Effects of Violent Video Gaming on Aggression & Desensitization

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METHODS

Study Type

We conducted an experiment in which the participants were placed in two separate conditions. Half of the participants were asked to play a violent video game for five minutes, while the other half of the participants were asked to play a nonviolent video game for five minutes. Prior to being placed in either condition, participants were asked to answer questions about their history of game use. Since we conducted an experiment, we had some control over the setting in which the research was conducted. For instance, we instructed participants to take the survey on a laptop or desktop, to make sure the volume was turned up, and to play the online video game for five minutes. However, despite these specific instructions, there was still a lack of complete control as we had no true way of knowing whether participants followed these instructions.

Sample

This experiment is designed to see whether the violent video game play could result in aggressive tendencies and desensitization effects. Participants were of no particular gender but had to be eighteen years of age or older. There were 35 participants in the total of both genders, various ages, and ethnicities who participated in this online experiment. Participants were sent a link via email, Facebook messenger, or through other forms of communication devices to take part in an experiment using Qualtrics. Participants were instructed to take this experiment on a laptop or desktop in a distraction-free environment.

We used snowball sampling, in which participants were invited to take part in the experiment where they were asked to invite their friends to participate. Among the 35 participants, there were 16 males and 19 females, and one participant did not indicate gender.

Most of the participants were in their early twenties, who might be students from either Boston University or other universities in the United States. There are two relatively extreme samples, one at age 34 and one at age 42, most likely a result of snowball sampling. It is important to note that several international students whose first language is not English took part in the experiment as well.

Measures

The measures accounted for in this experiment were video game type (i.e., violent and non-violent) and history of game use. The operational definition for history of game use is the amount of hours one plays video games. To measure history of game use, participants were given an interval level of measurement. They were asked how many hours a week they play video games and could choose from four, equal scales. Participants who selected 0-3 hours of video game play a week were considered to have a low history of game use. Participants who selected anything above four hours of game use per week were then considered to have a heavy history of game use.

When determining which online video games are violent versus nonviolent, we looked at the amount of blood that was shown in the game, and whether weapons were involved in the game or not. If the game did not include blood or weapons, it was considered nonviolent. The video game type was manipulated; participants were evenly randomized into two separate conditions (a violent condition or a nonviolent condition). The violent condition was an online video game called *Gangster Contact Mafia Wars*, and the nonviolent condition was an online video game called *Blur Racing*. After playing either the violent or nonviolent game, participants

were asked to measure emotions on a scale from 1 to 5. These scales measured desensitization. The Cronbach's Alpha measured as 0.53.

Stimulus

As stated, participants were required to complete a survey with the data stimulus material being two different video games: *Gangster Contact Mafia Wars* and *Blur Racing*. According to the game description, the game is "a fast-paced first person shooter title in which you must take control of the professional hitman. Your hitman must complete a range of different contracted kills within the city against other Mafia syndicates that are vying for power. The other Mafia gangs are extremely powerful and you will find your contracted kills challenging to complete! Move around the city and look for different weapons and supplies to complete your mission with. You must move and act quickly and dispatch your enemies as ruthlessly as possible… and the firefights and explosions are realistic! Can you show your skill as a top hitman and eliminate your rivals?"

Blur Racing, on the other hand, is a a non-violent online video game from the same website as the aforementioned. It is also free and accessible to anyone. The game is an "Intense and futuristic motorbike racing game in which you must race against the clock to set new records on a variety of superb neon tracks. During each race you must reach various checkpoints before the clock runs out. If you fail to do so your race is over so drive quickly but with control! Throughout the race you can encounter different items that inflict debilitating effects on your bike such as decreased speed and health reduction. If you get hit by the health reduction item three times your race is over too so avoid them at all costs! Aside from the negative items, you can also pick up various positive drops that give you a boost including a shield, a speed boost

and a time increase. Collect the yellow rings as you race and try to get a high score and beat the clock!"

Procedures

The data collection period began with the research team administering the link to the survey to anyone eighteen or older. Once the participant received the link, he/she was free to complete the survey at their convenience. Instructions were given to inform them of the stipulations and details (must take the survey on a laptop/desktop, etc.,). The survey takes approximately 15 minutes to complete, but participants had unlimited time to complete the survey as they needed. The survey began with a pre-test questionnaire asking participants about their game history (whether they play video games or not, which type of games), and how much time they spend playing video games).

At the end of the pretest, participants were randomly assigned to either a violent or non-violent game. Participants were given instructions on what controls to use prior to playing the game. They were instructed to keep the original window open and copy the link given into another tab and play the game for five minutes. Once completed, the participants would return to the original window to completed a post-test questionnaire of word associations and Likert-scale ratings.

Results

Based on our experiment, we came to the conclusion that running an ANOVA (analysis of variance) was the best statistical method to test our two hypotheses. Since there were different scales to measure aggression and desensitization, the variables are not measure on the same

metric. The Word Association Test was used to measure aggression and the likert-scale to measure desensitization was interval-level.

Three separate ANOVA tests were employed to test if there is a significance in desensitization and the history of game use, controlling for gender; the rating of violence depending on game type; and the rating of excitement and that playing a violent video game in comparison to a nonviolent video game increased levels of aggressive tendencies and desensitization.

Aggression was slightly pronounced in the word association test (WAT), in which participants were asked which words they associated with the ambiguous words provided, but numbers were not significant enough to reject the null hypothesis predicting a relationship between history of game use, game type and aggressive tendencies. In the WAT, 25 participants associated the word "punch" with a violent word. Moreover, participants who had the violent condition provided violent word associations in the WAT. More participants associated a nonviolent word with the words "pound," "arms," "tear," "beat" and "sock."

These findings indicate that there is no statistical significance between desensitization and history of game use: $F(3, 25) = 0.70$, $p > 0.56$. There is also no statistically significant relationship between rating of excitement and game type: $F(1, 27) = 0.13$, $p > 0.91$. Although the previous ANOVA rejected the null hypothesis, results from the third ANOVA indicated that there is a significant difference in ratings of violence depending on game type: $F(1, 27) = 12.63$, $p < 0.001$.

Based on our findings, we committed a Type II error, the null hypothesis was not rejected because the results reported that there was no significant relationship between our IVs and DVs.

However, it's worth noting that such relationships do exist in the world according to previous research.

Discussion

The present study examined the effect of playing either a violent or nonviolent video game online and the impact history of gaming had on levels of desensitization and aggression. Supporting previous research, this study used likert scales to measure the level of emotions they felt after playing either the violent or nonviolent video game. It is important to note that the violent and nonviolent video game differed in terms of perceived difficulty, enjoyment, and action, with the violent video game being more difficult and the nonviolent video game being significantly easier to play.

It should also be acknowledged that both the violent and nonviolent games contained competitive content. The violent game involved a competitive shooting battle for survival against computer-generated characters, while the nonviolent game involved competitive racing against computer-generated race cars. In future studies, it would be better to have a competitive violent game and a completely neutral nonviolent game. Moreover, it would be useful to control for competitive content to ensure that findings are a direct result of game type. With the growing prevalence of playing online violent video games, more specifically the popularity of opponent violent video gaming, we believe examining the effects of opponent video gaming and heightened aggressive tendencies is another important endeavor for future research.

Although the results of our experiment were consistent with the literature reviews and researches done on our topic, there were several limitations in our study that should be taken into consideration. Participants were instructed to do the survey on either a laptop or desktop

computer; however, we had no control over the devices they used to participate in the survey because they were not under our direct supervision. We could not ensure that participants played the game for five minutes as required or if they even played the game at all. The controls for the designated violent game for this experiment were much more complicated than the non-violent game. We cannot ensure that participants read the instructions thoroughly enough to know how to control for the game. Nor do we know if they played the game more than once, or if they paused while having the game open. We can assume this was the case at least with one participant, as results determined that they "played" for roughly ten hours.

We would have liked to have more control to ensure the participants played for the full time. For instance, if future research is conducted we would have participants come into a lab and play either an online video game or a video game console. Moreover, if we have participants come into a lab we could have them play using a video game console instead of an online video game. Despite the lack of supervision, it is worth noting that allowing participants to play in an environment of their choice resulted in more "natural" responses. Participants could play the online game and respond without the pressure of having someone overseeing the process.

Accounting for desensitization effects was another crucial part of the experiment. We found that the study would have benefited from a long-term measurement of participants' desensitization affects. Previous studies that looked at the relationship between violent video gaming and desensitization were long-term studies, in which the researcher could analyze this relationship after conducting a series of experiments. Due to the time constraint for conducting this experiment, we were unable to conduct a long-term study, therefore our findings did not show any significant links between history of game use and desensitization.

When measuring level of desensitization, we asked participants to rank - on a scale of 1 to 5 - how relaxed and calm they felt after playing either the nonviolent or violent video game. If participants reported a high number after playing the violent game, we concluded these participants had higher levels of desensitization. A second limitation worth noting in this procedure is we could not control for arousal levels in this experiment due to participants having the option of taking part in the experiment on their own computer devices. As a result, there may have been some outside factors that affected their arousal levels, which could have lead to differences in calmness and relaxation levels. Therefore, self-reported data on calmness and relaxation levels collected from all participants were not concise.

When examining reliabilities for desensitization, the Cronbach's alpha turned out to be 0.53 which is lower than 0.75 (anything over would be considered reliable). However, the measures for testing aggressive tendency also turned out to be 0.53, indicating a low reliability. We believe the reason for the low reliability is due to the incorrect constructing of the scale, which made it difficult to (reverse) recode. A scale of relax/tense, satisfied/unsatisfied and calm/frustrated were utilized to test the participants' desensitization. If participants scored on the higher end on the scale, they are considered desensitized. However, we found that there are flaws in whether this scale correctly measures desensitization. As for aggressive tendency, the scales to rate excitement and violence are simply too broad and simple to test for one's aggression level. Although the reliability test indicated that our data has a low reliability, results will be consistent if this experiment were repeated many times, but the experiment has a low validity due to the measures. The measures are not in correlation with our data.

For this experiment, we used the snowball sampling method to invite participants. While this method helped us acquire potential participants quickly and easily, it was also a limitation in our research, as this type of sampling may not be a true representation of the population due to the lack of control we have over the sample. Thus, this method of sampling could have possibly resulted in low external validity.

What We Would Have Done Differently

For this experiment, we were only required to have 15 participants per condition, and in total we attracted 50 participants to the study, but after dismissing invalid data, were left with 36. Perhaps with more time we could achieve a larger sample size, resulting in a stronger relationship between our IVs and DVs. For future studies we should invite participants to the lab because under the lab conditions, we could have more control on the participants gaming environment. Also, we should invite participants to the lab because under the lab conditions, we could have more control on the participants gaming environment. Likewise, more rigid instructions might have decreased our levels of incomplete data due to minor issues such as participants not completing questionnaires in-full. We would also have the opportunity to use more professional devices to measure participants' arousal level and reaction, such as a Galvanic skin response and a video camera to analyze facial expressions.

When establishing measures for aggressive tendencies and desensitization, the scales should have been similar in nature. Instead of having a Word Association Test to measure aggression, we should have created likert scales similar to the scales we used for desensitization. Moreover, the scales we used to measure desensitization should have been more focused on the effects and emotions linked to desensitization. In addition, when we measure desensitization, we

should put longer time on testing the violent game use effects as to conduct the desensitization effects on participants.

In conclusion, this study found no increases in aggressive tendencies or desensitization when playing a violent video game online in comparison to playing a nonviolent video game online. This is an important finding in relation to the growing popularity of violent video gaming and the recent links President Trump has made between violent video games and gun violence. While no effects were pronounced, we still think there should be a concern for the harmful effects violent video gaming appears to have on real world issues, including gun violence and desensitization towards real-world violence.

Appendix:

Reference

A, M. (2018, February). Gangster contract mafia wars. Retrieved April 30, 2018, from https://www.crazygames.com/game/gangster-contract-mafia-wars

Karex, M. (2017, October). Blur racing. Retrieved April 30, 2018, from https://www.crazygames.com/game/blur-racing

Effects of Violent Video Game Play on Aggressive Tendencies

Start of Block: Consent Form

Dear Student:

You are invited to take an online survey which will take approximately 15 minutes to complete. Please note that you must be at least 18 years old to participate in this research study. If you are less than 18 years of age or opt not to participate in this project, you can contact the principal investigator for an alternate assignment.

This study will benefit the field of communication in furthering our understanding of the motivations and use of social. As a communication student, it is important that you understand the academic research process. Following the completion of the study, you will receive an email with a detailed analysis of the results of the study.

The survey is voluntary. You will be asked to play an online game during this survey. You must take this survey on a laptop or desktop. To protect the privacy and confidentiality of participants in the study, the responses entered will not be linked back to individual subjects. The investigators will only know who responded to the survey in order to let your instructor know who completed the survey.

When you are ready to begin the questionnaire, please click below. Thank you for your time and effort in participating in this study!

End of Block: Consent Form

Start of Block: Pre-test

Q1 Do you play video games?

- Yes (1)
- No (2)

Q13 How many hours do you spend on playing video games weekly?

- 0-3 hours per week (1)
- 4-7 hours per week (2)
- 8-11 hours per week (3)
- 12+ hours per week (4)

Q15 Do you play online multiplayer games?

- Yes (1)
- No (2)

Q14 Do you enjoy playing video games alone or with friends?

- Alone (1)
- With friends (2)

Q16 Do you own a video game console? (Xbox, PlayStation, Wii, etc.)

- ○ Yes - what kind? (1) _____
- ○ No (2)

Q17 Select which types of video games you are most likely to play? (select all that apply)

- ☐ Action/Adventure (1)
- ☐ Shooting (2)
- ☐ Sports (3)
- ☐ Skill (4)
- ☐ Educational (5)
- ☐ Driving (6)
- ☐ Puzzle (7)
- ☐ Others (8)

Q18 Please select which gender you identify with.

- ○ Male (1)
- ○ Female (2)
- ○ Other (3)

Q19 What is your age?

_____

End of Block: Pre-test

Start of Block: Violent condition

Q14 You will be directed to an online video game. Please put the game in full-screen mode and make sure your volume is turned on. Make sure you are in a private environment. Begin the game and continue progressing through the next levels until 5 minutes have passed. Do not exit out of this page.

Controls:

- WASD or arrow keys to move around
- Left click or Z to fire Right-click or X to throw the grenade
- Left shift or C to activate Carl Time
- Scroll wheel or Q or E to cycle weapon
- E to enter the vehicle

If you are ready, copy and paste the link into a NEW tab: https://www.crazygames.com/game/gangster-contract-mafia-wars

End of Block: Violent condition

Start of Block: Non-Violent Condition

Q17 You will be directed to an online video game. Please put the game in full-screen mode and make sure your volume is turned on. Make sure you are in a private environment. Begin the game and continue progressing through the next levels until 5 minutes have passed. Do not exit

out of this page.

Controls:
Arrow keys to move left and right.

If you are ready, copy and paste the link into a NEW tab:
http://www.addictinggames.com/car-games/blur-racing-game.jsp

End of Block: Non-Violent Condition

Start of Block: Word association test

Q32 In the following section, you will be presented a series of words. Please write the first word that comes to your mind based on the word(s) provided:

Q33 Punch

_____

Q34 Pound

_____

Q35 Beat

_____

Q36 Arms

_____

Q37 Tear

_____

Q38 Sock

_____

End of Block: Word association test

Start of Block: Post test

Q18 Have you ever previously played this game?

- ○ Yes (1)
- ○ No (2)

Q28 Using the following scale, please rate how frustrated you currently feel:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Frustrated (1)	○	○	○	○	○	Calm

Q27 Please rate how satisfied you currently feel:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Unsatisfied (1)	○	○	○	○	○	Satisfied

Q29 How happy are you at this moment:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Sad (1)	○	○	○	○	○	Happy

Q30 Do you feel:

	1 (1)	2 (2)	3 (3)	4 (4)	5 (5)	
Guilty (1)	○	○	○	○	○	Not Guilty

Q24 Please rate how relaxed you feel right now:

	Relaxed (1)	Somewhat relaxed (2)	Neutral (3)	Somewhat tense (4)	Tense (5)
I feel: (1)	○	○	○	○	○

Q25 Were the controls easy or difficult to manage?

○ Easy (1)

○ Difficult (2)

Q26 Please rate the following statements about the video game you just played:

	Rating			
	Strongly Disagree (1)	Disagree (2)	Agree (3)	Strongly Agree (4)
This game is violent. (1)	○	○	○	○
This game is exciting. (2)	○	○	○	○
I would play this game again. (3)	○	○	○	○

End of Block: Post test