



EXAMINING THE ROLE OF GAMING ADDICTION AND PERCEIVED STRESS ON
AGGRESSIVE BEHAVIOR AMONG YOUNG ADULTS IN MALAYSIA

JESTON LEE TZE XIANG
KHOR MING
OOI PHEY JOO

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Jeston Lee Tze Xiang, Khor Ming and Ooi Phey Joo.
Universiti Tunku Abdul Rahman

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JESTON LEE TZE XIANG

KHOR MING

OOI PHEY JOO

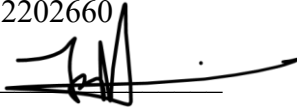
DECLARATION

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

Name: JESTON LEE TZE XIANG

Student ID: 2202660

Signed: _____



Date: 13 April 2026

Name: KHOR MING

Student ID: 2203273

Signed: _____



Date: 13 April 2026

Name: OOI PHEY JOO

Student ID: 2202929

Signed: _____



Date: 13 April 2026

APPROVAL FORM

This research paper attached hereto, entitled “Examining the Role of Gaming Addiction and Perceived Stress on Aggressive Behavior among Young Adults in Malaysia”, prepared and submitted by “Jeston Lee Tze Xiang, Khor Ming, Ooi Phey Joo” in partial fulfilment of the requirements for the Bachelor of Social Science (Hons) Psychology, is hereby accepted.



Supervisor

Ms. Tee Geok Hong

Date: 20 April 2026

Abstract

This study examines the increasing prevalence of aggressive behavior among young adults in Malaysia, a growing concern due to its detrimental impacts on individual functioning, interpersonal relationships, and societal well-being. Grounded in the General Aggression Model (GAM), the study seeks to examine the effects of gaming addiction and perceived stress on aggressive behavior among young adults. A quantitative, cross-sectional research design was employed, with data collected from 218 Malaysian young adults (47.2% male, 52.8% female; M age = 21.61). Data were collected through both physical distribution on campus and online survey platforms (e.g., Instagram, Xiaohongshu), using purposive and convenience sampling methods. Standardised instruments included the Gaming Addiction Scale-7 (GAS-7), Perceived Stress Scale-10 (PSS-10), and Buss-Perry Aggression Questionnaire-Short Form (BPAQ-SF). Multiple linear regression analysis revealed that both gaming addiction ($\beta = .523$) and perceived stress ($\beta = .349$) significantly and positively predicted aggressive behavior, with gaming addiction emerging as the stronger predictor. Theoretically, the findings support the GAM, demonstrating that both gaming addiction and perceived stress contribute to aggression. The results further suggest that aggressive behavior may be more strongly influenced by gaming addiction, potentially due to its role in reinforcing habitual engagement in high-arousal and competitive online environments that may reduce impulse control and increase aggressive tendencies. Practically, the results offer important implications for young adults, educational institutions, and mental health practitioners by emphasising the need to promote responsible gaming habits and effective stress management strategies to reduce aggressive behavior among young adults.

Keywords: gaming addiction, perceived stress, aggressive behavior, young adults, Malaysia

Subject Area: H1-99 Social Sciences (General)

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List of Abbreviations

Abbreviations

BPAQ-SF	Buss–Perry Aggression Questionnaire–Short Form
CBT	Cognitive-Behavioural Therapy
CD	Cook’s Distance
CL	Centered Leverage
GAM	General Aggression Model
GAS-7	Gaming Addiction Scale–7
ICD-11	International Classification of Diseases, 11th Revision
IGD	Internet Gaming Disorder
K-S	Kolmogorov-Smirnov
MD	Mahalanobis Distance
MLR	Multiple Linear Regression
PSS-10	Perceived Stress Scale–10
Q-Q Plot	Quantile-Quantile Plot
SERC	Scientific and Ethical Review Committee
SERC	Scientific and Ethical Review Committee
UTAR	Universiti Tunku Abdul Rahman
VIF	Variance Inflation Factor
WHO	World Health Organization

Chapter 1

Introduction

1.1 Background of Study

Aggressive behavior is defined as a behavior with the intention to cause harm or damage to others who have the motive to prevent such damage or harm (Allen & Anderson, 2017; Austerman, 2017). Aggression is usually categorized into three main categories, which are physical, verbal (Crotty et al., 2013), and relational aggression (Voulgaridou & Kokkinos, 2015). It has been a topic of central focus not only exists in the psychological field, but also across educational, social, and other related domains. It plays a significant role when it comes to individual functioning, interpersonal relationships, and societal well-being. In the Malaysian context, concerning aggressive behavior cases among youth have gained increasing attention, with media coverage highlighting several high-profile incidents within educational settings, such as homicide and bullying (Asmi, 2025; Chan, 2025; The Straits Times, 2025). As such, understanding the underlying contributors to aggression among young adults in Malaysia has become an important area of inquiry.

With the rising prevalence of violent and aggressive behavior, significantly among youth and young adults, who are constantly being exposed to various kinds of social input (Borrego-Ruiz & Borrego, 2025), emotional and cognitive changes (Su et al., 2010), which might heighten their susceptibility to aggressive behavior. These social inputs include but are not limited to interactions with peers, exposure to social media content, gaming, etc. According to the World Health Organization (2024), homicides and antisocial aggressive behavior account for 40% of all global homicide cases each year involving youth aged 15-19 years old. This age group also held the highest homicide rate among Malaysians in 2019, at 4.3% (Ridzuan, 2024).

Gaming is generally understood as an event involving the play of video or electronic games on devices. However, excessive gaming led to gaming addiction, a disorder that has been categorized into the International Classification of Diseases (ICD-11) in May 2019, by the World Health Organization (WHO) (Higuchi et al., 2021). According to WHO (n.d.), gaming addiction can be defined as having difficulties in taking control over gaming habits, placing priority on gaming, to the point that it overrides other responsibilities and daily tasks, but continues this act despite experiencing harmful outcomes. Gaming addiction develops gradually; initially, individuals use it as a coping mechanism, or just to temporarily escape and avoid stress, real-life demands or responsibilities (Sinha, 2024). In the long run, this behavior will be reinforced through a reward mechanism (Lee et al., 2014). For instance, in-game achievement, constant stimulation, or action that is not possible in real life. Ultimately, it results in gaming addiction and cause severe emotional, mental, or physiological reactions (Hussain et al., 2012).

In this era of technology, gaming has been even more accessible and reachable, with just a click of a mobile phone, tablet, or laptop. With easy access, it has unquestionably evolved into one of the dominant recreational activities among young adults. According to Abdul Kadir et al. (2025), the play time of video games rose from 16.38 to 20.82 hours per week across countries. While gaming does have some positive effects, such as providing entertainment, stress relief, or even building social connections (Ballard & Spencer, 2023; Hazel et al., 2022), being addicted to gaming raises concerns about its psychological and behavioral effects. Those who use gaming as a coping mechanism might face problematic patterns when it comes to interfering with real life functioning. With this being said, along with the rise of gaming, understanding how prolonged exposure to high-arousal gaming environments influences their aggressive behavior has become an important area of inquiry.

Perceived stress is defined as an individual's subjective feeling that the pressures or demands encountered surpass the personal resources they have to cope with them effectively

(Mahamid & Bdier, 2021). Perceived stress is closely associated with negative emotion and behavioral outcome, including aggression (Du et al., 2018; Mohamed et al., 2024). With stressors like academic pressures, financial concerns, career uncertainty, and interpersonal challenges, it unquestionably increases young adults' vulnerability when it comes to perceived stress. To support this concern, Idrus and Robinson (2024), conducted research across four public universities in Klang Valley, Malaysia, and found that 23.7% of students exhibited moderate to extremely severe stress due to the reasons listed. According to Spaan et al. (2024), without adequate coping mechanisms, an individual is more likely to express frustration through aggressive or hostile behavior when it comes to the heightening of stress. Thus, these growing mental health concerns among young adults suggest that stress levels are constantly rising and making it crucial to know if perceived stress may be one of the factors that trigger aggressive responses among young adults when navigating demanding life transitions.

Examining gaming addiction, perceived stress, and aggressive behavior together is meaningful because these constructs are conceptually linked through their impact on emotional regulation and behavioral functioning. Gaming addiction has been associated with difficulties managing impulses and coping with negative emotions (Blasi et al., 2019), while perceived stress reflects an individual's subjective appraisal of demands that may overwhelm their regulatory capacities. Both factors can heighten emotional instability, reduce frustration tolerance, and increase vulnerability to maladaptive behavioral responses (Lin et al., 2021). Aggressive behavior, in turn, is often understood as an externalised reaction that emerges when emotional regulation is compromised. By exploring how these psychological elements interact, the present study builds a foundational understanding of the mechanisms that may contribute to aggression, providing a coherent conceptual basis for the investigation that follows.

1.2 Problem Statement

Recent incidents of youth violence in Malaysia have raised a growing concern about aggressive behavior among adolescents aged 13 to 16 and a young adult aged 21. The recent cases under discussion include a knife attack at Taylor's University campus, a bullying related death of a boarding school student in Sabah, which is also known as the "Zara Case", and a shocking secondary school murder case in Selangor that were reported earlier in July and October 2025 respectively (Azmi, 2025; Chan, 2025; Hamdan, 2025). Such incidents reflect wider trends in youth aggression across countries. According to the Institute for Public Health (2022), approximately 16% of Malaysian adolescents reported involvement in physical fights, 16.2% reported being attacked within the past year, and 8.6% experienced bullying in the past 30 days. Although total crime, which includes assault and property related cases showed a slight 4.1% decrease from 52974 cases in 2021 to 50813 in 2022, aggression remains a critical concern in Malaysia, particularly among the youth population (Department of Statistics Malaysia, 2023).

When examining potential contributors to these patterns, problematic gaming behaviour like gaming addiction has emerged as a significant factor within the Malaysian context. In 2021, a study by Jaafar et al. (2021) among 411 undergraduate students in a Malaysian university reported that 52.8% of the participants had high Internet Gaming Disorder (IGD). Additionally, according to Ismail et al. (2021), the prevalence of internet addiction among Malaysian adolescents was 83.5% with 2.5% specifically for IGD. This is further supported by another study conducted in 2023, in which Mohamed et al. (2023) stated that 3.5% of Malaysian adolescents met the criteria for IGD. More recently, online gaming addiction was found to be particularly prominent among adolescents aged 13 to 17 (Mariot et al., 2025). Mariot et al. (2025) suggest that adolescents are more vulnerable to online gaming addiction due to different parenting styles (e.g., maternal authoritarian parenting, paternal neglectful parenting) and peer influence. These findings highlight the rising accessibility and impact of online gaming. Given that excessive gaming has been linked to heightened

irritability (Yen et al., 2017) and impulsivity (Şalvarlı & Griffiths, 2019), these patterns may contribute to increased aggressive tendencies among youth.

Simultaneously, increased levels of perceived stress remain a common issue among Malaysian youth. This has suggested another psychological pathway that may relate to aggressive behavior (Gonultas et al., 2025). To illustrate, a study has found that among undergraduate students in Malaysia found that there was 37.7% reported experiencing high levels of perceived stress, which reflects a significant proportion of students who appraise their academic, interpersonal, and environmental demands as overwhelming and beyond their coping ability (Fam & Teo, 2018). In addition, a more recent finding indicates that 44.6% of undergraduate students experience moderate to severe stress (Wong et al., 2023). Taken together, these findings suggest a rising trend in perceived stress among university students, with a rate increasing from 37.7% in 2018 to 44.6% in 2023. Moreover, the fact that 76.6% of healthcare students reported experiencing moderate stress (Shariff & Azlan, 2021) highlights how pervasive stress has become across different student populations, reinforcing the widespread nature of stress within Malaysia's young adult population.

Collectively, the persistent concerns surrounding youth aggression, increasing prevalence of gaming addiction, and consistently increased levels of perceived stress among Malaysian young adults highlight the need for more comprehensive empirical studies of how these factors may be correlated. Although each construct has been studied individually, there is still limited research that considers the association between gaming addiction, perceived stress, and aggressive behavior. It is crucial to understand these associations with aggression to inform early prevention efforts, shape targeted mental health interventions and support the well-being of young adults within Malaysia's increasingly digitalised and high-pressure social environment. Hence, this study aims to examine the roles of gaming addiction and perceived stress on aggressive behavior among young adults in Malaysia.

1.3 Research Objectives

1. To examine whether gaming addiction predicts aggressive behavior among young adults in Malaysia.
2. To examine whether perceived stress predicts aggressive behavior among young adults in Malaysia.

1.4 Research Questions

1. Does gaming addiction positively predicts aggressive behavior among young adults in Malaysia?
2. Does perceived stress positively predicts aggressive behavior among young adults in Malaysia?

1.5 Research Hypotheses

H1: Gaming addiction positively predicts aggressive behavior among young adults in Malaysia.

H2: Perceived stress positively predicts aggressive behavior among young adults in Malaysia.

1. 6 Significance of Study

1.6.1 Knowledge Contribution

This study is significant as it can fill in the existing literature gaps by exploring whether both gaming addiction and perceived stress predict aggressive behavior. Previous studies have highlighted the association between stress and aggression (Mandal & Roy, 2024), along with gaming addiction and aggressive behavior (Akbaş & İşleyen, 2024), yet there is limited research has combined these three variables together, particularly among young adults. Besides that, many existing studies focus on international populations, for instance Turkey, China, and India (Akbaş & İşleyen, 2024; Huang et al., 2017; Mandal &

Roy, 2024), with relatively few research conducted in the Malaysian context among young adults. Additionally, studies in Malaysia's past studies on this research topic mostly focus on several common outcomes of gaming addiction, such as academic performance, family relationships and physical health performance, rather than aggressive behavior (Subbiah & Loodusamy, 2025; Zakaria & Adnan, 2022). As a result, by combining gaming addiction, perceived stress, and aggressive behavior in a single study among Malaysian young adults, this study aims to enrich the existing literature and provide more comprehensive insights. This study can help researchers in Malaysia to better understand how these variables interact and contribute to aggressive behavior in a cultural setting that may differ from other regions.

In addition, there is an inconsistency in research findings regarding the association between variables examined. A study by Mandal and Roy (2024) found a positive association between stress and aggression, but Barrington and Ferguson (2022) argued that the relationship is not significant between these two variables. Mixed outcomes and contradictions are also found between gaming addiction and aggressive behavior. For example, Chan and Rabbani (2020) highlighted that there is a weak but significant positive correlation between gaming addiction and aggressive behavior, indicating that higher levels of gaming addiction might be linked with increased aggression. However, Delhove and Greitemeyer (2021) found no significant relationship between violent media exposure and aggression. These inconsistencies may arise from methodological differences (e.g., sample sizes, measurement tools, or participant demographics). As a result, this study can validate whether gaming addiction and perceived stress contribute to aggressive behavior among young adults in Malaysia.

Furthermore, this study seeks to bridge the cultural gap by examining how Malaysia's cultural norms may contribute to the association between gaming addiction and aggressive behavior among young adults in Malaysia. This is because the meta-analysis conducted by Li et al. (2023) reported that Internet Gaming Disorder (IGD) and aggression in Asian countries

are higher than in Europe. This is because individuals in Asian collectivist cultures are more impacted by social context and other people's behavior, making it difficult for them to retain self-awareness and self-monitoring while gaming, increasing the chance of imitating aggressive content. Meanwhile, societal expectations to suppress personal feelings and maintain harmony might make it harder to regulate negative emotions, which causes individuals with IGD to release repressed emotions more aggressively than in European individualistic cultures. However, there has been little research on how local cultural factors influence aggressive behavior in Malaysia. Cultural context has a significant impact on how IGD influences aggressive behavior. In Malaysia's collectivist culture, where academic performance is highly valued, young adults may experience stress from societal and family expectations, leading them to use gaming as a coping strategy, which can potentially trigger aggression when these expectations are not met.

1.6.2 Practical Contribution

This study will be beneficial for young adults, mental health professionals, educators, researchers and policymakers. It can serve as a guidance for young adults to understand how these factors interact and provide strategies for stress management to reduce the likelihood of engaging in aggressive behavior. By identifying the stressors and emotional triggers that result in aggressive behavior, the study can highlight practical stress-management approaches such as healthy emotional expression, problem-solving skills, and relaxation techniques. Mental health professionals can create more targeted mental health interventions by adopting a more holistic treatment approach that addresses both emotional and behavioral issues. The findings can also help practitioners design integrated treatment techniques that improve emotional regulation while reducing stress-related behavior.

Moreover, educators can obtain deeper insights into how gaming addiction and stress influence aggressive behavior among students, leading to the enhancement of university support systems such as counselling services and stress management workshops. Researchers

will also benefit from this study as it can serve as a reference for future research on relevant topics in other settings. This research is also useful for policymakers since it can help them to design prevention programs and policies that can address the rising issue of gaming addiction and its possible impact on students' mental health and behavioral outcomes at the national level. For instance, organizing public health campaigns to raise awareness of gaming addiction and its mental health consequences.

1.7 Conceptual Definitions

1.7.1 Gaming Addiction

Gaming addiction is defined as a persistent pattern of impaired control over gaming, prioritization of gaming over daily responsibilities, and continuation despite negative consequences, as recognized in the ICD-11 (WHO, n.d.). It is commonly associated with excessive use as a coping strategy to escape stressors.

1.7.2 Perceived Stress

Perceived stress refers to an individual's appraisal that life demands exceed their coping resources (Mahamid & Bdier, 2021). It reflects how unpredictable, uncontrollable, and overwhelming one perceives life circumstances to be.

1.7.3 Aggressive Behavior

Aggressive behavior refers to actions intended to cause physical, verbal, or relational harm to another person who seeks to avoid such harm (Allen & Anderson, 2017; Austerman, 2017; Crotty et al., 2013; Voulgaridou & Kokkinos, 2015). It encompasses behaviors ranging from overt physical aggression to subtle interpersonal hostility (Mambra & Kotian, 2023).

1.7.4 Young Adults

The term young adults are frequently used to define individual aged approximately 18 to 26 years (Nippold et al., 1999).

1.8 Operational Definitions

1.8.1 Gaming Addiction

Gaming addiction will be measured using the Gaming Addiction Scale–7 (GAS-7) developed by Lemmens et al. (2009). GAS-7 consists of a total of 7 items, measuring 6 core components of gaming addiction, which are salience, tolerance, mood modification, withdrawal, conflict, and relapse. The 5-point Likert scale will be used to rate the responses from 1 (*never*) to 5 (*very often*). A total score of each dimension will be calculated ranging from 7 to 35, where higher scores indicating higher levels of gaming addiction. The GAS-7 will be used in this study.

1.8.2 Perceived Stress

Perceived stress will be measured using the Perceived Stress Scale–10 (PSS-10) developed by Cohen (1988). The PSS-10 assesses the degree to which individuals evaluate situations in their lives as stressful during the past month. It consists of 10 items rated on a 5-point Likert scale, ranging from 0 (*never*), 1 (*almost never*), 2 (*sometimes*), 3 (*fairly often*), to 4 (*often*). Total scores range from 0 to 40, with higher scores indicating greater perceived stress. The PSS-10 will be used in this study.

1.8.3 Aggressive Behavior

Aggressive behavior will be measured using the Buss–Perry Aggression Questionnaire–Short Form (BPAQ-SF), developed by Bryant and Smith (2001). The BPAQ-SF consists of 12 items rated on a 5-point Likert scale ranging from 1 (*very unlike me*) to 5 (*very like me*). The scale assesses three core dimensions of aggression: Physical Aggression, Verbal Aggression, and Anger, with each subscale consisting of four items. The BPAQ-SF does not contain reverse-scored items. Total scores are obtained by summing responses across all items, producing a range from 12 to 60, where higher scores indicate higher levels of aggressive behavior. The BPAQ-SF will be used in this study.

Chapter 2

Literature Review

2.1 Gaming Addiction

Gaming addiction, often referred to as problematic or disordered gaming, is increasingly recognised as a behavioral pattern marked by loss of control over gaming, prioritisation of gaming over daily responsibilities, and persistence despite harmful consequences (Higuchi et al., 2021; WHO, n.d.). This issue is reflected through the act of the World Health Organization formally included “Gaming Disorder” in the ICD-11 in 2019, mirroring a growing global concern over its psychological and functional impacts. According to Lemmens et al. (2009), gaming addiction can be understood through six core components: salience, tolerance, mood modification, withdrawal, conflict, and relapse. These components collectively describe how gaming gradually becomes central to one’s life, first serving as a source of enjoyment or escape, and later as a compulsive behavior reinforced by reward mechanisms and continuous stimulation (Lee et al., 2014). Individuals may initially use gaming to cope with stress, academic pressure, or emotional discomfort; however, over time, this maladaptive coping can evolve into dependency (Sinha, 2024).

Whenever the term gaming addiction is being brought up, people would often associate with the population of children, adolescents (Kuss & Griffiths, 2012), university students (Kanat, 2019; Sung et al., 2020) and young adults (Guermazi et al., 2017; Moreno et al., 2021) who represent one of the most active and vulnerable gaming groups. These population were being frequently examined and associated, because they are still going through the significant stages of cognitive (Hayduk, 2024), emotional and social development (Saputra et al., 2020). Young adults, in particular, may be more vulnerable due to developmental needs for autonomy, identity exploration, and peer connection, making them highly susceptible to immersive digital environments that provide immediate gratification

(Pontes & Griffiths, 2015). Across these groups, gaming addiction is frequently examined alongside various psychological constructs such as stress, depression, anxiety, impulsivity, loneliness, and of course aggression (Brunborg et al., 2014; Kanat, 2019; Şalvarlı & Griffiths, 2019; Wang et al., 2019). These associations are not incidental; past research consistently shows that excessive gaming interacts with emotional regulation difficulties (Marchica et al., 2019), heightened stress levels (Lee et al., 2024), and lowered social interaction (Byeon, 2025), which may increase vulnerability to maladaptive behaviors such as aggression and self-isolation (Alnaimi et al., 2025).

Past studies consistently show that gaming addiction is associated with heightened aggression. Researchers explain that the aggressive responses are usually triggered when gaming becomes overload such as when players experience frustration from repeated losing (Moreau et al., 2023), delayed rewards, or competitive tension (Adachi & Willoughby, 2013). Neurobiological research studies also indicates that repeated exposure to fast-paced or competitive games sensitises the reward pathway, reducing impulse control and increasing emotional reactivity, which contributes to aggressive tendencies (Korte, 2020). Breuer et al. (2015) mentioned social reinforcement or interaction mechanisms within gaming environments, such as competitive gaming and hostile interactions, further normalise aggressive reactions, making aggression a more likely behavioural outcome.

Overall, the literature highlights gaming addiction as a multifaceted behavioural concern influenced by psychological needs, coping deficits, and reinforcement processes. Understanding this construct is essential, especially among young adults who navigate academic demands, life transitions, and digital exposure simultaneously.

2.2 Perceived Stress

Perceived stress is a subjective experience of stress that people experience when they perceive the demands imposed on them exceed their ability to deal effectively. This concept

extends beyond the physical presence of stressors to emphasize how people cognitively interpret and emotionally respond to them (Cohen et al., 1983). Unlike chronic stress, which is a long-term feeling of being overwhelmed, perceived stress is more unpredictable and fluctuates based on how the individual interprets events in their lives. For instance, an individual may consider a given event, such as an exam or work deadline, as overwhelming, while another would view it as manageable. The differences in perception are crucial in understanding how stress affects one's mental and physical health.

Academic expectations, social interactions, financial challenges, and personal health concerns are all potential causes of perceived stress (Graves et al., 2021). Personal characteristics like as coping techniques, emotional resilience, and the amount of social support received all have an impact on it. High levels of perceived stress can harm the immune system (Kaur & Agarwal, 2022; Segerstrom & Miller, 2004). When a person experiences long-lasting or chronic stress, it may contribute to global immunosuppression, which means the body's overall ability to fight off infections and respond to vaccines is significantly weakened, as almost all parts of the immune defense are turned down at the same time (Segerstrom & Miller, 2004). These findings tend to be concerning for young adults, who are at an important phase in their development and are frequently experiencing major life transitions such as education, career preparation, and social interactions.

While perceived stress affects individuals of all ages, certain groups are more likely to experience high levels of stress due to the distinctive challenges they encounter. Gender, cultural background, and life stage are important factors in determining who experiences perceived stress more intensely. Studies have repeatedly shown that females report higher levels of perceived stress than males, particularly in contexts where relationships and emotional support are important (Emran et al., 2024; Fam & Teo, 2018; Graves et al., 2021; Muhsain et al., 2024). This is largely driven by females' tendency to engage in emotion-focused coping techniques, such as seeking emotional support, although it may not always

alleviate the stressor itself. On the other hand, males are more likely to incorporate problem-focused coping techniques, which may help lower stressors more directly but tend to be less emotionally fulfilling (Graves et al., 2021).

Cultural factors also influence how people perceive stress. Collectivistic culture, where social harmony and group cohesion are greatly prioritised, may experience stress differently from individualistic cultures, where personal accomplishment and self-reliance are emphasized. For example, students in individualistic cultures, such as the United States and the United Kingdom, frequently report higher perceived stress than students in collectivistic cultures, such as Malaysia or Thailand, where coping mechanisms may be more community-focused (Mohamed et al., 2022). This is because students from individualistic culture often experience a profound loss of autonomy when social restrictions interfere with their independent lifestyles. In contrast, students from collectivistic cultures may experience less pressure as they are more accustomed to prioritizing group interests and shared responsibilities (Mohamed et al., 2022). This demonstrates that cultural differences can influence not only the perceived level of stress, but also the coping mechanisms used to deal with it.

Furthermore, it was also found that young adults, particularly university students, tend to be more vulnerable to high levels of perceived stress. This is because they are experiencing important life transitions such as leaving home, seeking further education, building new relationships, and deciding on a job and future aspirations. Academic stress is one of the most common felt stressors among young adults. The pressure to excel academically, meet deadlines, and balance between various duties can be overwhelming, resulting in high levels of stress. Fam and Teo (2018) found that among 456 undergraduate students in the research, first-year students reported higher stress levels (66.7%) than senior students (42%), with academic stress as the most significant factor. These stress levels are particularly concerning as they may contribute to poor mental health outcomes, such as depression and anxiety.

Social and familial influences play a substantial role in young adults' perceived stress. Relationships with family members can be both beneficial and stressful. Young adults frequently encounter stress due to parental expectations or the need to balance their academic and social lives. According to research, students who report more family-related stressors, such as financial issues or connections with family members, have higher levels of perceived stress (Slimmen et al., 2022).

The results of high stress levels in young adults are far-reaching. According to Kaur and Agarwal (2022), greater levels of perceived stress among young adults are associated with poorer physical fitness, particularly on strength and stamina. The decline in physical health may be accompanied by a lower quality of life in a variety of areas, including psychological and social well-being. In addition to these physical and mental health outcomes, young adults who experience high perceived stress frequently engage in maladaptive coping methods, such as substance use or avoidance behaviors, which can exacerbate the harmful effects of stress (Muhsain et al., 2024; Paudel et al., 2022). These findings highlight the significance of managing perceived stress early in young adulthood, as it may result in long-term effects for both mental and physical health.

Coping strategies play an important role in how people handle stress. Young adults' coping strategies might either ease or exacerbate stress. Graves et al. (2021) found that the most prevalent coping techniques among young people are emotion-focused coping (e.g., seeking emotional support or distraction) and problem-focused coping (e.g., time management or problem solving). However, research has indicated that maladaptive coping methods, such as substance abuse and engage in aggressive behavior, are common among students experiencing high stress, particularly in educational settings (Muhsain et al., 2024). These methods, while providing temporary relief, may not address the underlying source of stress and may result in increased psychological and physical health problems.

The literature review investigates perceived stress and its impact on mental and physical health, particularly among young adults, focusing on how academic, cultural, and social demands might increase stress levels. Previous study has shown that elevated perceived stress causes negative outcomes such as increased anxiety, depressive symptoms, and decreased immunological function. However, the current study adds to this body of work by examining perceived stress as a predictor of aggressive behavior. Rather than focusing on the causes or development of perceived stress, this study investigates how varying levels of perceived stress may contribute to differences in aggressive behavior among young adults.

2.3 Aggressive Behavior

Aggressive behavior is defined as any intentional act intended to cause harm or injury to another person who is motivated to avoid such harm. This harm can be physical, verbal, or relational, and it may include direct or indirect aggression (Allen & Anderson., 2017). Direct aggression occurs when the aggressor and the victim are together, enabling a face-to-face confrontation such as physically hitting or making a verbal insult. Conversely, indirect aggression occurs when the target is absent, such as harming someone's reputation through rumours or sending malicious messages anonymously. Physical aggressiveness involves causing or threatening harm to another person, such as punching or kicking, whereas verbal aggression includes insults, threats, or harsh words. Relational aggression is shown by manipulating behaviors aimed at bringing social or emotional harm to others (Pakaslahti & Keltikangas-Järvinen, 1998). Aggression is also classified based on its motivation. For example, hostile aggression happens when an individual is driven by anger and frustration, whereas instrumental aggression is goal-oriented and organised to attain a favourable outcome (Allen & Anderson, 2017).

Aggressiveness can be classified into two types: reactive and proactive aggression. According to Romero-Martínez et al. (2022), reactive aggression is impulsive and emotionally driven, while proactive aggression is intentionally planned and goal-oriented.

Reactive aggression is frequently associated with emotional dysregulation and is common in teenagers, but proactive aggression can be used to achieve a specific purpose, such as obtaining authority or dominance.

Aggressive behavior can also occur in social contexts such as sports fandoms (e.g., football fans) (Nuriddinov, 2023). Aggressive behavior can be learnt through social contexts such as peers, family, and the media. These behaviors emerge as verbal and physical assaults, property damage, and general hostility against opposing fans. Males are more likely to participate in direct aggression, such as fighting and bullying, whereas females are more prone to indirect violence, such as manipulating or gossiping (Pakaslahti & Keltikangas-Järvinen, 1998).

Aggression can stem from a variety of factors. Stefanile et al. (2017) found that low self-esteem and difficulties regulating emotions predicted greater levels of violence among adolescents. Furthermore, cognitive distortions such as self-centredness and blaming others influence the link between maladaptive personality traits and violence (Huang et al., 2023b). This is because these distorted thought patterns help transform the maladaptive personality traits into violent behavior by providing self-serving excuses that lowers inhibition, reducing feelings of guilt, and enabling individuals to be morally detached from the negative outcomes of their actions. Environmental factors are also significant, with peer pressure and substance usage contributing to aggressive behavior (Speroni et al., 2023; Wulandari & Ni'matuzahroh, 2024). Furthermore, genetic variables connected with the dopamine and serotonin pathways have been attributed to aggression, although these connections remain complex and require further exploration (Paulino et al., 2021).

Aggressive behavior leads to several harmful implications, especially among young adults. They may struggle academically, strained relationships, and commit violent crimes. For instance, Roche et al. (2006) found that early aggression in adolescence was linked to a

higher risk of violent behaviors in young adulthood, particularly among males. Additionally, aggression can also contribute to social isolation, as aggressive people are more likely to be rejected by their friends, which will further exacerbate their violent tendencies (Pakaslahti & Keltikangas-Järvinen, 1998). High aggression levels have also been linked to anxiety, depression, and substance addiction (Mbiydenyuy & Qulu, 2024).

Aggressive behavior is notably common among young people, as this stage of life is represented by increased emotional and social fluctuations, which may heighten aggressive tendencies. Peer pressure, exposure to violent media, and substance abuse are all significant contributors to aggression in this demographic (Zhao et al., 2021). Peer pressure is important in shaping aggressive behavior because deviant peers influence adolescents to participate in physical or verbal aggression (Wulandari & Ni'matuzahroh, 2024). Furthermore, exposure to substance use, particularly with the consumption of alcohol and energy drinks, has been linked to an increase in aggressive behavior among young adults (Speroni et al., 2023).

The transition from youth to adulthood, such as entering the workforce or starting a family, can either reduce or worsen violent behaviour. For example, early parenthood and living independently have been associated to ongoing aggression in young adulthood, particularly in men (Roche et al., 2006). These alterations frequently expose young adults to additional stressors, which can either lessen or increase aggression depending on the individual's coping methods and emotional regulation.

Despite substantial research on aggressive behaviour, the findings on the long-term impact of early aggression remain inconsistent. Some studies claim that early aggressive behavior predict later violent behaviors in adulthood (Roche et al., 2006), while others argue that positive life changes, such as adult role acquisition, can mitigate the impact of early aggression (Mbiydenyuy & Qulu, 2024). These discrepancies highlight the need for more advanced, longitudinal research that takes into account for both individual and sociocultural influences in influencing aggressive behavior.

The study of aggressive behavior is vital in understanding their development and implications. Aggressive behavior occurs due to psychological traits, societal influences, and familial susceptibility. The high frequency of aggression among young adults, along with its harmful impact on mental health and social functioning, highlights the importance of early intervention programs that focus on emotional regulation, self-esteem, and peer pressures. Further research is needed to investigate the long-term effects as well as developing a deeper understanding of the complex causes and consequences of aggression.

2.4 Gaming Addiction and Aggressive Behavior

A substantial body of empirical evidence demonstrates that gaming addiction is positively associated with aggressive behavior among adolescents and young adults. First, there are several cross-sectional studies that have been conducted across different regions, consistently reporting that higher levels of gaming addiction or problematic gaming behaviors are linked to increased aggression. To illustrate, a Malaysian study involving 595 adolescents revealed that gaming addiction significantly predicted overall aggression (Pan et al., 2024). Similar patterns have also been observed in Turkey, where adolescents with higher levels of digital game addiction significantly displayed greater aggression and anger (Akbaş & İşleyen, 2024). Moreover, there is another study conducted in Turkey that showed consistent findings, supporting the significant positive relationship between gaming addiction and aggressive behavior (Caner & Evgin, 2021). Together, the studies show that this relationship is further complicated by factors such as aggressive tendencies, environmental influences like family context or smartphone use, and emotional eating.

Building on this evidence, similar associations have been observed in several cross-sectional studies that examined broader digital addictive behaviors. According to Fekih Romdhane et al. (2022), higher smartphone addiction can worsen individuals' cognitive function, further associating significantly with increased physical aggression, verbal

aggression, anger, and hostility among 505 adolescents in western Turkey. The author suggests that high stress and excessive smartphone use among students may contribute to fatigue, reduced self-control, and weakened social skills, which eventually lead to increased aggressive behavior. While Fekih-Romdhane et al. (2022) examined the relationship between smartphone addiction and aggressive behavior, another study conducted by Zhang et al. (2022) revealed a significant positive correlation between internet addiction and aggressive behavior among 999 middle school students in China. Zhang et al. (2022) suggests that addictive internet use, particularly during the COVID-19 pandemic, may heighten adolescents' emotional instability and impulsivity, thereby increasing their likelihood of exhibiting aggressive behavior.

Beyond the cross-sectional findings, there is longitudinal and meta-analytic evidence that further strengthens the relationship between addictive gaming behavior and aggression. A meta-analysis of 30 studies reported a moderate and bidirectional relationship between Internet Gaming Disorder (IGD) and aggression (Li et al., 2023). IGD has been associated with an excessive number of hours spent playing video games. Li et al. (2023) indicated that individuals with higher IGD tend to be more aggressive, and aggressive individuals may also be more prone to develop IGD. In addition, a more recent systematic review and meta-analysis of 10 studies found that digital game addiction is strongly and positively associated with aggression while moderately related to anger (Nagar et al., 2025). These meta-analyses suggest that addictive gaming can reinforce aggressive tendencies through violent game content and learned aggressive behavior.

While meta-analytic evidence underscores the significance of the association, longitudinal studies further strengthen the relationship that addictive gaming behaviors may lead to increased aggression over time. For instance, Lin et al. (2024) performed a one-year follow-up study in Italy to examine the association between social media addiction and aggression across both genders among early adolescents. The results demonstrated that higher

levels of social media addiction at the first follow-up was associated with increased likelihood of both overt and relational aggression at the second follow-up (Lin et al., 2024). The authors indicate that excessive social media use may influence peer interactions, social environments, and developmental changes, reinforcing aggressive behaviour over time. Similarly, another study that was conducted in South Korea using a group-based trajectory model discovered that adolescents with higher gaming addiction displayed corresponding increases in multiple forms of aggressive behavior, such as physical aggression, verbal aggression, anger, and hostility (Lee et al., 2025).

Interestingly, the association between gaming addiction and aggression appears to vary across different age groups. For example, Silva and Maia (2024) conducted a cross-sectional study that involved 202 young adults in Portugal and found that Internet Gaming Disorder was significantly associated with physical aggression, verbal aggression, and hostility. This finding mirrors the common patterns that could be observed among adolescents' samples in Asian countries like Malaysia, China, and Korea (Lee et al., 2025; Pan et al., 2024; Zhang et al., 2022), suggesting that aggressive outcomes associated with problematic gaming like gaming addiction are not limited to younger age groups but may persist into early adulthood.

Despite the consistent associations found between gaming addiction and aggressive behavior, some evidence shows contradictory findings. According to Shabbir et al. (2020), the research findings show that there were significant but negative correlations between gaming addiction and various forms of aggression, including physical aggression and anger among young adults in Pakistan. Shabbir et al. (2020) explained such unexpected findings by suggesting that game playing serves as a source for releasing aggression, reducing physiological arousal, and eventually reducing aggression in life. Hence, due to the inconsistent findings across the past studies, this study aims to examine the effects of gaming addiction on aggressive behavior among young adults in Malaysia.

2.5 Perceived Stress and Aggressive Behavior

Existing research documents a positive relationship between perceived stress and aggressive behavior in both adolescent and young adult populations. There are several cross-sectional studies conducted across different cultural contexts that consistently reported that higher levels of perceived stress significantly predict aggressive behavior among adolescents. For instance, Centeio et al. (2015) found that perceived stress significantly predicted fighting behaviors among 138 adolescents in the Midwestern United States. Furthermore, Olutunde (2017) conducted a study among 240 adolescents aged 13 to 19 in Nigeria and showed that greater perceived stress was associated with increased aggression. According to the author, this association can be understood by considering common adolescents' stressors such as academic pressure, separation from family, peer-related conflicts, and rapidly changing emotional needs. When adolescents perceive these challenges as overwhelming, they are more susceptible to frustration-driven aggressive outbursts (Olutunde, 2017).

Similarly, another study conducted among 300 adolescents in Kyrgyzstan revealed that there is a strong and positive correlation between adolescents' level of stress and aggression (Fatma, 2021). In addition, consistent findings were also reported by Onyedire et al. (2023), who studied 394 secondary school students aged 11 to 17 in Nsukka, Nigeria. The results showed that perceived stress was a positive and significant predictor of aggressive behavior. The authors highlighted that adolescents with poor coping resources (e.g., emotion-oriented strategies) were more vulnerable to aggression when they were facing stressful situations. This supports the stress-vulnerability model, which proposes that individuals who lack effective coping strategies may resort to maladaptive aggressive behavior to manage overwhelming emotional states (Onyedire et al., 2023).

Further extending the literature focusing on adolescents, Yin et al. (2025) found that perceived stress significantly predicted online aggressive behavior among a large sample of

2032 Chinese adolescents aged 12 to 16 in China. This finding indicates that the effect of stress on aggressive behavior is not limited to face-to-face contexts. The authors suggested that adolescents with heightened physiological and emotional arousal often lack the resources to regulate their responses effectively, making online aggression an accessible platform for emotional release (Yin et al., 2025).

Beyond adolescents' populations, research involving college students and adults also demonstrates a positive association between perceived stress and aggressive behavior. To illustrate, a cross-sectional study that examined the mediating role of perceived stress on the relationship between Alexithymia and aggressive behavior was reviewed. The finding revealed that perceived stress had a positive correlation and significant predictive effects on aggressive behavior among 754 college students in China (Wei et al., 2024). According to Wei et al. (2024), heightened stress increases emotional overload and reduces self-control, pushing individuals toward impulsiveness, anger, and aggression. Consistently, Malaviya (2025) conducted a study on 160 college students in Ahmedabad, India, and found a statistically significant positive relationship between stress and aggression. The author stated that the result aligned with the Frustration-Aggression Hypothesis and Stress-Arousal Theory, which proposes that stress elevates physiological arousal and reduces individuals' capacity for rational problem-solving (Malaviya, 2025).

However, there was a nuanced result found in one study involving college students. Mandal and Roy (2024) conducted a study surveying 98 college students aged 18 to 25 in Kolkata, India and reported that there was a positive but non-significant correlation between perceived stress and aggression. However, the authors noted that this non-significance might be attributed to methodological limitations such as the small sample size and less powerful non-parametric tests (Mandal & Roy, 2024). Therefore, the lack of statistical significance does not necessarily indicate that no relationship exists between the variables.

Expanding the scope to clinical populations, Mohamed et al. (2024) conducted a study with 31 adults aged between 18 to 60 who had been diagnosed with Major Depressive Disorder in Sabah, Malaysia. The finding reported that there were moderately to strongly positive correlations between perceived stress and aggression. Moreover, the study conducted a secondary analysis and suggested a cyclical relationship between perceived stress and aggression (Mohamed et al., 2024). In this context, stress appears to promote aggression, which then exacerbates emotional distress, highlighting the reciprocal nature of this process.

While cross-sectional studies highlight the association between perceived stress and aggression at a single point in time, longitudinal findings provide support for the temporal and developmental stability of the relationship. To support, Yin et al. (2025) conducted a three-wave longitudinal study involving 1170 adolescents in China. Participants have been surveyed three times in a six-month interval. The finding discovered that perceived stress at first data collection significantly predicted aggressive behavior at the last data collection. Thus, this association suggests that stress not only co-occurs with aggression but may also lead to later aggressive tendencies, highlighting the role of perceived stress in shaping adolescents' behavioral responses (Yin et al., 2025). Thus, this study aims to examine the effects of perceived stress on aggressive behavior among young adults in Malaysia.

2.6 Theoretical Framework

2.6.1 General Aggression Model

The present study is guided by the General Aggression Model (GAM). According to Allen et al. (2017), GAM provides an integrative framework suggesting that aggressive behavior emerges through a sequence of interconnected processes. The process starts with input factors, which refer to personal (e.g., narcissism, low self-control, aggressive self-image) and situational (e.g., social stress, provocation, violent media) factors. Next, it emphasizes the routes by which personal and situational factors impact an individual's

internal states, which include a person's affect, cognition, and arousal. Lastly, it leads to the appraisal-decision process, in which the individual evaluates the situation and determines a response. This appraisal-decision process will determine whether an aggressive response occurs (Allen et al., 2017).

In this study context, gaming addiction is conceptualized as a personal variable. It reflects a stable behavioural tendency that may heighten vulnerability to aggressive reactions. On the contrary, perceived stress functions as a situational variable that reflects individuals' subjective evaluation of overwhelming circumstances (Maqsood et al., 2024). Subsequently, gaming addiction and perceived stress influence aggression through three routes, which are cognition, affect, and arousal (Allen et al., 2017). Cognitively, gaming addiction, particularly those containing competence-impeding content may reinforce aggression-related schemas, increasing the accessibility of hostile interpretations and aggressive responses (Ramezani & Changizi, 2024). While stress may trigger negative interpretation of environmental stimuli. Chronic stress has been shown to predispose individuals to perceive ambiguous situations more negatively, thereby leading to increased aggressive responses (Bélanger & Blanchette, 2021). In addition to the affect path, individuals with high gaming addiction and perceived stress may experience negative emotions like frustration and irritability (Lin et al., 2021; Yen et al., 2021; Zajenkowska et al., 2017). Moreover, both gaming addiction and perceived stress are associated with heightened physiological arousal (e.g., increased heart rate and blood pressure, skin conductance) (Klimek et al., 2023; Metcalf & Pammer, 2013). Thus, these shifts in internal states shape individuals' interpretations of the situational cues.

Building on these internal cognitive and emotional changes, the next stage in GAM involves the appraisal and decision-making processes, determining whether individuals respond with impulsive or controlled behaviors (Allen et al., 2017). When individuals experience gaming addiction alongside high levels of perceived stress, their cognitive and emotional resources become depleted, diminishing their capacity to reappraise situations

effectively. Therefore, they are more likely to inhibit aggressive impulses and eventually lead to aggressive behavior (Allen et al., 2017). In short, integrating gaming addiction and perceived stress into GAM provides a clear theoretical basis for examining their impact on aggressive behavior among young adults in Malaysia.

2.7 Conceptual Framework

Figure 2.7

The Conceptual Framework for Examining the Role of Gaming Addiction and Perceived Stress on Aggressive Behavior among Young Adults in Malaysia

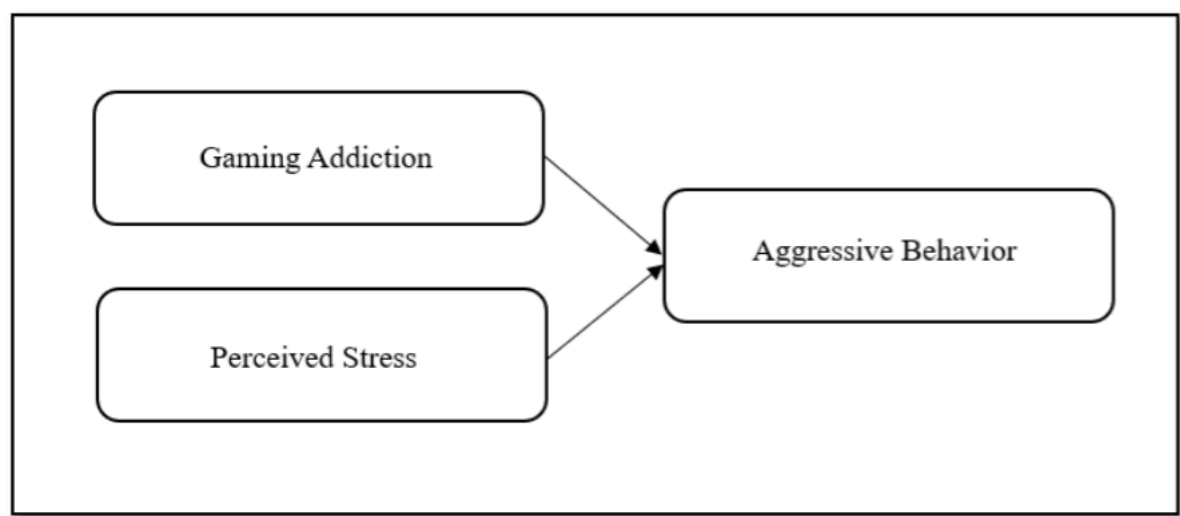


Figure 2.7 above shows the proposed conceptual framework for this study, which aims to examine the role of gaming addiction and perceived stress on aggressive behavior among young adults in Malaysia. Gaming addiction and perceived stress are the two predictors, while aggressive behavior is the dependent variable. This conceptual framework is supported by the General Aggression Model. Based on the literature review, it is hypothesized that both gaming addiction and perceived stress positively predict aggressive behavior among young adults in Malaysia.

Chapter 3

Methodology

3.1 Research Design

The present study employed a quantitative and cross-sectional research design to investigate the role of gaming addiction and perceived stress on aggressive behavior among young adults in Malaysia. Rana et al. (2021) define quantitative methods as the collection and analysis of numerical data to address scientific research questions. The quantitative approach is selected for this study because it allows for summarizing, averaging, detecting patterns, predicting outcomes, evaluating relationships, and generalizing findings to larger populations. Additionally, a cross-sectional design is employed in this study. According to Ghanad (2023), it is a form of study in which data are collected from a sample of the target population at a single point in time. This design enables the simultaneous measurement of exposures and outcomes among participants (Setia, 2016). Therefore, it is chosen for its efficiency and lower cost compared to other approaches, such as interviews, while allowing data on all variables to be collected concurrently (Wang & Cheng, 2020).

3.2 Sampling Procedures

3.2.1 Sampling Method

The present study adopted a purposive sampling approach, classified under non-probability sampling method and often known as judgmental or selective sampling (Dudovskiy, 2016; Saunders et al., 2012). Purposive sampling is the deliberate inclusion of individuals who meet preset criteria relevant to the research aims, ensuring that the sample is appropriate for investigating the variables of this study, which are gaming addiction, perceived stress and aggressive behavior. In addition, purposive sampling is used to focus on specific characteristics of a population of interest (Rai & Thapa, 2015). It helps select

participants who display certain qualities important to this study, ensuring that the sample is directly aligned with the research objectives. This method has the advantage of being more practical and efficient than other methods of data collection, as it requires less time and is cost-effective (Thomas, 2022). In the present study, an online purposive sampling method was employed to recruit participants. Initially, the link to our questionnaire was directly distributed to potential participants with the utilization of various social media platforms. Only individuals who met the inclusion criteria were selected to participate in the study. Additionally, public posts were made to increase outreach, including a poster with a brief description of the study, as well as a QR code and link to the questionnaire (refer to Appendix A). Although the poster included the participation criteria, there remains a possibility that individuals who did not meet the eligibility requirements may have accessed and responded to the questionnaire.

In addition, the study also employed convenience sampling, which is also one of the non-probability sampling methods. Convenience sampling is the process of selecting participants based on their accessibility to the researchers. In the selection process, individuals who are readily available will be chosen without imposing any extra criteria. The participants are selected due to their convenience for recruitment (Makwana et al., 2023). The advantages of this method include the simplicity of gathering data, as it does not need to create comprehensive sampling frameworks or implement intricate randomization methods. Besides that, it is also cost-effective as it is more practical and participants can be recruited in various settings. It helps in eliminating many direct and indirect costs in the public settings (Memon et al., 2025). In the current study, the convenience sampling method was employed by physically approaching potential participants on the UTAR campus and presenting them with the study's poster to invite participation. Participants were approached without any pre-screening prior to recruitment. Subsequently, the responses will be subjected to screening, and only those that fulfil the established inclusion criteria will be retained for analysis. This

multi-method approach allowed for a broader reach while ensuring accessibility and voluntary participation.

3.2.2 Location of Study

The data for this study were gathered through both online and physical channels. Online recruitment targeted participants via social media platforms, including Instagram, Xiaohongshu, WhatsApp, WeChat, and Discord, allowing access to Malaysian young adults across different regions. In addition, a physical data collection process took place on the premises of Universiti Tunku Abdul Rahman (UTAR) campus, where participants were approached in person.

3.2.3 Ethical Clearance Approval

The research proposal submission and approval were overseen by Ms. Tee Geok Hong, who served as the supervisor for this study. Ethical approval for this study was granted by the Scientific and Ethical Review Committee (SERC) of Universiti Tunku Abdul Rahman (UTAR) on 15 January 2026. The reference code is Re: U/SERC/78-685/2026 (refer to Appendix B). Data collection for this study was carried out after the ethical clearance had been obtained from the relevant authority, ensuring that the research procedures complied with established ethical guidelines.

3.3 Sample Size, Power, and Precision

Prior to the actual study, a pilot study was conducted to detect and eliminate potential problems in the questionnaire and research procedures, as well as to examine the study's feasibility (Teresi et al., 2022). Pilot studies are commonly used to determine whether the planned procedures can be implemented properly and to identify issues that may affect the main study on a larger scale. For the pilot study, a total of 30 participants were targeted as this number is generally considered as adequate for preliminary testing of questionnaire

clarity, feasibility, and initial reliability before the actual data collection was conducted (Bujang et al., 2024).

Version 3.1.9.7 of the G*Power software was implemented to compute the required sample size for this study. By utilising the $f^2 = \frac{r^2}{(1-r^2)}$ formula, the study's effect size was determined based on effect sizes reported in previous studies examining gaming addiction and perceived stress as predictors of aggressive behavior (Anderson & Bushman, 2001; Onyedire et al., 2023). In accordance with Cohen's criteria, the study's overall effect size of 0.78 represented a large effect size. The analysis was conducted using a multiple linear regression (fixed model, R^2 deviation from zero) with two predictors. It was subsequently used to estimate the minimum sample size required in this study, using a statistical power of 0.95, and an error probability of 0.05, to reduce the likelihood of Type II error (refer to Appendix C & D).

After the calculation, the recommended minimum sample size for this study was 24 participants. As the sample size was too small, it was increased to 140 participants to account for potential issues such as participant dropout and incomplete records (Andrade, 2020). This adjustment was intended to improve the generalizability of the findings as well as ensure more robust and reliable conclusions in this study (Memon et al., 2020). Consequently, a total of 230 responses was collected for the actual study using the Google Form questionnaire. However, due to 11 invalid responses found in the data screening process, the final sample size was 219.

3.4 Data Collection

3.4.1 Inclusion and Exclusion Criteria

Participants were included based on the following criteria: (1) young adults who are Malaysian; (2) aged between 18 and 26 years old; and (3) engaged consistently in

competitive or action-based online games (e.g., PUBG, Call of Duty, Mobile Legends) for at least the past six months. The particular age range was selected as it represents a developmental stage in which individuals are highly engaged with digital media and online gaming, making them a relevant population for examining gaming-related behaviours. Additionally, the requirement of at least six months of continuous engagement in competitive or action-based games was established to ensure that participants have sufficient exposure and familiarity with gaming environments that are often associated with heightened arousal.

Meanwhile, the criteria for exclusion were (1) individuals who did not fall within the specified age range; (2) non-Malaysian; (3) primary gaming activities are limited to non-competitive and/or single-player game genres (e.g., Candy Crush Saga, Hay Day); and (4) do not demonstrate a minimum of six months of continuous gaming engagement. Hence, during the data screening process, participants who failed to satisfy the specified criteria will be excluded.

3.4.2 Procedures of Obtaining Consent

Prior to participation, an online informed consent form was presented at the beginning of the Qualtrics and Google Form questionnaire (refer to Appendix E). The consent form outlined the purpose of study, procedures involved, estimated completion time, voluntary nature of participation, assurances of confidentiality, and the participant's right to withdraw at any time without penalty. Only participants who indicated their agreement to proceed were directed to the full questionnaire (refer to Appendix E).

3.4.3 Description of Data Collection Procedures

A quantitative online questionnaire was administered through the Qualtrics and Google Form platforms for pilot and actual study respectively. The online questionnaire was presented in English. To ensure the ethical conduct of the study, ethical approval was granted by the UTAR Scientific and Ethical Review Committee (SERC) before proceeding with the

process of data collection for the pilot and actual study. The questionnaire was then distributed to the target participants who are eligible for the study. For efficient participant recruitment, the QR code and questionnaire link were disseminated through various online platforms to reach young adults in Malaysia. Additionally, a poster containing brief research information and QR code linking to the Google Form survey was produced for public postings and on-site data collection at Universiti Tunku Abdul Rahman (UTAR) (refer to Appendix A). Upon providing informed consent, participants proceeded to complete the full online questionnaire. Data collection for both the pilot and actual study was conducted over a total duration of seven weeks, from 26 January 2026 to 11 March 2026.

3.4.4 Token of Appreciation

To encourage participation in the study, respondents were offered an incentive in the form of lucky draw. Upon completion of the questionnaire, participants who met the inclusion criteria, provided consent, submitted a valid phone number, and passed the data cleaning process were deemed to be eligible for the lucky draw. A total of 50 winners were chosen, comprising 10 winners who received RM20, 20 winners who received RM10, and 20 winners who received RM5. The monetary incentives were distributed via the Touch'n Go (TnG) eWallet.

3.5 Instruments

3.5.1 Demographic Information

The demographic information of the respondents was assessed, such as age, gender, nationality, ethnicity, educational level, occupation, and state of residence. In addition to standard demographic information, four additional items related to the study variables were included in the demographic section of the questionnaire. The items include: "How long have you been actively playing online games?", "How often do you currently play online games?", "Which types of online games do you play most often?", and "To what extent do you

perceive the games you play as competitive?”. These items were designed to facilitate further data analysis and provide supplementary insights into participants’ responses.

3.5.2 Buss-Perry Aggression Questionnaire-Short Form (BPAQ-SF)

Aggressive behavior was measured using the Buss–Perry Aggression Questionnaire–Short Form (BPAQ-SF), developed by Bryant and Smith (2001). The BPAQ-SF assesses the extent to which an individual’s go through, express, and engage in aggressive thoughts, feelings, and actions. It consists of 12 items rated on a 5-point Likert scale ranging from 1 (*very unlike me*) to 5 (*very like me*). The scale assesses three core dimensions of aggression: Physical Aggression, Verbal Aggression, and Anger, with each subscale consisting of four items. The BPAQ-SF does not contain reverse-scored items. Total scores are obtained by summing responses across all items, producing a range from 12 to 60, where higher scores indicate higher levels of aggressive behavior. Sample items of the BPAQ-SF include: “Given enough provocation, I may hit another person.” and “Other people always seem to get the breaks.”. The BPAQ-SF has demonstrated strong psychometric properties, with internal consistency coefficients for the subscales ranged from 0.65 to 0.85, while the overall scale revealed good internal consistency of 0.84. Test–retest reliability was excellent for the total scale ($r = 0.86$) and ranged from 0.60 to 0.89 across the subscales (Christopher et al., 2024). Moreover, convergent, discriminant, and criterion validity of the BPAQ-SF have been established and confirmed through several studies (Christopher et al., 2024; Diamond & Magaletta, 2006). The BPAQ-SF has also been utilized in a Malaysia study, confirming its suitability for local samples (Saat et al., 2013).

3.5.3 Perceived Stress Scale-10 (PSS-10)

Perceived stress was measured using the Perceived Stress Scale–10 (PSS-10) developed by Cohen (1988). The PSS-10 assesses the degree to which individuals evaluate situations in their lives as stressful during the past month. It consists of 10 items rated on a 5-

point Likert scale, ranging from 0 (*never*) to 4 (*often*). Six items (items 1, 2, 3, 6, 9, and 10) are negatively phrased and measure distress, while four items (Items 4, 5, 7, and 8) are positively stated and require reverse scoring. Total scores range from 0 to 40, with higher scores indicating greater perceived stress. Sample items of the PSS-10 include: “In the last month, how often have you been upset because of something that happened unexpectedly?” and “In the last month, how often have you felt that you were unable to control the important things in your life?”. The PSS-10 has demonstrated strong psychometric properties, with internal consistency coefficients ranging from 0.78 to 0.91, and good internal consistency for the overall scale ($\alpha = 0.81$). Test–retest reliability for the total scale was $r = 0.954$ and ranged from 0.55 to 0.87 across the subscale structure reported in the study (Sun et al., 2019). Furthermore, convergent, discriminant, and criterion validity of the PSS-10 have been established and confirmed through several studies (Chiu et al., 2016; Du et al., 2023; Xiao et al., 2023). The PSS-10 has been utilized in a Malaysia study, confirming its suitability for local samples (Gey et al., 2025).

3.5.4 Gaming Addiction Scale-7 (GAS-7)

Gaming addiction was measured using the Gaming Addiction Scale–7 (GAS-7) developed by Lemmens et al. (2009). The GAS-7 assesses the extent to which an individual’s experience severity of gaming addiction. It consists of a total of 7 items, measuring 6 core components of gaming addiction, which are salience, tolerance, mood modification, withdrawal, conflict, and relapse. The 5-point Likert scale was used to rate the responses from 1 (*never*) to 5 (*very often*). This scale has no reverse-coded items. A cumulative score is obtained for each dimension, ranging from 7 to 35, where higher scores indicate higher levels of gaming addiction. Sample items of the GAS-7 include: “Did you think about playing a game all day long?” and “Have you felt bad when you are unable to play?”. The GAS-7 has demonstrated strong psychometric properties, with internal consistency coefficients of 0.93 and 0.94 for the overall scale (Wang et al., 2014). Moreover, Khazaal et al. (2016) have

established the concurrent validity of the GAS-7, while convergent and discriminant validity were confirmed by Liu et al. (2020). The GAS-7 has also been used in a Malaysian study by Ting and Essau (2021), supporting its suitability for the local context.

3.5.5 Attention Checking Questions

To ensure the quality and reliability of the collected data, attention checking questions were incorporated within the questionnaire. According to Muszyński (2023), the main purposes of attention checking questions are to reduce noncompliance and ensure validity of data collected. In this study, one attention checking question was included for each of the three scales: BPAQ-SF, PSS-10, and GAS-7. These questions instructed the participants to select a specific response (e.g., “Please choose ‘Somewhat unlike me’”) to confirm attentiveness. Responses from participants who failed any of the attention checking questions were excluded from the final analysis, ensuring that the final dataset reflects accurate and valid responses.

3.6 Pilot Study

A pilot study was conducted to detect and eliminate potential problems before the actual study, as well as to examine the feasibility of the research (Lowe, 2019). The pilot study data were gathered between 26 January and 18 February 2026. A total of 51 responses were initially acquired for this pilot study. Within this sample, 20 incomplete responses were removed from the dataset. The remaining responses were subsequently subjected to attention check screening, whereby all participants met the required criteria. Consequently, a final sample of 31 complete and valid responses was retained for analysis, which aligns with the recommended sample size of 30 participants for a pilot study (Browne, 1995). Reliability analysis for the pilot sample ($n = 31$) was performed using IBM SPSS Statistics (Version 23). The results showed that the reliability for BPAQ-SF, PSS-10, and GAS-7 are .940, .709, and .940 respectively. According to Nunnally (1978), Cronbach’s alpha value of ≥ 0.70

represents acceptable reliability in basic research. Thus, the results indicate a high reliability with sufficient internal consistency to proceed to actual study.

Table 3.1
Cronbach’s Alpha Coefficient for BPAQ-SF, PSS-10, and GAS-7 in Pilot Study (n=31)

Variables	Number of Items	Pilot Study (n=31)
Buss-Perry Aggression Questionnaire (Bryant & Smith, 2001)	12	.940
Perceived Stress Scale-10 (Cohen, 1988)	10	.709
Gaming Addiction Scale-7 (Lemmens et al., 2009)	7	.940

3.7 Actual Study

The actual study was initiated shortly after the confirmation upon the reliability of the pilot study. The procedures implemented in the actual study were identical to those of the pilot study and the data collection started from 19 February 2026 to 11 March 2026. An adequate number of participants were recruited (n=230) throughout this period. After cleaning and analysing the collected data, the total number of data used in the actual study was 219. Reliability analysis for the actual study (n= 219) was performed using IBM SPSS Statistics (Version 23). The results revealed that the reliability for BPAQ-SF, PSS-10, and GAS-7 are .932, .823, and .900 respectively, indicating high reliability with sufficient internal consistency (Nunnally, 1978).

Table 3.2

Cronbach’s Alpha Coefficient for BPAQ-SF, PSS-10, and GAS-7 in Actual Study (n=219)

Variables	Number of Items	Actual Study (n=219)
Buss-Perry Aggression Questionnaire (Bryant & Smith, 2001)	12	.932
Perceived Stress Scale-10 (Cohen, 1988)	10	.823
Gaming Addiction Scale-7 (Lemmens et al., 2009)	7	.900

Chapter 4

Results

4.1 Data Cleaning

Upon completing the data collection phase, a sum of 230 responses was obtained for the actual study. Initially, four data were excluded as participants did not consent to the processing of their personal data. Besides, another four data were also removed because they were identified as straight-lining responses. Furthermore, three responses were excluded for not meeting the study's eligibility criteria: one participant was outside the age range of 18 to 26, and two participants were identified as non-Malaysian. Overall, 11 data were removed from 230 responses. The remaining responses were then screened using attention check questions, and all participants met the required criteria. Consequently, the final dataset comprised 219 responses that remained for analysis in this study.

4.2 Normality

4.2.1 Histogram

The histograms of BPAQ-SF, PSS-10, and GAS-7 indicate a normal, bell-shaped distribution, characterised by one mode and a rough symmetry. This demonstrates that the data are centered around the mean with minimal skewness, suggesting that the assumption of normality is met (Hair et al, 2010; refer to Appendix H).

4.2.2 Q-Q Plots

The Q-Q plots of BPAQ-SF, PSS-10, and GAS-7 reveal that the data points are distributed closely along the diagonal line, suggesting that the assumption of normality is not violated (Hair et al., 2010; refer to Appendix I).

4.2.3 *Skewness and Kurtosis*

The skewness of BPAQ-SF, PSS-10, and GAS-7 indicate that the distributions are slightly right-skewed, suggesting a minor asymmetry towards higher scores. The kurtosis values for BPAQ-SF and GAS-7 indicate light-tailed distributions compared to the normal distribution, whereas PSS-10 shows a distribution close to normal. Overall, all skewness and kurtosis values are within the acceptable range of -1.96 to +1.96. as stipulated in Table 4.1, indicating that no violations of normality assumption (Hair et al., 2010).

Table 4.1

Skewness and Kurtosis

Scale	Skewness	Kurtosis
BPAQ-SF	.173	-.920
PSS-10	.557	-.013
GAS-7	.165	-.849

4.2.4 *Kolmogorov-Smirnov Test*

The Kolmogorov-Smirnov (K-S) test indicates that BPAQ-SF [$D(219) = .080, p = .002$], PSS-10 [$D(219) = .134, p < .001$], and GAS-7 [$D(219) = .073, p = .006$] all significantly deviated from a normal distribution. This finding leads to the rejection of the null hypothesis, indicating that the sample data differed significantly from the population. Therefore, BPAQ-SF, PSS-10, and GAS-7 violate the K-S test.

Table 4.2

Kolmogorov-Smirnov Test

Scale	<i>p</i> -value
BPAQ-SF*	.002
PSS-10*	.000
GAS-7*	.006

*Violate K-S test

4.2.5 *Summary of Normality Test*

In short, the distributions of BPAQ-SF, PSS-10, and GAS-7 do not violate normality based on histogram, Q-Q plot, and skewness and kurtosis values. Although the K-S test indicates significant deviation from normality, all variables meet the normality assumption in at least three of four tests. Therefore, normality assumptions are met.

4.3 **Multivariate Outliers and Influential Cases**

Multivariate outliers are observations that stand out notably from most of the data when multiple variables are analyzed together. The identification of multivariate outliers is essential for statistical analyses as they might alter our understanding of the underlying parameter values (El-Masri et al., 2020). The present study applied three statistical measures to detect potential multivariate outliers, namely the Mahalanobis Distance (MD), Cook’s Distance (CD), and Centered Leverage (CL). Cases were recognised as outliers if they exceeded any of the specified thresholds: when MD is greater than 15 (Barnett & Lewis, 1978); CD is more than 1 (Cook & Weisberg, 1982), or CL value exceeding 0.0274. The leverage cutoff was calculated using the formula $\frac{2(p+1)}{n}$, where p represents the total number of predictors ($p = 2$) and n represents the sample size ($n = 219$) (Fitrianto & Xin, 2022). The

analysis indicated that cases 2 and 164 were potential outliers. Case 164 exceeded both the Mahalanobis Distance ($MD = 16.522$) and the leverage threshold ($CL > 0.027$), meeting two of the three criteria. Therefore, it was removed from the dataset to maintain the assumptions of regression analysis. Conversely, case 2 demonstrated high leverage ($CL = 0.039$) its Mahalanobis Distance ($MD = 8.565$) and Cook's Distance ($CD < .001$) were within acceptable limits, indicating that only one criterion was met. Therefore, case 2 remains in the dataset (refer to Appendix L). The final sample size proceeded for the MLR analysis was 218 participants.

4.4 Descriptive Statistics

4.4.1 Demographic Characteristics

Table 4.3 presents the ages, genders, ethnicities, education levels, occupation and the states where the 218 participants reside. The average age range of 218 participants is 21.61 years old ($M = 21.61$, $SD = 1.891$), ranging from 18 to 26 years old. The statistic shows that 52.8 percent ($n = 115$) of the participants are female, while 47.2 percent ($n = 103$) are male. Most of the participants are Chinese (87.2%), followed by Indian (6%), Malay (3.7%) and other ethnicities, including Siamese and Kadazandusun (3.1%). In addition, the result also shows that 189 out of 218 (86.7%) participants in this study are students, another 24 are employed, and only 5 of them are unemployed. The current education level for most participants is Bachelor's Degree (65.1%), followed by pre-university (24.3%) and secondary education (8.7%), while 1.8% of the participants hold a postgraduate degree. Furthermore, the participants are mostly made up of Malaysian that are currently living around Perak (39.4%), followed by Penang (14.65%), Selangor (12.4%), Sarawak (10.6%), Kuala Lumpur (7%), Johor and Kedah both at (3.4%), Sabah (2.5%), Kelantan and Melaka (2.05%), Terengganu (1.15%) and lastly Negeri Sembilan and Pahang both at (0.7%).

Table 4.3
Demographic Information of Research Sample (n=218)

Variables		<i>n</i>	<i>%</i>	<i>M</i>	<i>SD</i>
Age				21.61	.891
	18	11	5.0		
	19	17	7.8		
	20	40	18.3		
	21	35	16.1		
	22	45	20.6		
	23	38	17.4		
	24	15	6.9		
	25	12	5.5		
	26	5	2.3		
Gender					
	Male	103	47.2		
	Female	115	52.8		
Ethnicity					
	Chinese	190	87.2		
	Indian	13	6.0		
	Malay	8	3.7		
	Other	7	3.1		
Education Level					

	Secondary (SPM/ O-Level or equivalent)	19	8.7
	Pre-University / Foundation /Matriculation / STPM / A-Level / Diploma	53	24.3
	Bachelor's Degree	142	65.1
	Postgraduate Degree (Master's / PhD)	4	1.8
Occupation			
	Student	189	86.7
	Employee	24	11.0
	Unemployed	5	2.3
State of Residence			
	Selangor	27	12.4
	Perak	87	39.4
	Johor	7	3.4
	Kedah	7	3.4
	Kelantan	4	2.05
	Kuala Lumpur	15	7
	Sarawak	23	10.6
	Melaka	4	2.05
	Negeri Sembilan	1	0.7
	Pahang	1	0.7
	Penang	32	14.65
	Sabah	5	2.5
	Terengganu	2	1.15
How long have you been actively			

**playing online
games?**

Less than 6 months	0	0.0
6-12 months	43	19.7
1-3 years	34	15.6
3-6 years	48	22.0
More than 6 years	93	42.7

**How often do
you currently
play online
games?**

1-2 days per week	67	30.7
3-4 days per week	64	29.4
5-6 days per week	37	17.0
Everyday	50	22.9

**Which types
of online
games do you
play most
often?**

First-Person Shooter (FPS)	39	17.9
Multiplayer Online Battle Arena (MOBA)	110	50.5
Battle Royale	69	31.7

**To what extent
do you
perceive the
games you
play as
competitive?**

Not competitive at all	8	3.7
Slightly competitive	39	17.9
Moderately competitive	60	27.5
Highly competitive	77	35.3

Extremely competitive	34	15.6
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Note. *n* = number of participants; % = percentage; *M* = mean; *SD* = standard deviation

4.4.2 Descriptive Statistics

Table 4.4 presents the mean and standard deviation of the two independent variables of the research, which are perceived stress (*M* = 2.242, *SD* = .637) and gaming addiction (*M* = 2.879, *SD* = 1.001). These findings suggest that participants reported a relatively higher level of gaming addiction and aggressive behavior compared to perceived stress.

Table 4.4

Descriptive Statistics of Aggressive Behavior, Perceived Stress and Gaming Addiction

Variables	<i>M</i>	<i>SD</i>
Aggressive Behaviour	2.816	1.002
Perceived Stress	2.242	.637
Gaming Addiction	2.879	1.001

Note. *M* = mean; *SD* = standard deviation.

4.5 Assumptions of Multiple Linear Regression (MLR)

4.5.1 Independence of Errors

The Durbin–Watson test was applied in this study to examine the assumption of independence of errors. Any value ranged between 1 and 3 is listed to be in the acceptable range for the Durbin–Watson (Field, 2009). With the two predictors of our study which are gaming addiction and perceived stress, the result of the of the Durbin–Watson test for the independence of errors is presented in Table 4.5. The value of 2.05 indicates that there is no violation of this assumption. A value close to 2 suggests that the residuals are independent and that there is minimal autocorrelation among the residuals.

Table 4.5

Durbin-Watson Test

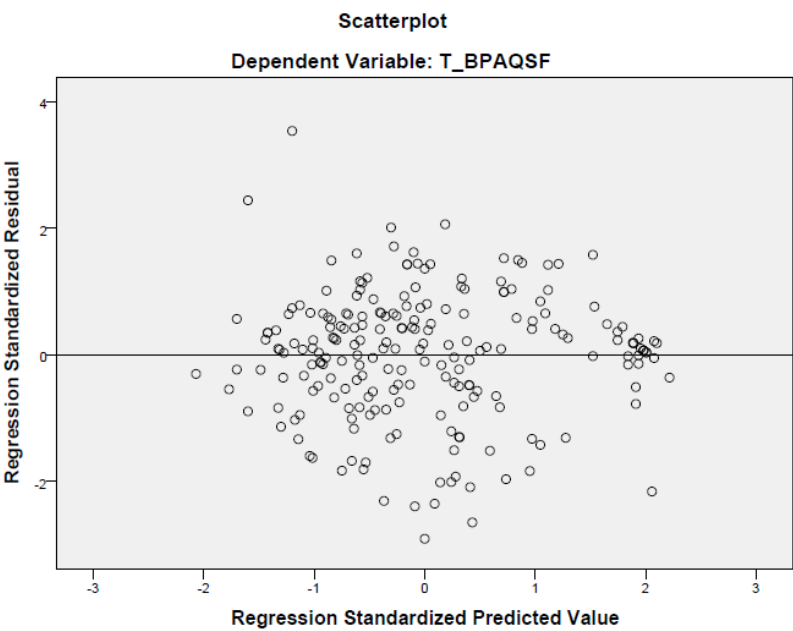
Model	Durbin-Watson
1	2.051

4.5.2 Normality of Residual, Linearity, and Homoscedasticity

A scatterplot of the standardised predicted value of aggressive behavior against the standardised residual was shown in Figure 4.5.1. It is observable that the residuals are evenly and randomly distributed around the zero line. The results indicates that the assumptions of linearity and homoscedasticity are met, suggesting that the regression model is appropriate for further analysis.

Figure 4.5.1

Scatterplot of Standardized Predicted Value and Standardized Residual



4.5.3 Multicollinearity

In this study, the correlation between the predictors was examined with the utilisation of Tolerance and Variance Inflation Factor (VIF). According to Hair et al (2010), no multicollinearity is detected when the Tolerance value is above .10 and the VIF value is below 10. Collinearity statistics of Tolerance and VIF were demonstrated in Table 4.6, showing that all values fall within the acceptable thresholds. This indicates low inter-correlations among the independent variables. Therefore, no multicollinearity was found in the current study.

Table 4.6

Coefficients among Variables

Variables	Collinearity Statistics	
	Tolerance	VIF
Perceived stress	.641	1.561
Gaming addiction	.641	1.561

4.6 Multiple Linear Regression Analysis

In order to examine the effects of perceived stress and gaming addiction on aggressive behavior, a Multiple Linear Regression analysis was conducted. Table 4.7 shows that the model was statistically significant, $F(2, 215) = 171.527, p < .001$, indicating that the predictors significantly explained the variance in aggressive behavior. The model accounted for 61.1% of the variance in aggressive behavior ($R^2 = .611$) (refer to Table 4.8). As shown in Table 4.9, both gaming addiction ($\beta = .523, p < .001$) and perceived stress ($\beta = .349, p < .001$) were found to be significant positive predictors of aggressive behavior among the respondents.

Table 4.7

ANOVA Table

Model		Sum of Square	df	Mean Square	F	Sig.
1	Regression	134.047	2	67.024	171.527	.000 ^b
	Residual	84.010	15	.391		
	Total	218.058	17			

a. Dependent Variable: Aggressive Behavior

b. Predictors: (Constant), Perceived Stress, Gaming Addiction

Table 4.8

Model Summary

Model	R	R Squared	Adjusted R-Square	Std. Error of the Estimate	Durbin-Watson
1	0.784 ^a	.615	.611	.625	2.051

a. Predictors: (Constant), Perceived Stress, Gaming Addiction

b. Dependent Variable: Aggressive Behavior

Table 4.9

Regression (Coefficients)

		Unstandardized Coefficients	Standardized Coefficients			
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.075	.160		.470	.639

Perceived stress	.550	.083	.349	6.608	<.001
Gaming addiction	.524	.053	.523	9.890	<.001

4.8 Summary of Results

To sum up, the results of this study support both hypotheses. Gaming addiction and perceived stress were found to significantly predict aggressive behavior among young adults in Malaysia. Specifically, both variables were found to positively predict aggressive behavior, indicating that higher levels of gaming addiction and perceived stress are associated with increased aggressive behavior.

Table 4.10

Summary of Results

Hypotheses	Outcomes
H1: Gaming addiction positively predicts aggressive behavior among young adults in Malaysia.	The hypothesis is accepted.
H2: Perceived stress positively predicts aggressive behavior among young adults in Malaysia.	The hypothesis is accepted.

Chapter 5

Discussion

5.1 Discussion of the Findings

5.1.1 Gaming Addiction and Aggressive Behavior

The present study found that gaming addiction positively predicts aggressive behavior among young adults in Malaysia, thereby supporting Hypothesis 1. This indicates that higher gaming addiction levels lead to increased aggressive behavior. This finding aligns with previous studies, which have demonstrated a positive association between gaming addiction and aggressive behavior (Akbaş & İşleyen, 2024; Caner & Evgin, 2021; Pan et al., 2024). In addition, the result is congruent with several longitudinal and meta-analytic findings, suggesting that individuals who are more engaged in addictive gaming behavior may be more prone to exhibiting aggressive behavior in real life (Li et al., 2023; Lin et al., 2024; Nagar et al., 2025).

The findings of the present study can be explained through the lens of prolonged engagement in competitive and immersive gaming environments, as supported by prior research. Pan et al. (2023) found that excessive gaming not only directly predicts higher levels of aggression among young adults but also operates through psychological mechanisms such as impaired self-control and heightened narcissistic tendencies, which exacerbate hostile responses. Similarly, Akbaş and İşleyen (2024) suggested that excessive engagement in competitive digital games exposes players to repeated competitive challenges and scenarios that often require the use of aggressive strategies. This pattern is reflected in the gaming behavior of participants in present study, where 42.7% of them reported long-term engagement in online gaming for more than six years, indicating prolonged exposure that may reinforce habitual gaming patterns (refer to Table 4.3). Additionally, approximately 40% of participants in this study reported engaging in gaming for at least five days per week.

This suggests a considerable high level of gaming frequency. As a result, such sustained and frequent exposure to competitive and high-pressure game environments can heighten emotional arousal, including frustration, irritability, and stress (Nugroho & Reza, 2022). Gradually, these repeated experiences may normalize aggressive responses beyond the gaming context and increase the likelihood of their expression in real-life contexts.

Furthermore, competitive game settings have shown to prime aggressive cognition and behavior due to the repeated exposure to competition pressures and failure (Sun et al., 2023). As the players' aggressive affect heightens, their readiness to respond in a hostile manner also increases. Besides, frustration arising from game difficulty, task complexity, or challenges in mastering game controls has been shown to predict aggression (Lopes, 2014). This indicates that cognitive overload and repeated setbacks can elicit hostile behavioral tendencies. These findings suggest that the interplay of competitive demands and challenging gameplay not only reinforces aggressive thought patterns but may also facilitate the translation of aggressive tendencies into behavioral responses. Taken together, these findings highlight the psychological processes through which prolonged and intense competitive gaming can contribute to the emergence of aggressive behavior among players, thereby explaining the relationship observed in the present study.

From a theoretical perspective, the present study's findings are also aligned with the General Aggression Model (GAM), which serves as the theoretical framework guiding this study. GAM conceptualises aggression as the result of interactions between cognitive, emotional, and situational factors, whereby exposure to gaming environments can influence individuals' thoughts, feelings, and arousal. Ultimately, this shapes behavioral outcomes, such as aggressive behavior (Olejarnik & Romano, 2023). Moreover, Chen et al. (2023) found that engagement in video games, particularly those involving immersive and competitive elements, can reinforce aggressive behavioral tendencies. These findings suggest that repeated exposure to gaming environments may contribute to the development of aggression,

consistent with explanations grounded in the GAM, and align with the relationship identified in the present study.

5.1.2 Perceived Stress and Aggressive Behavior

The findings of the present study provide empirical support for Hypothesis 2, which proposed that perceived stress positively predicts aggressive behavior among young adults in Malaysia. The results of the statistical analysis revealed that perceived stress is a significant positive predictor of aggression. This indicates that when perceived stress increases, the propensity for young adults to engage in aggressive behavior increases.

These findings are consistent with previous studies conducted across various cultural contexts, which have consistently highlighted that heightened stress levels have led to increased aggressive behavior among college students and young adults (Malaviya, 2025; Mohamed et al., 2024; Onyedire et al., 2023; Wei et al., 2024). Furthermore, the findings of the current study also align with the longitudinal study conducted by Yin et al. (2025), which demonstrated that perceived stress at one point in time significantly predicted later aggressive tendencies over a six-month interval.

In the present study, the positive relationship between perceived stress and aggressive behavior can be explained by the mechanisms of emotional regulation and physiological arousal. As young adults experience several life transitions and challenges such as academic pressures, separation from family members and interpersonal conflicts, they often experience heightened emotional overload (Olutunde, 2017). When young adults perceive these demands as exceeding their available coping resources, it may contribute to emotional dysregulation and a reduction of self-control, thereby increasing the likelihood to engage in aggressive behavior (Wei et al., 2024). This is because emotional dysregulation arises from the interplay of cognitive, emotional, and physiological processes that shape how individuals react to stress (Blader et al., 2025). Therefore, effective management of emotional responses through

mechanisms such as inhibitory control and cognitive flexibility, plays a crucial role in mitigating the risk of displaying aggressive behavior. This is particularly important for young adults, who often struggle to cope with stress.

Additionally, studies on sensory sensitivity and cognitive appraisal suggest that heightened stress can alter how individuals perceive potential threats, making them more prone to aggressive responses (Blader et al., 2025). This is further supported by Guan et al. (2024), who found that perceived stress directly mediates the relationship between self-compassion and aggression, particularly reactive aggression. Given that reactive aggression is often triggered by perceived threats or provocations, these findings suggest that reducing perceived stress can help individuals manage stress more effectively, thereby decreasing the likelihood of aggressive behavior. This may help explain the findings of the present study, which highlighted that heightened perceived stress could increase aggressive responses by affecting how individuals appraise and react to stressful situations, particularly among young adults in Malaysia.

Moreover, the high representation of university students within the current study's sample (86.7%) also provides a specific contextual explanation for the finding, as students are particularly vulnerable to the rising academic and societal stressors that can lead to externalised hostility (refer to Table 4.3). Increased stress has been shown to significantly heightens physiological arousal while simultaneously impairing an individual's ability to engage in rational problem-solving (Malaviya, 2025). This implies that when young adults in Malaysia experience overwhelming stress, they may lack the mental and emotional resources to control their impulses effectively, leading them to engage in aggressive behavior as a maladaptive coping mechanism to release intense internal tension.

5.2 Implication of Study

5.2.1 Theoretical Implication

The results of this study provide an empirical support for the General Aggression Model (GAM) by demonstrating that both gaming addiction and perceived stress significantly and positively predict aggressive behavior among young adults in Malaysia. It then reinforces the GAM's proposition that aggressive behavior arises from the interaction between personal and situational inputs through cognitive, affective, and arousal pathways.

Gaming addiction is a significant predictor of aggressive behavior among young adults. This finding aligns with numerous cross-sectional and meta-analytic studies (Lee et al., 2025; Li et al., 2023; Nagar et al., 2025) that also reported a positive association between gaming addiction and aggression. With the framework of GAM, the result of the present study supports the conceptualisation of gaming addiction as a personal factor that reinforces aggressive cognitions and emotional responses through repeated exposure to competitive or negative gaming environments (Ramezani & Changizi, 2024). The present study extends these findings by confirming that such effects are also obvious among young adults in the Malaysian context. It hence suggests that the influence of gaming addiction on aggression persists beyond adolescence, which has been the primary focus of previous research (Deng et al., 2024; Emre, 2020).

Moreover, gaming addiction exerts a stronger influence on aggressive behavior compared to perceived stress. This is reflected in its higher predictive value ($\beta = .523$) relative to perceived stress ($\beta = .349$). This suggests that stable behavioral tendencies, such as gaming, may exert a more substantial influence on aggressive outcomes than situational stressors. This finding extends the GAM by highlighting the growing importance of digital behavioural patterns in shaping aggression (Chen et al., 2025), particularly in modern contexts where gaming is highly prevalent (Sanjaya et al., 2023). It also supports arguments from previous literature that repetitive engagement in gaming environments may reduce impulse control over time (Korte, 2020).

In addition, perceived stress is also a significant predictor of aggressive behavior. This finding is consistent with prior research (Mohamed et al., 2024; Wei et al., 2024; Yin et al., 2025), which demonstrated that heightened stress levels are indeed associated with increased aggressive behavior. Within the framework of GAM, the results of the present study support the role of perceived stress as a situational factor influencing internal states, particularly affect and arousal (Klimek et al., 2023). Elevated stress may lead to emotional dysregulation (Veltri et al., 2026), frustration (Amor & Nino, 2025), and heightened physiological arousal (Mbiydenyuy et al., 2024), thereby increasing the likelihood of aggressive responses.

Furthermore, the present findings help clarify inconsistencies in the existing literature on gaming addiction and aggression. While some studies (Shabbir et al., 2020) reported negative associations between gaming addiction and aggression, the current study supports the dominant perspective that gaming addiction is positively associated with aggressive behavior. This contributes to the ongoing debate by providing evidence from a Malaysian young adult sample, thereby strengthening the generalisability of the GAM across cultural contexts.

At last, this study contributes to the literature by addressing the lack of Malaysian-based evidence on gaming addiction and aggression. A considerable proportion of prior studies examining the relationship between gaming addiction and aggressive behavior have been conducted in non-Malaysian contexts, for instance, Turkey, China, and India (Akbaş & Işleyen, 2024; Huang et al., 2017; Mandal & Roy, 2024). These studies provide insight, for example, into how digital game addiction triggers aggression in adolescents in Turkey (Akbaş & Işleyen, 2024); how interpersonal problems and health adaptation difficulties of adolescents influence aggressive behavior in rural areas of China (Huang et al., 2017). Despite their valuable contributions, the applicability of these findings may be shaped by cultural, social, and environmental differences. Therefore, the present study contributes to the

literature by providing empirical evidence from a Malaysian young adult sample, thereby addressing a contextual gap in the existing research.

5.2.2 Practical Implication

Touching upon practical implications, the present research could provide informative insight into practical implications, particularly for young adults, educational institutions, and mental health practitioners in Malaysia.

Given that gaming addiction was identified as a predictor of aggressive behavior, targeted interventions aimed at promoting healthy gaming habits are essential. Educational institutions, especially universities, can implement awareness programmes that educate students on the potential negative consequences of excessive gaming, including its impact on emotional regulation and behavioral outcomes, such as aggressive behavior. For instance, the RETHink Life Game was found to be useful in trains emotion regulation abilities among college students, which may help reduce maladaptive behavioral response (David & Tomoiagă, 2025). Other than that, workshops on time management and digital well-being strategies may be included as well, to further support students in regulating their gaming behaviour, thereby reducing the likelihood of aggression associated with excessive gaming.

In addition, the significant role of perceived stress highlights the importance of stress management interventions among young adults. Higher learning institution can consider to introducing structured support systems, such as stress management workshops, peer support programmes, or even free counselling services for students. By doing so, they can equip students with coping skill to manage stress more effectively, which in turns reducing the likelihood of stress-related aggressive behavior.

Other than that, the present finding can act as an extra piece of guidelines for mental health practitioners and counsellors when it comes to developing interventions and treatment strategies. A more inclusive approach may be implemented by the mental health practitioners

and counsellors when addressing aggressive behavior. For example, interventions could also consider underlying factors such as excessive gaming and high perceived stress, rather than focusing solely on anger management. Identifying maladaptive thought patterns, regulating emotional responses, and modifying problematic gaming behavior may be done with the implementation of Cognitive-behavioural therapy (CBT) (Byeon, 2025).

In sum, the study provides insightful information for developing targeted interventions aimed at reducing aggressive behavior. By addressing both gaming addiction and perceived stress, stakeholders can better support young adults in managing their behaviors and improving their overall psychological well-being.

5.3 Limitations of Study

Despite its contributions, several limitations constrain the generalizability of this study's findings. First, the use of non-probability sampling methods, particularly convenience and purposive sampling in this study context, is a potential factor contributing to the limited generalizability. According to Stratton (2023), these sampling methods allow for efficient data collection by targeting participants who are readily accessible and willing to participate. However, they are considered less reliable due to their susceptibility to selection bias, undermining the extent to which the findings can be generalized to the wider population (Stratton, 2023). As a result, the sample might not be representative of the demographic and diversity of the target population, which in turn limits the external validity and generalizability of the observed relationship in this study.

On top of that, the generalizability of the findings is further restricted by the disproportionate representation of key demographic characteristics within the sample. In terms of ethnicity, the majority of participants were Chinese (87.2%), while Indians (6.0%), Malays (3.7%), and other ethnic groups (3.1%) were underrepresented. Given Malaysia's multicultural context, the cultural variations in social norms, stress coping mechanisms, and

gaming behaviors may influence the relationships observed between the variables. Therefore, the results of this study may primarily reflect only the experiences of the Chinese respondents, who constituted most of the sample. Similarly, the generalizability of the findings is limited by the uneven distribution of participants' educational level and occupational status. Most participants held a bachelor's degree (65.1%) and were students (86.7%). This overrepresentation of university students indicates that the findings may primarily reflect this specific subgroup, rather than the wider young adult population.

Furthermore, another limitation is the cross-sectional nature of research design, which involves the collection of data at a single point in time. Although this approach enables the recognition of relationships between variables, it restricts the ability to establish causal inferences (Wang & Cheng, 2020). In particular, this design cannot determine whether changes in gaming addiction and perceived stress contribute to changes in aggressive behavior. In addition, the cross-sectional nature of the study limits understanding of the long-term dynamics governing these relationships, such as how gaming habits and stress levels may evolve over time and influence aggression. Hence, the findings are restricted to the identification of associations rather than the establishment of causal relationships, highlighting the need for future longitudinal research to examine the causal pathways underlying these variables.

Additionally, one important limitation of this study lies in the use of a quantitative research design. While enabling efficient data collection from a larger sample and facilitating statistical analysis of the relationships among variables, this approach relies on structured measures with limited response options (Sardana et al., 2023). This may restrict the depth of understanding as it oversimplifies participants' experiences and overlooks contextual and subjective factors. Thus, the findings are limited to the measurement of patterns and relationships rather than the exploration of in-depth experiences, highlighting the need for

future qualitative or mixed-methods research to better understand the contextual factors influencing these variables.

Lastly, the limitation of this study concerns participants' language proficiency, which may have influenced the accuracy and reliability of the results. Limited proficiency could have affected participants' comprehension of the survey items, thereby introducing potential measurement error into their responses. Although the scales used (e.g., BPAQ-SF, PSS-10, GAS-7) are confirmed to have good reliability from the past studies, some participants in the present study faced difficulty interpreting items in the scales. For instances, items like "At times I feel I have gotten a raw deal out of life" and "Sometimes I fly off the handle for no good reason" from BPAQ-SF. This may potentially lead to misunderstandings and inaccurate responses. Therefore, future research could simplify item wording and conduct validity tests on modified questionnaires to ensure interpretive accuracy.

5.4 Recommendations for Future Research

Several recommendations are proposed to enhance future research similar to this study. Initially, stratified random sampling can be employed as it involves dividing the population into distinct subgroups or strata based on specific characteristics, then selecting a random sample from each group to ensure balanced representation for all relevant subgroups (Makwana et al., 2023). By using this method, it ensures the proportional representation of the diverse demographic composition of Malaysia, including various ethnicities and regions. To illustrate, future studies could stratify participants by ethnicity (e.g., Malay, Chinese, Indian) and region (e.g., Northern, Central, Southern, East Coast, Sabah, Sarawak), then randomly sample from each subgroup in proportion to its presence in the population. This would result in a more precise and reliable findings. Moreover, this approach would have allowed a more accurate generalization of the findings to the broader Malaysian population, offering a clearer insight into how gaming addiction and perceived stress predict aggressive

behavior among young adults in Malaysia, at the same time accounting for demographic variations in gaming habits and stress levels.

Secondly, longitudinal research can be implemented in future studies to overcome the limitations associated with cross-sectional study. It is because cross-sectional study can only capture data at one point in time, which makes it difficult to establish causal relationships between gaming addiction, perceived stress, and aggressive behavior (Maier et al., 2023). Conversely, a longitudinal approach would enable researchers to monitor changes of participants over an extended period, simultaneously providing insights into the dynamic evolution and interrelationships of these factors over time (Caruana et al., 2015). For instance, by following up with participants at multiple time points (e.g., over six months or a year), researchers could observe the shifts in gaming patterns, perceived stress levels and tendencies to conduct aggressive behavior, and gain insights on how these changes impact one another. In short, this approach would allow for the exploration of the long-term effects of gaming addiction on perceived stress and aggressive behavior, providing valuable insights into the development of these behavior and how they influence each other over time, thereby facilitating a more comprehensive and detailed insight of the topic.

Meanwhile, future studies can incorporate a mixed-methods approach that combines both quantitative and qualitative data. Qualitative data can be obtained through methods such as interviews or focus groups, which aims in exploring participants' personal experiences with gaming addiction, stress, and aggressive behavior (Genc et al., 2024). To demonstrate, qualitative interviews could explore how participants perceive the impact of gaming on their emotional well-being, how they manage stress, and what factors contribute to their aggressive behavior. Consequently, this qualitative data would complement the quantitative findings, as it provides a more holistic view of the issue and reveals underlying motivations and personal experiences that may not be captured through surveys alone. Hence, this approach would

address the limitations of structured surveys and enable a more nuanced exploration of the variables (Ahmed et al., 2024).

Ultimately, future research should also ensure that questionnaire items are comprehensible to a wider range of respondents. A brief explanatory note can be included within the questionnaire to clarify the meaning of specific terms to help participants better understand the wording of each item. Besides that, a brief note can also be included in the instructions, indicating that participants may contact the researcher if they face difficulty in understanding any of the items. Researchers could also simplify the wording of certain questions to avoid confusion. According to Balza et al. (2022), cognitive interviewing is employed to detect questionnaire items that may cause confusion, and the questions were rewritten in simpler language to ensure that respondents could accurately grasp their intended meaning. For instance, phrases like “At times I feel I have gotten a raw deal out of life” in BPAQ-SF could be rephrased as “I sometimes feel life is unfair”. All simplified items should preserve the intended meaning of the original questionnaire items to ensure that the measurement of the construct remains consistent. Additionally, validity tests should be conducted beforehand to ensure that the interpretation of the words is more accurate to minimize any misinterpretation that could arise from unclear or complex language.

References

- Abdul Kadir, N., Nordin, N., Mohd, R., & Griffiths, M. D. (2025) Prevalence of Internet Gaming Disorder and its association with loneliness and leisure boredom among Malaysian gamers during the COVID-19 pandemic. *Journal of Muslim Mental Health*, 18(3). <https://doi.org/10.3998/jmmh.2374>
- Adachi, P. J. C., & Willoughby, T. (2013). Demolishing the competition: The longitudinal link between competitive video games, competitive gambling, and aggression. *Journal of Youth and Adolescence*, 42(7), 1090–1104. <https://doi.org/10.1007/s10964-013-9952-2>
- Ahmed, A., Pereira, L., & Kimberly, J. (2024). *Mixed methods research: Combining both qualitative and quantitative approaches*. Researchgate.
- Akbaş, E., & İşleyen, E. K. (2024). The effect of digital game addiction on aggression and anger levels in adolescents: A cross-sectional study. *Archives of Psychiatric Nursing*, 52, 106–112. <https://doi.org/10.1016/j.apnu.2024.06.022>
- Allen, J. J., & Anderson, C. A. (2017). Aggression and violence: Definitions and distinctions. *The Wiley handbook of violence and aggression*, 1, 1-14. <https://doi.org/10.1002/9781119057574.whbva001>
- Allen, J. J., Anderson, C. A., & Bushman, B. J. (2017). The general aggression model. *Current Opinion in Psychology*, 19, 75–80. <https://doi.org/10.1016/j.copsyc.2017.03.034>
- Alnaimi, S., Al-Habies, F. A. M., Baniyounes, M. M., Alqudah, A. F., & Nuaimat, A. (2025). Electronic game addiction and eating behaviors: Implications for adolescent health and academic engagement in Jordan. *Educational Process: International Journal*, 17. <https://doi.org/10.22521/edupij.2025.17.328>

- Amor, L. B., & Nino, M. (2025). Emotion suppression and aggressive behavior: Frustration tolerance as a mediator in young adults. *Journal of Assessment and Research in Applied Counselling*, 7(2), 163–171. <https://doi.org/10.61838/kman.jarac.7.2.19>
- Anderson, C. A., & Bushman, B. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: A meta-analytic review of the scientific literature. *Psychological Science*, 12(5), 353–359. <https://doi.org/10.1111/1467-9280.00366>
- Andrade, C. (2020). Sample size and its importance in research. *Indian Journal of Psychological Medicine*, 42(1), 102–103. https://doi.org/10.4103/IJPSYM.IJPSYM_504_19
- Austerman, J. (2017). Violence and aggressive behavior. *Pediatrics in review*, 38(2), 69-80. <https://doi.org/10.1542/pir.2016-0062>
- Azmi, H. (2025, July 15). Viral knife attack on Chinese student shocks Malaysia. *South China Morning Post*. <https://www.scmp.com/week-asia/people/article/3318227/viral-knife-attack-chinese-student-shocks-malaysia>
- Ballard, M. E., & Spencer, M. T. (2023). Importance of social videogaming for connection with others during the COVID-19 pandemic. *Games and culture*, 18(2), 251–264. <https://doi.org/10.1177/15554120221090982>
- Balza, J. S., Cusatis, R. N., McDonnell, S. M., Basir, M. A., & Flynn, K. E. (2022). Effective questionnaire design: How to use cognitive interviews to refine questionnaire items. *Journal of Neonatal and Perinatal Medicine*, 15(2), 345–349. <https://doi.org/10.3233/NPM-210848>
- Barnett, V., & Lewis, T. (1978). *Outliers in statistical data*. Wiley.

- Barrington, G., & Ferguson, C. J. (2022). Stress and violence in video games: Their influence on aggression. *Trends in Psychology, 30*(3), 497–512. <https://doi.org/10.1007/s43076-022-00141-2>
- Bélangier, K., & Blanchette, I. (2021). Stressful life events are related to more negative interpretations, but not under acute stress. *Psychological Reports, 125*(4), 1988–2008. <https://doi.org/10.1177/00332941211014150>
- Blader, J. C., Garrett, A. S., & Pliszka, S. R. (2025). What processes are dysregulated among emotionally dysregulated youth? *Journal of Child Psychology and Psychiatry, 66*(4), 516–546. <https://doi.org/10.1111/jcpp.14126>
- Blasi, M. D., Giardina, A., Giordano, C., Coco, G. L., Tosto, C., Billieux, J., & Schimmenti, A. (2019). Problematic video game use as an emotional coping strategy: Evidence from a sample of MMORPG gamers. *Journal of Behavioral Addictions, 8*(1), 25–34. <https://doi.org/10.1556/2006.8.2019.02>
- Borrego-Ruiz, A., & Borrego, J. J. (2025). Adolescent aggression: A narrative review on the potential impact of violent video games. *Psychology International, 7*(1), 12. <https://doi.org/10.3390/psycholint7010012>
- Breuer, J., Scharnow, M., & Quandt, T. (2015). Sore losers? A reexamination of the frustration–aggression hypothesis for colocated video game play. *Psychology of Popular Media Culture, 4*(2), 126–137. <https://doi.org/10.1037/ppm0000020>
- Browne, R. H. (1995). On the use of a pilot sample for sample size determination. *Statistics in Medicine, 14*(17), 1933–1940. <https://doi.org/10.1002/sim.4780141709>
- Brunborg, G. S., Mentzoni, R. A., & Frøyland, L. R. (2014). Is video gaming, or video game addiction, associated with depression, academic achievement, heavy episodic drinking, or conduct problems? *Journal of Behavioral Addictions, 3*(1), 27–32. <https://doi.org/10.1556/jba.3.2014.002>

- Bryant, F. B., & Smith, B. D. (2001). Refining the architecture of aggression: A measurement model for the Buss–Perry Aggression Questionnaire. *Journal of Research in Personality*, 35(2), 138–167. <https://doi.org/10.1006/jrpe.2000.2302>
- Bujang, M. A. (2021). A step-by-step process on sample size determination for medical research. *Malaysian Journal of Medical Sciences*, 28(2), 15–27. <https://doi.org/10.21315/mjms2021.28.2.2>
- Bujang, M. A., Omar, E. D., Foo, D. H. P., & Hon, Y. K. (2024). Sample size determination for conducting a pilot study to assess reliability of a questionnaire. *Restorative Dentistry & Endodontics*, 49(1). <https://doi.org/10.5395/rde.2024.49.e3>
- Byeon, H. (2025). Effectiveness of non-invasive interventions for internet gaming disorder: A meta-analysis of randomized controlled trials. *World Journal of Psychiatry*, 15(11). <https://doi.org/10.5498/wjp.v15.i11.110759>
- Byeon, H. (2025). Impact of video game addiction on social interaction: An observational review examining loneliness, social anxiety, and social activity. *World Journal of Psychiatry*, 15(12). <https://doi.org/10.5498/wjp.v15.i12.110653>
- Caner, N., & Evgin, D. (2021). Digital risks and adolescents: The relationships between digital game addiction, emotional eating, and aggression. *International Journal of Mental Health Nursing*, 30(6), 1599–1609. <https://doi.org/10.1111/inm.12912>
- Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease*, 7(11), 537–540. <https://doi.org/10.3978/j.issn.2072-1439.2015.10.63>
- Centeio, E. E., Whalen, L., Kulik, N., Thomas, E., & McCaughtry, N. (2015). Understanding stress and aggression behaviors among urban youth. *Journal of Yoga & Physical Therapy*, 5(2). <https://doi.org/10.4172/2157-7595.1000187>

- Chan, J. (2025, September 13). Zara Qairina inquest: What we know so far. *Malay Mail*.
<https://www.malaymail.com/news/malaysia/2025/09/13/zara-qairina-inquest-what-we-know-so-far/190957>
- Chan, J. H., & Rabbani, M. (2020). The relationship between gaming addiction, aggressive behaviour and narcissistic personality traits among university students in Malaysia. *Indian Journal of Public Health Research & Development*, 11(5), 620–621.
<https://doi.org/10.37506/ijphrd.v11i5.9401>
- Chen, S., Mao, B., & Liu, Y. (2022). The effect of justified video game violence on aggressive behavior and moderated immersion: An experimental approach. *Aggressive Behavior*, 49(1), 68–75. <https://doi.org/10.1002/ab.22054>
- Chen, Y., Wang, L., Guo, S., & Gu, Q. (2025). Violent or competitive? Unpacking adolescent cyber-aggressive behavior in text, video, and game context. *Frontiers in Psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1577717>
- Chiu, Y., Lu, F. J., Lin, J., Nien, C., Hsu, Y., & Liu, H. (2016). Psychometric properties of the Perceived Stress Scale (PSS): Measurement invariance between athletes and non-athletes and construct validity. *PeerJ*, 4. <https://doi.org/10.7717/peerj.2790>
- Christopher, M., Ferry, M., Simmons, A., Vasquez, A., Reynolds, B., & Grupe, D. (2024). Psychometric properties of the Buss–Perry Aggression Questionnaire-short form among law enforcement officers. *Aggressive Behavior (Print)*, 50(2).
<https://doi.org/10.1002/ab.22145>
- Cohen, S. (1988). Perceived stress in a probability sample of the United States. *Psycnet.apa.org*. <https://psycnet.apa.org/record/1988-98838-002>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385. <https://doi.org/10.2307/2136404>

- Cook, R. D., & Weisberg, S. (1982). *Residuals and influence in regression*. Chapman and Hall.
- Crotty, G., Doody, O., & Lyons, R. (2013). Aggressive behaviour and its prevalence within five typologies. *Journal of Intellectual Disabilities*, 18(1), 76–89.
<https://doi.org/10.1177/1744629513511356>
- David, O. A., & Tomoiagă, C. (2025). Game-based assessment of emotion regulation abilities in college students: A usability study of the RETHink Life Game assessment system. *International Journal of Human-Computer Interaction*, 1–8.
<https://doi.org/10.1080/10447318.2025.2462749>
- Delhove, M., & Greitemeyer, T. (2021). Violent media use and aggression: Two longitudinal network studies. *The Journal of Social Psychology*, 161(6), 697–713.
<https://doi.org/10.1080/00224545.2021.1896465>
- Deng, X., Hu, Y.-B., Liu, C.-Y., Li, Q., Yang, N., Zhang, Q.-Y., Liu, L., Qiu, J.-N., Xu, H.-B., Xue, L., Shi, Y.-W., Wang, X.-G., & Zhao, H. (2024). Psychological distress and aggression among adolescents with internet gaming disorder symptoms. *Psychiatry Research*. <https://doi.org/10.1016/j.psychres.2023.115624>
- Department of Statistics Malaysia. (2023, November 2). *Crime Statistics Malaysia*.
<https://www.dosm.gov.my/portal-main/release-content/crime-statistics-malaysia-2023>
- Diamond, P. M., & Magaletta, P. R. (2006). The Short-Form Buss-Perry Aggression Questionnaire (BPAQ-SF). *Assessment*, 13(3), 227–240.
<https://doi.org/10.1177/1073191106287666>
- Dudovskiy, J. (2016). The ultimate guide to writing a dissertation in business studies: A step-by-step assistance. *Pittsburgh, USA*, 51.

- Du, J., Huang, J., An, Y., & Xu, W. (2018). The relationship between stress and negative emotion: The mediating role of rumination. *Clinical Research and Trials*, 4(1).
<https://doi.org/10.15761/crt.1000208>
- Du, X., Liu, X., Zhao, Y., & Wang, S. (2023). Psychometric testing of the 10-item perceived stress scale for Chinese nurses. *BMC Nursing*, 22(1), 430.
<https://doi.org/10.1186/s12912-023-01602-4>
- El-Masri, M. M., Mowbray, F. I., Fox-Wasylyshyn, S. M., & Kanters, D. (2020). Multivariate outliers: A conceptual and practical overview for the nurse and health researcher. *Canadian Journal of Nursing Research*, 53(3), 316–321.
<https://doi.org/10.1177/0844562120932054>
- Emran, M. G. I., Mahmud, S., Khan, A. H., Bristy, N. N. N., Das, A. K., Barma, R., Barma, A., Mita, M. H., Bosunia, L., Rahman, M., & Roy, M. (2024). Factors affecting stress levels among students: A virtual exploration. *European Journal of Medical and Health Sciences*, 6(6), 67–75. <https://doi.org/10.24018/ejmed.2024.6.6.2203>
- Emre, O. (2020). Effect of game addiction on reactive-proactive aggression in adolescents. *Annals of Medical Research*, 27(1), 85.
<https://doi.org/10.5455/annalsmedres.2019.12.799>
- Fam, J.Y., & Teo, L.Y. (2018). Prevalence and determinants of perceived stress among undergraduate students in a Malaysian university. *Journal of the University of Malaya Medical Centre*, 21(1), 1–5.
- Fatma, H. (2021). Personal identity, perceived level of stress, and tend to aggressive behavior among the adolescents and emerging adulthood. *International Journal of Applied Research*, 7(1), 151–155.
- Fekih-Romdhane, F., Malaeb, D., Dine, A. S. E., Obeid, S., & Hallit, S. (2022). The relationship between smartphone addiction and aggression among Lebanese

- adolescents: The indirect effect of cognitive function. *BMC Pediatrics*, 22(1), 735.
<https://doi.org/10.1186/s12887-022-03808-y>
- Field, A. (2009). *Discovering statistics using SPSS (3rd ed.)*. SAGE Publications.
- Fitrianto, A., & Xin, S. H. (2022). Comparisons between robust regression approaches in the presence of outliers and high leverage points. *Jurnal Ilmu Matematika dan Terapan*, 16(1), 243-252. <https://doi.org/10.30598/barekengvol16iss1pp241-250>
- Genc, E., Çakmak, F. N., Çiftçi, H., & Hoccoğlu, Z. M. (2024). “Fiction is the reality”: A qualitative study on digital game addiction and reality perception in young adults. *Children and Youth Services Review*, 157.
<https://doi.org/10.1016/j.chilyouth.2024.107445>
- Gey, J. W., Yap, C. K., Leow, K., & Lo, Y. Y. (2025). Resilience as a mediator between emotional intelligence (EI) and perceived stress among young adults in Malaysia. *Discover Mental Health*, 5(1), 37. <https://doi.org/10.1007/s44192-025-00166-w>
- Ghanad, A. (2023). An overview of quantitative research methods. *International Journal of Multidisciplinary Research and Analysis*, 6(8). <https://doi.org/10.47191/ijmra/v6 i8-52>
- Gonultas, B. M., Ozturk, M., Başçillar, M., Aydemir, I., Temiz-Sarikaya, S., Erkoc, B., Ervuz, C., & Turk, A. (2025). Predictive role of perceived stress and family climate on aggression of individuals during compulsory isolation. *Psychiatry*, 1–13.
<https://doi.org/10.1080/00332747.2025.2503005>
- Graves, B. S., Hall, M. E., Dias-Karch, C., Haischer, M. H., & Apter, C. (2021). Gender differences in perceived stress and coping among college students. *PLoS ONE*, 16(8).
<https://doi.org/10.1371/journal.pone.0255634>

- Guan, F., Zhan, C., Li, S., Tong, S., & Peng, K. (2024). Effects of self-compassion on aggression and its psychological mechanism through perceived stress. *BMC Psychology*, 12(1), 667. <https://doi.org/10.1186/s40359-024-02191-w>
- Guermazi, F., Halouani, N., Yaich, K., Ennaoui, R., Chouayakh, S., Aloulou, J., & Amami, O. (2017). Video and internet gaming addiction among young adults. *European Psychiatry*, 41, S203–S204. <https://doi.org/10.1016/j.eurpsy.2017.01.2158>
- Hair, J.F., Black, W., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective (7th ed.)*. Pearson.
- Hamdan, N. (2025, November 21). Bandar Utama school murder: Psych report on accused not ready, case put off to Dec 19. *The Star*. <https://www.thestar.com.my/news/nation/2025/11/21/bandar-utama-school-murder-psych-report-on-accused-not-ready-case-put-off-to-dec-19>
- Hayduk, K. S. (2024). Researchers “see” vulnerability to gaming addiction in the adolescent brain: Playing video games is a rite of passage for many adolescents, but for some, it could also be the first step to a gaming addiction. *University of Rochester Medical Center*.
- Hazel, J., Kim, H. M., & Every-Palmer, S. (2022). Exploring the possible mental health and wellbeing benefits of video games for adult players: A cross-sectional study. *Australasian Psychiatry: Bulletin of Royal Australian and New Zealand College of Psychiatrists*, 30(4), 541–546. <https://doi.org/10.1177/10398562221103081>
- Higuchi, S., Nakayama, H., Matsuzaki, T., Mihara, S., & Kitayuguchi, T. (2021). Application of the eleventh revision of the international classification of diseases gaming disorder criteria to treatment-seeking patients: Comparison with the fifth edition of the diagnostic and statistical manual of mental disorders internet gaming disorder criteria.

Journal of Behavioral Addictions, 10(1), 149–158.

<https://doi.org/10.1556/2006.2020.00099>

Huang, J., Tang, J., Tang, L., Chang, H. J., Ma, Y., Yan, Q., & Yu, Y. (2017). Aggression and related stressful life events among Chinese adolescents living in rural areas: A cross-sectional study. *Journal of Affective Disorders*, 211, 20–26.

<https://doi.org/10.1016/j.jad.2016.12.044>

Huang, L. S., Molenberghs, P., & Mussap, A. J. (2023b). Cognitive distortions mediate relationships between early maladaptive schemas and aggression in women and men. *Aggressive Behavior*, 49(4), 418–430. <https://doi.org/10.1002/ab.22083>

Hussain, Z., Griffiths, M. D., & Baguley, T. (2012). Online gaming addiction: Classification, prediction and associated risk factors. *Addiction Research & Theory*, 20(5), 359–371.

<https://10.3109/16066359.2011.640442>

Idrus, I. A. B. M., & Robinson, F. (2024). Factors associated with stress, anxiety, and depression among first-year undergraduate students at Universiti Malaysia Sabah. *Malaysian Journal of Public Health Medicine*, 24(3), 43–45.

Institute for Public Health. (2022). *Technical report national health and morbidity survey (NHMS) 2022: Adolescent health survey, Malaysia*. https://iku.gov.my/images/nhms-2022/Report_Malaysia_nhms_ahs_2022.pdf

Ismail, N., Tajjudin, A. I., Jaafar, H., Jaafar, N. R. N., 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).

<https://doi.org/10.3390/ijerph182211870>

- Jaafar, N. R. N., Baharudin, A., Tajjudin, I., Safarudin, M. A., Sufia, D. S., Zulkifle, N. H., & Tan, K. A. (2021). Factors correlated with internet gaming disorder among Malaysian university students. *Malaysian Journal of Medicine & Health Sciences*, 17(2).
- Kanat, S. (2019). The relationship between digital game addiction, communication skills and loneliness perception levels of university students. *International Education Studies*, 12(11), 80. <https://doi.org/10.5539/ies.v12n11p80>
- Kaur, T., & Agarwal, S. (2022). Correlation between perceived stress, physical fitness and health related quality of life in young adults. *Journal of Clinical and Diagnostic Research*. <https://doi.org/10.7860/jcdr/2022/56794.16418>
- Khazaal, Y., Chatton, A., Rothen, S., Achab, S., Thorens, G., Zullino, D., & Gmel, G. (2016). Psychometric properties of the 7-item game addiction scale among French and German speaking adults. *BMC Psychiatry*, 16(1), 132. <https://doi.org/10.1186/s12888-016-0836-3>
- Klimek, A., Mannheim, I., Schouten, G., Wouters, E. J. M., & Peeters, M. W. H. (2023). Wearables measuring electrodermal activity to assess perceived stress in care: A scoping review. *Acta Neuropsychiatrica*, 37.
- Korte, M. (2020). The digital revolution and its impact on human brain and behavior. *Dialogues in Clinical Neuroscience*, 22(2). <https://doi.org/10.31887/dens.2020.22.2>
- Kuss, D. J., & Griffiths, M. D. (2012). Online gaming addiction in children and adolescents: A review of empirical research. *Journal of Behavioral Addictions*, 1(1), 3–22. <https://doi.org/10.1556/jba.1.2012.1.1>
- Lang, X., Wang, Q., Huang, S., Feng, D., Ding, F., & Wang, W. (2022). Relations among perceived stress, fatigue, and sleepiness, and their effects on the ambulatory arterial stiffness index in medical staff: A cross-sectional study. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1010647>

- Lee, Y., Hull, K. A., & Kim, J. (2025). Beyond the joystick: Exploring the relationship between game addiction trajectories and aggression dimensions. *Journal of Criminal Justice*, 98. <https://doi.org/10.1016/j.jcrimjus.2025.102425>
- Lee, Y., Krajewski, A., Kim, J., & Hull, K. A. (2024). Exploring the relationship between stress and excessive gaming: The role of game efficacy. *Deviant Behavior*, 1–13. <https://doi.org/10.1080/01639625.2024.2341946>
- Lee, Z. W. Y., Cheung, C. M. K., & Chan, T. K. H. (2014). Explaining the development of the excessive use of massively multiplayer online games: A positive-negative reinforcement perspective. *Hawaii International Conference on System Sciences*, 47. <https://doi.org/10.1109/HICSS.2014.89>
- Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2009). Development and validation of a game addiction scale for adolescents. *Media Psychology*, 12(1), 77–95. <https://doi.org/10.1080/15213260802669458>
- Li, S., Wu, Z., Zhang, Y., Xu, M., Wang, X., & Ma, X. (2023). Internet gaming disorder and aggression: A meta-analysis of teenagers and young adults. *Frontiers in Public Health*, 11. <https://doi.org/10.3389/fpubh.2023.1111889>
- Lin, H., Yen, J., Lin, P., & Ko, C. (2021). The frustration intolerance of internet gaming disorder and its association with severity and depression. *The Kaohsiung Journal of Medical Sciences*, 37(10), 903–909. <https://doi.org/10.1002/kjm2.12394>
- Lin, S., Fabris, M. A., Longobardi, C., & Mastrokourou, S. (2024). The association between social media addiction and aggressive behaviors: A longitudinal and gender-specific analysis. *Journal of Adolescence*, 97(3), 798–807. <https://doi.org/10.1002/jad.12454>
- Liu, Y., Wang, Q., Jou, M., Wang, B., An, Y., & Li, Z. (2020). Psychometric properties and measurement invariance of the 7-item game addiction scale (GAS) among Chinese

- college students. *BMC Psychiatry*, 20(1), 484. <https://doi.org/10.1186/s12888-020-02830-7>
- Lopes, M. G. (2014, August 8). Video gamers' aggression linked to frustration, not violent content. *News Center*. <https://www.rochester.edu/newscenter/frustration-in-mastering-video-games-linked-to-aggression>
- Lowe, N. K. (2019). What is a pilot study? *Journal of Obstetric, Gynecologic & Neonatal Nursing*, 48(2), 117–118. <https://doi.org/10.1016/j.jogn.2019.01.005>
- Mahamid, F. A., & Bdier, D. (2021). The association between positive religious coping, perceived stress, and depressive symptoms during the spread of coronavirus (COVID-19) among a sample of adults in Palestine: A cross sectional study. *Journal of Religion and Health*, 60(1), 34-49. <https://doi.org/10.1007/s10943-020-01121-5>
- Maier, C., Thatcher, J. B., Grover, V., & Dwivedi, Y. K. (2023). Cross-sectional research: A critical perspective, use cases, and recommendations for IS research. *International Journal of Information Management*, 70. <https://doi.org/10.1016/j.ijinfomgt.2023.102625>
- Makwana, D., Engineer, P., Dabhi, A., & Chudasama, H. (2023). Sampling methods in research: A review. *International Journal of Trend in Scientific Research and Development*, 7(3), 762–768.
- Malaviya, D. (2025). Exploring the effect of stress on aggression among young college students. *Indian Journal of Social Sciences and Literature Studies*, 11(2).
- Mambra, A. J. K., & Kotian, S. (2023). *Understanding aggressive behavior: A comprehensive review of research*. Ssrn.com. <https://papers.ssrn.com/sol3/Delivery.cfm?abstractid=4497759>

- Mandal, R., & Roy, S. (2024). A correlational study on stress, resilience and aggression among college students in Kolkata. *International Journal of Indian Psychology, 12*(1), 1287-1294. <https://doi.org/10.25215/1201.121>.
- Maqsood, A., Gul, S., Noureen, N., & Yaswi, A. (2024). Dynamics of perceived stress, stress appraisal, and coping strategies in an evolving educational landscape. *Behavioral Sciences, 14*(7), 532. <https://doi.org/10.3390/bs14070532>
- Marchica, L. A., Mills, D. J., Derevensky, J. L., & Montreuil, T. C. (2019). The role of emotion regulation in video gaming and gambling disorder. *The Canadian Journal of Addiction, 10*(4), 19–29. <https://doi.org/10.1097/cxa.0000000000000070>
- Mariot, M., Zulkefli, N. A. M., & Fauzi, F. A. (2025). Exploring triggers of mobile gaming addiction in economically challenged youth in Malaysia: A cross-sectional study. *Malaysian Journal of Medicine and Health Sciences, 21*(1), 1–8. <https://doi.org/10.47836/mjmhs.21.1.30>
- Mbiydzennyuy, N. E., & Qulu, L. A. (2024). Stress, hypothalamic-pituitary-adrenal axis, hypothalamic-pituitary-gonadal axis, and aggression. *Metabolic Brain Disease, 39*, 1613–1636. <https://doi.org/10.1007/s11011-024-01393-w>
- Mbiydzennyuy, N. E., Joanna, M., Shabangu, T. W., & Qulu, L. (2024). Exploring the influence of stress on aggressive behavior and sexual function: Role of neuromodulator pathways and epigenetics. *Heliyon, 10*(5). <https://doi.org/10.1016/j.heliyon.2024.e27501>
- Memon, M. A., Thurasamy, R., Ting, H., & Cheah, J. H. (2025). Convenience sampling: A review and guidelines for quantitative research. *Journal of Applied Structural Equation Modeling, 9*(2), 1-15. [https://doi.org/10.47263/JASEM.9\(2\)01](https://doi.org/10.47263/JASEM.9(2)01)

Memon, M. A., Ting, H., Cheah, J.-H., Ramayah, T., Chuah, F., & Cham, T. H. (2020).

Sample size for survey research: Review and recommendations. *Journal of Applied Structural Equation Modeling*, 4(2). [https://doi.org/10.47263/JASEM.4\(2\).5](https://doi.org/10.47263/JASEM.4(2).5)

Metcalfe, O., & Pammner, K. (2013). Physiological arousal deficits in addicted gamers differ based on preferred game genre. *European Addiction Research*, 20(1), 23–32.

<https://doi.org/10.1159/000349907>

Mohamed, N. F., Manan, N. A., Chan, M. F. M. F., Rahmatullah, B., Wahab, R. A.,

Baharudin, S. N. A., Govindasamy, P., & 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>

Mohamed, N. H., Beckstein, A., Pang, N. T. P., Hutchings, P. B., Dawood, S. R. S., Fadilah, R., Sullivan, K., Yahaya, A., & Baral, J. E. V. (2022). Cross-cultural differences in

psychological health, perceived stress, and coping strategies of university students during the COVID-19 pandemic. *European Journal of Mental Health*, 17(2), 65–77.

<https://doi.org/10.5708/ejmh.17.2022.2.8>

Mohamed, N. H., Relajo-Howell, D., & Rathakrishnan, B. (2024). The relationship between

perceived stress and aggression behavior among individuals with Major Depressive Disorder (MDD). *International Journal for Multidisciplinary Research*, 6(6).

<https://doi.org/10.36948/ijfmr.2024.v06i06.31620>

Moreau, A., Bethencourt, A., Payet, V., Turina, M., Moulinard, J., Chabrol, H., & Chauchard,

E. (2023). Rage in video gaming, characteristics of loss of control among gamers: A qualitative study. *Psychology of Popular Media*, 13(3), 331–337.

<https://doi.org/10.1037/ppm0000481>

- Moreno, M., Riddle, K., Jenkins, M. C., Singh, A., Zhao, Q., & Eickhoff, J. (2021). Measuring problematic internet use, internet gaming disorder and social media addiction in young adults: A cross-sectional study. *JMIR Public Health and Surveillance*, 8(1). <https://doi.org/10.2196/27719>
- Muhsain, S. N. F., Aziz, M. R., Muhsain, S. N. F., Zainal, N. F., & Harun, N. H. (2024). Exploring perceived stress levels and coping strategies: An analysis among undergraduate pharmacy students. *Asian People Journal*, 7(1), 75–88. <https://doi.org/10.37231/apj.2024.7.1.567>
- Muszyński, M. (2023). Attention checks and how to use them: Review and practical recommendations. *Ask Research and Methods*, 32(1), 3–38. <https://doi.org/10.18061/ask.v32i1.0001>
- Nagar, K., Patidar, A. K., Mudgal, S. K., Gaur, R., & Patidar, V. (2025). Relationship of digital game addiction with aggression and anger in the post COVID-19 era: A systematic review and meta-analysis. *Investigación Y Educación En Enfermería*, 43(2). <https://doi.org/10.17533/udea.iee.v43n2e13>
- Nippold, M. A., Hegel, S. L., Sohlberg, M. M., & Schwarz, I. E. (1999). Defining abstract entities: Development in pre-adolescents, adolescents, and young adults. *Journal of Speech, Language, and Hearing Research*, 42(2), 473-481. <https://doi.org/10.1044/jslhr.4202.473>
- Nugroho, W. A., & Reza, I. F. (2022). Frustration as a forming factor of aggressive behavior in Moslem adolescents in playing online games. *Indonesian Journal of Multidisciplinary Sciences*, 1(1), 50–66. <https://doi.org/10.59066/ijoms.v1i1.50>
- Nunnally, J. C. (1978). *Psychometric theory (2nd ed.)*. McGraw-Hill.

- Nuriddinov, A. (2023). A study of the aggressive status of football fans. *American Journal of Social Sciences and Humanity Research*, 3(11), 73–80.
<https://doi.org/10.37547/ajsshr/Volume03Issue11-10>
- Olejarnik, S. Z., & Romano, D. (2023). Is playing violent video games a risk factor for aggressive behaviour? Adding narcissism, self-esteem and PEGI ratings to the debate. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1155807>
- Olutunde, S. (2017). Influence of perceived stress, anxiety, and self-esteem on aggressive behavior among teenagers. *International Journal of Innovative Science, Engineering & Technology*, 4(6).
- Onyedire, N. G., JohnBosco, C. C., Eze, C. M., & Offor, J. (2023). Why are adolescents getting so aggressive? Exploring the contributions of parenting styles, perceived stress, and media exposure. *African Journal for the Psychological Studies of Social Issues*, 26(2).
- Pakaslahti, L., & Keltikangas-Järvinen, L. (1998). Types of aggressive behavior among aggressive-preferred, aggressive non-preferred, non-aggressive preferred and non-aggressive non-preferred 14-year-old adolescents. *Personality and Individual Differences*, 24(6), 821–828. [https://doi.org/10.1016/s0191-8869\(98\)00012-9](https://doi.org/10.1016/s0191-8869(98)00012-9)
- Pan, Y., Motevalli, S., & Yu, L. (2024). The relationship between game addiction and aggression among adolescents with mediating role of narcissism and self-control. *Iranian Journal of Psychiatry*. <https://doi.org/10.18502/ijps.v19i3.15804>
- Paudel, U., Parajuli, A., Shrestha, R., Kumari, S., Yadav, S. A., & Marahatta, K. (2022). Perceived stress, sources of stress and coping strategies among undergraduate medical students of Nepal: A cross-sectional study. *F1000Research*, 11, 167.
<https://doi.org/10.12688/f1000research.75879.1>

- Paulino, C., Fernandes, A. R., Baptista, P. V., Soeiro, C., Grosso, A. R., & Quintas, A. (2021). Genetic predisposition for aggressive behaviour related with dopamine and serotonin pathways – An overview. *Annals of Medicine*, 53(1).
<https://doi.org/10.1080/07853890.2021.1897426>
- Pontes, H. M., Schivinski, B., Sindermann, C., Li, M., Becker, B., Zhou, M., & Montag, C. (2019). Measurement and conceptualization of gaming disorder according to the framework: The development of the gaming disorder test. *International Journal of Mental Health and Addiction*, 19. <https://doi.org/10.1007/s11469-019-00088-z>
- Rai, N., & Thapa, B. (2015). A study on purposive sampling method in research. *Kathmandu: Kathmandu School of Law*, 5(1), 8-15.
- Ramezani, M., & Changizi, A. (2024). Understanding aggression through computer game addiction and emotion regulation difficulties. *Journal of Adolescent and Youth Psychological Studies*, 5(11), 123–129. <https://doi.org/10.61838/kman.jayps.5.10.15>
- 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
- Ridzuan, F. N. M. (2024). *Addressing the escalating crisis of youth violence in Malaysia*. EMIR Research. <https://www.emirresearch.com/addressing-the-escalating-crisis-of-youth-violence-in-malaysia/>
- Roche, K. M., Ensminger, M. E., Ialongo, N., Poduska, J. M., & Kellam, S. G. (2006). Early entries into adult roles: Associations with aggressive behavior from early adolescence into young adulthood. *Youth & Society*, 38(2), 236–261.
<https://doi.org/10.1177/0044118x06287263>
- Romero-Martínez, Á., Sarrate-Costa, C., & Moya-Albiol, L. (2022). Reactive vs proactive aggression: A differential psychobiological profile? Conclusions derived from a

- systematic review. *Neuroscience & Biobehavioral Reviews*, 136.
<https://doi.org/10.1016/j.neubiorev.2022.104626>
- Saat, G. A. M., Idrus, Z., & Hamid, N. H. N. (2013). Contextualising institutionalised prevention of recidivism among Malaysian petty criminals. *Annual Conference of European Society of Criminology, Budapest*, 4-7.
- Şalvarlı, Ş. İ., & Griffiths, M. D. (2019). The association between Internet Gaming Disorder and impulsivity: A systematic review of literature. *International Journal of Mental Health and Addiction*, 20(1), 92–118. <https://doi.org/10.1007/s11469-019-00126-w>
- Sanjaya, K., Chandra, R., & Jose, J. (2023). The digital gaming revolution: An analysis of current trends, issues, and future prospects. *Russian Law Journal*, 11(1), 18–29.
<https://doi.org/10.52783/rlj.v11i1.288>
- Saputra, M. D., Marjohan, M., & Safrizal, S. (2020). Game addiction and its effects on teenagers' mental health. *Ta'dib*, 23(1), 113. <https://doi.org/10.31958/jt.v23i1.2007>
- Sardana, N., Shekoochi, S., Cornett, E. M., & Kaye, A. D. (2023). Qualitative and quantitative research methods. *Elsevier eBooks*, 65–69. <https://doi.org/10.1016/b978-0-323-98814-8.00008-1>
- Saunders, M., Lewis, P. & Thornhill, A. (2012). *Research methods for business students 6th edition*. Pearson Education Limited.
- Segerstrom, S. C., & Miller, G. E. (2004). Psychological stress and the human immune system: A meta-analytic study of 30 years of inquiry. *Psychol Bull*, 130(4), 601–630.
- Setia, M. (2016). Methodology series module 3: Cross-sectional studies. *Indian Journal of Dermatology*, 61(3), 261. <https://doi.org/10.4103/0019-5154.182410>
- Shabbir, S., Saleem, M., Mahmood, S., & Perveen, S. (2020). Gaming addiction and aggression in Pakistani young adults: Through the lens of excitation transfer theory.

Journal of Professional & Applied Psychology, 1(1), 10–21.

<https://doi.org/10.52053/jpap.v1i1.4>

Shariff, N. M., & Azlan, M. R. M. M. (2021). Perceived stress level and its stressors among Malaysian undergraduate nursing students during COVID-19 pandemic. *International Journal of Care Scholars*, 4(1), 26–31. <https://doi.org/10.31436/ijcs.v4isupp1.215>

Silva, D., & Maia, B. R. (2024). Use of videogames, internet gaming disorder, and aggressiveness in emerging adulthood. *European Psychiatry*, 67(1), 397. <https://doi.org/10.1192/j.eurpsy.2024.814>

Sinha, S., Sharma, M. K., Narayanan, G., Kashyap, H., Shreedevi, A. U., & Tadpatrikar, A. (2024). A systematic review of problematic gaming: Escapist strategy to cope with difficult life situations. *Industrial psychiatry journal*, 33(2), 210–218. https://doi.org/10.4103/ipj.ipj_99_23

Slimmen, S., Timmermans, O., Mikolajczak-Degrauwe, K., & Oenema, A. (2022). How stress-related factors affect mental wellbeing of university students A cross-sectional study to explore the associations between stressors, perceived stress, and mental wellbeing. *PLoS ONE*, 17(11). <https://doi.org/10.1371/journal.pone.0275925>

Spaan, P., Boogert, F. V. D., Bouman, Y. H. A., Hoogendijk, W. J. G., & Roza, S. J. (2024). How are you coping? Stress, coping, burnout, and aggression in forensic mental healthcare workers. *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1301878>

Speroni, J., Fanniff, A. M., Edgemon, J. M., Martini, V., & Haas, A. L. (2023). Alcohol mixed with energy drinks and aggressive behaviors in adolescents and young adults: A systematic review. *Clinical Psychology Review*, 104. <https://doi.org/10.1016/j.cpr.2023.102319>

- Stefanile, C., Matera, C., Nerini, A., Puddu, L., & Raffagnino, R. (2017). Psychological predictors of aggressive behavior among men and women. *Journal of Interpersonal Violence*, 36(1–2), 920–941. <https://doi.org/10.1177/0886260517737553>
- Stratton, S. J. (2023). Population sampling: Probability and non-probability techniques. *Prehospital and Disaster Medicine*, 38(2), 147–148. <https://doi.org/10.1017/s1049023x23000304>
- Su, W., Mrug, S., & Windle, M. (2010). Social cognitive and emotional mediators link violence exposure and parental nurturance to adolescent aggression. *Journal of Clinical Child and Adolescent Psychology*, 39(6), 814–824. <https://doi.org/10.1080/15374416.2010.517163>
- Subbiah, A., & Loodusamy, N. (2025). Digital dependencies: The impact of online gaming addiction on mental health and social well-being among Malaysian youths. *Pertanika Proceedings*, 1(4), 51-56. <https://doi.org/10.47836/pp.1.4.011>
- Sun, J., Hao, J., & Liu, Y. (2023). Short-term effects of competitive video games on aggression: An event-related potential study. *Brain Sciences*, 13(6), 904. <https://doi.org/10.3390/brainsci13060904>
- Sun, Y., Gao, L., Kan, Y., & Shi, B. X. (2019). The Perceived Stress Scale-10 (PSS-10) is reliable and has construct validity in Chinese patients with systemic lupus erythematosus. *Lupus*, 28(2), 149-155. <https://doi.org/10.1177/0961203318815595>
- Sung, Y., Nam, T.-H., & Hwang, M. H. (2020). Attachment style, stressful events, and internet gaming addiction in Korean university students. *Personality and Individual Differences*, 154. <https://doi.org/10.1016/j.paid.2019.109724>
- Teresi, J. A., Yu, X., Stewart, A. L., & Hays, R. D. (2022). *Guidelines for designing and evaluating feasibility pilot studies*. *Medical Care*, 60(1), 95–103. <https://doi.org/10.1097/MLR.0000000000001664>

- The Straits Times (2025, October 22). Malaysia school stabbing: Teen, 14, charged with murder of schoolmate. *The Straits Times*. <https://www.straitstimes.com/asia/se-asia/malaysian-teen-charged-with-murder-of-schoolmate-at-bandar-utama-school>
- Thomas, F. B. (2022). The role of purposive sampling technique as a tool for informal choices in a social sciences in research methods. *Just Agriculture Multidisciplinary E-Newsletter*, 2(5), 1-8.
- Ting, C. H., & Essau, C. (2021). Addictive behaviours among university students in Malaysia during COVID-19 pandemic. *Addictive Behaviors Reports*, 14. <https://doi.org/10.1016/j.abrep.2021.100375>
- Veltri, A., Beatino, M. F., Corsi, M., Chiumiento, M., Caldi, F., Guglielmi, G., Foddìs, R., Perugi, G., & Buselli, R. (2026). Emotional dysregulation and stress-related psychopathology in workers exposed to occupational stress. *Behavioral Sciences*, 16(1), 105. <https://doi.org/10.3390/bs16010105>
- Voulgaridou, I., & Kokkinos, C. M. (2015). Relational aggression in adolescents: A review of theoretical and empirical research. *Aggression and Violent Behavior*, 23, 87–97. <https://doi.org/10.1016/j.avb.2015.05.006>
- Wang, C., Chan, C. L. W., Mak, K., Ho, S.-Y., Wong, P. W. C., & Ho, R. T. H. (2014). Prevalence and correlates of video and internet gaming addiction among Hong Kong adolescents: A pilot study. *The Scientific World Journal*, 2014(1), 1–9. <https://doi.org/10.1155/2014/874648>
- Wang, J. L., Sheng, J. R., & Wang, H. Z. (2019). The association between mobile game addiction and depression, social anxiety, and loneliness. *Frontiers in Public Health*, 7(7). <https://doi.org/10.3389/fpubh.2019.00247>
- Wang, X., & Cheng, Z. (2020). Cross-sectional studies. *CHEST Journal*, 158(1), 65–71. <https://doi.org/10.1016/j.chest.2020.03.012>

- Wei, C., Fan, X., & Xu, Y. (2024). The relationship between Alexithymia and aggressive behavior: The mediating role of perceived stress. *Academic Journal of Humanities & Social Sciences*, 7(11), 174-181. <https://doi.org/10.25236/ajhss.2024.071125>
- Wong, S. S., Wong, C. C., Ng, K. W., Bostanudin, M. F., & Tan, S. F. (2023). Depression, anxiety, and stress among university students in Selangor, Malaysia during COVID-19 pandemics and their associated factors. *PLoS ONE*, 18(1). <https://doi.org/10.1371/journal.pone.0280680>
- World Health Organization. (2024, October 31). *Youth violence*. <https://www.who.int/news-room/fact-sheets/detail/youth-violence>
- World Health Organization. (n.d.). *Gaming Disorder*. <https://www.who.int/standards/classifications/frequently-asked-questions/gaming-disorder>
- Wulandari, A. N., & Ni'matuzahroh. (2024). The effect of peer pressure on aggressive behavior in adolescents: A systematic literature review. *International Journal of Indian Psychology*, 12(4), 2553-2573. <https://doi.org/10.25215/1204.241>
- Xiao, T., Zhu, F., Wang, D., Liu, X., Xi, S., & Yu, Y. (2023). Psychometric validation of the Perceived Stress Scale (PSS-10) among family caregivers of people with schizophrenia in China. *BMJ Open*, 13(11). <https://doi.org/10.1136/bmjopen-2023-076372>
- Yen, J., Chou, W., Lin, H., Wu, H., Tsai, W., & Ko, C. (2021). Roles of hostility and depression in the association between the MAOA gene polymorphism and internet gaming disorder. *International Journal of Environmental Research and Public Health*, 18(13). <https://doi.org/10.3390/ijerph18136910>

- Yen, J., Yeh, Y., Wang, P., Liu, T., Chen, Y., & Ko, C. (2017). Emotional regulation in young adults with Internet Gaming Disorder. *International Journal of Environmental Research and Public Health*, 15(1), 30. <https://doi.org/10.3390/ijerph15010030>
- Yin, X., Peng, H., & Xin, S. (2025). Longitudinal relationship between perceived stress and Chinese adolescent aggressive behavior: The mediating role of impulse control and the moderating role of social connectedness. *SSRN Electronic Journal*.
<https://doi.org/10.2139/ssrn.5317912>
- Yin, Z., Xuan, B., Zhang, X., & Di, Y. (2025). Perceived stress increases online aggressive behavior among Chinese adolescents: Evidence from a moderated mediation analysis. *Chinese Journal of Communication*, 1–17.
<https://doi.org/10.1080/17544750.2025.2562127>
- Zajenkowska, A., Jasielska, D., & Melonowska, J. (2017). Stress and sensitivity to frustration predicting depression among young adults in Poland and Korea - Psychological and philosophical explanations. *Current Psychology*, 38(3), 769–774.
<https://doi.org/10.1007/s12144-017-9654-0>
- Zakaria, A. S., & Adnan, W. H. (2022). Youth awareness: A survey on mobile gaming addiction concerning physical health performance on young adults in Malaysia. *Journal of Media and Information Warfare (JMIW)*, 15(1), 85–98.
- Zhang, Y., Hou, Z., Wu, S., Li, X., Hao, M., & Wu, X. (2022). The relationship between internet addiction and aggressive behavior among adolescents during the COVID-19 pandemic: Anxiety as a mediator. *Acta Psychologica*, 227.
<https://doi.org/10.1016/j.actpsy.2022.103612>
- Zhao, Q., Huang, Y., & Li, C. (2021). Does adolescents' internet addiction trigger depressive symptoms and aggressive behavior, or vice versa? The moderating roles of peer

relationships and gender. *Computers in Human Behavior*, 129.

<https://doi.org/10.1016/j.chb.2021.107143>

Appendices

Appendix A

Poster



UTAR
UNIVERSITY TOWN & COUNTRY
RE: U/NERC/78-685/2025

WE ARE CALLING FOR PARTICIPANTS!

We are Year 3 Psychology students from FAS, UTAR Kampar conducting a study on gaming addiction, perceived stress, and aggressive behaviour among Malaysian young adults for our Final Year Project.

ELIGIBILITY

- Aged 18–26
- Citizen of Malaysia
- Played **competitive/action online games** for **≥6 months** (e.g., PUBG, Call of Duty, Mobile Legends)

Note: Casual single-player games (e.g., Candy Crush, Hay Day) are not included.

Complete the survey & stand a chance to WIN!
Up to RM20 for 50 lucky winners!

SCAN NOW



If you have any inquiries, kindly contact:

1. Jeston Lee Tze Xiang (011-10501967).
2. Khor Ming (018-2251917).
3. Ooi Phey Joo (011-65579818)

Appendix B

Ethical Approval for Research Project



UNIVERSITI TUNKU ABDUL RAHMAN DU012(A)
Wholly owned by UTAR Education Foundation Co. No. 578227-M

Re: U/SERC/78-685/2026

15 January 2026

Dr Lee Wan Ying
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 Lee,

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 UAPZ3013. 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.	Academic stress, loneliness, and social anxiety as predictors of social media addiction among university students in Malaysia	1. Lim Le Yee 2. Cheah Yi Thong	Dr T'ng Soo Ting	15 January 2026 – 14 January 2027
2.	The Relationship Between Self-oriented Perfectionism, Self-determination, and Academic Procrastination Among Undergraduate Students in Malaysia	1. Chan Yan Leung 2. Liong Yi Qing 3. Ng Ting Shuen	Dr Siah Poh Chua	
3.	The Relationship Between Coping Strategies, Self-Control and Sleep Quality Among University Students in Malaysia	1. Lee Kell Win 2. Lim Say Khai		
4.	Resilience, Self-efficacy, and Perceived Social Support as Predictors of Coping Strategies Among Young Adults in Malaysia	1. Chong Chee Hui 2. Lian Jin Yee 3. Teo Yi Jing	Ms Teoh Xi Yao	
5.	Sleep Quality, Resilience, and Social Support as Predictors of Mental Well-being Among Undergraduate Students in Malaysia	1. Lai Li Yen 2. Teh Wen Yi	Ms Choo Hui Jui	
6.	Self-efficacy, Intolerance of Uncertainty, and Procrastination as Predictors of Future Anxiety Among University Students in Malaysia	1. Chen Hui En 2. Liew Jun Wei 3. Then Siang Ying		
7.	A Study on Peer Pressure and Parenting Style as Predictors of Self-Esteem Among University Students in Malaysia	1. Chen Jing Yi 2. Foo Yu Xian 3. Sebastian Lin Xu Ze	Ms Sanggari a/p Krishnan	
8.	Relationship Between Self-esteem, Academic Stress and Depression Among Undergraduate Students in Malaysia	1. Lee Seen Yi 2. Tang Jing Deeng 3. Timmy Looi Tian Ming	Dr Ooh Seow Ling	
9.	The Influence of Mindfulness and Sleep Quality in Stress Among University Students in Malaysia	1. Chang Rui Qi 2. Olivia Ho Yui Ying		

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
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Website : www.utar.edu.my



No	Research Title	Student's Name	Supervisor's Name	Approval Validity
10.	Predictive Roles of Rejection Sensitivity, Maladaptive Perfectionism and Rumination on Depression Among University Students in Malaysia	1. Hii Xiu Jing 2. Joan Chai Wan Ying 3. Sophia Kong Ke Ying	Dr T'ng Soo Ting	15 January 2026 – 14 January 2027
11.	The Predictors of Impulsive Buying of Youth in Malaysia	1. Khaw Jing Chun 2. Ong Chee Seng 3. Phang Wen Jun 4. Li Zihao 5. Tan Wooli Yu	Mr Lim Ooi Sheng	
12.	Online Shopping Addiction, Perceived Social Support, Social Media Usage as Predictors of Life Satisfaction Among Young Adults in Malaysia	1. Chin Yi Ying 2. Katherine Lim Mean 3. Mak Wen Xuan	Dr Nurul Inan Binti Abdul Jalil	
13.	Relationship Between Self-Control, Perceived Social Support, and Internet Addiction with Cyberbullying	1. Mandy Ooi Wen Min 2. Tay Xu Chi 3. Yip Jun Kit	Dr Ooh Seow Ling	
14.	The Relationship Between Attachment Styles, Conflict Resolution Strategies, and Romantic Relationship Satisfaction Among Young Adult	1. Shirley Chew Mei Yee 2. Yeoh Jim Min		
15.	Red Pill Ideology as a Mechanism Linking Gender Norms to Relationship Cynicism: The Buffering Effect of Egalitarian Orientation	1. Ally Tan Sze Man 2. Tun Xin Jie 3. Zoe Ong Jia Jing	Dr Au Zher Wen	
16.	The Relationship Between Violent Game Exposure, Trait Aggression, and Conflict-resolution Styles Among University Students in Malaysia	1. Geh Zhu Yan 2. Soo Jing Xiang 3. Tee Yu Yang		
17.	The Influence of Instagram Use on Body Image Among Gen Z: The Mediating Role of Social Comparison	1. Chua Xiao Qing 2. Elaze Ng Yong Xuan 3. Wong Yong Sing	Dr Ooh Seow Ling	
18.	Shyness, Social Media Use, and Neuroticism as Predictors of Cyberbullying Victimization Among Young Adults in Malaysia	1. Cheng Xin Rou 2. Priyadarsini a/p Gunalan 3. Soh Jing Wen	Dr Lee Wan Ying	
19.	Examine the Associations Between Self-efficacy, Peer Influence, and Impulsivity on Internet Gaming Disorder Among Emerging Adult Multiplayer Online Battle Arena (MOBA) Players in Malaysia	1. Chan Zi Yuan 2. Lim Wen Yan 3. Tan Yun Lin	Dr T'ng Soo Ting	
20.	Examining the Role of Gaming Addiction and Perceived Stress on Aggressive Behaviour Among Young Adults in Malaysia	1. Jeston Lee Tze Xiang 2. Khor Ming 3. Ooi Phey Joo	Ms Tee Geok Hong	
21.	The Relationship Between Mental Health Literacy, Mental Health Stigma and Barriers to Seeking Mental Health Support Among Young Adults in Malaysia	1. Kam Yee Ching 2. Tang Kar Zhan 3. Yong Si Xian		
22.	Association Between Parental Marital Conflict-resolution, Romantic Relationship Self-efficacy, and Attitudes Toward Singlehood Among Malaysian Emerging Adults	1. Kristin Ong Kai Tzu 2. Wonard Primas Kayau	Dr Tan Soon Aun	
23.	Visualizing the Future Self and Its Effect on Future Self-Continuity and Intention to Be Single: An Experimental Study	1. Hoon Xin Yi 2. Joanne Ooi Rou Yan		
24.	Future Self Continuity and Lying-flat Tendency Among Undergraduate Students in Malaysia: The Mediating Role of Grit	1. Chan Lee Yi 2. Ho Si Qing 3. Tan Qian Yine	Mr Tay Kok Wai	
25.	Loneliness and Depression as Predictors of Barriers to Help-seeking for Mental Health Among Malaysian University Students	1. Keong Pei Wen 2. Sip Chern Huan 3. Tey Sen Sui		
26.	Mental Health Literacy and Attitudes Toward Seeking Professional Psychology Help Among Malaysian University Students	1. Lim Sheng Xun 2. Gan Boon Quan 3. Veyron Chua Rui Yuan	Dr Gan Su Wan	
27.	The Mediating Role of Fear of Intimacy Between Parental Psychological Control and Romantic Relationship Among Malaysian Emerging Adults	1. See E Yann 2. Tan Jia Li 3. Tan Yee En		

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No	Research Title	Student's Name	Supervisor's Name	Approval Validity
28.	Insecure Attachment, Relationship Commitment and Relationship Satisfaction as Predictors of Ghosting Behaviour in Romantic Relationships Among Emerging Adults in Malaysia	1. Gajendra Singam a/l Doraisingam 2. Harshini a/p Subramaniam 3. Lo Xin Yi	Dr Gan Su Wan	15 January 2026 – 14 January 2027
29.	The Relationship Between Family Cohesion, Nature Exposure, Digital Literacy, and Psychological Well-being of Malaysian Older Adults	1. Annissa Cheong Ce Yan 2. Chan Yee Xuan 3. Yap Yan Tong	Dr Sarvarubini Nainee	

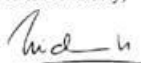
The conduct of this research is subject to the following:

- (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.

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 Dr Zuraidah Abd Manaf
Chairman
UTAR Scientific and Ethical Review Committee

c.c Dean, Faculty of Arts and Social Science



Appendix C

Effect Size Calculation

Gaming Addiction

1. Gaming addiction and aggression

Correlation Analysis

The primary goal of the study was to examine the relationships between game addiction, aggression, narcissism, and self-control. As shown in Table 3, there was a statistically significant positive correlation between game addiction and aggression ($r = 0.777$, $P < 0.001$), indicating that as levels of game addiction increase, so did the propensity for aggressive behaviors. Similarly, a positive correlation ($r = 0.785$, $P < 0.001$) was found between game addiction and narcissism, showing that those with higher levels of game addiction may also have higher levels of narcissistic traits. In contrast, there was a negative correlation between game addiction and self-control ($r = -0.668$, $P < 0.001$), suggesting that higher levels of game addiction are linked to lower levels of self-control. On the other hand, narcissism was observed to be significantly positively correlated with aggression ($r = 0.779$, $P < 0.001$), suggesting that narcissistic individuals are prone to show more aggressive behavior. Likewise, a significant negative relationship was observed between self-control and aggression ($r = -0.692$, $P < 0.001$), demonstrating that individuals with lower self-control are more likely to behave aggressively toward others.

Pearson correlation, $r = 0.777$

$$f^2 = \frac{r^2}{1 - r^2} = \frac{0.77^2}{1 - 0.77^2} = \frac{0.592}{0.407} \approx 1.454$$

Perceived Stress



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with aggression ($r = .28$, $p < .001$). Of the three parenting styles, only authoritative was not significantly correlated with aggression, whereas permissive ($r = .12$, $p = .014$) and authoritarian ($r = .10$, $p = .041$) positively and significantly correlated with aggression. The correlation between perceived stress and aggression was positive and significant ($r = .31$, $p < .001$). Of the two dimensions of media exposure, antisocial content was positively and significantly correlated with aggression ($r = .35$, $p < .001$), whereas prosocial content was not significantly correlated with aggression.

The results of hierarchical multiple regression appear in Table 2.

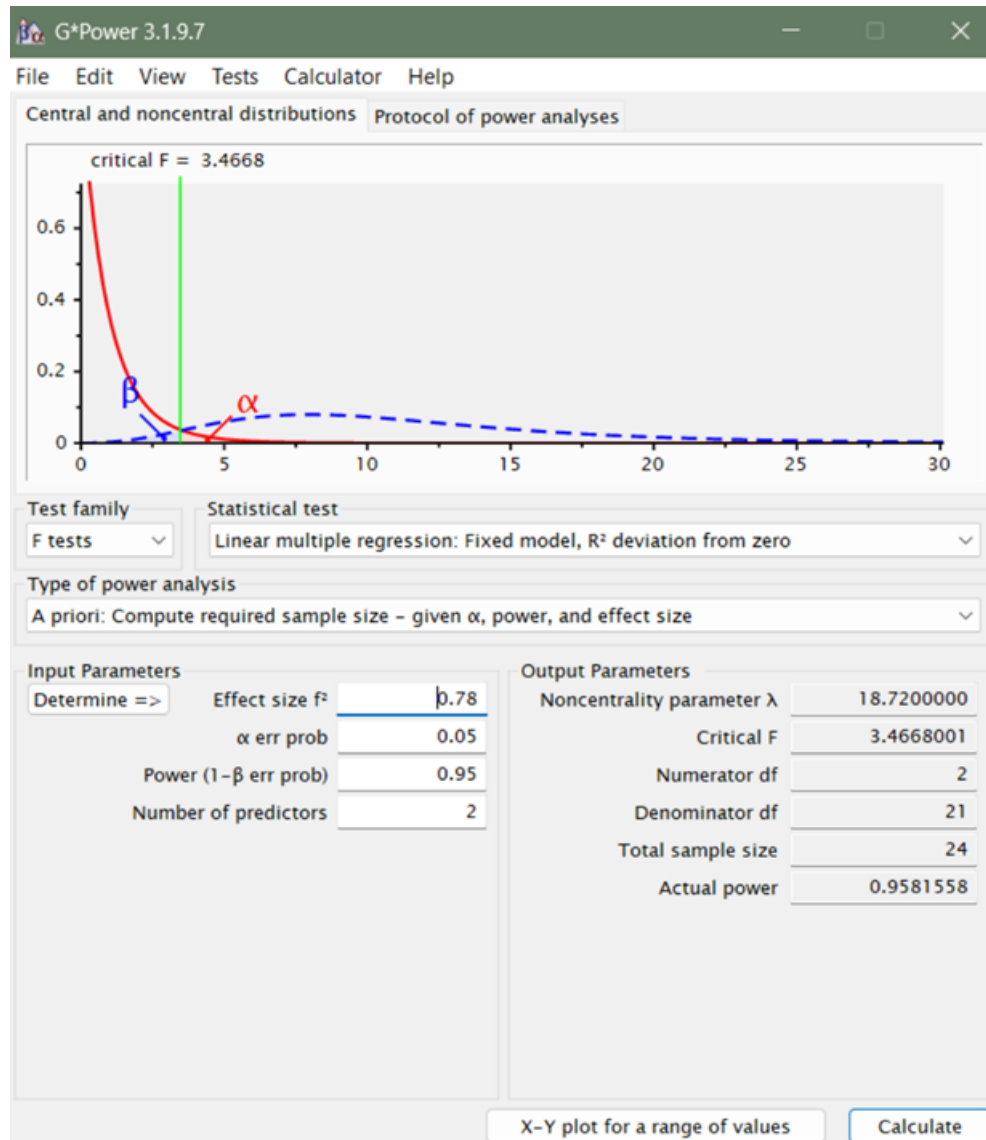
$$f^2 = \frac{r^2}{1 - r^2} = \frac{0.31^2}{1 - 0.31^2} = \frac{0.0961}{0.9039} \approx 0.106$$

Effect Size of Current Study

$$f^2 = \frac{1.454 + 0.106}{2} = 0.78$$

Appendix D

G*Power Effect Size Calculation



Appendix E

Questionnaire

Section A: Informed Consent

Department of Psychology and Counselling
Faculty of Arts and Social Science
Universiti Tunku Abdul Rahman

Introduction

We are Year 3 Psychology students from the Faculty of Arts and Social Science (FAS) at Universiti Tunku Abdul Rahman (UTAR), Kampar Campus. We would like to conduct a research study to examine the role of gaming addiction and perceived stress on aggressive behaviour among young adults in Malaysia. This study is conducted to fulfil the requirements for the Final Year Project course.

Procedures and Confidentiality

This survey consists of 4 sections: Section A (Demographic Information), Section B (Buss-Perry Aggression Questionnaire-Short Form), Section C (Perceived Stress Scale-10), Section D (Gaming Addiction Scale-7). The following questionnaire will require approximately 15 minutes to complete. All information provided will remain **private and confidential**. The information given will only be reported as group data with no identifying information and will only be used for academic purposes.

Eligibility Criteria for Participants

We are looking for individuals who fulfil the following criteria:

1. Aged between 18 and 26 years old.
2. Currently residing in Malaysia.
3. Engaged consistently in competitive or action-based online games (e.g., PUBG, Call of Duty, Mobile Legends) for at least the past six months.

Individuals will be excluded from participation if their primary gaming activities:

1. Limited to non-competitive and/or single-player game genres (e.g., Candy Crush Saga, Hay Day).
2. Do not demonstrate a minimum of six months of continuous gaming engagement.

Token of Appreciation

By completing this survey and fulfil the requirement, you may enter a Lucky Draw and stand a chance to receive RM5, RM10 and RM20. There will be a total of 50 winners for this Lucky Draw, and the Lucky Draw will be conducted at the end of the data collection phase.

1. Take at least 5 minutes to complete the survey
2. Answered all the items in the survey
3. Answered all the attention-checking items correctly
4. Entered your information correctly (e.g., contact number)

Level of Risk:

Only minimal risk should be associated with this research. Given that personal thoughts are discussed, there may be a potential for the research to evoke emotional feelings and discomfort. This research was approved by UTAR Scientific and Ethical Review Committee (Ref no: U/SERC/78-685/2026).

Participation

All the information gathered will remain anonymous and confidential. Your information will not be disclosed to any unauthorized person and would be accessible only by group members. Participant in this study is voluntary, you are free to withdraw with consent and discontinue participation at any time without prejudice. Your responses will be coded numerically in the research assignment for the research interpretation. Your cooperation would be greatly appreciated.

Contact Information

If you have any inquiries, kindly contact:

1. Jeston Lee Tze Xiang (011-10501967).
2. Khor Ming (018-2251917).
3. Ooi Phey Joo (011-65579818).

If you choose to participate in this project, please answer all the questions as honestly as possible and return the completed questionnaire promptly.

Description (optional)

Section B: Personal Data Protection Form

PERSONAL DATA PROTECTION STATEMENT

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

Notice:

1. 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:

- a) For assessment of any application to UTAR
- b) For processing any benefits and services
- c) For communication purposes
- d) For advertorial and news
- e) For general administration and record purposes
- f) For enhancing the value of education
- g) For educational and related purposes consequential to UTAR
- h) For replying any responds to complaints and enquiries
- i) For the purpose of our corporate governance

j) For the purposes of conducting research/ collaboration

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 when 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 to 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 reward or to assist you in respect of the purposes and/or for any other purposes related to the purpose.

8. This project will be supervised by Ms. Tee Geok Hong teegh@utar.edu.my

9. You may access and update your personal data by writing to us at:

1. jltx040928@1utar.my (Jeston Lee Tze Xiang)
 2. 2203273@1utar.my (Khor Ming)
 3. ooipj8137@1utar.my (Ooi Phey Joo)
-

Acknowledgment of Notice *

- ☐ I have been notified and that I hereby understood, consented and agreed per UTAR above notice.
- ☐ I disagree, my personal data will not be processed

Section C: Demographic Information

Instruction: Please fill in your details and provide the answers that best fit you. This information will be kept confidential and used for research purposes only.

- A) Gender
 - ☐ Male
 - ☐ Female
- B) Age: _____
- C) Nationality
 - ☐ Malaysian
 - ☐ Non-Malaysian
- D) Current Living State (e.g., Selangor): _____
- E) Ethnicity
 - ☐ Chinese
 - ☐ Indian
 - ☐ Malay
 - ☐ Others: _____
- F) Occupation
 - ☐ Student
 - ☐ Employee
 - ☐ Unemployed
- G) Educational Qualification
 - ☐ Secondary (SPM / O-Level or equivalent)
 - ☐ Pre-University / Foundation / Matriculation / STPM / A-Level / Diploma
 - ☐ Bachelor's Degree
 - ☐ Postgraduate Degree (Master's / PhD)
 - ☐ Other: _____
- H) How long have you been actively playing online games?
 - ☐ Less than 6 months
 - ☐ 6-12 months
 - ☐ 1-3 years
 - ☐ 3-6 years
 - ☐ More than 6 years
- I) How often do you currently play online games?
 - ☐ 1-2 days per week
 - ☐ 3-4 days per week
 - ☐ 5-6 days per week
 - ☐ Everyday
- J) Which types of online games do you play most often?
 - ☐ First-Person Shooter (FPS) (e.g., Call of Duty, Valorant, CS)
 - ☐ Multiplayer Online Battle Arena (MOBA) (e.g., Dota 2, League of Legends)
 - ☐ Battle Royale (e.g., PUBG, Apex Legends, Fortnite)
- K) To what extent do you perceive the games you play as competitive?
 - ☐ Not competitive at all
 - ☐ Slightly competitive
 - ☐ Moderately competitive
 - ☐ Highly competitive
 - ☐ Extremely competitive

Section D: Buss-Perry Aggression Questionnaire-Short Form

The purpose of this questionnaire is to assess the extent to which an individual's go through, express, and engage in aggressive thoughts, feelings, and actions. Please read each of the following statements and decide how well it describes you. (1 = Very unlike me to 5 = Very like me)

1	2	3	4	5
Very Unlike me	Somewhat unlike me	Neither like nor unlike me/neutral	Somewhat like me	Very like me

	1	2	3	4	5
Q1: Given enough provocation, I may hit another person.					
Q2: I often find myself disagreeing with people.					
Q3: At times I feel I have gotten a raw deal out of life.					
Q4: There are people who have pushed me so far that we have come to blows.					
Q5: I can't help getting into arguments when people disagree with me.					
Q6: Sometimes I fly off the handle for no good reason.					
Q7: Other people always seem to get the breaks.					
Q8: Please choose "Somewhat unlike me".					
Q9: I have threatened people I know.					
Q10: My friends say that I'm somewhat argumentative.					
Q11: I have trouble controlling my temper.					
Q12: I wonder why sometimes I feel so bitter about things.					
Q13: I sometimes feel like a powder keg ready to explode.					

Section E: Perceived Stress Scale-10

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way.

(0 = Never to 4 = Very often)

In the last month, how often have you...

0	1	2	3	4
Never	Almost Never	Sometimes	Fairly Often	Very Often

	0	1	2	3	4
Q1: been upset because of something that happened unexpectedly?					
Q2: felt that you were unable to control the important things in your life?					
Q3: felt nervous and "stressed"?					
Q4: felt confident about your ability to handle your personal problems?					
Q5: felt that things were going your way?					
Q6: Please choose "Fairly often" for this question.					
Q7: found that you could not cope with all the things that you had to do?					
Q8: been able to control irritations in your life?					
Q9: felt that you were on top of things?					
Q10: been angered because of things that were outside of your control?					
Q11: felt difficulties were piling up so high that you could not overcome them?					

Section F: Gaming Addiction Scale-7

The purpose of this questionnaire is to assess the extent to which an individual's experience severity of gaming addiction. Please read each of the following statements and decide how well it describes you.

(1 = Never to 5 = Very often)

How often during the last six months have you experienced the following situations related to gaming?

1 2 3 4 5
Never Rarely Sometimes Often Very Often

	1	2	3	4	5
Q1: Have you thought all day long about playing a game?					
Q2: Have you played longer than intended?					
Q3: Have you played games to forget about real life?					
Q4: Please choose "Sometimes" for this question.					
Q5: Have others unsuccessfully tried to reduce your time spent on games?					
Q6: Have you felt upset when you were unable to play?					
Q7: Have you had arguments with others (e.g. family, friends) over your time spent on games?					
Q8: Have you neglected important activities (e.g. school, work, sports) to play games?					

Section G: Identification for Token of Appreciation

Identification for Token of Appreciation (Optional)

Kindly take note that this section is optional and is only applicable to those who wish to participate in the lucky draw.

To participate, you may need to provide us with your VALID handphone number registered with TnG for us to transfer the token to you. Only responses that are complete and meet the participation criteria will be included in the Lucky Draw. The information that you have provided (such as phone number, name) will remain private and confidential and will only be used for transferring the TnG e-wallet credit. It is alright if you do not want to join the Lucky Draw. In that case, you may skip this section. We greatly appreciate your contribution by filling out this survey form.

Please select ONE of the choices below. *

- ☐ I would like to join the Lucky Draw. I understand the terms stated above and will provide my phone nu...
- ☐ I do not want to join the Lucky Draw. I will not provide my phone number.

Appendix F

Pilot Study: Reliability Statistics

Buss-Perry Aggression Questionnaire-Short Form

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.940	.940	12

Perceived Stress Scale-10

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.708	.723	10

Gaming Addiction Scale-7

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.940	.941	7

Appendix G

Actual Study: Reliability Statistics

Buss-Perry Aggression Questionnaire-Short Form

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.932	.933	12

Perceived Stress Scale-10

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.823	.824	10

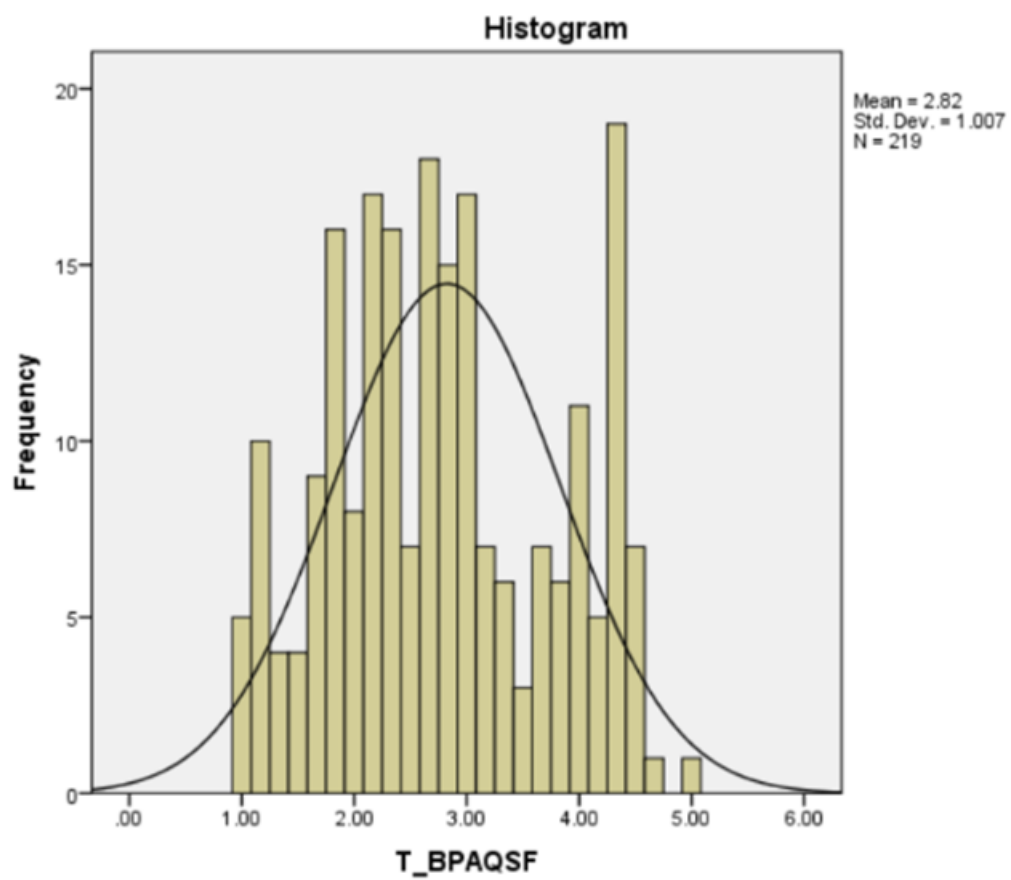
Gaming Addiction Scale-7

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.900	.900	7

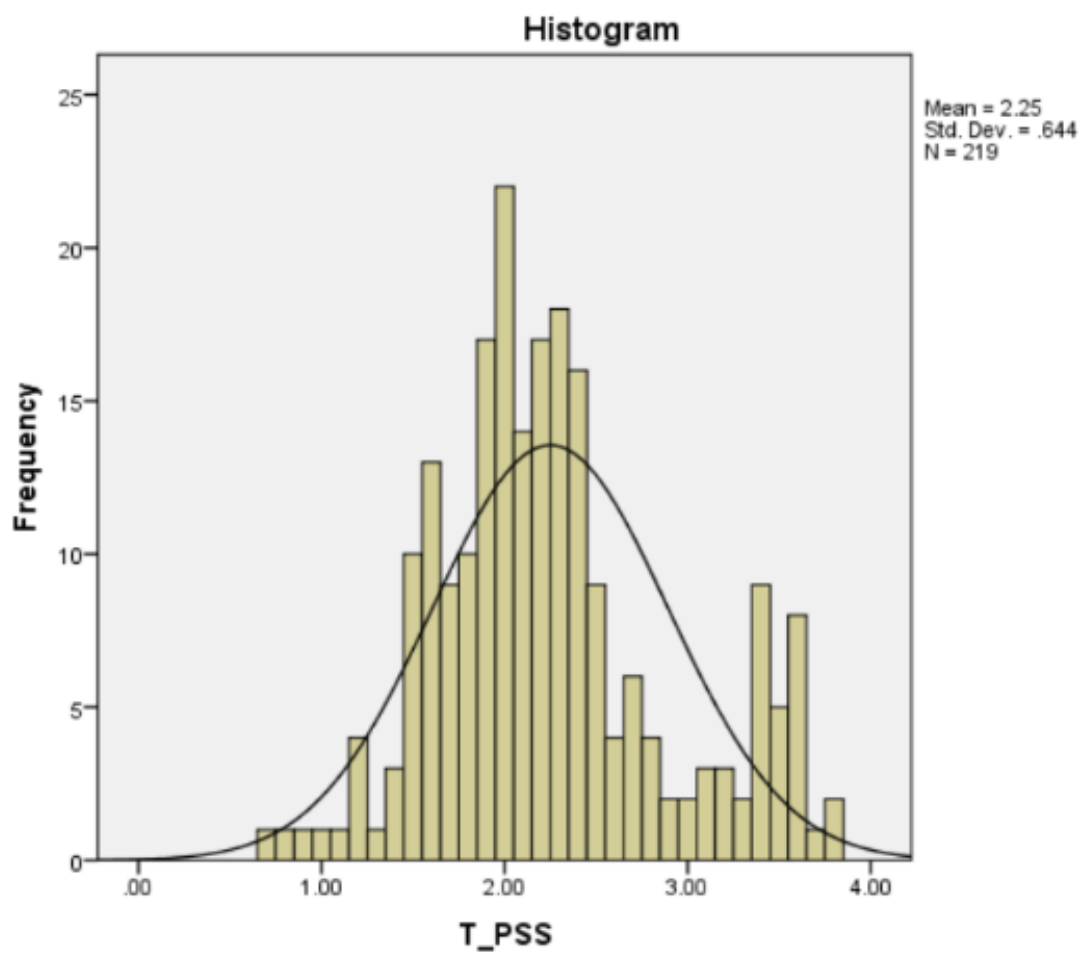
Appendix H1

Histogram of Aggressive Behavior



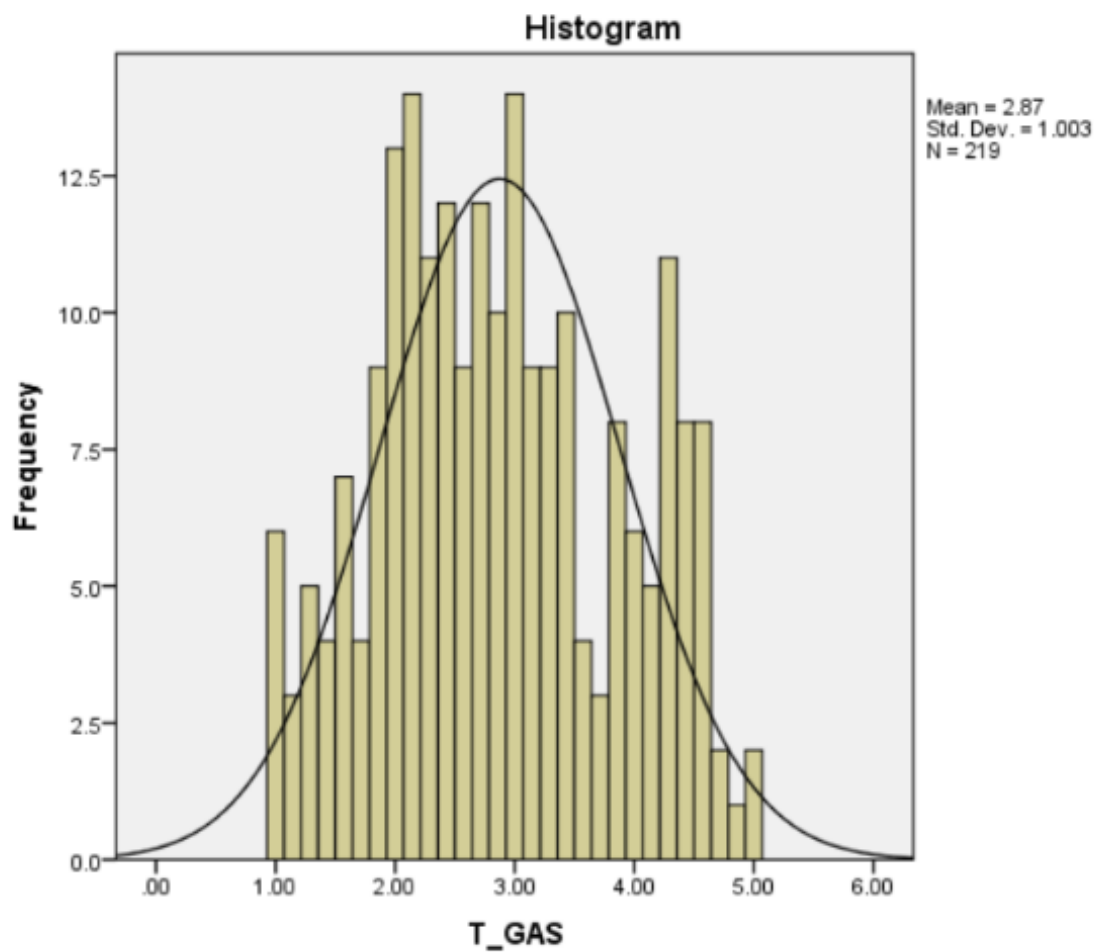
Appendix H2

Histogram of Perceived Stress



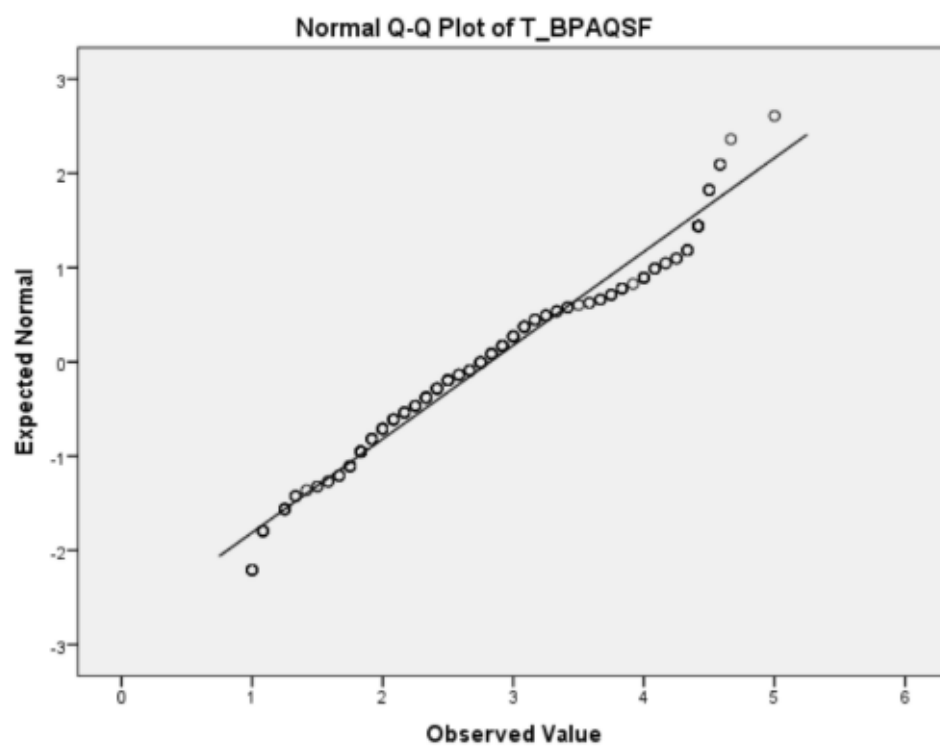
Appendix H3

Histogram of Gaming Addiction



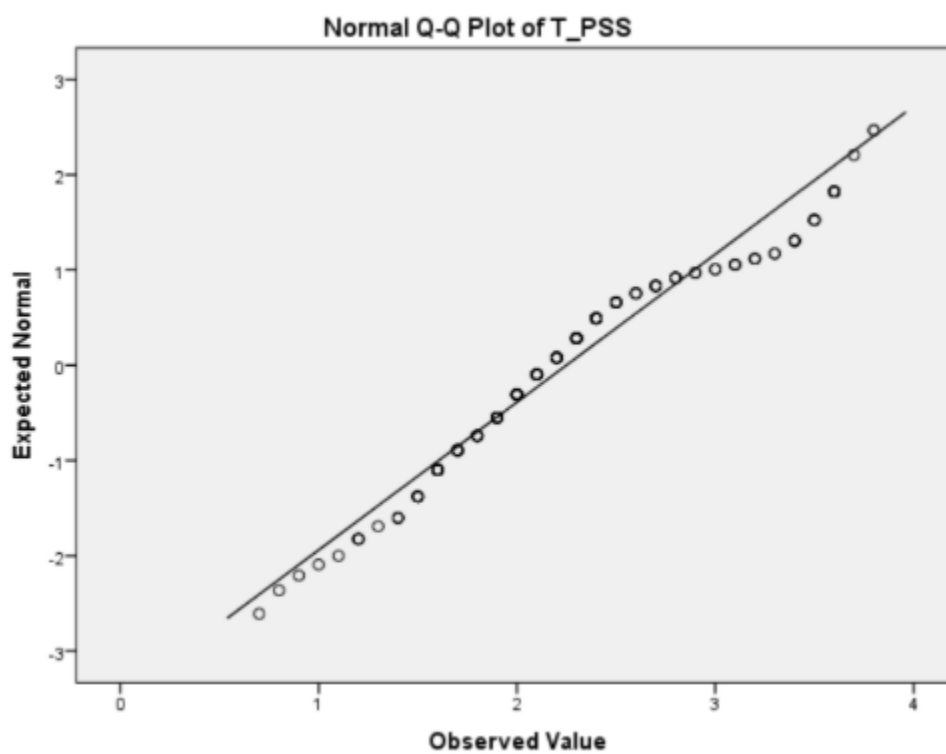
Appendix I1

Q-Q Plot of Aggressive Behavior



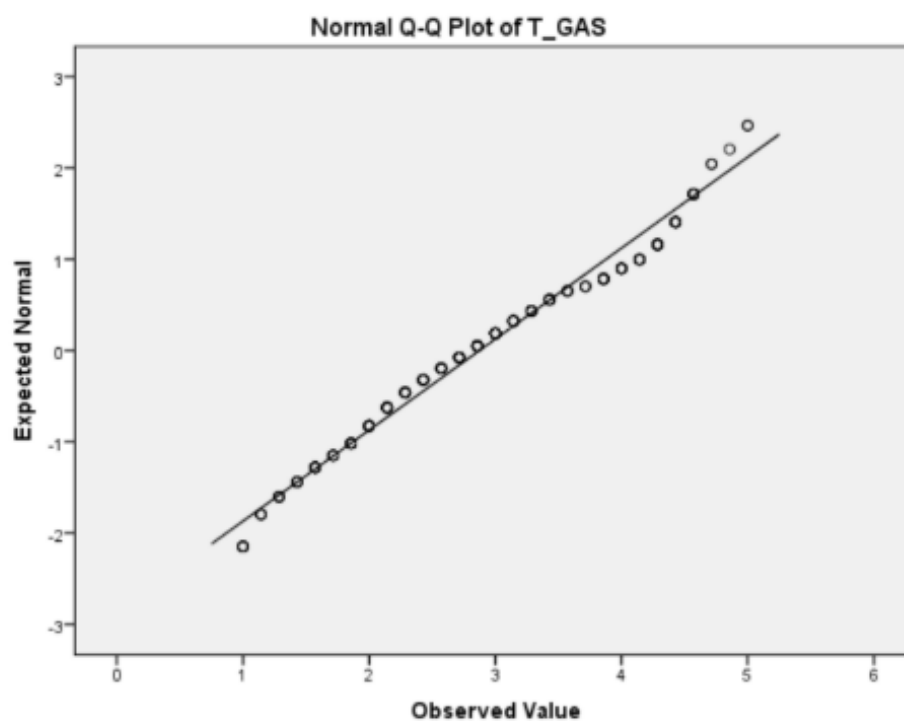
Appendix I2

Q-Q Plot of Perceived Stress



Appendix I3

Q-Q Plot of Gaming Addiction



Appendix J

Skewness and Kurtosis Values

Descriptives			Statistic	Std. Error
T_BPAQSF	Mean		2.8234	.06802
	95% Confidence Interval for Mean	Lower Bound	2.6894	
		Upper Bound	2.9575	
	5% Trimmed Mean		2.8245	
	Median		2.7500	
	Variance		1.013	
	Std. Deviation		1.00659	
	Minimum		1.00	
	Maximum		5.00	
	Range		4.00	
	Interquartile Range		1.67	
	Skewness		.173	.164
	Kurtosis		-.920	.327
T_PSS	Mean		2.2493	.04354
	95% Confidence Interval for Mean	Lower Bound	2.1635	
		Upper Bound	2.3351	
	5% Trimmed Mean		2.2362	
	Median		2.2000	
	Variance		.415	
	Std. Deviation		.64434	
	Minimum		.70	
	Maximum		3.80	
	Range		3.10	
	Interquartile Range		.70	
	Skewness		.557	.164
	Kurtosis		-.013	.327
T_GAS	Mean		2.8735	.06778
	95% Confidence Interval for Mean	Lower Bound	2.7399	
		Upper Bound	3.0070	
	5% Trimmed Mean		2.8710	
	Median		2.8571	
	Variance		1.006	
	Std. Deviation		1.00300	
	Minimum		1.00	
	Maximum		5.00	
	Range		4.00	
	Interquartile Range		1.43	
	Skewness		.165	.164
	Kurtosis		-.849	.327

Appendix K

Kolmogorov-Smirnov Test

Tests of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
T_BPAQSF	.080	219	.002	.963	219	.000
T_PSS	.134	219	.000	.951	219	.000
T_GAS	.073	219	.006	.972	219	.000

a. Lilliefors Significance Correction

Appendix L1

Model Summary Table

Model Summary ^b										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.784 ^a	.615	.611	.62510	.615	171.527	2	215	.000	2.051

a. Predictors: (Constant), T_GAS, T_PSS

b. Dependent Variable: T_BPAQSF

Appendix L2

ANOVA Table

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	134.047	2	67.024	171.527	.000 ^b
	Residual	84.010	215	.391		
	Total	218.058	217			

a. Dependent Variable: T_BPAQSF

b. Predictors: (Constant), T_GAS, T_PSS

Appendix L3

Coefficients Table

Coefficients ^a											
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.075	.160		.470	.639					
	T_PSS	.550	.083	.349	6.608	.000	.663	.411	.280	.641	1.561
	T_GAS	.524	.053	.523	9.890	.000	.732	.559	.419	.641	1.561

a. Dependent Variable: T_BPAQSF

Appendix L4

Case Summaries

Case Summaries

	Case Number	Mahalanobis Distance	Cook's Distance	Centered Leverage Value
1	1	1.88448	.00490	.00864
2	2	8.56466	.00073	.03929
3	3	.77998	.00298	.00358
4	4	1.66471	.00725	.00764
5	5	1.48832	.00322	.00683
6	6	.20599	.00009	.00094
7	7	2.03450	.02750	.00933
8	8	2.51072	.00022	.01152
9	9	.34714	.00256	.00159
10	10	.05479	.00079	.00025
11	11	.53207	.00669	.00244
12	12	1.67875	.00618	.00770
13	13	1.42773	.00154	.00655
14	14	2.41313	.00003	.01107
15	15	1.01558	.00696	.00466
16	16	.15440	.00069	.00071
17	17	.33103	.00036	.00152
18	18	1.91445	.00131	.00878
19	19	.34714	.00070	.00159
20	20	.18291	.01538	.00084
21	21	.34714	.00024	.00159
22	22	.00700	.00001	.00003
23	23	2.84813	.00458	.01306
24	24	.33782	.00053	.00155
25	25	1.06164	.00149	.00487
26	26	.53872	.00349	.00247
27	27	2.24294	.00032	.01029
28	28	1.02655	.00061	.00471

29	29	2.47649	.01027	.01136
30	30	.15576	.00513	.00071
31	31	.79629	.00591	.00365
32	32	.48936	.00538	.00224
33	33	1.41369	.00003	.00648
34	34	2.41003	.00190	.01106
35	35	.42404	.00329	.00195
36	36	2.24592	.01059	.01030
37	37	1.55100	.00208	.00711
38	38	2.24592	.00556	.01030
39	39	2.22970	.01110	.01023
40	40	1.31285	.00005	.00602
41	41	1.65174	.00183	.00758
42	42	4.57292	.00000	.02098
43	43	3.63289	.00022	.01666
44	44	4.75034	.00027	.02179
45	45	4.75034	.00008	.02179
46	46	4.26568	.00000	.01957
47	47	4.57292	.00000	.02098
48	48	4.45607	.00015	.02044
49	49	5.93541	.00196	.02723
50	50	.15172	.00157	.00070
51	51	.60093	.00078	.00276
52	52	.33103	.01138	.00152
53	53	.40637	.00037	.00186
54	54	5.94185	.00003	.02726
55	55	.34817	.00223	.00160
56	56	1.83496	.00339	.00842
57	57	3.68919	.00001	.01692
58	58	1.93938	.00051	.00890
59	59	.42404	.00086	.00195
60	60	14.49190	.00001	.06648
61	61	.60274	.00065	.00276
62	62	1.04291	.01016	.00478
63	63	4.45607	.00015	.02044
64	64	1.04882	.00004	.00481
65	65	5.08849	.00001	.02334
66	66	1.29701	.00213	.00595

67	67	1.74099	.00484	.00799
68	68	2.10060	.00000	.00964
69	69	1.07328	.00057	.00492
70	70	3.52257	.00578	.01616
71	71	.22278	.00001	.00102
72	72	3.49528	.00194	.01603
73	73	.31493	.00793	.00144
74	74	.63828	.00002	.00293
75	75	3.50087	.00235	.01606
76	76	.09582	.00660	.00044
77	77	.75750	.00000	.00347
78	78	2.95057	.01441	.01353
79	79	.77998	.00379	.00358
80	80	4.97196	.00192	.02281
81	81	3.85294	.00022	.01767
82	82	3.40697	.00025	.01563
83	83	3.59967	.00026	.01651
84	84	3.85294	.00001	.01767
85	85	4.57292	.00000	.02098
86	86	3.40697	.00072	.01563
87	87	4.05034	.00532	.01858
88	88	4.26568	.00000	.01957
89	89	2.37271	.00289	.01088
90	90	3.85294	.00040	.01767
91	91	1.04291	.00002	.00478
92	92	.05479	.00021	.00025
93	93	2.03956	.00502	.00936
94	94	2.03956	.00502	.00936
95	95	1.75793	.02162	.00806
96	96	.18291	.00003	.00084
97	97	.24421	.00012	.00112
98	98	.89963	.00244	.00413
99	99	1.84537	.00128	.00846
100	100	2.03956	.01152	.00936
101	101	2.67352	.00024	.01226
102	102	1.35780	.00022	.00623
103	103	1.81672	.00035	.00833
104	104	.75750	.00046	.00347

105	105	1.50203	.00056	.00689
106	106	.58268	.00009	.00267
107	107	3.27485	.00127	.01502
108	108	3.59967	.00002	.01651
109	109	1.87751	.01196	.00861
110	110	2.90751	.00000	.01334
111	111	3.96383	.00045	.01818
112	112	2.70015	.00023	.01239
113	113	2.07613	.00060	.00952
114	114	2.77992	.01274	.01275
115	115	1.45029	.00009	.00665
116	116	3.11819	.00088	.01430
117	117	3.52257	.00001	.01616
118	118	.77998	.00017	.00358
119	119	.34714	.00042	.00159
120	120	1.35780	.00109	.00623
121	121	3.75767	.00092	.01724
122	122	1.42773	.00031	.00655
123	123	2.65835	.00008	.01219
124	124	2.84813	.03602	.01306
125	125	.15576	.00053	.00071
126	126	1.53014	.00213	.00702
127	127	4.39979	.00121	.02018
128	128	.04908	.00323	.00023
129	129	.57988	.00504	.00266
130	130	1.35784	.00002	.00623
131	131	.07410	.00031	.00034
132	132	2.91365	.00205	.01337
133	133	.57988	.00504	.00266
134	134	2.35182	.00029	.01079
135	135	5.60029	.01637	.02569
136	136	.86610	.00220	.00397
137	137	.90065	.00150	.00413
138	138	2.26765	.00786	.01040
139	139	.16895	.00008	.00078
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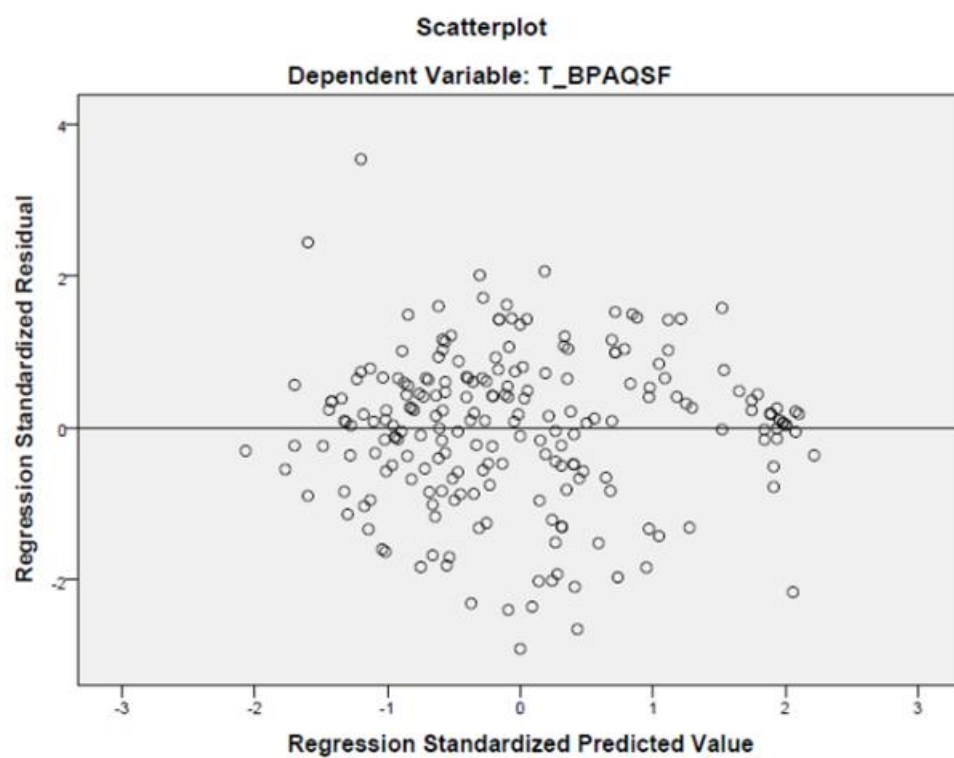
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147	147	.53207	.00247	.00244
148	148	4.19207	.00062	.01923
149	149	6.61350	.00663	.03034
150	150	.75750	.00585	.00347
151	151	4.81737	.02729	.02210
152	152	.48901	.00000	.00224
153	153	1.02655	.00747	.00471
154	154	.20599	.00044	.00094
155	155	.39185	.00001	.00180
156	156	1.58559	.00085	.00727
157	157	5.94185	.03021	.02726
158	158	.21311	.00160	.00098
159	159	.40637	.00005	.00186
160	160	.98945	.00049	.00454
161	161	2.70742	.00811	.01242
162	162	1.61467	.00119	.00741
163	163	1.75666	.00430	.00806
164	164	16.52208	.15370	.07579
165	165	.32877	.00147	.00151
166	166	.58268	.00178	.00267
167	167	.22278	.00065	.00102
168	168	1.53014	.04859	.00702
169	169	1.96513	.01481	.00901
170	170	.82307	.01907	.00378
171	171	1.02912	.00120	.00472
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173	173	.05467	.00010	.00025
174	174	1.15498	.00062	.00530
175	175	.64661	.00013	.00297
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177	177	.62798	.01049	.00288
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179	179	4.54160	.00021	.02083
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182	182	1.14263	.00145	.00524
183	183	1.02912	.00010	.00472
184	184	1.36072	.01424	.00624
185	185	1.50426	.00728	.00690
186	186	.31689	.00065	.00145
187	187	1.98692	.01252	.00911
188	188	1.35784	.00996	.00623
189	189	.94349	.00073	.00433
190	190	.81627	.00001	.00374
191	191	4.05034	.00242	.01858
192	192	2.34016	.00419	.01073
193	193	1.68866	.00009	.00775
194	194	1.31285	.00497	.00602
195	195	.35982	.00195	.00165
196	196	1.93938	.00163	.00890
197	197	4.19207	.00062	.01923
198	198	2.90288	.00219	.01332
199	199	.71559	.00999	.00328
200	200	4.27621	.03896	.01962
201	201	.55338	.00037	.00254
202	202	1.29701	.00319	.00595
203	203	5.18542	.00069	.02379
204	204	2.67772	.01151	.01228
205	205	1.08365	.00052	.00497
206	206	.31493	.00285	.00144
207	207	.70520	.00358	.00323
208	208	1.66733	.01624	.00765
209	209	.15898	.00002	.00073
210	210	.18524	.00098	.00085
211	211	1.07978	.00364	.00495
212	212	2.93019	.00782	.01344
213	213	.39185	.00047	.00180
214	214	2.78691	.02416	.01278
215	215	1.46989	.00234	.00674
216	216	1.01558	.00101	.00466
217	217	2.28141	.00006	.01047
218	218	1.55633	.00212	.00714

219		219	1.02655	.00244	.00471
Total	N		219	219	219

Appendix L5

Scatterplot



Appendix M

Turnitin Reports



Page 2 of 50 - Integrity Overview

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