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A CASE STUDY ON THE IMPACT OF VIDEO GAMES TOWARDS MALAYSIAN YOUTH

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ABSTRACT

Due to the rapid growth of technology in recent years, the technology is revolutionising the video game industry and opening the door for a new generation of gamers. However, spending hours a day playing video games could possibly affect our life as we indulge ourselves in video games for a long period of time. So, we would like to provide some insights on the effects of video games in this study. The aim of this study was to determine the effect of video games towards youth on academic performance, prosocial behaviour, physical health and mental health. The data collection was carried out by sending questionnaires to youths in Malaysia, aged 15 to 24. There were a total of 201 respondents who completed the questionnaire and the data collected were analysed using a bivariate correlation test. Pearson correlation between the level of video games addiction and each independent variable (academic performance, social behaviour, physical health and mental health) are calculated for the results. The results of our study showed that there is a moderately weak positive correlation between the level of video games of addiction and prosocial behaviour ($r = 0.231$, $p = 0.001$). The correlation between video games and academic performance ($r = -0.119$, $p = 0.092$), physical health (in terms of BMI ($r = 0.123$, $p = 0.081$) and physical health score ($r = -0.138$, $p = 0.051$)) and mental health are not statistically significant. The results proved that video games will positively affect prosocial behaviour. The results of this research can help in expanding the knowledge of the positive effects of video games towards the youth on prosocial behaviour.

Keywords: *Video Game, Academic Performance, Prosocial Behaviour, Physical Health, Mental Health)*

1. INTRODUCTION

The invention of the computer has revolutionized our life in various fields, including business, medical, simulation, modelling as well as casual entertainment. As the size of computer chips becomes smaller and smaller, the influence of video games in our world grows. According to Ayenigbara [1], any software program that can be played on computing devices such as mobile phones, personal computers and gaming consoles is called a video game. Video games are something that is loved by people of all ages ranging from children to the elderly. They have evolved remarkably from the early days of computer games and the very first versions of Nintendo and Atari. The video game sector has become larger than the movie and music industries combined. In the United States, one of the largest video game markets in the globe with 226.6 million video game players in total, the average age of gamers is 31 years old where 18% of them are above 55 years old and 20 % of them are below 18 years old [2]. As of 2021, there were more than 3.2 billion gamers around the world with Asia being the largest video game market in the world with approximately 1.48 billion video game players which is more than double of the runner-up, Europe, with a figure of 715 million [3]. As the population of video game players keeps growing, there will be concerns on what are the effects brought by video games, whether they will benefit or harm us [4].

Video game can be very entertaining and through it, gamers can develop skills. However, it also may result in one's getting too obsessed with video games regardless of any circumstances. Unnoticed, it may develop an Internet gaming disorder and effect on the life style of a person [5].

Therefore, in this study, the authors have conducted a survey in Malaysia to know what are the effects of video games towards youth. The survey focuses on four aspects for the effects of video games which are academic performance, prosocial behaviour, physical health and mental health.

1.2 Problem Statement

According to Newzoo [6], there will be around 3.0 billion video game players across the globe in 2021, which is an increase of 5.3% from 2020. Among all the regions, 55% of the world's players reside in the Asia-Pacific region. Video games have become the leading industry in sales and growth in the entertainment market and global leisure [7]. The vast amount of time youth spend on playing video games has become a concern among educators, parents and administrations. Therefore, video games have occupied part of the public and scientific debate due to several concerns emerging around them. These concerns have focused on several aspects, among which academic performance and their relationship with addictions [8]. It is necessary to explore the effects of youths dedicating a large part of their time to video games. Therefore, this research is carried out to determine the effects of video games towards youth based on academic performance.

There will be around 3.0 billion video game players across the globe in 2021, which is an increase of 5.3% from 2020 [9]. Prosocial behaviour is defined as voluntary behaviour intended to benefit another [10]. Among all the regions, 55% of the world's players reside in the Asia-Pacific region. The research on media and prosocial behaviour are focused on the opposite side which is how playing violent games will reduce prosocial behaviours. There are several studies that have documented reductions in prosocial behaviour in response to aggressive play. Prosocial and antisocial behaviours are not defined the same [11], [12]. Furthermore, prosocial behaviour can be cultivated via online games. Prosocial behaviours can be defined at several levels [13]. In this study, the authors defined prosocial behaviours as those intended to help others and not try to hurt others. Therefore, this research is carried out to determine the effects of video games towards youth based on prosocial behaviour.

While according to Koipysheva, Lebedinsky and Koipysheva [14], physical health represents the normal condition of an individual's body at all levels which encourages balance among the body's condition, adaptability to external environment, functionalities and absence of illness and pain. A study has shown that non-players have a better health status when compared to people who play video games. Malaysian youths are spending more time on video games and television than doing non-sedentary activities such as sports and outdoor engagement [15], [16]. As a result, we are concerned about the contribution of video games in affecting Malaysian youths' physical health since sedentary activities such as playing video games could induce poor health outcomes regardless of physical activity [17]. Moreover, video games can also cause visual discomfort and impairment [18]. So, in this research, the authors are trying to determine the effects of video games towards youths on physical health and provide evidence for it.

Refer to World Health Organization (WHO) [19], mental health can be explained as a condition of a person's well-being in managing the stress of life. There is many research done on the negative effects of video games on mental health, focusing on aspects such as aggression, which is typically connected to violent video games, anxiety and depression [20], [21]. However, not many can be found on the positive effects of video games on mental health and most of the research that can be found is mostly focused on children or adults. Therefore, in this research, to fill in the gap and determine the effects of video games towards youth based on mental health.

1.3 Research Objectives and Research Hypotheses

In order to further explore into the problem statements as per discussion, the objectives of the study focuses on determining the effect of video games towards youth on academic performance, prosocial behavior, physical health and mental health. To achieve the objectives of this study, the proposed research hypothesis was determined in terms positive and negative affect. The hypothesis as follows:

$H_0$1: Video games will positively affect the youth on academic performance.
$H_0$2: Video games will negatively affect the youth on prosocial behaviour.
$H_0$3: Video games will positively affect the youth on physical health.
$H_0$4: Video games will negatively affect the youth on mental health.

H1: Video games will negatively affect the youth

on academic performance.
H2: Video games will positively affect the youth on prosocial behaviour.
H3: Video games will negatively affect the youth on physical health.
H4: Video games will positively affect the youth on mental health.

2. LITERATURE REVIEW

2.1 Academic Performance

It was found that the higher the academic performance of the youths, the less time of youths spent on video games [22]. Alongside the numerous benefits that video games afford, they also have determined some impacts [23]. Video games addiction is a kind of psychological disorder exhibiting social phobia symptoms and dependent personality disorder [24], which is an adverse outcome caused by excessive video games [25].

Researchers claim that video games negatively affect college students' academic achievements [26], [27]. Previous studies have presented mixed results concerning the impacts of video games on academic outcomes. Concretely, several studies attributed worsen academic performance to the use of video games [28], [29]. For example, Chen and DeNoyelles [16] claimed a negative relationship between students' grade point averages and their use of video games devices.

However, some studies reported a positive impact of video game use on academic development [30]. The positive effects of video games on learning objectives have been reported by several studies, especially in location-based learning scenarios, like learning in museums and scenario-based laboratory learning with predefined teaching materials [31]. For example, Miller and Cuevas [32] reported an insignificant effect of video games on students' academic achievement. Through a longitudinal analysis based on actual video games usage data of 24 university students over the course of a year, participants perceived the use of video games for university education as favourable prior to use, but it was considered a detriment to their academic goals later. At the end of their study, participants reported that video games devices were more of a distraction than a help, and they had noticed large changes in habitual behaviours associated with the need to continuously check their device.

2.2 Prosocial Behaviour

Prosocial behaviour is a voluntary behaviour that will benefit another [33]. Playing video games with prosocial content is positively related to increases in prosocial behaviour [34]. More time spent on video games will help the player to increase their prosocial behaviour. Furthermore, as video games have become an increasingly social activity [35], it is important for future research to increasingly consider the social contexts of gameplay which include cooperative play. In addition, video games can have both positive and negative effects.

Content is very important because games have become excellent teachers for youth [36]. In prosocial content it can lead the people to be more cooperative and helpful. Furthermore, video games that are not explicitly prosocial yet still provide exposure to valuable character lessons and practice in exercising teambuilding and leadership skills (e.g. World of Warcraft) also appear to take gamers along the character education pathway to prosocial behaviour [37] – [40].

In addition, prosocial content in games can increase prosocial behaviour in the short and long term [35], [41]. According to reports that violent video games increase anti-social behaviour (aggression included) [42], it seems reasonable to expect that violent video games will decrease prosocial behaviour, that is, behaviour intended to help others [41]. Therefore, it is important to choose a video game to play for the youth. If playing prosocial games, the prosocial of youth will increase.

2.3 Physical Health

Refer to WHO [43], the definition of obesity is abnormal or overwhelming accumulation of fats that could harm our body health. Refer to Figure 1, Malaysia one of the country with the highest rate of obesity and overweight in Asia [44]. WHO defined a person is considered as obesed when his or her Body Mass Index (BMI) falls above 30.0 or above where above 25 is considered as overweight [45]. BMI uses one's height and weight to determine whether a person's weight is healthy or not. BMI is calculated using height in metres squared to divide the weight of the person. According to a study in Switzerland [46], there is a significant association between video games and obesity with nearly 2-fold increased probability of getting obesity by hour spent in electronic games per day. Obesity is associated with video games among youths as they preferred playing video games over physical activities which causes less body energy expenditure, thus causing an increase in body weight overtime [47]. Moreover, video games also increase a person's spontaneous food intake regardless of sensation of hunger and appetite, which could contribute to further weight gain [48].

Furthermore, video games could also lead to pain in different body parts. According to a study

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conducted by Luján and Esteban [49], a great amount of questionnaire respondents that play video games regularly reported that they suffered pain from different body parts such as head, back, neck, shoulder, hip, elbow, wrist, finger, leg and ankle, ranged from occasionally to sometimes. The results also show that people suffered the most from neck and back pain. It also mentioned that computer players are more susceptible to wrist and hip pain compared to console players. Another study shows prolonged sitting in a static posture such as sitting in front of a computer screen could induce neck pain and headaches and neck pain is highly associated with high hours of computer usage where headaches are more prevalent among female than male computer users [50]. Furthermore, another study has discovered the relationship between the high usage of video games and musculoskeletal pains [50].

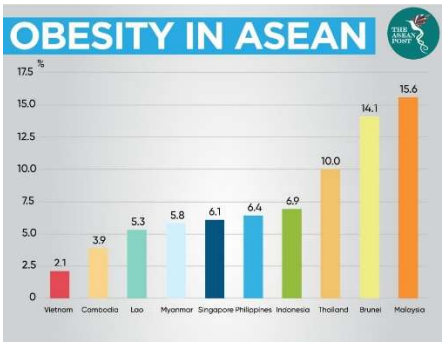

Figure 1: Obesity in Asian

Apart from that, eye disorder is another effect of video games. People could develop Computer Visual Syndrome (CVS) after using the computer screen for a long time (more than 3 hours per day) and being too close to the screen (viewing distance less than 20 inches) [52]. Moreover, visual discomfort such as headaches, eyestrain, and blurred vision are some of the symptoms of CVS [53]. In addition, hours spent on computer screens such as video gaming and computer usage is one of the significant factors of having myopia (nearsightedness) [54]. The effects of increase in duration of playing video games on development of refractive errors such as myopia, hyperopia(farsightedness) and astigmatism were statistically significant ($p<0.05$) [55].

2.4 Mental health

There are also been research on video games being used for recovery purposes for those who went through stressful and exhausting situations and those who suffer from mental health problems [61], [62]. From the study between video game play and mental health recovery showed that veterans who played video games had reported that video games do not just help with managing their moods and stress, but with eudemonic well-being, adaptive coping and socialising as well [61]. Many said that playing video games was a way to help them manage their mental health symptoms. Being able to succeed in games gave them confidence in beingable to face real life [62].

3. RESEARCH METHODOLOGY

The authors referred to related articles in Google Scholar to define our research title and carried out the literature review through Google Scholar and iDiscover as well. Hypothesis was formulated to achieve the stated ROs and also to answer the RQs. Quantitative research was carried out through questionnaire by using Google Form which consists six sections with a total of 48 items as attached in Appendix. The items were measured using multiple choice questions with Likert scales format. The data collected was analysed by using PSPP software. Cronbach's alpha test and bivariate correlation test were used to analyse the data collected.

3.1 Research Instrument and Data Collection

For data collection, questionnaires as attached in Appendix were send to youths through Gmail and other social media platforms such as Instagram and Facebook. There are six sections in the questionnaire with a total of 48 items. The first section is about demographic information of the respondents. Second section is level of video games addiction consist 2 items. Items 5 to 8 are belong to the third section which is about academic performance. This section consists of academic level; CGPA score; academic goal achievement; and performance of semester examination. Forth section is about prosocial behaviour which consists of 3 items that are items 9 to 11 adapted from [34].

The fifth section is about physical health which consists of items 12 to 27 adapted from [47], [48]. Item 12, which is general health while items 13 and 14, which are height and weight. Item 15, which is vision condition whereas item 16, which is vision discomforts. Items 17 to 27 related to discomfort of body parts. The sixth section is about mental health, which consists of 21 ordinal scale items, which are items 28 to 48 that were derived from the Depression, Anxiety and Stress scale (DASS-21) [63].

3.2 Questionnaire Validity

The questionnaire was validated using the content and face validation.

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3.2.1 Content Validation

Content validation indicates how well the individual items in the instrument correspond to the concept being examined [62]. The designed questionnaire was reviewed by five lecturers. The items were rated according to the validation criteria (Table 1). Each content validation criteria were rated using a 5-point scale whereby 1 = Strongly Disagree, 2 = Disagree, 3 = Somewhat Agree, 4 = Agree, and 5 = Strongly Agree.

Table 1: Content Validity Index

Content Validation Criteria	L1	L2	L3	L4	L5	CVR
1. The objective of the instrument is stated clearly.	5	5	5	5	5	**1.00**
2. The format is appropriate.	5	5	5	5	5	**1.00**
3. The meaning of every item is clear.	5	5	5	5	5	**1.00**
4. The instruction is clear.	5	5	5	5	5	**1.00**
5. The questions represent academic performance, prosocial behaviour, physical health and mental health.	5	5	5	5	5	**1.00**
CVI						**1.00**

L- *Lecturer*

Content Validity Ratio (CVR) and Content Validity Index (CVI) were used to quantify the validity of the questionnaire. The CVI value 0.80 or greater is acceptable [65] to indicate an excellent questionnaire. Table 1 shows lecturers' rating on the content validity of each item. All the items were rated as "Strongly Agreed" and that the CVR and CVI which yielded a score of 1.00 show the high validity of the questionnaire.

3.2.2 Face Validation

The designed instrument was face validated according to the validation criteria by 30 undergraduate students as illustrated in Table 2. All the items in the instrument were relevant to the content of the study due to the reliability coefficient yielded $\alpha = 0.84$ through Cronbach's alpha [66]. Reliability refers to how well a test measures what it should while the Cronbach's alpha tests is used in order to see if the survey instrument is reliable [65].

Table 2: Face Validation Item

Face Validation Criteria	Mean	Std. deviation	N
1. The instruction is clear.	4.52	0.574	30
2. The wording of the questions is easy to understand.	4.31	0.604	30
3. The flow of the questions is easy to follow.	4.52	0.634	30
4. The meaning of every item is clear.	4.24	0.689	30
5. The format is appropriate.	4.31	0.660	30
6. The font size is appropriate	4.76	0.435	30

3.2.3 Sampling

The data are collected through the questionnaire which is created on Google Form and distributed through emails and social media platforms. Simple random sampling method was used to select participants for the survey from a population of Malaysian youths that ranged from 15 to 24 years old. Emails was send which consists a brief description of the research with the questionnaire. 500 emails have been sent out to target respondents as well as posting the survey online in social media platforms once every two days in hope of reaching the maximum targeted number of respondents. A total sample size of 201 respondents was successfully collected from youths ranging from 18 to 24 years old within Malaysia.

3.2.4 Analysis

The analysis method which was used in this study for all four hypotheses is the bivariate correlation test. To perform the bivariate correlation test, the authors calculated the video games addiction level by transforming the ordinal scale items which are the number of days that the respondents play video games in a week and the number of hours that the respondents spend in video games per day.

4. RESULTS AND DISCUSSIONS

4.1 Research Deliverable 1

This section addressing the first research objective (RO) which is to determine the effect of video games towards youth on academic performance base on the following hypothesis.

$H_0$1: Video games will positively affect the youth on academic performance.
H1: Video games will negatively affect the youth on academic performance.

Based on Table 3, the Pearson Correlation between level of video games addiction and

academic performance is r = -0.119 and p = 0.092. This shows that there is a weak negative correlation between the level of video games addiction and academic performance which means the higher the level of video games addiction, the lower the academic performance. These results are in line with the previous studies indicating that video games negatively affect the youth on academic performance [67], [68], [69]. However, as the significance level is more than 0.05 means that no effect was observed from this study. It is not statistically significant and indicates strong evidence for the null hypothesis. Therefore, $H_0$1 is rejected.

Table 3: Correlation between level of video games addiction and academic performance

		Level_of_addiction	Academic_Performance
Level_of_addiction	Pearson Correlation	1.000	-.119
	Sig. (2-tailed)		.092
	N	201	201
Academic_Performance	Pearson Correlation	-.119	1.000
	Sig. (2-tailed)	.092	
	N	201	201

4.2 Research Deliverable 2

In this section addressing the second RO, to determine the effect of videos games towards youth on prosocial behavior base on the following hypothesis.

$H_0$2: Video games will negatively affect the youth on prosocial behaviour.
H2: Video games will positively affect the youth on prosocial behaviour.

Refer to Table 4, the result shows that Pearson correlation between the level of video games addiction and prosocial behaviour is r = 0.231 and p = 0.001. This shows that there is a moderately weak positive correlation between level video games of addiction and prosocial behaviour. It indicates that the higher the level of video games addiction, the higher the prosocial behaviour of a youth.

Table 4. Correlation between level of video games addiction and prosocial behaviour

		Prosocial_behaviour	Level_of_addiction
Prosocial_behaviour	Pearson Correlation	1.000	.231
	Sig. (2-tailed)		.001
	N	201	201
Level_of_addiction	Pearson Correlation	.231	1.000
	Sig. (2-tailed)	.001	
	N	201	201

Moreover, as p < 0.05, the correlation between level of video games addiction and prosocial behaviour is significant. Thus, H2 is accepted. Furthermore, by comparing to previous studies, the result shows consistent with the report from another researcher which is that those who played more games behave more prosocially [70], [71]. Furthermore, most of the popular video games nowadays need players to collaborate with other teammates in order to win the match, for example, Language of Legend, a team-based game [72]. The player who wants to win the match will need teamwork and helping each other.

4.3 Research Deliverable 3

This section addressing the third RO which is to determine the effect of video games towards youth on physical health base on the following hypothesis.

$H_0$3: Video games will positively affect the youth on physical health.
H3: Video games will negatively affect the youth on physical health.

Based on Table 5, the result shows that Pearson correlation between the level of video games addiction and BMI is r = 0.123 with p = 0.081. This shows that there is a weak positive correlation between level of video games addiction and BMI. It indicates that the higher the level of video games addiction, the higher the BMI of a person. However, since p > 0.05, this result is not statistically significant.

Table 5. Correlation between level of video games addiction and Body Mass Index (BMI)

		BMI	Level_of_addiction
BMI	Pearson Correlation	1.000	.123
	Sig. (2-tailed)		.081
	N	201	201
Level_of_addiction	Pearson Correlation	.123	1.000
	Sig. (2-tailed)	.081	
	N	201	201

Based on Table 6, the Pearson Correlation between level of video games addiction and physical health score is r = -0.138 with p = 0.051. This shows that there is a weak negative correlation between the level of video games addiction and physical health score. According to the research setting, the lower the health score, the better the physical health, thus the result indicates that a person's physical health is directly proportional to the level of addiction of video games. Therefore, the result of table 5 contradicts with hypothesis H3.

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Table 6. Correlation between level of video games addiction and physical health score

		Level_of_addiction	Health_Score
Level_of_addiction	Pearson Correlation	1.000	-.138
	Sig. (2-tailed)		.051
	N	201	201
Health_Score	Pearson Correlation	-.138	1.000
	Sig. (2-tailed)	.051	
	N	201	201

Since the p-value of Table 5 and Table 6 are greater than 0.05 and the result of Table 6 contradicts with hypothesis H3, so, hypothesis H3 is rejected. Unlike the previous studies [15], [17], [47], [49], [50], [51] which indicated that video games can have negative effects on physical health, the result of our study shows the other way around. This is probably due to the emergence and prevalence of physically-active video games such as Pokemon Go [73] which advocate people to get involved in physical activities. Moreover, probably due to the imposition of working from home and online study during COVID-19 pandemic, the respondents will have more time and flexibility in carrying out sports and exercises, thus improving their physical health.

4.4 Research Deliverable 4

The fourth RO which is to determine the effect of video games towards youth on mental health while the research hypothesis is

$H_0$4: Video games will negatively affect the youth on mental health.
H4: Video games will positively affect the youth on mental health.

Based on Table 7, the Pearson correlation is r = 0.049 and p = 0.490. r = 0.049 indicates that there is a weak positive correlation between the level of video games addiction and mental health, where the higher the level of video game addiction, the worse their mental health is. Since p > 0.05, the correlation between these two is not statistically significant. Thus, H4 is rejected.

Table 7. Correlation between level of video games addiction and total mental health score

		Level_of_addiction	DASS_Total
Level_of_addiction	Pearson Correlation	1.000	.049
	Sig. (2-tailed)		.490
	N	201	201
DASS_Total	Pearson Correlation	.049	1.000
	Sig. (2-tailed)	.490	
	N	201	201

Compared to the previous studies which shows that video games had a positive affect on mental health [56], [58], [60]. While in this study, the results showed that video games have a weak negative affect on mental health instead. This is probably due to the Covid-19 pandemic in Malaysia, where the youths will stay at home instead of hanging out with their friends to prevent getting infected by the Covid-19 virus, making them feel lonely and possibly depressed. Therefore, this may take a toll on the youths' mental health, affecting their responses in the questionnaire.

5. CONCLUSIONS

The purpose of this survey is to study the effects of video games on Malaysian youths in terms of academic performance, prosocial behaviour, physical health and mental health. Based on the data collected from the respondents, the results prove that video games will affect the youth on prosocial behaviour positively, indicating that the more video games a youth plays, the higher their prosocial behaviour. However, the correlation between the video games and academic performance, physical health and mental health are not statistically significant. Moreover, regardless of the significance level, the results for physical health score and mental health contradicts with hypothesis 3 and 4 respectively too. The results of this research can help in expanding the knowledge of the positive effects of video games towards the youth on prosocial behaviour. More awareness can be raised for video games regarding this aspect and possibly help in changing the negative views of people towards video games. In general, video games can bring both positive and negative effects to youths, so it can be suggested that youth should build self-discipline when playing video games.

6. RECOMMENDATION FOR FURTHER RESEARCH WORK

The limitation of this survey is the lack of accurate opinions. As this survey mostly uses closed ended questions except for weight and height, there is a possibility of losing honest opinions in this survey.

In addition, the questionnaires are distributed randomly to the respondents, so we do not know how they fill out the questionnaire. There is a probability that some respondents will randomly choose an answer without reading the questions carefully before submitting them. Therefore, the result of the data may lack accurate opinion.

Future research can be carried out to collect more accurate data in analysing the effects of video games

since our research uses self-report studies. Collaborations with schools and higher institutions across Malaysia can be done to collect data on the academic performance of youths for higher data accuracy. For physical and mental health, collaborations with hospitals can be done to carry out body checks and mental health checks with respondents to collect objective and accurate physical and mental health status of a respondent instead of self-reported physical and mental health status.

Furthermore, to collect more accurate data for future research of prosocial behaviour, a laboratory canbe prepared for participants to play some classic video games. Video games such as prosocial games, aggressive games and neutral games can be used. For example, the prosocial games will be Super Mario Sunshine, the violent game will be Bulletstorm and the neutral game will be Tetris. Each participant may need to play 8 minutes for each game and fill up the questionnaire after time up. This is to ensure that the participants are playing the same game and with the same time. Therefore, the result of future research should be more accurate than the current report due to the fact that we do not know what game the participant played before filling up the questionnaire of the current report.

In a future study when dealing with this subject, it would be interesting to look more deeply, for example comparing differences between the time of day when video games are played in a week, since it seems that this may be a determining factor, as Drummond and Sauer [74] pointed out, in order to understand the relationship between these variables.

Finally, we must point out that this is a correlational study, which indicates the existence of possible interactions of extraneous variables in the study. Therefore, it is important to continue working on this issue through more research, whether quantitative or qualitative, carried out from a more ecological and global epistemology [75]. It is also important to focus on the study of time according to the type of video game, since it affects us in different aspects.

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APPENDIX

Section 1: Demographic

1. What is your age? _____
2. What is your gender? ☐Male ☐Female

Section 2: Level of Video Games Addiction

3. How many days do you play video game per week?
   - ❶ 1 - 2 days per week
   - ❷ 3 - 4 days per week
   - ❸ 5 - 6 days per week
   - ❹ Every day

4. How many hours do you play video game per day?
   - ❶ less than 1 hour
   - ❷ 1 - 3 hours
   - ❸ 4 - 6 hours
   - ❹ more than 6 hours

Section 3: Academic Performance

5. With respect to last year, which of the following statements is closest to your academic level?
   - ❶ I have failed 4 or more subjects.
   - ❷ I have failed between 1 and 3 subjects.
   - ❸ I have passed everything and have an average of adequate or good.
   - ❹ I have passed everything and have an average of notable or outstanding.

6. What is your current CGPA?
   - ❶ less than 2.0
   - ❷ between 2.00 and 2.99
   - ❸ between 3.00 and 3.49
   - ❹ more than 3.49

7. Rate how often you achieve your academic goals.
   ❶ Never ❷ Seldom ❸ Sometimes ❹ Often ❺Always

8. I perform poorly in my past semester examinations.
   ❶ Strongly Agree ❷Agree ❸ Somewhat disagree ❹ Disagree ❺Strongly Disagree

Section 4: Prosocial Behaviour

9. Rate how often you cooperate with other players in the game.
   ❶ Never ❷ Seldom ❸ Sometimes ❹ Often ❺Always

10. Rate how often you help other players in the game.
    ❶ Never ❷ Seldom ❸ Sometimes ❹ Often ❺Always

11. Rate how often you hurt or kill other players in the game.
    ❶ Always ❷ Often ❸ Sometimes ❹ Seldom ❺ Never

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Section 5: Physical Health

12. In general, how would you describe your health?
❶ Excellent ❷ Good ❸ Normal ❹ Bad ❺ Very bad

13. What is your height? _____ cm

14. What is your weight? _____ kg

15. Your eye vision _____.
❶ Normal vision ❷ Nearsighted vision ❸ Farsighted vision

16. How often do you have visual discomforts (such as dry eyes, blurry vision, headache) during or after playing video game?
❶ Never ❷ Seldom ❸ Sometimes ❹ Often ❺Always

Indicate how often you feel pain in the following body parts

	❶Never	❷Rarely	❸Sometimes	❹Very Often	❺Daily
17.  Head	☐	☐	☐	☐	☐
18.  Neck	☐	☐	☐	☐	☐
19.  Shoulder	☐	☐	☐	☐	☐
20.  Elbow	☐	☐	☐	☐	☐
21.  Wrist	☐	☐	☐	☐	☐
22.  Finger	☐	☐	☐	☐	☐
23.  Back	☐	☐	☐	☐	☐
24.  Hip	☐	☐	☐	☐	☐
25.  Leg	☐	☐	☐	☐	☐
26.  Knee	☐	☐	☐	☐	☐
27.  Ankle	☐	☐	☐	☐	☐

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Section 6: Mental Health

		❶ Never	❷Seldom	❸Sometimes	❹Often	❺Always
28.	I found it hard to wind down.	☐	☐	☐	☐	☐
29.	I was aware of dryness of my mouth.	☐	☐	☐	☐	☐
30.	I couldn't seem to experience any positive feeling at all.	☐	☐	☐	☐	☐
31.	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion).	☐	☐	☐	☐	☐
32.	I found it difficult to work up the initiative to do things.	☐	☐	☐	☐	☐
33.	I tended to over-react to situations.	☐	☐	☐	☐	☐
34.	I experienced trembling (eg, in the hands).	☐	☐	☐	☐	☐
35.	I felt that I was using a lot of nervous energy.	☐	☐	☐	☐	☐
36.	I was worried about situations in which I might panic and make a fool of myself.	☐	☐	☐	☐	☐
37.	I felt that I had nothing to look forward to.	☐	☐	☐	☐	☐
38.	I found myself getting agitated.	☐	☐	☐	☐	☐
39.	I found it difficult to relax.	☐	☐	☐	☐	☐
40.	I felt down-hearted and blue.	☐	☐	☐	☐	☐
41.	I was intolerant of anything that kept me from getting on with what I was doing.	☐	☐	☐	☐	☐
42.	I felt I was close to panic.	☐	☐	☐	☐	☐
43.	I was unable to become enthusiastic about anything.	☐	☐	☐	☐	☐
44.	I felt I wasn't worth much as a person.	☐	☐	☐	☐	☐
45.	I felt that I was rather touchy.	☐	☐	☐	☐	☐
46.	I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat).	☐	☐	☐	☐	☐
47.	I felt scared without any good reason.	☐	☐	☐	☐	☐
48.	I felt that life was meaningless.	☐	☐	☐	☐	☐