



The virtual playground: Exploring action video games among adolescents

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ABSTRACT

Currently, action video games have emerged as the most popular form of entertainment among young individuals. The recent COVID-19 pandemic and the enforcement of movement control order (MCO) led to a significant increase in the regular engagement of young people with action video games, often through portable devices like smartphones. Owing to their widespread appeal, video games have significantly shaped contemporary society. Various elements contribute to aggression and violence. The potential impact on aggression, even if relatively small could be significant considering the substantial number of individuals participating in these action video games. The social learning theory, developed by Albert Bandura in 1965, was employed as the basis of this study. The main objective of this study was to examine the dimension of violent behaviour among diverse demographic backgrounds of young adolescents and to establish the relationship between this dimension and frequency of violent behaviour following action video game exposure. This study employed a quantitative research design using survey questionnaires. Purposive sampling was used to obtain data from 400 adolescents. The results reveal a noteworthy difference between school types and the dimension of violent behaviour ($p < 0.05$). Moreover, the study demonstrated a significant correlation between the frequency of violent behaviour and the dimension of violent behaviour, as indicated by Pearson correlation coefficient ($r = .745, p < 0.05$). These findings contribute to a deeper understanding of the effect of action video games on adolescents, considering the rising popularity of video games in contemporary society. It is recommended that future research is conducted with a larger sample size to further explore and validate these findings. A combination of quantitative and qualitative research methods would allow for a more extensive exploration of the reasons behind some adolescents becoming violent after playing video games while others did not. Different situations and circumstances during gameplay could lead to diverse outcomes, and applying alternative methodologies and theories would offer a more comprehensive understanding of the complex relationship between video games and their effects on individuals, especially on their academic performance.

Keywords: ***Video games genre, action video games, adolescents, violent behaviour, social learning theory***

INTRODUCTION

The use of digital technology, especially smartphones, and the time spent on social media, recreation, and video gaming, has increased tremendously among adolescents and young adults (Smith et al., 2018). Movement restrictions and quarantines, imposed as a result of the COVID-19 pandemic, have resulted in children and adolescents being confined to their homes with limited activity options. As a result, their engagement in video games increased drastically. Reports indicate a global rise in online gaming and related social media activity during the pandemic (Gerblick, 2021). Playing video games is commonly associated with feelings of happiness, so it is understandable that electronic amusement plays a crucial role in the recreational pursuits of numerous individuals. A recent study revealed that approximately 214 million people in the United States engage in video game activities (Entertainment Software Association, 2020).

Additionally, the World Health Organization (WHO) has expressed endorsement for video games as a means of encouraging people to stay at home during the pandemic, as long as moderation is exercised (King et al., 2020). Ayenigbara (2017) explained that any computer software that can be enjoyed on various computing devices like mobile phones, personal computers, and gaming consoles falls under the category of video games. Video games are cherished by individuals spanning all age groups, from children to the elderly. Video games have undergone significant transformations since the inception of computer games and the initial releases of Nintendo and Atari. Since the start of the 21st century, the rapid progression of the internet has led to video games becoming a notable form of entertainment for youngsters. In this context, the prominent genre of violent video games assumes a vital role in the development and maturing process of children and teenagers (Wei et al., 2022).

Numerous media experts argue that the consumption of violent media, such as violent video games (VVGs), contributes to aggressive behaviour, and some studies illustrate enduring impacts (American Psychological Association, 2020). In contrast, certain research has indicated minimal or no correlation between violent media and aggression (Ferguson et al., 2020), resulting in ongoing debates concerning the detrimental impacts of violent media. Thus, engaging in gaming moderately can be a constructive and advantageous endeavour. When approached as a source of leisure and enjoyment, it can yield various advantages.

Nevertheless, excessive gaming as a means to avoid real-life issues can lead to complications, potentially resulting in negative consequences from prolonged play and, in severe instances, leading to the development of a gaming addiction. Researchers have examined the consequences of violent video games on young people. Their comprehensive assessment has demonstrated that these games notably contribute to negative effects such as increased aggression, intensified emotions of aggression, decreased sensitivity to violence, and impacts on psychological health, as confirmed through several meta-analyses (Calvert et al., 2017). In addition, Sun and Sun (2021) suggested that the association between violent video games and problematic behaviours could be influenced by peer interactions.

Previous studies indicate a connection between increased exposure to violent video games and a greater tendency to endorse aggression, as well as heightened levels of anxiety and insomnia among male teenagers in Lebanon (Akel, 2023). These findings serve as a valuable reference point for the adverse effects associated with engaging in violent video gaming. However, limited research has been conducted on the specific relationship between adolescents' demographics and action video games. While there have been studies, such as the one conducted by Kaur and Kaur (2017) that examined the relationship between

gender and video games, there is a gap in research specifically focusing on action video games.

Another notable gap is the absence of studies investigating the relationship between demographics and the dimensions of violent behaviour specifically in Penang, Malaysia. This study aims to address these gaps and contribute valuable insights in these areas. Lastly, the study aims to provide valuable insights to action game developers regarding the impact of action video games on adolescents. This information can help developers be more aware of the content they create and its potential effects on the target audience.

The research objectives of the present study are as follows:

1. To evaluate the difference between gender and dimension of violent behaviour
2. To evaluate the difference between ethnicity and types of school and dimension of violent behaviour
3. To analyse the relationship between frequency of violent behaviour and dimension of violent behaviour.

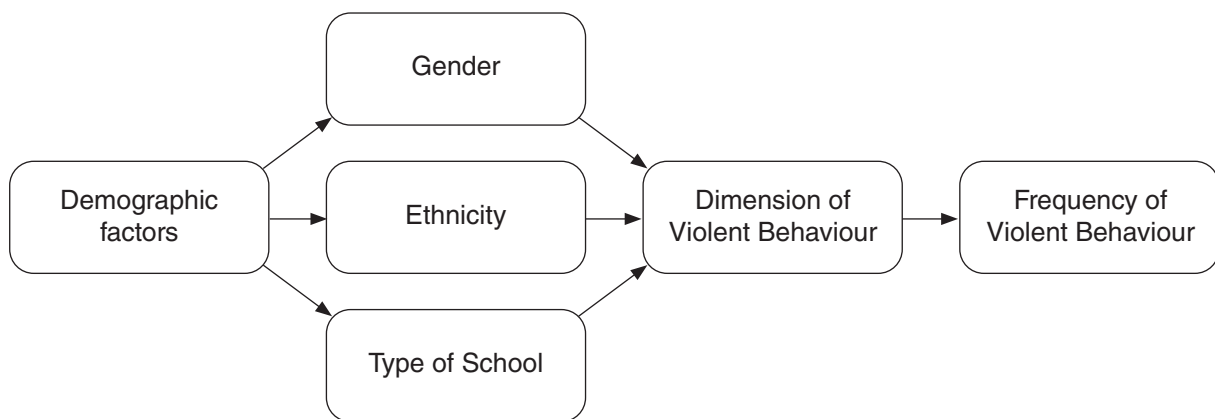


Figure 1. Conceptual framework of demographic factors, frequency of violent behaviour and dimension of violent behaviour

LITERATURE REVIEW

The increasing popularity of video games among adolescents has led to widespread concern that these games have a significant impact on them (Ahmad Zaki, 2017). It is worth noting that the video gaming industry is experiencing rapid growth and is considered one of the fastest-growing sectors in the entertainment industry worldwide. Video games have long been recognised as a prominent medium for entertainment, particularly among adolescents who often turn to gaming as a means to unwind and alleviate stress. The inception of video games can be traced back to the 1940s, but their popularity surged in the 1970s with the introduction of various video game consoles by manufacturers like Atari and Nintendo (Ahmad & Abdul Razak, 2018).

The majority of research indicates that playing violent video games is strongly linked to an increase in aggressive behaviour among players. Several comprehensive analyses on violent content have revealed that such games heighten players' aggressive thinking, feelings, and actions while diminishing their ability to empathise, ultimately leading to negative impacts on their social conduct (Burkhardt & Lenhard, 2022). Regarding the frequency of gaming, research has shown that prolonged exposure to video games has detrimental impacts on the emotions and social interactions of adolescents, elevating the

likelihood of experiencing anxiety, mood disorders, and challenges in social adaptation (De Pasquale et al., 2020).

Certain empirical studies have additionally demonstrated a significant association between exposure to violent video games and problematic behaviours like aggressive conduct (Teng et al., 2022). A study was conducted in China involving 3,707 adolescents on exposure to violence in video games and (cyber)bullying. The results hint at a clear relationship between exposure to violent video games and an increase in occurrences of both traditional bullying and cyberbullying (Teng et al., 2020). However, the study might not have accounted for other variables that could have influenced the results, such as the adolescents' personal histories or the specific types of video games to which they were exposed. Nevertheless, these aforementioned studies reinforce the fact that exposure to action video games has a strong relationship with violent behaviour.

Video games genre

Over the recent decades, the online sphere has witnessed a significant surge in the popularity of the gaming industry. With its multi-million-dollar industry, gaming has become the preferred entertainment option for both millennials and adults who have retained their fondness for childhood gaming. Leading gaming corporations consistently pour substantial investments into the development and release of a diverse range of games, spanning various genres, both established and emerging (Nair, 2023). However, it is acknowledged that the convergence of game genres is also increasing, as evidenced by individual game titles incorporating various play modes from different genres, alongside the emergence of new, increasingly interconnected genres. This serves as a reflection of a rapidly evolving ecosystem (Dale et al., 2020).

Among the top 100 ranked games observed, a variety of 16 genres can be categorised, including adventure, role-playing, shooter, platform, puzzle, strategy, hack-and-slash/beat 'em up, real-time strategy, turn-based strategy, point-and-click, indie, racing, sports, fighting, arcade, and simulator. A comparative analysis of these genres was conducted to ascertain their relative appeal to players. Consequently, it was noted that six genres from the aforementioned 16, namely adventure, RPG, shooter, platform, puzzle, and strategy, prominently dominate the top-ranked games (Qaffas, 2020). However, the researcher would like to remind the reader that the cognitive literature's definition of what constitutes action-like experiences does not completely align with the video game industry's marketing classification of action video games.

Violent video games and adolescents

The heightened sensitivity of adolescents can potentially account for their increased vulnerability to the impacts of violent media (Crone & Konijn, 2018). In the realm of (violent) video games, it holds significance as it offers teenagers prompt feedback and incentives when they excel in gaming (Konijn & Achterberg, 2020). Although playing video games can offer adolescents the chance to acquire various skills, it can also heighten their susceptibility, particularly when they engage in violent first-person shooting games or fighting games.

These types of games, which provide rewards for violent actions within the game, have the potential to impact the emotional, cognitive, and self-regulatory processes of adolescent players, including their ability to recognise emotions and control their responses to emotional stimuli (Miedzobrodzka et al., 2022). As highlighted by Waheed (2019), even though adolescents exhibit only limited recognition of the potential harm in their actions, it has been noted that young individuals extensively participate in online risky behaviour. They appear to act without much contemplation, and to some degree, they underestimate

the potential harm associated with their actions. Thus, the researcher feels that the same situation may occur in relation to playing action video games.

Violent video games and gender

Gaming has become popular among teenagers and has traditionally been seen as a predominantly male activity. Nevertheless, the number of female gamers is increasing, and it is essential for us to gain a deeper understanding of how gender influences the gaming experience (Leonhardt & Overa, 2021). Meanwhile, a study addressed the issue of video game violence in relation to different genders. It is a common stereotype that video games are predominantly played by men compared to women. Another stereotype regarding female gamers is that their games are more casual and require fewer skills compared to those played by men. While this stereotype holds some truth, women also play games that are similar to those played by men (Paaben et al., 2017).

Additionally, the limited representation of women in gaming studies contributes to the perception that violent behaviour after playing video games is more prevalent among men (Entertainment Software Association, 2015). In addition, another scholar discovered that boys exhibited a preference for action games and devoted more time to playing such games, whereas girls showed a liking for simulation-type games. The reason behind girls' decision to play less could be attributed to their lack of interest in gaming within social contexts and their relatively lower inclination towards specific gaming genres, as indicated by Gómez-Gonzalvo et al. (2020). There is limited research in Malaysia that compares gender differences in terms of violent behaviour after playing video games. However, a study by Maraire and Chethiyar (2019) found no significant difference in the amount of time male and female university students in Malaysia allocated to playing violent video games. Therefore, the present study aims to investigate whether there are differences in the effects of violence among male and female adolescents in Malaysia, building upon the study conducted by Maraire and Chethiyar (2019).

Violent video games and ethnicity

For a significant period, scholarly works have extensively documented the prevalence of racial and ethnic stereotypes within media and popular culture. This collective body of literature illustrates the evolution of media stereotypes over time, pertaining to specific racial and ethnic groups, various media formats, and different genres. Initially, the majority of research in this domain centred on depictions in the mainstream media of the United States, particularly concerning representations of African Americans in popular media. However, in recent decades, media scholars have expanded their focus to include the examination of media stereotypes related to indigenous groups, Latino communities, Arabs, Asians, and Pacific Islanders.

Furthermore, contemporary studies have extended beyond conventional media forms like television and films to encompass an analysis of other media content types, such as video games, microblogging platforms like Twitter, and media-sharing websites such as YouTube (Ramasubramaniam et al., 2023). Additionally, the American Psychology Association (APA) (2019) noted that news reports on mass shootings in schools often associate video games with white perpetrators, while in some cases, articles link video game violence to mass shootings involving African American perpetrators. The association also conducted a study in 2015, revealing that 90% of children in America have played video games, and 85% of those games contained violent elements. However, the study found limited evidence linking video gameplay to real-world violence, suggesting that this phenomenon may be a reflection of broader racial issues in America.

Dimension of video game violence

The general aggression model (GAM), put forward by Anderson and Bushman (2002), stands as one of the latest theoretical frameworks concerning aggression, and it holds the highest prominence in studies on media-related violence. It highlights three distinct types of frameworks: perceptual schemas that aid in recognising objects like chairs or social occurrences like personal insults; personal schemas that encompass one's beliefs about specific individuals or groups; and behavioural scripts that encapsulate information on how individuals tend to act in varying situations. Basically, the dimension of violence/aggression contains physical aggression, verbal aggression, anger, and hostility. The present study addressed the link between playing action video games and violence/aggressive behaviour among adolescents.

Frequency of violent video games

The gaming industry is undergoing a significant transformation, paving the way for a fresh cohort of gamers. Nevertheless, dedicating prolonged hours to playing video games might have potential implications for our lives, as we immerse ourselves in these activities for extended durations (Lun et al., 2022). However, it is unclear to what extent the frequency of video game violence affects the dimension of video game violence. The frequency of violent video games is calculated by considering how often adolescents engage in aggressive/violent behaviour as a result of playing action video games, ranging from most often to least often.

Social learning theory (SLT)

In the present study, the social learning theory (SLT), which was developed by Albert Bandura (1965), was employed as the basis of this study. This theory proposes that children can acquire new behaviours by observing the attitudes and actions of others. According to this theory, children learn by modelling and imitating the behaviours of role models after observing them. In society, children are surrounded by significant role models such as parents, friends, teachers, and characters on television. Furthermore, it is undeniable that video games are one of the media children come into contact with, and in this case, there is a connection between SLT and video game violence.

De Leon et al. (2018) concluded that the children in their study who watched violent television programs became violent in real life, despite the programs being shown in selected time slots. This demonstrates the influence of television programs (media) on children's behaviour. Applying SLT to video game playing in Malaysia, it is suggested that Malaysian adolescents who frequently play video games may be inclined to model the violent behaviour depicted in those games. Consequently, these adolescents might exhibit increased aggression after playing action video games, as they often contain intense violent actions. However, considering the cultural differences in Malaysia, it is worth studying this phenomenon.

Similarly, Meng et al. (2017) conducted a study on the effects of violent video game exposure and aggression levels among undergraduates at University Tunku Abdul Rahman (UTAR), and the results also indicate that playing violent video games increased aggression among the UTAR undergraduates. However, both of these studies were conducted in other states in Malaysia and focused on video games in general. According to Thinakaran (2023), individuals exposed to simulated violence, such as that found in video games, may develop desensitisation to it and exhibit a higher likelihood of engaging in violent behaviour. While there is not enough evidence to directly connect violent video games to criminal conduct, the interactive elements in some games could intensify the

impact of game violence on young people by promoting repetitive actions and rewarding such behaviour through animated game features.

Limited research has specifically examined the context of adolescents in Penang. Therefore, the researcher decided to conduct a study on the effects of action video games on adolescents in Penang, focusing on the specific topic of the violent effects of video games. In a previous study (Kaur, 2017), the t-test was used to examine the relationship between gender differences and the effects of video games. The results showed a connection between gender and increased aggression after playing video games. Men exhibited higher levels of aggression, while women also showed aggression but to a lesser extent. This study revealed a relationship between gender and the effects of video games, but not everyone was influenced. These findings suggest that the effects of video games on respondents are limited.

METHODS

The sampling method employed in this study was purposive sampling, which involves selecting samples that serve a specific purpose for the study (Taherdoost, 2016). Purposive sampling allows researchers to focus on specific groups that are most informative for the research question, enhancing the relevance and depth of the data collected. This approach is crucial when the study needs input from people who have particular expertise or experiences (Etikan & Bala, 2017). The chosen sample was adolescents aged between 10 and 19 years old who played action video games. Individuals who did not meet these criteria and did not fulfil the specific purpose of the research were not selected as respondents. Additionally, it was a requirement for the respondents to originate from Penang, Malaysia, as the study primarily focused on gamers in that geographical area.

As of 2023, the total population of Malaysia was estimated at 33.4 million while the population of Penang state was approximately 1,775,300 million (Department of Statistics Malaysia, 2023). Adolescents accounted for 15.6% of the total population in Penang (National Higher Education Research Institute, 2019), which equated to approximately 276, 000 adolescents. A total of 77, 000 adolescent gamers were located in Penang, amounting to 28% of adolescent gamers. This is a substantial number, and due to the high concentration of gamers in Penang, the researchers chose it as the main area of study. Moreover, there were limited studies conducted on this topic, specifically in Penang.

For this study, a survey questionnaire was utilised, and a total of 400 respondents were selected. The questionnaire used in this study was adapted from the work of Drummond (2014) and Taxy (2017) on aggression in violent video games. The questionnaires were created using Google Forms and distributed through various social media platforms during the pandemic. To ensure an adequate number of respondents for the study, the researcher distributed them through social media platforms like Facebook and Instagram. As part of the ethical consideration, both respondents and their guardians were required to give consent to take part in this study.

High school teachers were also approached to help reach more respondents. The teachers distributed the questionnaires to their students within the specified age group and made sure they met the criteria. Additionally, the researcher asked their friends who fell within the target age group to distribute the questionnaires to anyone they knew who also met the criteria. Google Forms, an advanced software and real-time feedback tool, was used to collect data from the targeted sample. It has been widely used in many studies due to its user-friendly nature and systematic approach to data collection and analysis. Google Forms can be shared via email, and all the collected data can be automatically organised

and stored uniformly in a Google Spreadsheet, which can be stored in Google Drive. This facilitated faster data analysis for the researcher.

The study utilised both descriptive and inferential analysis to examine the impact of violence on young adolescents in Penang, Malaysia. Descriptive analysis was employed to provide a comprehensive overview of the data's fundamental characteristics. As described by Trochim et al. (2015), this type of analysis involves summarising the sample and measures and presenting the information through tables and graphical representations. Once the researcher collected data from the adolescent sample, it was summarised using tables and charts to enhance visualisation. For this study, the collected data for Part 1: Demographics of Respondents, Part 2: Dimensions of Violent Behaviour, and Part 3: Frequency of Violent Behaviour will be described in terms of number of respondents and their age distribution.

The researcher employed inferential statistics to draw conclusions about the larger population based on the collected sample data or summary statistics (Trochim et al., 2015). Descriptive analysis was used to present the collected data clearly, while inferential statistics were applied to determine whether adolescents in Penang, Malaysia are affected by violent action video gameplay. In this study, independent t-test, one-way analysis of variance (ANOVA), and Pearson correlation were utilised. A pilot study was initiated before the actual study was conducted. The respondents (N=40), which represented 10% of the total sample, were selected to test-run the survey questionnaire. The reliability test was high for both dimensions of violent behaviour (0.945) and frequency of violent behaviour (0.931). Therefore, the survey questionnaire was deemed fit by the researcher to obtain the data.

Table 1. Reliability analysis on dimension and frequency of violent behaviour

	Cronbach's Alpha of Items	Cronbach's Alpha Based on Standardised Items	N
Dimension of violent behaviour	.958	.963	8
Frequency of violent behaviour	.931	.937	8

Table 1 shows the results of the reliability analysis on the dimension and frequency of violent behaviour. The Cronbach's alpha reliability coefficient for the questionnaire, with a value of 0.958, is deemed both high and acceptable, affirming the questionnaire's suitability for gathering data in this study. Its purpose is to assess the dimensions of violent behaviour among students while engaging in video game play. In addition, for the frequency of violent behaviour, the questionnaire exhibited a Cronbach's alpha reliability coefficient of 0.937. This coefficient is regarded as sufficiently high and acceptable and thus, suitable to measure the extent of students' occurrence of violent behaviour while playing video games.

FINDINGS AND DISCUSSION

Table 2. Descriptive analysis on demographic of respondents

Characteristics	Total Number (N)	Percentage (%)
Gender		
Male	228	57.00
Female	172	43.00

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Characteristics	Total Number (N)	Percentage (%)
Ethnicity		
Malay	65	16.25
Chinese	200	50.00
Indian	87	21.75
Others	48	12.00
Type of school		
Public school	214	53.50
Private school	13	3.25
International school	44	11.00
Public college/university	41	10.25
Private college/university	88	22.00

Table 2 explains the demographic background of the study respondents. The results show 57.00% of the participants were male, while the remaining 43.00% were female. The majority of the respondents in Penang were Chinese (50.00%), followed by Indians (21.75%), Malays (16.25%), and individuals from other racial backgrounds (12.00%). In regard to education, 53.50% of the respondents attended public schools, while 3.25% were enrolled in private schools. Additionally, 11.00% of the participants attended international schools, 10.25% were studying at public universities or colleges, and 22.00% were enrolled in private universities or colleges.

Table 3. Independent sample t-test on gender

Levene's Test For Equality of Variances		t-test for Equality of Means				
		F	Sig	T	df	Sig (2 tailed)
Total Dimension	Equal Variances assumed	1.337	.248	-.597	398	.551
	Equal Variances not assumed	.937	8	-.596	366	.552

Table 3 exhibits the results of Levene's test for equality of variances. There was no statistically significant difference ($p = .248 > .05$) in the variation of test scores between male and female respondents. This implies that both male and female respondents exhibited similar variances in their test scores. Consequently, there was no significant disparity in the average score of violent behaviour dimensions between male and female respondents.

Table 4. One-way analysis of variance (ANOVA) on ethnicity and type of school and dimension of violent behaviour

Category	df	M	F	Sig
Ethnicity	3	86.178	1.381	.248
Type of school	3	161.264	2.608	.049

Referring to the data presented in Table 4, in terms of ethnicity, the result shows that the probability value (0.248) had exceeded the predetermined alpha value (0.05). This

reveals that there were no significant variations in the average scores among at least two groups of students. Therefore, it is clear that ethnicity does not have a significant impact on the dimension of violent behaviour within the gaming community. However, the type of school provides different perspectives. The result signals that the probability value (0.049) is below the predetermined alpha value (0.05). This indicates a significant difference in the scores of the respondents. Consequently, it can be inferred that the type of school had an influence on the dimension of violent behaviour among the respondents.

Table 5. Correlation between dimension of violent behaviour and frequency of violence behaviour

	Total Dimension		Total Frequency
Total Dimension	Pearson Correlation	1	.745**
	Sig, (2-tailed)		.000
	N	400	400
Total Frequency	Pearson Correlation	.745**	1
	Sig, (2-tailed)	.000	
	N	400	400

According to the data presented in Table 5, the Pearson's correlation coefficient value, $r = 0.745$, indicates a robust positive relationship between the dimension of violent behaviour and the frequency of violent behaviour. This finding is further supported by the probability value (0.000), which is lower than the predetermined alpha value (0.05). Therefore, it can be concluded that playing action video games had an impact on the respondents' behaviour, leading to an increase in violent tendencies as they replicated actions learned from such games. The corresponding probability value of 0.000, which is lower than the predetermined alpha value of 0.05, provides strong evidence to support the observed relationship. This means that the likelihood of obtaining such a strong correlation by chance alone was very low, reinforcing the validity and significance of the findings.

In light of these results, it can be concluded that playing action video games had a noticeable impact on the respondents' behaviour. The findings suggest that individuals who engage in playing action video games are more prone to displaying violent behaviour, as they tend to imitate and act out the actions they had learned from these games. It is important to note that while the correlation indicates a strong relationship, it does not necessarily imply causation. The findings suggest an association between playing action video games and violent behaviour, but further research would be needed to establish a causal link and to explore other potential factors that may contribute to this relationship.

The t-test results indicate that there was no significant distinction ($p = .248 > .05$) in the propensity for violent behaviour between males and females after playing action video games. The findings of the survey questionnaire support this, revealing a higher number of male gamers compared to females, as previously reported by the Entertainment Software Association in 2015. However, when examining both gender and the dimension of violent behaviour, there was no noteworthy distinction observed, suggesting that adolescents do not exhibit increased aggression as a result of playing video games.

Despite previous studies by Lenhart (2008), Kaur (2017), and others indicating a correlation between gender and the dimension of violent behaviour, the present study did not yield the same outcome. Instead, the present study concurs with Maraire and Chethiyar (2019), who revealed that there is no significant difference in violent behaviour between males and females when playing action video games. The results of the ANOVA

test indicate that ethnicity did not have a significant impact on the dimension of violent behaviour following the playing of action video games.

Previous research conducted in the United States of America has primarily focused on people of colour, such as African Americans, as well as Americans, Westerners, and Europeans, as reported by the American Psychology Association in 2019. However, there has been limited research conducted specifically on the influence of ethnicity. In the present study, it was found that ethnicity does not play a significant role in determining a person's propensity for violent behaviour after playing action video games. This finding aligns with a study conducted by Ulmer and Harris (2013), who concluded that an individual's ethnicity does not make them more prone to violence when engaging in video games.

However, when considering the type of school attended, a significant difference was observed in the mean score of the dimension of violent behaviour. Individuals from public or private colleges/universities displayed the highest mean scores compared to other types of schools, likely due to their status as adults, granting them more freedom and disposable income to engage in gaming activities. The second-highest mean score was observed among students from private schools, who often enjoy greater independence, resulting in their parents granting them more freedom to engage in activities like video gaming with peers. It is worth noting that there is a lack of research specifically examining the relationship between type of school and the effects of violent behaviour in adolescents following exposure to action video games.

Furthermore, a Pearson correlation test revealed a strong positive relationship between the dimension of violent behaviour and the frequency of engaging in violent behaviour. This indicates that adolescents tend to display more violent behaviour when they play action video games. The findings of this present study align with several previous studies, indicating a broader trend in the relationship between video game exposure and adolescent behaviour. The implications are significant for understanding how video game content impacts young people. Consistent with Aleissa et al. (2022), this study reinforces the link between playing video games and various forms of aggression in adolescents, including physical aggression, anger, hostility, and verbal aggression. Thus, the study suggests a need for monitoring and potentially regulating video game content to mitigate these negative behaviours.

The study supports Teng et al. (2022)'s findings that adolescents with higher trait aggressiveness are more susceptible to the influence of violent video games, resulting in increased bullying behaviours. This highlights the importance of identifying and supporting high-risk individuals to prevent aggressive actions. Echoing Kit and Nie (2022), the study emphasises the role of media literacy in shaping adolescents' perceptions and behaviours. Adolescents with low media literacy are more likely to accept media narratives uncritically, which can lead to distorted views of reality and increased acceptance of negative stereotypes, particularly regarding aggression and societal threats. Overall, these findings underscore the critical need for educational programs that enhance media literacy among adolescents, along with stricter guidelines for video game content to protect young people from potential harm. Additionally, they point to the importance of targeted interventions for individuals with high trait aggressiveness to reduce the risk of bullying and other aggressive behaviours.

CONCLUSION

In conclusion, this study provides valuable insights into the effects of playing action video games on adolescents, given the increasing popularity of video games among this

demographic. The findings suggest that action video games do not have significant adverse effects on adolescents in Penang, allowing parents to allow their children to engage in gaming safely. However, it is important for parents and society to remain vigilant and observe any potential psychological changes in adolescents who play video games, as some individuals may still experience limited effects. Additionally, this study can inform action video game developers regarding the effects their games may have on young players. Developers can continue creating games as usual, as the study results indicate limited effects on adolescents. Nevertheless, it is advisable for developers to exercise control over the exposure to violent content by implementing censorship of violent scenes or enforcing stricter game ratings.

This study contributes to the scholarly understanding of the topic and can guide future research on the effects of video games on the general public. To further expand on this study, it is suggested that future researchers employ a combination of quantitative and qualitative research methods. This approach would allow for a more comprehensive exploration of the reasons behind why some adolescents become violent after playing video games while others do not. Conducting an initial quantitative study to obtain an overall perspective and subsequently employing qualitative methods would provide a deeper understanding of these reasons. Moreover, to enhance the generalisation of the findings, it is recommended that future researchers include a broader geographical area encompassing multiple states in Malaysia. Additionally, incorporating a wider range of age groups, such as individuals above 20 years old, would enable comparisons between adolescents and adults, shedding light on potential effects on different age groups.

Lastly, it is advisable to consider utilising other theories in analysing the effects of video games on individuals, such as reinforcement theory, agenda setting, uses and gratification theory, and cultivation theory. Different situations and circumstances during gameplay could lead to diverse outcomes, and applying alternative theories could offer a more comprehensive understanding of the complex relationship between video games and their effects on individuals. Furthermore, future researchers can also conduct long-term studies to track the developmental effects of action video game play from early adolescence into adulthood.

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