The Effects of Video Games on memory and Frustration

Brooke L. Lindenbusch

Introduction

Frustration

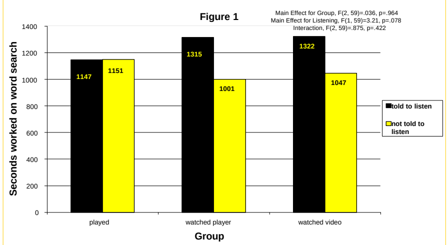
- Several studies have been done trying to support the hypothesis that violent video games cause children to become more aggressive. According to Williams and Clippinger (2002, Graybill, Kirsch, and Esselman 1985), children who played aggressive video games seemed to act more aggressively than children who played non-aggressive games. There are several theories as to what causes the video games to have this affect on the participant.
- One explanation as to why video games may have this affect on people: Williams and Clippinger (2002) think The Frustration-Aggression Hypothesis could play a role. This hypothesis states that frustration comes before aggression and violent video games could be the source of that frustration. Anderson and Bushman (2001), go on to say that nonviolent video games can have an affect on aggression too. They said that nonviolent games could increase aggressive affects through frustration.
- Other related studies: A study done by Calvert and Tan (1994), looked to see if aggressive thoughts increased more in the active participants as compared to the passive observers. In addition, a dissertation done by Hoffman (1994), also looked at aggressive beliefs being affected by either playing or watching violent video games. Both found the same results, aggressive thoughts did increase more for those who played the games, than those who just observed.
- Purpose of this study: To see if frustration tolerance is affected more by playing a nonviolent video game as compared to watching someone play the game or watching a video of someone play the game.

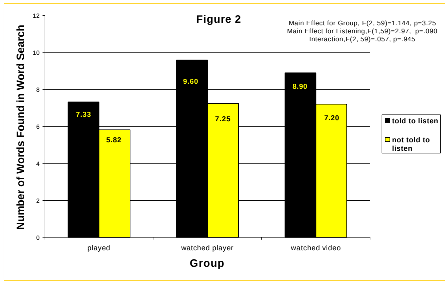
Memory

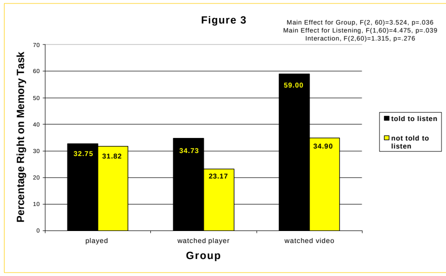
- Another interest of mine is how much of the commentary people remember from the video games that they play. Research shows that items are better remembered when presented in picture form, than just words or sentences. In addition, events are also better remembered through recognition than recall (Zechmeister & Nyberg, 1982).
- With this in mind, would one remember the commentary going on in the background of a video game because it shows the picture of what is going on along with the words? Also, would one remember the commentary more if they had a recognition checklist to choose from?
- Purpose: To see what group remembers the most commentary among those who play the game, the people who watch the person play the game or the people who watch a video of someone playing the game, when given the recognition checklist.

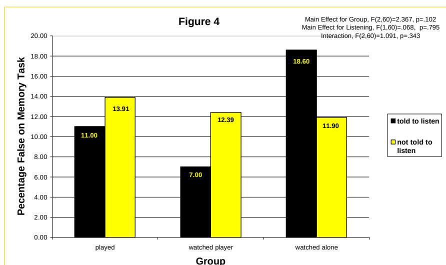
Abstract

The frustration-aggression hypothesis would suggest that playing frustrating video games would decrease frustration tolerance, and therefore could lead to increased aggression. Reduced frustration tolerance could also lead to decreased attention or motivation which could impair memory. This study looked at whether or not playing a frustrating but non-violent video game had an impact on either frustration tolerance or memory. Frustration tolerance was not significantly affected by whether someone played a game, watched someone play a game, or watched a video of someone playing a game. Memory was significantly affected by what the participant was doing, and by the pre-game instructions.









Method

Materials

- For this study, the participants, either played, watched someone play, or watched a movie
- NASCAR 99' for Playstation 1.
- Memory checklist of data the participants could have heard during the course of the game (see Appendix A)
- A word search, that did not have all of the words in the search to find, was also used (see Appendix B).

Participants

- 66 undergraduate students
- 44 females and 22 males.

Procedure

- 23 people played
- 23 people watched them play
- 20 participants watched a video alone, of the game being played.
- The groups were randomly assigned.
- Half of the groups were told to listen to the commentary going on in the background of the game.
- Each participant was given a memory checklist to check the commentary that they had heard
- Afterwards, a word search to work on, in separate rooms, as the frustrating task.

Appendices

Appendix A

_______ Dale Earnhardt's aggressive driving style earned him the nickname "intimidator".
_______ Sears Point Raceway was reconfigured in 1998 it will offer more speed and more laps.
_______ Passing on a turn can be a tricky proposition, and it takes nerves of steal, but if you pull it off you can win the race.
_______ Stock cars originally ran on beaches and on dirt tracks, but now they run on paved ovals and, in major events, on high-banked speedways.
_______ Record breaking crowds and last lap battles has become this courses trademark
_______ Mark Martin was the victor at Sears Point in 1997.
_______ It takes a well conditioned athlete and a lot of practice to compete at this level.
_______ Dale Earnhardt enters the 1998 season tied with King Richard Petty with 7 wins a piece.
_______ Teams will do all they can to help a driver finish the race to pick up as many points as possible.
_______ The appeal of stock-car racing to fans comes with the idea of supposed street cars running close together at speeds of up to 200 mph.
_______ Road courses are tough because it is hard to go left and right. The key to success is setting up your car and knowing when to pass.
_______ In NASCAR's early days drivers raced in street clothes; sometimes sporting short sleeves and even shorts.
_______ These cars are closed-wheeled and closed-cockpitted, with hoods, bumpers, and grilles.
_______ Consistency is the key for any driver to win a championship.
_______ Stockcar brakes are more heavy duty than production brakes, for example, it has a racing rotor that features fins inside the rotor.
_______ Each car is inspected pre and post qualifying as well as post race, some of the things included in the inspection are front air dam clearance, rear spoiler light, engine compression ratio, manifold clearance, and restrictor plate placement.
_______ Transmission in these cars are responsible for transfer 700hp from the engine to the rear wheels, so teams take a lot of time and care in preparing them before every race.
_______ Although stock cars run in several nations, the class is most associated with the United States because of the powerful public presence of NASCAR.
_______ These cars all use good year eagle radio racing tires. They are slick tires with thin tread and sidewalls mounted on 10-inch rims.
_______ The rear spoiler is one of the most debated parts on the car.
_______Set in the rolling foothills of the beautiful NAPA Valley, this twisted, turning road course was opened in 1968.
_______ The nose piece is made from a durable material called Kevlar. This was chosen because it holds shape well, even at 200mph. This is important because the change in the shape of the nosepiece can cause dramatic changes in handling.
_______ Sometimes you see cars with duck tape on them, it is not there because the car is falling apart, it is there to reduce drag.
_______ Drivers wear special suits made from the fireproof tarp Nomex.
_______ Gordon became the youngest driver ever to capture the Daytona 500 during the 1997-racing season.
_______ Now days stock cars are involved in all kinds of sponsor decals, but that was not always the case. In the 1940's numbers were the only graphics on the car. The 1950's saw engines horsepower painted on the hood. In the 1960's teams began to realize the benefits of sponsors and slapping decals on their cars.
_______ These cars are equipped with standard 4-speed transmission. Each car's transmission has an alloy case with heavy-duty coverage, with oil coolers to remove some of the heat, which can get up to 300 degrees.
_______ Do not get caught out of the draft. Not only will proper drafting help you catch up to the pack, it will allow you to conserve fuel.
_______ The purpose of the front air dam is to keep air from going under the car, the air dam adds more down-force to the front of the car and reduces drag over all.
_______ As a safety precaution, a restriction plate is required for the largest track, such as Talladega. This plate is mounted between the carburetor and the intake manifold to limit fuel and air mixture to the engine; this reduces airflow, lowers engine revolutions and horsepower, therefore lowering the cars top speed.
_______ The transmission is one of the most important components of these cars. They have durability, especially on the road courses where a driver may shift 15 to 20 times per lap.
_______ The Good Year Eagle Tire is equipped with an inner safety shield known as a tire with in a tire. If the tire gets cut and deflates, the inner tire supports the tire until the driver gets back to the pits.
Additional Commentary:

Appendix B

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P B R A K E S M K D K N X H J I T C K I D R E J X
Y K E V L A R M O V T S I Z N K Y W Z E U S G O G
B R W S Z S Y A W D E E P S O F T L R B C W M O P
O R N M A I X T C L E Y P A F K C A R T I J V S M
K S I Z Z R L W I E S E T E L H T A Q N M Z V G B
R A C L Z Z Q Q Y C C H P N L E C C A E A R N H A
B O C V U K F I O T R A N S M I S S I O N W E L B
I Y Z M O R E L I O P S R B N T B P A A Y G C N Q
S E W B I Z E O T U A H O G R C D O A N D R I J Z
Y P J S Q V N T T F I H S I H M X N M P Z V U N M
Y N M H C I L J O C A M F Y V E Q P O D N Y U X E
Z F C U B E Z C D R P R E L T S B L B C Z L Y A W
Y B D I O P U S D M Y S D P E T M Q G M W G M S U
C I B A K P L T A O D B R G F H U R U I P U E I K
E W T R Z V X H C T U D O S C S I D U G H V I Z G
M T R R H R G C S P A H V O U K M V L J E D Q R T
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Accelerate	Throttle
Automobile	Transmission
Engine	Sponsor
Racecar	Inspection
Driver	Racing
Velocity	Carburetor
Wheels	Spoiler
Speedometer	Earnhardt
Track	Decals
Crew	Draft
NASCAR	Kevlar
Speedway	Athlete
Brakes	Shift
Crash	Laps
Aerodynamic	Finish

Results

This study looked at how video games affect both frustration tolerance and memory.

Frustration Tolerance

The results on the participants' frustration tolerance task show that there is not a main effect for the different groups (playing, watching someone play, or watching a movie of someone playing). However, the main effect for instructions (told to listen or told nothing) showed a non-significant trend (p=.078). The group that was told to listen to the commentary on the video game worked a little longer than the groups who were not told anything. There was no interaction between the group and the instructions (Please refer to Figure 1).

When looking at the word search results, there was no main effect for how many words the participants found based on what group they were. Although not significant, there was a trend (*p*=.09) involving the instructions. On average, the people who were told to listen found slightly more words than those who were not told anything. This is because the participants who were given instructions worked slightly longer on the word searches. When looking at the interaction between the group and the instructions on the number of words found in the word search, there was no significance (Please refer to Figure 2).

Memory

When looking at the memory aspect of this study, the results were a little different. There was a significant difference when looking at the main affect of group membership on number of answers right. In addition, there was a significant main effect of instructions. However, when looking at the interaction between the two, no significant results were found. The people who watched the movie of someone playing tended to get more answers right, than the people who played or watched someone play. The people who were given the instructions tended to get more answers right than those who were not given any instructions (Please refer to Figure 3).

I also analyzed the number of false positives in the memory task. The main effect for group membership was not significant. The main effect for instructions was also not significant, and neither was the interaction between the two. It did not matter what group the participants were in or if they were given the instructions to listen or not, the same percentage of false positives were remembered (Please refer to Figure 4).

The results of the memory data suggest that depending on what group you were in, and what instructions you received, the number of answers you would get right would change. However, there were no effects of false positives.

Discussion

Conclusions

- This study does not support the idea that playing video games lowers frustration, which could leads to aggression.
- When it came to how long the participants worked on the frustrating task, the group membership did not matter.
- There was a trend for how long each participant worked on the word search based on the instructions they received.
- When looking at how many words were found in the word search, there was not a difference among group membership.
- The people who watched the video tended to get more answers right on the memory checklist, than those who played or watched someone play.
- The people who were given the instructions to listen tended to get more answers right, than those who were given no instructions at all.
- Regardless of which group the participants were in or if they were told to listen to the commentary or not, on average the same number of false positives were checked on the memory checklist.

Limitations

- College student sample may have more/less exposure to video games
- College student sample may have different ability to control their frustration
- Game was set on hardest difficulty (too hard, no real competitiveness)

Generality

- Children may have different ability to control their frustration
- Maybe playing video games is not the cause of lower frustration levels; maybe the act of watching is just as effective.
- This study may suggest that just listening, without the interaction of the other persons discussion is the best way to remember.

Implications for Future Research

- What if a violent game was used in comparison to the non-violent game.
- When looking at the memory aspect of this study, one might want to explore the idea of passive learning instead of active learning in a classroom setting.

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