



A CROSS-SECTIONAL STUDY OF CORRELATION BETWEEN VIOLENT VIDEO GAMES EXPOSURE, AGGRESSIVE AND IMPULSIVE BEHAVIOR IN THAILAND GAMER COMMUNITY

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Violent video games have been questioned in its influence toward violence and aggressive behavior in nowadays especially with adolescents and young adults which usually spend their time playing games more than other activity. The aim of this research is to find a correlation between violent video games exposure, aggressive behavior and self-control in an individual to answer the question that “Is playing violent video games can lead a person to be more violence, aggressive and lack of self-control more than it should be?” The research will be studied with 351 people in the Thailand Gamer Community. An aggressive behavior and impulsive behavior will be look into by self-questionnaire: Buss – Perry aggression questionnaire: BPAQ – Short Form to measure aggressive behavior, the short version of the Self-Control Scale to measure an impulsive behavior and for a violent video games exposure, it will be measured by the time that participants playing video games and how violent it exposure to violent video games and aggressive behavior but the results only show a slightly correlation between these two variables. Nevertheless, the results show no correlation between violent video games exposure and impulsive behavior.

Keywords: Aggressive behavior, Anger, Violent exposure, Video games, Self-contro

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Introduction

Art, through its multiple mediums of film, photography, music, fine art; both paintings and sculptures have been the subject of portraying life and the real world. The medium of its imitation speaks volumes on its influence on culture in the way one dresses, the language one uses and even the mannerisms one chooses to assume. The imitation may stem subconsciously or even consciously from films, artwork, music and the variety of mediums that bombard and expose each of us on a daily basis. While behaviors and mannerisms of impressionable viewers and admirers of movie-goers and film enthusiasts of the actors behind the screen are undeniable in their influence on culture. The narrative of influence videogames to real life actions are still long discussed and have been the point of contention. Films and television have long been under the microscope of criticism of its affluence towards violent behaviors prompting age-restrictions and viewership guidance. On the other hand, videogames, another medium of art and culture portrayed through interaction plot-driven gameplay or open-world free-roam fixtures where players have no constructs to their actions. Videogames, as with the growing expanse of technology and its ability to bridge the virtual with reality, the narrative and debate of its in-game influence to real-world actions. Particularly, it is violent videogames have been the topic of discussion on its influence towards violent and aggressive behavior. The majority of the demographic that is routinely exposed to violent videogames and are the subject of debates are adolescents and young adults. A group of the population versed in the variety of its multitude of videogame genres who spend time playing games more than other activities. The long exposure to videogames is usually thought to be linked to imitating in-game actions to real-world life like acting out scenes or using problem solving aspects from games to the outside world. While games do stimulate the mind in providing thought-provoking solutions to complex problems that can be applied to real world problems, it is usually the violence aspects of gameplay that is highlighted to real world problems rather than knowledge and skill-building aspect.

Adults and parents have become concerned that these violent videogames may cause or have an effect towards aggressive behavior or depressive symptoms in youths. These kinds of games have been blamed for many types of violence such as mass shootings, juvenile delinquency or even sex-related violence. In Thailand, there have been many crimes which had been claimed to be rooted from the exposure to violent videogames. An example would be a daylight robbery of a gold shop where the perpetrator burgled the store and used execution-style shooting methods to subdue staff and bystanders. Among the dead were gold shop staffs, bystanders and a two-year old child, the police claimed that the offender mimicked a well-known violent videogame 'Grand Theft Auto' where its open-world gameplay allowed for such actions with little consequence – unlike the real world. Moreover, the media claimed that the shooter in the mass shooting in Korat, Thailand in February 2020 potentially suffered from videogame addiction. A mentally unstable individual having been linked to videogame addiction puts presence on the videogaming community as a whole – did this individual re-enact gameplay from his videogame? Were his actions

blamed on by his addiction to videogame? Or was the videogame scapegoated into justifying his actions to kill innocent mallgoers and military outposts? While it will be difficult to ascertain the motivations and justification of the killer in Korat, there have been reports and research that link videogame addiction to violent behavior. Particularly in Thailand, there is a report from the Department of Mental Health, under the Ministry of Public Health which stated that the number of children who suffered from videogame addiction had significantly increased by 400 percent from last year. The study doesn't conclude whether the increase is attribute to the increase of videogames, ease in children accessibility to videogames or its influence of addiction to violence.

Researches on violent videogames have focused on the potential effects of the aggressive behaviors that come from playing violent videogames. The case that violent videogame play increases aggressive behavior has been made most forcefully by Anderson et al. Since the 1990s, which some claimed to be the peak period of violent videogames, there are an abundance of researches about media violence, which Anderson and Bushman had concluded much of the work in 2002. The researches included meta-analytic results on four categories of media violence including: laboratory experiments, field experiments, cross-sectional correlation studies, and longitudinal studies. For each of category, it was found that exposure to violent media resulted in a significant increase in aggression or violence (Anderson et al., 2007). However, there are still some questions that need to be further researched. Imitation of art will always be apparent in the norm of media consumption – whether individuals feed off from film, art, music or photography, or even videogames. Its perpetual influence will always be apparent, but not all viewers and enthusiasts of horror films re-enact grotesque scenes. Not all admirers of war film choose to don uniform, march onto battlefields and into enemy territory in dominance of power or conquest. Music doesn't always incite listeners to *rage against the machines* or march in *riot*, so why do videogames incur a different level of influence? The research will attempt to find correlation between violent videogames to violent behavior and aggression. The attempt will not include bias of the researcher's admirer of videogames but instead take attempts to uncover or reveal if correlations exists. Life will always try to imitate art, but art does not necessarily influence imitations that take life, and cause harm.

Aims, Purpose, and Research question

The aim of this research is to find a correlation between the exposure to violent videogames and aggressive and impulsive behaviors to answer the question of: "Does playing violent videogames make a person more violent, aggressive and lack self-control? And do people who are exposed to violent videogames have impulsive behavior issues?". Moreover, in the information processing script theory developed by Huesmann in 1988, being exposed to violent media may promote aggressive behavior, as it's believed that the experiences or events in those violent media will be

memorized and used as guides for behavior and problem solving (Abelson, 1981). Anderson et al. concluded in 2007 that violent video game play is positively associated with aggressive behavior, as well as negatively associated with empathy for victims of violence. Thus, the researcher would like to hypothesize that these variables, which include violent videogame exposure, time spent playing violent videogames, and impulsive and aggressive behavior will have some sort of correlation between one another in Thailand's gamer community.

By employing a cross-sectional study on violent videogames exposure, the effects within an individual can be determined by whether or not an individual becomes more aggressive as a result of playing these games. Moreover, another question is whether or not individuals who play more violent videogames exhibit more aggressive behaviors than those who don't.

Hypotheses

- Higher levels of violent videogame exposure will positively correlate with levels of aggressive behavior.
- Higher levels of violent videogame exposure will negatively correlate with levels of self-control.
- There are correlations between the variables, which include: Demographic characteristics, violent videogame exposure, aggressive behaviors and self-control.
- The researcher will investigate factors including the total number of time the participants spent playing videogames, and the total number of violent content in videogames that participants rated.

Methodology

Firstly, informed consent will be needed from all participants. The researcher will provide essential information about the study to the participants including the research question, aims and proposal, the method and how the data will be used. Purposive sampling was chosen as the method of sampling, where 351 members of the Thailand gamer community from many popular videogames facebook group in Thailand including Playerunknown's Battleground, Dead by daylight, Csgo, Grand theft Auto and DOTA were chosen as the samples of this study. Also the survey were distributed and posted on many Discord gamer servers that the author herself are one of the member. Discord is an online platform designed for communities where people can use it to communicate with other member in the server with video calls, voice calls, text, media, file and also screen sharing is available. Discord is very popular platform among gamers, especially in Thailand due to the fact that the platform itself is free and easy to use for any user.

The study will employ the cross-sectional method, and it will take place online using Google Forms. All of the self-reported questionnaires will be distributed online among the 351 members of the gamer community in Thailand. It will take approximately 10-15 minutes to complete the questionnaire.

Participants

Participants were recruited to complete an online self-report questionnaire for a cross-sectional study of the correlation between violent videogame exposure, and the aggressive and impulsive behaviors among gamers in the Thai gamer community. A total of 351 gamers in Thailand participated in this study (279 or 79.5% were male, 67 or 19.1% were female and 5 or 1.4% of the participants reported their gender as others). Moreover, 15.1% or 53 participants reported their age to be below 18. While 135 or 38.5% of the participants were 18-24 years old, and 46.4% or 163 participants were more than 25 years old.

Measurement and Variables

The self-reported questionnaire was created to gather data on demographic characteristics, violent videogame exposure, aggressive behavior and impulsive behavior. There were 3 scales in this study, which include:

- 1) Buss – Perry aggression questionnaire: BPAQ – Short Form to measure aggressive behaviors
- 2) The short version of the Self-Control Scale to measure impulsive behaviors
- 3) Violent videogame exposure will be measured by the time that participants spent playing videogames and the level of violence seen in the games. Each variables and scales will be further described in the next part.

Demographic characteristics

The following characteristics of age, gender and occupation were included in the online self-reported questionnaire to collect basic information about participants, and to see if there are any differences between each variable. Gender differences will also be included in the model due to the factual differences in male and female delinquent and aggressive behaviors (Svensson, 2003).

Violent videogame exposure

To measure violent videogame exposure, the participants were given a list of three videogames, and were asked to gauge how much time they spent playing each game by giving a rating from 1 to 5 (1 = sometimes to 5 = very often). The level of violence of each game was also rated from 1 to 5 (1 = not at all to 5 = very much). This method has been successfully used in many previous researches (Bush and Teng et al., 2019; Anderson and Dill, 2000; Prot et al., 2014). The ratings of each game will then be averaged. For example, if ‘Playerunknown’s Battleground’ was found to be the most popular videogame between two participants, with each given the violence rating of 2,3 and 4 by the participants, the researcher will use 3 as the average violence rating. Exposures to violent videogames were calculated by summing up the total number of the time participants spent playing, and the level of violence participants rated. The Cronbach’s Alpha of this scale is 0.504, which indicates sufficient internal consistency.

From all of the participants, the table 1 below will show number that each participant listed as their first favorite videogames which in the survey the author has required participants to fill their three first favorite videogames.

[Table 1] The most favorite videogames that each participant listed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	PUBG	104	29.6	31.1	31.1
	DBDL	25	7.1	7.5	38.6
	DOTA	24	6.8	7.2	45.8
	ROV	20	5.7	6.0	51.8
	CSGO	16	4.6	4.8	56.6
	GTA	10	2.8	3.0	59.6
	other	135	38.5	40.4	100.0
	Total	334	95.2	100.0	
Missing	System	17	4.8		
Total		351	100.0		

The results from 351 participants show that the most popular videogame for the participants is ‘Playerunknown’s Battleground’ or known colloquially as ‘PUBG’. A total of 104 participants (29.6%) reported ‘PUBG’ as their most favorite game, while

53 people (15.1%) named it as their second most favorite game, and 35 people (10%) voted it as their third favorite game. The mechanism of the game itself is a shooting game that pits 100 players against each other in a bid for survival. Each player has to gather supplies and outwit the opponents to become the last person standing. The official developers have disclosed this particular message inside the game: *'This game may contain content not appropriate for all ages, or may not be appropriate for viewing at work: Frequent Violence or Gore, General Mature Content'* as a formal warning to its audience. According to the self-reported questionnaire, the average number of time participants spent playing this game was a 4 out of 5. While the average level of violence reported by the participants on this game was a 3 out of 5.

The participants' second most favorite game was found to be 'Dead by Daylight', with a total of 25 participants (7.1%) reported it is as their most favorite game, 22 participants (6.3%) voted it as their second most favorite game and 16 participants (4.6%) named it as their third favorite game. 'Dead by Daylight' is a multiplayer (4 vs. 1) horror game, where one player takes on the role of a savage killer, and the rest of the four players play as survivors, trying to escape the killer and avoid being caught, tortured, and killed. In a similar manner go PUBG, the official developers of the game have disclosed this particular message inside the game: *'This game may contain content not appropriate for all ages, or may not be appropriate for viewing at work: Frequent Violence or Gore, General Mature Content'* as a formal warning to its audience. From the data collected from the self-reported questionnaire, it was found that the average number of time participants spent playing this game was a 4 out of 5. Furthermore, the average level of violence of this game rated by the participants was 4 out of 5.

The third most favorite game of the participants was 'DOTA 2' with over 24 participants (6.8%) named it as their most favorite game. Meanwhile, 16 participants (4.6%) considered it as their second most favorite game, and 18 remaining participants (5.1%) had chosen it as their third most favorite game. 'DOTA 2' is a multiplayer online battle arena (MOBA) where a player will play as a hero in a team of 5, fighting to destroy another team of 5 to see which team will conquer another. The data suggests that the average number of time participants spent playing this game according to the self-report questionnaire is a 3 out of 5. Meanwhile, the average violence rating of this game given by the participants was 3 out of 5.

Aggressive behaviors

Personality is one of the key factors that many criminologists believe to contribute to a criminal's make-up, and having aggressive behaviors is one of the personality traits that are commonly found in criminals. Professor Hans Eysenck identified three personality traits commonly found in criminals, which are:

1) Psychoticism - People who are aggressive, egocentric, and impulsive (Eysenck, 1971).

2) Neuroticism - People with low self-esteem, and anxiety (Eysenck, 1971).

3) Extroversion - People who are dominant, sensation seeking, and assertive (Eysenck, 1971).

According to Bandura, aggressive behaviors are learned and maintained through environmental experiences either directly or indirectly, and the learning of aggression is controlled by possible consequences and punishment in ways similar to the learning of any new behavior (Bandura, 1973). Many studies on the exposure to violent media were using Bandura's concept to develop their study, in which the theory believed that aggressive behaviors are learned by experiences that an individual had gone through. In this study, we can say that being exposed to violent videogames can make an individual have virtual experiences of violence and examples of aggressive behavior, which are regularly exhibited in these types of videogames.

To measure aggressive behavior from the participants, the researcher will use the Buss – Perry aggression questionnaire: (BPAQ – Short Form), developed by Bryant & Smith in 2001, which was used to measure aggressive tendencies consisting of a new 12-item measure of aggression. The scale was separated into four kinds of aggression, including:

1. Physical aggression (e.g. If given enough provocation, I may hit another person).
2. Verbal aggression (e.g. I tell my friends openly when I disagree with them)
3. Hostile aggression (e.g. I sometimes feel that people are laughing at me behind my back)
4. Angry aggression (e.g. I have trouble controlling my temper).

The number of indicators will be on a scale of 1 to 5 (1 = Extremely uncharacteristic of me), and (5 = Extremely characteristic of me). The Cronbach's Alpha of this scale is 0.805, which indicates good internal consistency.

The result from the short version of Buss – Perry aggression questionnaire is expected to analyze if each participant displayed any kind of aggressive behavior.

Self-Control

There were several previous studies which believe that the idea of impulsivity should have the most research attention of all psychological factors related to juvenile delinquency and crime (Ellis and Walsh, 1999). Self-control or impulsive behavior is one of the most significant factors that criminologists consider as a cause for many

offenders to commit crime (Gottfredson and Hirschi, 1990; Newman and Wallace, 1993; Moffitt, 1993; Lynam, 1996).

The researcher will use impulsive behaviors as one of the measurements since it is expected that individuals who spend a significant time playing violent videogames tend to lack self-control, have problems with impulsivity, and are less able to control aggressive behaviors.

There are four personality pathways that make up the idea of impulsive behaviors, which include:

1. Urgency (Tendency to experience strong impulses, frequently under conditions of negative affect)
2. Lack of premeditation (Not being able to think and reflect on the consequences of an action before engaging doing said action)
3. Lack of perseverance (Not having the ability to remain focused on a task that is tedious or difficult)
4. Sensation seeking (Tendency to enjoy/pursue activities that are exciting and to try new experiences).

To measure self-control from participants, the researcher will use the short version of the Self-Control Scale or the Brief Self-control Scale, which describes self-control as the ability to override or change one's inner responses, interrupt tendencies to exhibit undesired behaviors, and refrain from acting on them (Tangney et al., 2004). In the original version of the self-control scale, the scale contains 36 items rated on a 5 point scale. The numbers of the indicator range from 1 (Not at all) to 5 = (Very much). Additionally, there are five dimensions of the scale, which include: general capacity for self-discipline, deliberate or non-impulsive action, healthy habits, work ethic, and reliability (Tangney et al., 2004). In this study, however, the short version of the self-control scale will be used to measure this variable. The short version of the scale has the same structure as the original scale by including questions of each of the factors in five dimensions that were stated earlier (Unger et al., 2016).

Ethical considerations

Firstly, the researcher must inform all participants about the essential components of the research including the research question, the aims and proposal of the research, the methods (How the researcher is going to collect data), and what the researcher is going to do with the collected data. It is crucial for the participants to be informed and give their consent.

Secondly, all of the information from the participants will be kept confidential for their privacy and confidentiality. Thirdly, this research is voluntary, which means all participants may decide to participate or refuse to take part in this research.

The information and consent letter were included in the survey form that was given to participants requiring each participant to complete and sign their name before continuing to complete the survey.

Information and consent letter is included with

- Title of the study
- Information of the study : purpose, aim, objective and procedure of the study
- Clear statement stating that participant in this study is voluntary and each participant may decide to leave or not participate in the study
- Confirmation that all of the collected data will be kept in confidential and stay anonymous

Analysis

The violent videogame exposure model was tested both in a hierarchical OLS regression and bivariate correlation. The number of items, range, minimum, maximum, mean and standard deviation values will be mathematically described in Table 2 below.

[Table2] Descriptive Statistics Table

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
Violent Video Games Exposure	335	24.00	6.00	30.00	18.8358	4.80705
Aggressive Behavior	351	46.00	12.00	58.00	24.5869	7.59118
Self-Control	351	41.00	19.00	60.00	39.5812	7.43110
Valid N (listwise)	335					

As for Table 3, The R Square of all models is shown. Model 4 includes gender, age, aggression and self-control. Self-control is considered the best of the four models with an explained variance of 5.4%. Although the number of the R Square is not a significant number compared to the first and second model, which include only the demographic characteristics (gender and age), the number increased from 1.9% to 5.4% when adding up ‘aggressive behavior and impulsive behavior’.

[Table 3] Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.134 ^a	.018	.015	4.77066
2	.139 ^b	.019	.014	4.77440
3	.224 ^c	.050	.042	4.70609
4	.232 ^d	.054	.042	4.70401

a. Predictors: (Constant), Gender

b. Predictors: (Constant), Gender, Age

c. Predictors: (Constant), Gender, Age, Aggressive Behavior

d. Predictors: (Constant), Gender, Age, Aggressive Behavior, Self-Control

In order to examine the correlation of variables, The Coefficients table will illustrate the OLS regression results, consisting of 4 models. Violent videogame exposure is the dependent variable, while gender, age, aggressive behavior and self-control are the independent variables.

Furthermore, the bivariate correlation table will illustrates the bivariate correlation between all variables including aggressive behavior, impulsive behavior, the total number of the time participants spent playing videogames, and the level of violent content in videogames rated by participants. It will analyze two factors of the exposure to violent videogames, and figure out if there are any correlations between these two factors of violent videogame exposure and two other variables.

Results

The results of this research will be mainly concluded by examine through the coefficients and the bivariate correlation between each and all variables.

[Table 4] Coefficients Table, the correlation of variables

		Coefficients^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	16.025	1.166		13.743	.000
	Gender	1.541	.623	.134	2.473	.014
2	(Constant)	16.599	1.432		11.592	.000
	Gender	1.544	.624	.135	2.475	.014
	Age	-.250	.361	-.038	-.692	.490
3	(Constant)	13.940	1.629		8.559	.000
	Gender	1.541	.615	.134	2.506	.013
	Age	-.279	.356	-.042	-.784	.434
	Aggressive Behavior	.111	.034	.175	3.272	.001
4	(Constant)	11.816	2.477		4.770	.000
	Gender	1.640	.621	.143	2.642	.009
	Age	-.311	.357	-.047	-.870	.385
	Aggressive Behavior	.125	.036	.197	3.465	.001
	Self-Control	.042	.037	.065	1.137	.256

a. Dependent Variable: Violent Video Games Exposure

[Table 5] Bivariate Correlation Table, the correlation between each variables

		Bivariate Correlations			
		Aggressive Behavior	Self-Control	Total Playtime	Total Violent Content
Aggressive Behavior	Pearson Correlation	1	-.320**	.130*	.170**
	Sig. (2-tailed)		.000	.017	.002
	N	351	351	336	338
Self-Control	Pearson Correlation	-.320**	1	.018	-.042
	Sig. (2-tailed)	.000		.740	.447
	N	351	351	336	338
Total Playtime	Pearson Correlation	.130*	.018	1	.346**
	Sig. (2-tailed)	.017	.740		.000
	N	336	336	336	335
Total Violent Content	Pearson Correlation	.170**	-.042	.346**	1
	Sig. (2-tailed)	.002	.447	.000	
	N	338	338	335	338

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

The first hypothesis to consider here is that higher levels of violent videogame exposure will positively correlate with levels of aggressive behavior. According to Table 4, the results in every model show that there is a positive correlation between violent videogame exposure index and aggressive behavior index. The strongest correlation is in the 4th model (Unstandardized B = .125, Beta = .36), which consists of gender, age, aggression and self-control. Despite showing only a slight correlation from the numbers, it still shows a positive correlation. This justifies that the first hypothesis is correct, further cementing the fact that exposure to violent videogames can make an individual exhibit aggressive behavior.

The second hypothesis to consider is that higher levels of violent videogame exposure will positively correlate with levels of impulsive behaviors. According to Table 4, an impulsive behavior is only included in the 4th model, which is a small number, and therefore, not significant in this correlation (Unstandardized B = .042, Beta = .037). The results show no correlation between variables, which justifies that being exposed to violent videogames will not make an individual more prone to exhibit impulsive behavior.

The third hypothesis to consider is the correlation between the variables, which include demographic characteristics, violent videogame exposure, and aggressive and impulsive behavior. For the exposure of violent videogames, the researcher had investigated the total number of time participants spent playing videogames and the level of violent content rated by participants.

The bivariate correlation was used in order to investigate the correlation between aggression, self-control, the total number of the time participants spent playing videogames and the total number of violent content in videogames participants rated. According to Table 5, the results show that there is a slight correlation between the time participant spent playing videogames (.130), violent content exposure (.170) and aggressive behavior. This means that the level of violence in videogames has a stronger connection to aggressive behaviors more than the amount of time participants spent playing them. On the other hand, there is no significant correlation between the exposure to violent videogames (total time spent playing = .018, total violent content exposure = -.042) and impulsive behaviors. This means that the amount of violence in videogames is less likely to induce impulsive behaviors among its players.

Additionally, the bivariate correlation that splits data into groups was also generated in order to investigate more into the gender differences between the variables. The results in the table 6 below show that there are differences between male and female participants when exposed to violent content, in correlation to aggressive behaviors. For female participants, the number of correlation between aggressive behavior and

violent content exposure ($p=.352$) is higher than that of the male participants ($p=.126$). This means that women who are exposed to violent content are more likely to have more aggressive behaviors than men. The reason behind this number comes from the fact that women are believed to be more sensitive to violent content than men (C.E. Collyer et al., 2011)

[Table6] The differences between genders in bivariate correlation

Correlation : Differences between Gender						
Gender			Aggressive Behavior	Self-Control	Total playtime	Total violent content
Female	Aggressive Behavior	Pearson Correlation	1	-.447**	.152	.352**
		Sig. (2-tailed)		.000	.229	.004
		N	67	67	64	65
	Self-Control	Pearson Correlation	-.447**	1	-.055	.037
		Sig. (2-tailed)	.000		.663	.769
		N	67	67	64	65
Male	Aggressive Behavior	Pearson Correlation	1	-.297**	.130*	.126*
		Sig. (2-tailed)		.000	.034	.039
		N	279	279	267	268
	Self-Control	Pearson Correlation	-.297**	1	.039	-.048
		Sig. (2-tailed)	.000		.522	.434
		N	279	279	267	268

Discussion and Conclusion

In conclusion of the research and hypothesis of whether or not a correlation exists between violent videogames and violent and aggressive tendencies in behavior, it is found that the hypothesis can be rejected. The research does not present strong and substantial evidence to correlate that exposure to violent videogames causes an individual to be one of increased aggression, and lack self-control to the extent of eliciting violent behavior.

The research concludes that the hypothesis can be rejected with findings found to indicate only under substantial correlation between aggressive behavior and violent videogame exposure. While this is supported by the first hypothesis, the numbers are not evident enough to conclude strong correlation and causation that exposure and stimulus to videogames leads to aggressive behavior in video gamers. The research also underscores that there is no evident correlation or causation between violent videogame exposure and self-control, which means that being exposed to violent videogames does not cause impulsive behavior among its players, as opposed to the claims Anderson et al. made in their previous research. Anderson et al. made claims from previous research that one's exposure to violent videogames and stimulus of violence through its variety of mediums of games and consoles equated to lack of self-control to which this research rejects such findings. Moreover, the results show that the level of violence in videogames have more of a positive correlation to aggressive behavior rather than the amount of time participants spent playing them, despite the low numbers. Thus, it can be summed up that the level of violence outweighs the amount of time participants spent playing these videogames.

However, there are notable instances to be documented after the findings of this research is concluded. The research did contain several limitations that could influence findings but can be utilized to improve further research. The first limitation in this research is the Cronbach's alpha in violent videogame exposure, which is found to be 0.504. The number is higher than it's supposed to be, due to the fact that the data may need to be more varied, and more alternative variables may need to be taken into consideration. The low variability in the data used for this research may contribute to the high Cronbach alpha that is revealed from the research. However, although the Cronbach alpha of 0.504, is found to be higher than expected, the finding did not exceed or reach 0.70. The range that it is found to be can be considered to having sufficient internal consistency.

The second limitation that can be documented for further research is the intriguing points of gender differences. Referring to Table 3, the unstandardized b of gender is 1.641 in model 4, which might be caused by the unequal number of male and female participants. As a result, a more equal amount of genders in the sampling pool may provide more accurate and nuanced results. The data collection of sample space for males and females proved to be difficult, and data collected by random sampling had to be used to avoid sampling of convenience so that findings can remain unbiased and without confounding variables. It should also be noted that while the sampling pool

for two data collection of male and female proved to be unequal, the gender differences proved to be note-worthy. The results in Table 5 show the correlation between aggressive behavior and violent content exposure, which indicates the differences between male and female participation. The pool for each gender may have inconsistent variability, the findings proved to be consistent with previous researches as such with C.E. Collyer et al., 2011). Lynam, D and Mill, J., 2004 highlighted that pathways to impulsive behavior could be linked to gender and not solely based on exposure to violence. The same can be said with several researches that have found gender differences in violent media sensitivity (C.E. Collyer et al., 2011). The findings in this research confirmed that exposure of violence in gender influenced, but further study should be ascertained to find direct causation especially with higher variability in sample space.

Interestingly yet debatable is the hours of playing videogames. The question asking that how many hours of playing videogames is too much is still debatable in many ways. However, according to fews previous researches might suggested safe limit for playing videogames or any media exposure is approximately around 2-3 hours ant not more than 5 hours per day (Rossman, 2017)(Marachi, 2016)

Furthermore, the study of violent videogame exposure should also consider focusing on children and adolescents. Several researchers and theories believed that children who are exposed to violent media tend to be more susceptible to aggressive behaviors (Anderson et al., 2007). In the information processing script theory developed by Huesmann in 1988, it explains the stability of aggressive tendencies over a period of time, and the role of media violence in promoting aggressive behavior. According to the script theory, being exposed to violent media may promote aggressive behavior, as it's believed that the experiences or events in those violent media will be memorized and used as guides for behavior and problem solving (Abelson, 1981). Moreover, the theory believes that the exposure of media violence to adults is limited during their learning of aggressive behaviors. The theory also suggests little relation between adult aggression and an adult's exposure to media violence as opposed to the significant relations between childhood exposure and childhood aggression (Huesmann and Miller, 1994). This point of limitation will be difficult to highlight as further study from children into adolescent and into adulthood must be researched and documented. While the intentional exposure of violence to young adults, and children have been hinted at stemming into adulthood, the question of ethical practices to intentionally expose children to reveal causality will be difficult to take into research methodology. A longitudinal study regarding violent videogame exposure would perhaps prove to be the better method of study due to the fact that a one-time study is not enough to justify any real relationship between violent videogame exposure and aggressive behaviors. Perhaps more external factors are needed to help analyze whether or not playing violent videogames really causes any sort of aggression.

In conclusion, the results of this research may pose challenges to several future studies between the relationship of violent videogame exposure and aggression as it

does offer a simple explanation of the lack of correlation. While there are inconsistent findings due to multiple limitations highlighted above, the researcher is confident that the findings have proved to reject the hypothesis that exposure to violent videogames causes aggressive behavior and violent tendencies. The research is hopeful that it will provide a basis for future studies and research on whether violent video games increases aggressive behaviors, and whether the effects of its exposure stem long into adulthood or fade away given time.

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Appendices

Appendix 1. the Buss – Perry aggression questionnaire: (BPAQ – Short Form) that was developed by Bryant & Smith in 2001

The 29-Item Aggression Questionnaire (Buss & Perry, 1992), Its 12-Item Short Form (Bryant & Smith, 2001; italicized items) and the 12-Item Brief Aggression Questionnaire (boldface items)

	Loading	Rank
Physical aggression		
1. Once in a while I can't control the urge to strike another person. ^a	0.61	
2. <i>Given enough provocation, I may hit another person.</i>	0.84	1
3. If someone hits me, I hit back. ^a	0.64	
4. I get into fights a little more than the average person. ^a	0.51	
5. If I have to resort to violence to protect my rights, I will.^a	0.65	2.5
6. <i>There are people who pushed me so far that we came to blows.^a</i>	0.65	2.5
7. I can think of no good reason for hurting another person. ^{a*}	0.63	
8. <i>I have threatened people I know.</i>	0.52	
9. I have become so mad that I have broken things.	0.52	
Verbal aggression		
1. I tell my friends openly when I disagree with them.	0.46	2.5
2. <i>I often find myself disagreeing with people.^v</i>	0.40	
3. When people annoy me, I may tell them what I think of them.^v	0.46	2.5
4. <i>I can't help getting into arguments when people disagree with me.^v</i>	0.38	
5. <i>My friends say that I'm somewhat argumentative.</i>	0.51	1
Anger		
1. <i>I flare up quickly but get over it quickly.</i>	0.51	
2. When frustrated, I let my irritation show.	0.44	
3. I sometimes feel like a powder keg ready to explode. ⁱ	0.43	
4. I am an even-tempered person.[*]	0.65	3
5. Some of my friends think I'm a hothead.	0.61	
6. <i>Sometimes I fly off the handle for no good reason.</i>	0.71	2
7. <i>I have trouble controlling my temper.</i>	0.72	1
Hostility		
1. I am sometimes eaten up with jealousy. ^f	0.43	
2. <i>At times I feel I have gotten a raw deal out of life.^x</i>	0.55	
3. Other people always seem to get the breaks.^f	0.61	2
4. <i>I wonder why sometimes I feel so bitter about things.</i>	0.50	
5. I know that "friends" talk about me behind my back. ^s	0.48	
6. I am suspicious of overly friendly strangers. ^s	0.44	
7. I sometimes feel that people are laughing at me behind my back.^s	0.65	1
8. When people are especially nice, I wonder what they want.^s	0.56	3

Notes. ^{*}Reverse-scored item. Items developed from the ^aAssault, ^vVerbal Aggression, ⁱIrritability, ^fResentment, or ^sSuspicion subscales of Buss–Durkee (1957) Hostility Inventory.

Appendix 2. the Brief Self-control Scale (Tangney et al.,2014)

Items of the Self-Control Scale (cf. Tangney et al., 2004)

- * 1. I am good at resisting temptation.
- (R) * 2. I have a hard time breaking bad habits.
- (R) * 3. I am lazy.
- (R) * 4. I say inappropriate things.
- 5. I never allow myself to lose control.
- (R) 6. I do certain things that are bad for me, if they are fun.
- 7. People can count on me to keep on schedule.
- (R) 8. Getting up in the morning is hard for me.
- (R) 9. I have trouble saying no.
- (R) 10. I change my mind fairly often.
- (R) 11. I blurt out whatever is on my mind.
- (R) 12. People would describe me as impulsive.
- * 13. I refuse things that are bad for me.
- (R) 14. I spend too much money.
- 15. I keep everything neat.
- (R) 16. I am self-indulgent at times.
- (R) * 17. I wish I had more self-discipline.
- 18. I am reliable.
- (R) 19. I get carried away by my feelings.
- (R) 20. I do many things on the spur of the moment.
- (R) 21. I don't keep secrets very well.
- * 22. People would say that I have iron self-discipline.
- (R) 23. I have worked or studied all night at the last minute.
- (R) 24. I'm not easily discouraged.
- (R) 25. I'd be better off if I stopped to think before acting.
- 26. I engage in healthy practices.
- 27. I eat healthy foods.
- (R) * 28. Pleasure and fun sometimes keep me from getting work done.
- (R) * 29. I have trouble concentrating.
- * 30. I am able to work efficiently towards long-term goals.
- (R) * 31. Sometimes I can't stop myself from doing something, even if I know it is wrong.
- (R) * 32. I often act without thinking through all the alternatives.
- (R) 33. I lose my temper too easily.
- (R) 34. I often interrupt people.
- (R) 35. I sometimes drink or use drugs to excess.
- 36. I am always on time.

Note. *Items of the Brief Self-Control Scale. (R) = reversed items.