

# EXAMINING THE EFFECTS OF VIDEO GAME PLAYING ON THE AGGRESSIVE TENDENCIES OF PLAYERS'

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## Abstract

The aim of this study was to address the issue of linkage between video game playing and aggression. The rationale of this study was to identify the effects of videogame playing on aggressive tendencies in Pakistani cultural settings. The method of research in the study was quantitative survey was used. For data collection, the questionnaire was consisted in 3 sections which comprised of demographics, type and amount of videogames played and Buss Perry aggression model from which 379 respondents were selected, through probability sampling. The results showed that violent video game players' had lower aggressive tendencies that non-violent video game players'. The result findings suggested an inverse relationship exists between the types of videogames played and the aggressive tendencies of players. The regression model scatter plot further elaborates the inverse relationship between violent video games players and aggression. Meanwhile, gender as a moderator does not play a statistically significant role in video games effect of aggression.

**Keywords:** videogames, violent video games, non-violent video games, aggression, Pakistani cultural settings, university students, regression

## 1. INTRODUCTION

Video games are an interactive medium of communication that use artificial intelligence interface built on visual graphics and coded patterns to stimulate players to actively interact in the virtual world (Granic, et al., 2014). Video games have become an integral part of society's source of entertainment and communication, through which individuals can socially interact with one another in real-world time.

Video games have been associated with various pro-social and anti-social effects on players' behavior and tendencies of various forms that most prominently include aggressive tendencies (Anderson, Ithori, et al., 2010). Literature present over the last decade shows a somewhat direct connection to the extent that videogames are designed with violent content based on real-world interaction and violent activity (Gitter, Ewell, et al., 2013). But the issue of linkage between video games and aggression seems far from settled as some seen in recent literature (Kuhn, Kugler, Schmalen, et al., 2018; Tear & Nielsen 2013; 2014).

Based on the generalized results from researches conducted over the last decade or so on the effects of video game playing on aggressive tendencies in the western and eastern culture, this study investigates the relationship between effects of video game playing and aggressive tendencies in Pakistani cultural context.

### **1.1 Statement of Problem**

Research on video game playing and its effect on children and adolescents, an extension of the heavily researched tradition of the effects of television on violence in the US, has attracted considerable amount of attention from social scientists particularly from the mass communication scholars for over the last one decade or so. A close examination of several meta-analyses of this research and some of the most recent studies show that a number of issues remain unresolved in the whole context of this research particularly the issue of video games' effects on aggression and also the dispute over the validation of these type of research's findings in non-western culture (Anderson, Ithori, Bushman, et al., 2010).

### **1.2 Significance of Study**

The significance of this study lies in that it tests the effect of the amount of video games played and type of video games played, violent and non-violent, on the aggressive tendencies among university students in Pakistan. It is important to find out whether the type of video game played and the amount of video game played influences aggressive tendencies of the university students in Pakistan or not. Meanwhile, this research also investigates the role of gender as a moderator in this nexus.

### **1.3 Research Objectives**

The aim and objectives of this research study is to help generate new data in Pakistani cultural context which has not been a focus in the existing literatures. This includes:

- To examine the frequency of video game playing among the university students.
- To examine the amount and type of violent and non-violent video games played by university students.
- To examine the distribution of video gamers across the gender categories in the student population.
- To examine the extent to which aggressive tendencies are present among the university students.
- To test the effect of type of video games played on the aggression among the gender categories.

#### 1.4 Research Question

- What is the relationship between the types of video games played and the level of aggression?
- Whether gender moderate the effect of video games playing and aggressive tendencies?

#### 1.5 Research Hypotheses

- The mean aggression score between violent video game players group will be higher than the non-violent video game players group.
- The effect of video game playing on the aggressive tendencies will be dependent on gender.
- The effect of video game playing on the aggressive tendencies will be dependent on time spent playing violent video games.

## 2. LITERATURE REVIEW

According to a meta-analytic review” in 2010 focused on observing the relationship of video games and aggressive behavior between the east and west. This annexation of a more restricting methodological eminence is somewhat different from the meta-analysis drive in the past. Analysis is based on the population from Japan and western countries on the basis of their cultural differences and social cognitive models and the results mentioned designs of meta-analysis that fits well with the rhetorical predictions. This study finding suggests that exposure to violent video game is a causal risk factor for increased aggressive tendencies. Furthermore, research revealed significantly weak evidence of cultural differences in susceptibility and type of measurement effects. Moreover, study found no evidence of gender differences in susceptibility (Anderson, Ithori, Bushman, et al., 2010).

Video games are played almost everywhere and with the latest development in the video game industry; video games are being made nowadays as to have more and more violent content and highlighted a lot many aggressive triggers to be more attracted. These new video games have become a growing concern among the community members due to the increasing number of reported cases of people committing crimes or violent acts in real life based on the video games they play. This factor highlighted an increasingly active cognition process among these individuals that they become more active in committing violence and harm to society members (Crump, 2014).

The General Aggression Model (GAM) has stated that the individuals who play violent video games will show higher aggressive tendencies in their personnel traits and behavior (Anderson, 2002). A research study has hypothesized that in a contextual analysis on violent video games which do increase aggression in violent video game players, but it has also considered that non-violent video games may also be the cause of increase in aggressive tendencies in video game players (Anderson, 2010). As another study in

which it has shown that violent video game players did not have significantly high aggressive tendencies or violence present in them because their aggression was expressed into the violent video games they played for prolong periods of time had made them desensitized to the effects of violence in those video games (Brockmyer, 2014).

Center (2015) conducted a research study on video game players who played violent and non-violent video games. The study used extensive stages of research to associate industry video game rating with players' rating based on their exposure to specific video games. The study result concluded that player could correctly identify and rate different violent video games based on their personnel experiences and preferences.

Furthermore, (Engelhardt, Bartholow, et al., 2011) argued that direct association of violent video games and increase in aggression was still unresolved. The study findings showed that playing video games, consisting of extremely high violent content and aggressive scripts, resulted in individuals becoming desensitized to violence and the aggression tendencies reduced among them.

Fatima & Ashfaq (2014) examined the effects of violent video games on school going children in Pakistan. The study showed on negative relation between violent video games playing and children's behaviour and increased aggression. Based on social learning theory where individuals learn from their social interaction and environment, children who played violent video games learned violent behaviour depicts by the videogame characters and imitated them in front of their peers.

Przybylski & Weinstein (2019) stated that violent video game engagement is not associated with adolescents' aggressive behaviour. In this regard, evidence from a registered report observed the amount of time they play violent video games in adolescents and the level of aggression present in them as compared to those who do not play violent video games. The result findings concluded that its hypothesis did not predicted relationship between non-parabolic functions social behavior and no supporting evidence was found on violent video game engagement leading to aggressive behavior in adolescents.

Similarly, another research showed no evidence was present in directly connecting or linking violent video games and physical aggression hence the researcher found no evidence that links violent video game medium to real world violence. This study investigated the linkage of violent crimes and video games sales, popular key words searched on internet were violent video games guides and the release states of popular violent video games through four-time series analysis. Findings however showed results contrary to the popular claims of a strong linkage of violent video games and aggressive tendencies and witnessed a decreasing level (Markey, Markey & French 2015).

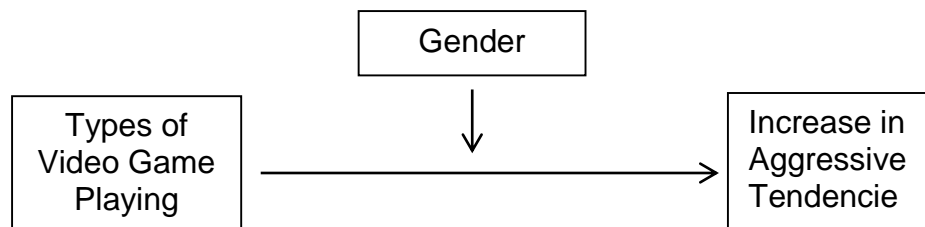
The research study observed that the male adolescents were more inclined towards playing video games pathologically which increased their level of aggression and were more antisocial as compared to female adolescents who were described as non-pathological video gamers. The research study concluded that the increased level of

aggression and loneliness has varied effects on gender groups with males more addicted to playing pathological games and becoming more aggressive and females less addicted to these pathological games and therefore experience less aggressiveness in behaviour (Qureshi, Khan, & Masroor 2013).

Whereas, Jelinek & Kveton (2016) investigated on the linkage between violent video games and antisocial behavior (verbal, indirect and physical) among children and teenagers with respect to gender. The research focused on the repeated exposure of violent video game playing based on the participants' favourite games and their evaluation of the level of violence in those specific video games and the amount of time they spent playing. The research study showed that violent video game playing were associated with physical aggression and by means of gender; male players have slightly lower level of physical aggression and bullying than in female players.

### 3. THEORETICAL FRAMEWORK

The theoretical model for this research is based on the objective and hypothesis of this study. This research study game GAM model for developing the theoretical model as in Fig.1



**Figure 3.1. Types of video games and gender as moderator effect on aggressive tendencies**

The general objective of the study is to test out whether video games i.e. violent video games and non-violent video games influence the aggressive tendencies in players across the university students and gender is a moderator in the study.

Based on the existing literature from over the last decade in the western culture, the hypotheses of this study are as follows

### 4. METHOD OF RESEARCH

In this research, quantitative research survey method was opted to collect objective accurate data. The population was defined as the currently enrolled students from university. Sample size will consist of about 400 student's student population and data was gained from the student affairs; from this the sample size was defined to be around approximately 350 to 400 enrolled students. The Buss Perry Aggression Scale Model was implemented and modified according to the requirement of the research study objectives to check the level of aggression in students who actively played violent and non-violent

video games. Method of data collection was questionnaires which consisted of questions designed on a 5 point Likert Scale and Buss Perry Aggression Scale about how the students were likely to agree or disagree of playing videogames and the type of videogames they played. This model provided the ability to address the aggressive tendencies in students which are categorized as anger, verbal aggression, hostility and physical Aggression. The students were selected using probability sampling technique. The student list consisted of all the departments and student registration and their semester information. The probability sampling process of randomly selecting every 3rd student from the population.

#### 4.1 Questionnaire

An open ended and close ended questionnaire was constructed according to the research objectives and hypothesis. The questionnaire comprised of 3 sections consisting of 46 items about their general information, name of their favourite videogames that they played on a daily basis, type of video game and amount of time they spend on playing. Afterwards the Buss Perry aggression scale was utilized to ask questions which checked their aggressive tendencies or level of aggression. The general layout of the questionnaire is described as:

Section I Demographics – Distribution of video gamers across the gender categories

Section II Types of Video games

II (A) Frequency of type of video games played

II (B) Amount of time spent playing and violence rated by the students present in the video games they play.

Section III Buss Perry Aggression Scale – The currently present aggressive tendencies in players.

**Table 4.1. Reliability Statistics about Buss Perry Aggression Scale**

Cronbach's Alpha	Number of Items
.880	29

The Buss Perry Aggression Scale value is indicated at .880 which was considered as a very reliable scale to address the aggressive tendencies for which pilot testing was done by selecting 40 questionnaire samples.



## 5. RESULTS AND FINDINGS

**Table 5.1. Univariate Statistics of the Study**

Variables	Mean Score	Standard Deviation	N
Gender	1.51	.500	379
Age	21.08	2.567	379
Program	1.24	.522	379
Enrolled Department	5.01	3.160	379
Semester	3.48	2.175	379
Family Income	3.15	1.363	379
Type of Video gamer	1.37	.483	379
Video game 1 Name	45.68	44.277	379
Playing Videogame 1	3.25	1.256	379
Violence in Videogame 1	3.20	1.307	379
Time Spent Playing Videogame 1	163.79	145.630	379
Video game 2 Name	49.10	46.634	365
Playing Videogame 2	3.22	1.174	365
Violence in Videogame 2	3.11	1.401	365
Time Spent Playing Videogame 2	162.26	166.099	379
Video game 3 Name	48.97	43.554	352
Playing Videogame 3	3.01	1.197	352
Violence in Videogame 3	2.92	1.451	352
Time Spent Playing Videogame 3	153.62	162.231	379
BPAS	49.12	9.999	379
Average time spent playing videogame	11.64	4.996	379

Table 5.1 shows the univariate descriptive statistics of all the study's variables which includes predictors, controlled variables and criterion variable. The table 5.1 shows the mean, standard deviation and number of cases.

**Table 5.2 Zero Order Correlation Coefficient**

		Gender	Age Group	Family Income	type of video game	Average game time sqrt	Average game time_vg	score_aggression
Gender	Coefficient	1						
	N	379						
Age Group	Coefficient	-.147**	1					
	N	379	379					
Family Income	Coefficient	-.028	-.040	1				
	N	378	378	378				
type of video game	Coefficient	.251**	-.024	-.008	1			
	N	379	379	378	379			
Average game times	Coefficient	-.154**	.081	.027	-.180**	1		
	N	378	378	377	378	378		
Average game time_vg	Coefficient	-.158	.098	-.094	. <sup>b</sup>	1.000**	1	
	N	140	140	140	140	140	140	
Score aggression	Coefficient	-.183**	.134**	.060	-.195**	.298**	.268**	1
	N	379	379	378	379	378	140	379

Table 5.2 shows Zero Order Correlation between predictor, controlled variables and criterion of the study. The statistics procured in table 5.2 shows that Age and Gender were statistically significant and negatively correlated at ( $r = -.15$ ,  $P < .05$ ) which showed that the player population consisted on female video game player who were of younger age. While Family Income did not significantly correlate with any of the variables of the study.

The Predictor variable type of video game (non-violent and violent) was statistically significant and positively correlated with Gender ( $r = .25$ ,  $p < .05$ ), which showed that female video game players played more violent video games than male video game players was inversely statistically significant with average time spent playing video games ( $r = -.18$ ,  $p < .05$ ). Which showed that violent video game player spent less time playing than non-violent video game players.

The criterion variable mean score of aggression was inversely significant with gender ( $r = -.18$ ,  $p < .05$ ) which show that female player had lower score of aggression. While Age and score of aggression were positively statistically significant ( $r = .13$ ,  $p < .05$ ) as age in years increase the players' aggression also increased. Type of video games and mean score of aggression were statistically significant but weakly inversely correlated ( $r = -.20$ ,  $p < .05$ ) which showed that violent video game players had lower score of aggression than non-violent video game players. Whereas, average time spent playing videogames and mean score of aggression was positively correlated and statistically significant ( $r = .30$ ,  $p < .05$ ) which showed that as more time was spent playing videogames, the aggression in video game players increased.

## 6. TESTING HYPOTHESIS

**Table 6.1 Partial Order Correlation Coefficient**

Mean Score of Aggression						
Independent Variables		Zero Order Correlation	1 <sup>st</sup> Order Partial Correlation (Gender)	2 <sup>nd</sup> Order Partial Correlation (Gender & Age)	3 <sup>rd</sup> Order Partial Correlation (Gender , Age & Family Income)	4 <sup>th</sup> Order Partial Correlation (Gender. Age. Program & Average Videogame Time)
Type of Video Game	Coefficient	-.19	-.16	-.16	-.16	-.13
	Probability	.00	.00	.00	.00	.00

In table 6.1, shows Partial correlation coefficient of predictor type of video game on criterion mean score of aggression. The correlation when controlled from 1<sup>st</sup> order to 4<sup>th</sup> order showed a highly significant inverse relationship between the predictor and criterion ( $r = -.13$ ,  $p < .01$ ) which showed when the effects of gender, age, family income and average time spend playing video games was controlled the effect of type of video games on aggression varied but remained inversely significant. Which showed that violent video



game players had lower aggressive tendencies than non-violent video game players. Hence hypothesis 1 was not supported.

**Table 6.1.A. Regression of Score of Aggression on Types of videogame player & Gender**

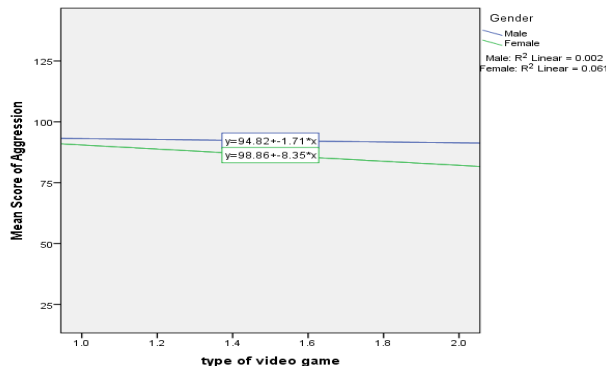
**Table 6.1.A Hypothesis 2A**

Predictors		Score of Aggression (DV) N=378 $\beta$
Block 1		
Gender		-.12**
Age in Years		.12**
Family Income		.06
Type of videogame player		-.164*
% R <sup>2</sup> Change	-	
% R <sup>2</sup>	.073	
Block 2		
Gender		.14
Age in Years		.12**
Family Income		.05
Type of Videogame player		.13
Type vg_gender		-.45
% R <sup>2</sup> Change in Block 2	.008	
% R <sup>2</sup>	.081	

In table 6.1.A. Block 1, the hierarchal multiple regression model showed an R<sup>2</sup> 7.3% variance in score of aggression, type of videogame players and gender which was statistically significant at  $P \leq .05$ .

In Block 2, when the interaction term of type of videogame player and gender was added, the R<sup>2</sup> change 0.8% variance was significant for gender as a moderator at  $P \leq .05$ . However, when effects of predictors were controlled the interaction term between type of videogame player and gender did not statistically affect the score of aggression with  $\beta = -.45$  and  $P > .05$ . Hence hypothesis 2A was not supported.

**Figure 6.1. Scatter Plot of Hypothesis 2A**



The interaction term shows effect of gender on type of videogame players and score of aggression. Where female videogame players who played violent videogames have lower aggression than male videogame players.

**Table 6.1.B. Regression of Score of Aggression on Average Time spent playing videogames and Gender**

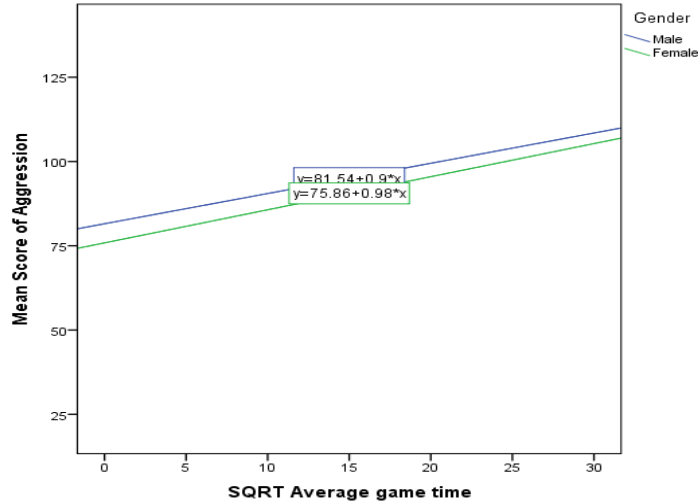
**Table 6.1.B Hypothesis 2B**

		Score of Aggression (DV)	N=377
Predictors		$\beta$	
Block 1			
Gender		-.12*	
Age in Years		.09**	
Family Income		.05	
Average game times		.27*	
% R <sup>2</sup> Change	-		
% R <sup>2</sup>	.117		
Block 2			
Gender		-.17	
Age in Years		.10*	
Family Income		.05	
Average game time sqrt		.21	
Int_avggt_gen		.07	
% R <sup>2</sup> Change in Block 2	.000		
% R <sup>2</sup>	.118		

In table 6.1.B. Block 1, the hierarchal multiple regression model showed an R<sup>2</sup> 11.7% variance in score of aggression, average time spent playing videogames and gender which was statistically significant at  $P \leq .05$ .

In Block 2, when the interaction term of average time spent playing videogames and gender was added, the R<sup>2</sup> change 0.0% variance was seen for gender as a moderator at  $P \leq .05$ . However, when effects of predictors were controlled the interaction term between average time spent playing videogames and gender did not statistically affect the score of aggression with  $\beta = .07$  and  $P > .05$ . Hence hypothesis 2B was not supported.

**Figure 6.2 Scatter plot of Hypothesis 2B**



The interaction term shows effect of gender on average time spent playing videogames and score of aggression. Where both male and female videogame players' aggression increases with increase in time spent playing videogames. In Fit Line shows that as more time is spent playing score of aggression in male videogame players increases faster than female videogame players.

**Table 6.1.C. Regression of Score of Aggression on Average Time spent playing violent videogames and Gender**

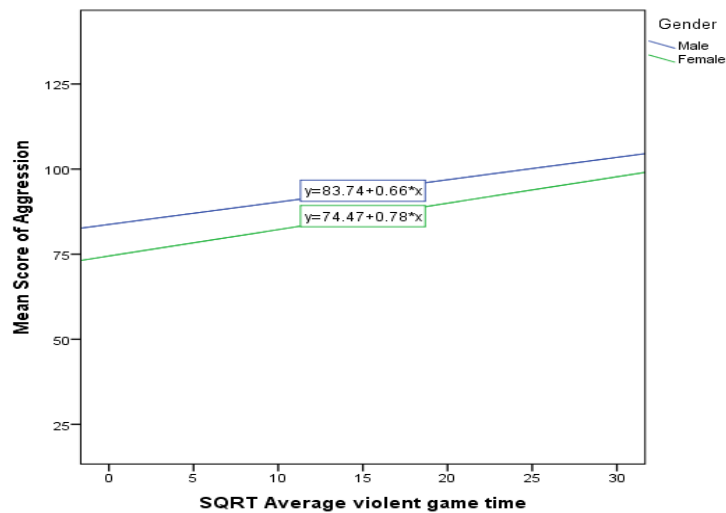
**Table 6.2.C Hypothesis 2C**

		Score of Aggression (DV) N=140
Predictors		$\beta$
Block 1		
Gender		-.20*
Age in Years		.15
Family Income		.06
averagegametime_vg		.22*
% R <sup>2</sup> Change	-	
% R <sup>2</sup>	.148	
Block 2		
Gender		-.25
Age in Years		.16
Family Income		.05
averagegametime_vg		.13
Int_avgviolentvgtime_gen		.10
% R <sup>2</sup> Change in Block 2	.001	
% R <sup>2</sup>	.149	

In table 6.1.C. Block 1, the hierarchal multiple regression model showed an  $R^2$  15% variance in score of aggression, average time spent playing violent videogames and gender which was statistically significant at  $P \leq .05$ .

In Block 2, when the interaction term of average time spent playing videogames and gender was added, the  $R^2$  change 0.1% variance was significant for gender as a moderator at  $P \geq .01$ . However, when effects of predictors were controlled the interaction term between average time spent playing violent videogames and gender did not statistically affect the score of aggression with  $\beta = .10$  and  $P > .05$ . Hence hypothesis 2C was not supported.

**Figure 6.3 Scatter plot of Hypothesis 2C**



The interaction term shows effect of gender on average time spent violent playing videogames and score of aggression. Where both male and female videogame players' aggression increases with increase in time spent playing violent videogames. The Fit Lines shows that as more time is spent playing violent video games the score of aggression in female videogame players increases faster as compared to male videogame players.

## 7. DISCUSSION AND CONCLUSION

This research study was designed to investigate the rather unresolved effect of videogame playing on the aggressive tendencies of videogame players. Most of the projected results have been consistent and in-line with the existing literature in the sense that there is an indication of the impacts of violent videogame playing on the aggressive tendencies of players. In this research, besides violent video-games, non-violent video games players have also been assessed for their aggressive tendencies. Moreover, moderating effect of gender has also been tested to assess whether it has any impact on the relationship of violent and non-violent videogame playing and the aggressive tendencies of the players. The research results have partially supported the hypothesis

that states “aggressive tendencies of violent videogame players will be higher than the aggressive tendencies of non-violent videogame players”. However, the research study has also established that gender as a moderating variable has not played a significant role on the relationship of type of videogame players and aggressive tendencies.

The research study results also showed the amount of video games played by both male and female video game players. To a more specific aspect the in gender, female video game players spent more time playing violent video games than male video gamers. With reference to the research objective of this study non-violent video game players were found to spend more time than violent video game players.

Till now, we talked about the direct relationship of between types of video games and its effect on the aggressive tendencies of students. In this research study, gender was placed as a moderating variable. An interaction term was placed in the hierarchal multiple regression model to see whether gender had any significant role in varying the effects of types of video games players and aggressive tendencies.

While controlling the gender the effects did not change in both violent video game players and non-violent video game players. According to the study conducted by (Tear & Nielsen., 2014) which stated that direct linkage between video game playing and in specifically type of video game playing and players was still unresolved. This study results shows that violent video game players had lower aggressive tendencies while non-violent video game player had higher aggressive tendencies. Another Study by (Anderson, et al., 2010) stated that their findings on violent video game playing in western cultural setting were generalized in the eastern cultural setting as well. This study thus provides a small narrative to above literature that in eastern cultural setting non-violent video games players also seem to have higher aggressive tendencies as compared to violent video game players. A study (Engelhardt, Bartholow, et. al., 2011) stated that direct association of violent video games and increase in aggression was to date unresolved. From this, in this research study it maybe stated as an additional effect of specifically playing violent video game with have an extremely high amount of violence and aggressive scripts which result may have cause individuals to become desensitized to violence and decreases their aggressive tendencies. Because the results of this study which show non-violent video game players to have a significantly higher aggressive tendencies are due to the lack of an emotional release and because non-violent video games do not stimulate present or hidden aggressive tendencies as violent video games do.

The study found a statistically inverse relation between videogame playing and aggressive tendencies which indicated that non-violent video game players had higher aggressive tendencies than violent video game players whereas, gender was as a moderator in showed no significance in the effects of video game playing on the aggressive tendencies of players. In conclusion, the linkage between videogames and aggression is still unresolved.

## 8. FUTURE RECOMMENDATIONS

For future studies, the recommendation is that future studies should look in to effects of videogames playing as a catharsis or as a comparison tool on the effects of various tendencies existing in individuals of different age groups working in different fields of life.

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