.47406 | .00094 | .02394 |
| | | 4 | 4 | 6.58194 | .00029 | .01859 |
| | | 5 | 5 | 3.28329 | .00005 | .00927 |
| | | 6 | 6 | 4.81543 | .00012 | .01360 |
| | | 7 | 7 | 1.17166 | .00010 | .00331 |
| | | 8 | 8 | 9.21197 | .00012 | .02602 |
| | | 9 | 9 | 19.94711 | .00337 | .05635 |
| | | 10 | 10 | 26.16427 | .01690 | .07391 |
| | | 11 | 11 | 7.92543 | .00028 | .02239 |
| | | 12 | 12 | 4.22643 | .00032 | .01194 |
| | | 13 | 13 | 5.86655 | .00039 | .01657 |
| | | 14 | 14 | 10.00742 | .00218 | .02827 |
| | | 15 | 15 | 19.61432 | .00413 | .05541 |
| | | 16 | 16 | 14.11028 | .00002 | .03986 |
| | | 17 | 18 | 21.30700 | .01561 | .06019 |

| | | | | |
|---|---|---|---|---|
| 18 | 19 | 5.36565 | .00041 | .01516 |
| 19 | 20 | 5.49592 | .00189 | .01553 |
| 20 | 21 | 6.45783 | .00024 | .01824 |
| 21 | 22 | 18.04290 | .00839 | .05097 |
| 22 | 23 | 5.12293 | .00008 | .01447 |
| 23 | 24 | 17.23293 | .01082 | .04868 |
| 24 | 25 | 7.32215 | .00019 | .02068 |
| 25 | 26 | 49.29036 | .02093 | .13924 |
| 26 | 27 | 7.88761 | .00183 | .02228 |
| 27 | 28 | 3.42879 | .00353 | .00969 |
| 28 | 29 | 3.61753 | .00068 | .01022 |
| 29 | 30 | 13.53850 | .00197 | .03824 |
| 30 | 31 | 4.60582 | .00000 | .01301 |
| 31 | 32 | 13.39182 | .00177 | .03783 |
| 32 | 33 | 5.85723 | .00107 | .01655 |
| 33 | 34 | 7.38607 | .00193 | .02086 |
| 34 | 35 | 2.24816 | .00000 | .00635 |
| 35 | 36 | 3.03727 | .00016 | .00858 |
| 36 | 37 | 27.95363 | .00006 | .07897 |
| 37 | 38 | 5.21107 | .00010 | .01472 |
| 38 | 39 | 21.14000 | .00305 | .05972 |
| 39 | 40 | 3.93022 | .00009 | .01110 |
| 40 | 41 | 14.51389 | .01467 | .04100 |
| 41 | 42 | 12.38486 | .01210 | .03499 |
| 42 | 43 | 20.28953 | .01282 | .05732 |
| 43 | 44 | 12.86583 | .00155 | .03634 |
| 44 | 45 | 10.46465 | .00048 | .02956 |
| 45 | 46 | 13.76847 | .00152 | .03889 |
| 46 | 47 | 23.75377 | .00023 | .06710 |
| 47 | 48 | 32.32706 | .00370 | .09132 |
| 48 | 49 | 7.73720 | .00021 | .02186 |
| 49 | 50 | 5.45285 | .00398 | .01540 |
| 50 | 51 | 5.77251 | .00027 | .01631 |
| 51 | 52 | 17.23612 | .00402 | .04869 |
| 52 | 53 | 5.38490 | .00383 | .01521 |

| | | | | |
|---|---|---|---|---|
| 53 | 54 | 3.53122 | .00057 | .00998 |
| 54 | 55 | 17.49905 | .00047 | .04943 |
| 55 | 56 | 3.35800 | .00001 | .00949 |
| 56 | 58 | 3.66695 | .00179 | .01036 |
| 57 | 59 | 9.81332 | .00072 | .02772 |
| 58 | 60 | 8.51163 | .00633 | .02404 |
| 59 | 61 | 12.26682 | .00150 | .03465 |
| 60 | 62 | 3.86412 | .00309 | .01092 |
| 61 | 63 | 2.73746 | .00004 | .00773 |
| 62 | 64 | 4.27894 | .00037 | .01209 |
| 63 | 66 | 4.74744 | .00015 | .01341 |
| 64 | 67 | 24.01048 | .00088 | .06783 |
| 65 | 68 | 8.18905 | .00053 | .02313 |
| 66 | 69 | 24.84793 | .00630 | .07019 |
| 67 | 70 | 16.96881 | .00054 | .04793 |
| 68 | 71 | 7.69299 | .00048 | .02173 |
| 69 | 72 | 17.32903 | .00176 | .04895 |
| 70 | 73 | 2.32936 | .00001 | .00658 |
| 71 | 74 | 21.63565 | .01376 | .06112 |
| 72 | 75 | 13.78452 | .00137 | .03894 |
| 73 | 76 | 9.02727 | .00136 | .02550 |
| 74 | 77 | 17.03988 | .00082 | .04814 |
| 75 | 78 | 1.48431 | .00022 | .00419 |
| 76 | 79 | 9.71103 | .00135 | .02743 |
| 77 | 80 | 14.21613 | .00002 | .04016 |
| 78 | 81 | 10.99788 | .00334 | .03107 |
| 79 | 82 | 6.00061 | .00054 | .01695 |
| 80 | 83 | 19.53754 | .00321 | .05519 |
| 81 | 84 | 5.41554 | .00001 | .01530 |
| 82 | 85 | 4.74669 | .00353 | .01341 |
| 83 | 86 | 17.88251 | .01210 | .05052 |
| 84 | 87 | 23.92515 | .00000 | .06759 |
| 85 | 88 | 9.49045 | .00107 | .02681 |
| 86 | 89 | 14.30173 | .00523 | .04040 |
| 87 | 90 | 14.89258 | .00837 | .04207 |

| 88 | 91 | 5.01345 | .00063 | .01416 |
| 89 | 92 | 2.40267 | .00002 | .00679 |
| 90 | 93 | 9.20376 | .00001 | .02600 |
| 91 | 94 | 3.71999 | .00273 | .01051 |
| 92 | 95 | 3.42129 | .00007 | .00966 |
| 93 | 96 | 36.82145 | .01261 | .10402 |
| 94 | 97 | 5.43171 | .00296 | .01534 |
| 95 | 98 | 16.05722 | .00048 | .04536 |
| 96 | 99 | 17.82504 | .00345 | .05035 |
| 97 | 100 | 5.93715 | .00529 | .01677 |
| 98 | 101 | 17.06834 | .00096 | .04822 |
| 99 | 102 | 4.16083 | .00308 | .01175 |
| 100 | 103 | 7.50816 | .00016 | .02121 |
| 101 | 105 | 9.57439 | .00125 | .02705 |
| 102 | 106 | 16.51190 | .00523 | .04664 |
| 103 | 107 | 14.57724 | .00098 | .04118 |
| 104 | 108 | 11.17790 | .00006 | .03158 |
| 105 | 109 | 8.49378 | .00117 | .02399 |
| 106 | 110 | 10.46560 | .00203 | .02956 |
| 107 | 111 | 8.53295 | .00006 | .02410 |
| 108 | 112 | 13.06067 | .00113 | .03689 |
| 109 | 113 | 11.44704 | .00267 | .03234 |
| 110 | 114 | 6.37264 | .00294 | .01800 |
| 111 | 115 | 18.79469 | .00692 | .05309 |
| 112 | 116 | 16.66701 | .00019 | .04708 |
| 113 | 117 | 6.94988 | .00808 | .01963 |
| 114 | 118 | 12.79231 | .00002 | .03614 |
| 115 | 119 | 6.30519 | .00023 | .01781 |
| 116 | 120 | 11.51469 | .00329 | .03253 |
| 117 | 121 | 7.18997 | .00177 | .02031 |
| 118 | 122 | 2.37589 | .00175 | .00671 |
| 119 | 123 | 4.57735 | .00091 | .01293 |
| 120 | 124 | 10.98870 | .00341 | .03104 |
| 121 | 125 | 14.71170 | .00045 | .04156 |
| 122 | 126 | 18.87593 | .00693 | .05332 |

| | 123 | 127 | 10.15339 | .00022 | .02868 |
|---|---|---|---|---|---|
| | 124 | 128 | 10.10996 | .00000 | .02856 |
| | 125 | 129 | 3.53263 | .00087 | .00998 |
| | 126 | 130 | 1.37438 | .00142 | .00388 |
| | 127 | 131 | 3.10019 | .00217 | .00876 |
| | 128 | 133 | 5.70451 | .00450 | .01611 |
| | 129 | 134 | 1.72475 | .00219 | .00487 |
| | 130 | 135 | 6.10888 | .00033 | .01726 |
| | 131 | 136 | 3.99531 | .00091 | .01129 |
| | 132 | 137 | 2.76703 | .00083 | .00782 |
| | 133 | 138 | 7.57429 | .00476 | .02140 |
| | 134 | 139 | 2.13540 | .00001 | .00603 |
| | 135 | 140 | 6.42577 | .00469 | .01815 |
| | 136 | 141 | 20.08654 | .00387 | .05674 |
| | 137 | 142 | 4.03241 | .00071 | .01139 |
| | 138 | 143 | 4.13361 | .00010 | .01168 |
| | 139 | 144 | 4.82138 | .00162 | .01362 |
| | 140 | 145 | 3.97974 | .00434 | .01124 |
| | 141 | 146 | 1.79287 | .00161 | .00506 |
| | 142 | 147 | 1.50837 | .00163 | .00426 |
| | 143 | 148 | 1.17166 | .00010 | .00331 |
| | 144 | 149 | 1.17166 | .00036 | .00331 |
| | 145 | 150 | 19.08753 | .00152 | .05392 |
| | 146 | 151 | 3.08050 | .00111 | .00870 |
| | 147 | 152 | 11.26740 | .00212 | .03183 |
| | 148 | 153 | 1.53489 | .00000 | .00434 |
| | 149 | 154 | 9.83609 | .00545 | .02779 |
| | 150 | 155 | 3.48972 | .00001 | .00986 |
| | 151 | 156 | 3.15293 | .00183 | .00891 |
| | 152 | 157 | 10.89637 | .00203 | .03078 |
| | 153 | 158 | 5.97146 | .00038 | .01687 |
| | 154 | 159 | 9.81841 | .00006 | .02774 |
| | 155 | 160 | 2.36659 | .00027 | .00669 |
| | 156 | 161 | 4.09079 | .00007 | .01156 |
| | 157 | 162 | 13.71329 | .00000 | .03874 |

| 158 | 163 | 5.13845 | .00163 | .01452 |
| 159 | 164 | 28.34755 | .00367 | .08008 |
| 160 | 165 | 7.26901 | .00005 | .02053 |
| 161 | 166 | 4.75720 | .00044 | .01344 |
| 162 | 167 | 16.16192 | .00050 | .04566 |
| 163 | 168 | 7.18402 | .00001 | .02029 |
| 164 | 169 | 1.90708 | .00054 | .00539 |
| 165 | 170 | 2.19741 | .00133 | .00621 |
| 166 | 171 | 4.86016 | .00488 | .01373 |
| 167 | 172 | 6.94176 | .00008 | .01961 |
| 168 | 173 | 4.96126 | .00016 | .01401 |
| 169 | 174 | 4.20139 | .00004 | .01187 |
| 170 | 175 | 6.41198 | .00090 | .01811 |
| 171 | 176 | 4.59782 | .00041 | .01299 |
| 172 | 177 | 6.20977 | .00079 | .01754 |
| 173 | 178 | 16.09713 | .00197 | .04547 |
| 174 | 179 | 18.05290 | .00153 | .05100 |
| 175 | 180 | 5.27051 | .00146 | .01489 |
| 176 | 181 | 23.60607 | .01428 | .06668 |
| 177 | 182 | 7.69964 | .00389 | .02175 |
| 178 | 183 | 2.22756 | .00010 | .00629 |
| 179 | 184 | 11.12851 | .00008 | .03144 |
| 180 | 185 | 14.39460 | .00508 | .04066 |
| 181 | 186 | 3.65583 | .00030 | .01033 |
| 182 | 187 | 6.38795 | .00001 | .01805 |
| 183 | 188 | 7.60897 | .00135 | .02149 |
| 184 | 190 | 34.58107 | .00108 | .09769 |
| 185 | 191 | 14.70852 | .00075 | .04155 |
| 186 | 192 | 10.44585 | .00144 | .02951 |
| 187 | 193 | 4.55653 | .00032 | .01287 |
| 188 | 194 | 7.20045 | .00012 | .02034 |
| 189 | 196 | 8.38623 | .00685 | .02369 |
| 190 | 197 | 8.53552 | .00302 | .02411 |
| 191 | 198 | 11.28537 | .00280 | .03188 |
| 192 | 200 | 20.34052 | .00041 | .05746 |

| | | | | |
|---|---|---|---|---|
| 193 | 201 | 18.76925 | .01715 | .05302 |
| 194 | 202 | 6.52668 | .00008 | .01844 |
| 195 | 203 | 6.48777 | .00010 | .01833 |
| 196 | 204 | 3.84575 | .00002 | .01086 |
| 197 | 205 | 13.05262 | .00003 | .03687 |
| 198 | 206 | 4.06647 | .00005 | .01149 |
| 199 | 207 | 4.03208 | .00010 | .01139 |
| 200 | 208 | 18.27764 | .00728 | .05163 |
| 201 | 209 | 5.84725 | .00124 | .01652 |
| 202 | 210 | 1.17166 | .00036 | .00331 |
| 203 | 211 | 5.36580 | .00038 | .01516 |
| 204 | 212 | 10.63610 | .00416 | .03005 |
| 205 | 213 | 3.86928 | .00010 | .01093 |
| 206 | 214 | 1.17166 | .00036 | .00331 |
| 207 | 215 | 2.74155 | .00297 | .00774 |
| 208 | 216 | 4.60582 | .00023 | .01301 |
| 209 | 217 | 2.76146 | .00055 | .00780 |
| 210 | 218 | 6.56878 | .00148 | .01856 |
| 211 | 220 | 15.58195 | .00000 | .04402 |
| 212 | 221 | 5.52097 | .00008 | .01560 |
| 213 | 222 | 9.00140 | .00032 | .02543 |
| 214 | 224 | 5.41282 | .00115 | .01529 |
| 215 | 225 | 7.68350 | .00624 | .02170 |
| 216 | 226 | 7.08944 | .00489 | .02003 |
| 217 | 227 | 7.01305 | .00725 | .01981 |
| 218 | 228 | 5.31208 | .00004 | .01501 |
| 219 | 229 | 6.73742 | .00121 | .01903 |
| 220 | 230 | 3.27053 | .00003 | .00924 |
| 221 | 231 | 3.89012 | .00206 | .01099 |
| 222 | 232 | 7.66008 | .00035 | .02164 |
| 223 | 233 | 1.78495 | .00003 | .00504 |
| 224 | 234 | 10.52348 | .00052 | .02973 |
| 225 | 235 | 15.18231 | .00078 | .04289 |
| 226 | 236 | 16.69336 | .00464 | .04716 |
| 227 | 237 | 7.73741 | .00073 | .02186 |

| | | | | |
|---|---|---|---|---|
| 228 | 238 | 8.03450 | .00008 | .02270 |
| 229 | 239 | 5.78045 | .00257 | .01633 |
| 230 | 240 | 7.49452 | .00089 | .02117 |
| 231 | 241 | 19.86881 | .01050 | .05613 |
| 232 | 243 | 16.79025 | .01165 | .04743 |
| 233 | 244 | 2.42779 | .00075 | .00686 |
| 234 | 245 | 25.56595 | .00206 | .07222 |
| 235 | 246 | 5.84021 | .00030 | .01650 |
| 236 | 247 | 15.18880 | .00133 | .04291 |
| 237 | 248 | 19.55483 | .02094 | .05524 |
| 238 | 249 | 8.96743 | .00034 | .02533 |
| 239 | 250 | 20.10792 | .00065 | .05680 |
| 240 | 251 | 20.12941 | .00278 | .05686 |
| 241 | 252 | 2.42735 | .00045 | .00686 |
| 242 | 253 | 5.97812 | .00128 | .01689 |
| 243 | 254 | 4.46144 | .00003 | .01260 |
| 244 | 255 | 9.81657 | .00131 | .02773 |
| 245 | 256 | .93655 | .00012 | .00265 |
| 246 | 257 | 2.36605 | .00037 | .00668 |
| 247 | 258 | 2.73123 | .00051 | .00772 |
| 248 | 259 | 12.80616 | .00412 | .03618 |
| 249 | 260 | 2.10755 | .00110 | .00595 |
| 250 | 261 | 3.66695 | .00179 | .01036 |
| 251 | 262 | 4.01101 | .00029 | .01133 |
| 252 | 263 | 3.96140 | .00023 | .01119 |
| 253 | 264 | 2.81812 | .00314 | .00796 |
| 254 | 266 | 5.16226 | .00314 | .01458 |
| 255 | 267 | 3.92865 | .00171 | .01110 |
| 256 | 268 | 2.03681 | .00030 | .00575 |
| 257 | 269 | 5.39293 | .00494 | .01523 |
| 258 | 270 | 5.19048 | .00425 | .01466 |
| 259 | 271 | 1.70197 | .00023 | .00481 |
| 260 | 272 | 2.30862 | .00054 | .00652 |
| 261 | 273 | 2.88778 | .00062 | .00816 |
| 262 | 274 | 1.54720 | .00026 | .00437 |

| | | | | |
|---|---|---|---|---|
| 263 | 275 | 3.79413 | .00005 | .01072 |
| 264 | 276 | 1.17166 | .00186 | .00331 |
| 265 | 277 | 18.31009 | .00231 | .05172 |
| 266 | 278 | 8.92853 | .00010 | .02522 |
| 267 | 279 | 9.43164 | .00048 | .02664 |
| 268 | 280 | 4.76763 | .00123 | .01347 |
| 269 | 281 | 10.17296 | .00010 | .02874 |
| 270 | 282 | 1.09847 | .00000 | .00310 |
| 271 | 283 | 1.57221 | .00007 | .00444 |
| 272 | 284 | 4.63691 | .00317 | .01310 |
| 273 | 285 | 8.42875 | .00161 | .02381 |
| 274 | 286 | 3.94323 | .00038 | .01114 |
| 275 | 287 | 9.59767 | .00056 | .02711 |
| 276 | 288 | 4.21686 | .00155 | .01191 |
| 277 | 289 | 6.39716 | .00496 | .01807 |
| 278 | 290 | 9.68825 | .00100 | .02737 |
| 279 | 291 | 3.41153 | .00011 | .00964 |
| 280 | 292 | 3.99537 | .00281 | .01129 |
| 281 | 293 | 4.96752 | .00573 | .01403 |
| 282 | 294 | 14.52883 | .00503 | .04104 |
| 283 | 295 | 14.15970 | .01526 | .04000 |
| 284 | 296 | 10.59727 | .00078 | .02994 |
| 285 | 297 | 4.71482 | .00144 | .01332 |
| 286 | 298 | 6.63695 | .00053 | .01875 |
| 287 | 299 | 2.62725 | .00172 | .00742 |
| 288 | 300 | 7.16644 | .00192 | .02024 |
| 289 | 301 | 14.76843 | .00079 | .04172 |
| 290 | 302 | 7.77368 | .00022 | .02196 |
| 291 | 303 | 6.58728 | .00086 | .01861 |
| 292 | 304 | 6.37404 | .00157 | .01801 |
| 293 | 305 | 4.72258 | .00128 | .01334 |
| 294 | 306 | 5.39737 | .00018 | .01525 |
| 295 | 307 | 20.07190 | .00468 | .05670 |
| 296 | 308 | 8.80847 | .00102 | .02488 |
| 297 | 309 | 6.53145 | .00070 | .01845 |

| | | | | |
|---|---|---|---|---|
| 298 | 310 | 9.01166 | .00011 | .02546 |
| 299 | 311 | 8.56436 | .00411 | .02419 |
| 300 | 312 | 6.13920 | .00288 | .01734 |
| 301 | 313 | 24.64464 | .00881 | .06962 |
| 302 | 314 | 7.67436 | .00170 | .02168 |
| 303 | 315 | 14.85774 | .00513 | .04197 |
| 304 | 316 | 25.08248 | .00206 | .07085 |
| 305 | 317 | 2.92916 | .00088 | .00827 |
| 306 | 318 | 14.53006 | .00205 | .04105 |
| 307 | 319 | 12.35602 | .00179 | .03490 |
| 308 | 321 | 4.60453 | .00012 | .01301 |
| 309 | 322 | 4.48385 | .00031 | .01267 |
| 310 | 323 | 5.47730 | .00161 | .01547 |
| 311 | 324 | 1.17166 | .00022 | .00331 |
| 312 | 325 | 2.35024 | .00203 | .00664 |
| 313 | 326 | 6.18383 | .00233 | .01747 |
| 314 | 327 | 9.00958 | .00511 | .02545 |
| 315 | 328 | 1.20136 | .00058 | .00339 |
| 316 | 329 | 8.49662 | .00525 | .02400 |
| 317 | 331 | 16.36869 | .00211 | .04624 |
| 318 | 332 | 4.93475 | .00002 | .01394 |
| 319 | 333 | 12.44672 | .00542 | .03516 |
| 320 | 334 | 19.27854 | .01610 | .05446 |
| 321 | 335 | 6.57275 | .00047 | .01857 |
| 322 | 336 | 6.02478 | .00024 | .01702 |
| 323 | 337 | 6.49352 | .00159 | .01834 |
| 324 | 338 | 4.60582 | .00348 | .01301 |
| 325 | 339 | 1.17166 | .00004 | .00331 |
| 326 | 340 | 2.07181 | .00095 | .00585 |
| 327 | 341 | 1.17166 | .00022 | .00331 |
| 328 | 342 | 17.15583 | .00760 | .04846 |
| 329 | 343 | 7.21973 | .00056 | .02039 |
| 330 | 344 | 5.21231 | .00000 | .01472 |
| 331 | 345 | 2.85891 | .00083 | .00808 |
| 332 | 346 | 7.68030 | .00016 | .02170 |

| | | | | | |
|---|---|---|---|---|---|
| | 333 | 347 | 1.50690 | .00000 | .00426 |
| | 334 | 348 | 13.35463 | .00137 | .03772 |
| | 335 | 349 | 12.04017 | .00243 | .03401 |
| | 336 | 350 | 10.17185 | .00039 | .02873 |
| | 337 | 351 | 11.43968 | .00076 | .03232 |
| | 338 | 352 | 12.52661 | .00299 | .03539 |
| | 339 | 353 | 6.65175 | .00434 | .01879 |
| | 340 | 354 | 21.02897 | .00249 | .05940 |
| | 341 | 355 | 4.10169 | .00491 | .01159 |
| | Total    N | | 341 | 341 | 341 |
| Total    N | | | 355 | 355 | 355 |

**Anova Table**

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6149.619 | 9 | 683.291 | 19.228 | .000[b] |
| | Residual | 12224.584 | 344 | 35.537 | | |
| | Total | 18374.203 | 353 | | | |

a. Dependent Variable: T_IGD

b. Predictors: (Constant), T_SS, T_Fantasy, T_Recreation, T_SE, T_Competition, T_Social,

T_Coping, T_Skill, T_Escape