The Correlation Between Exposure to Video Games and Academic Performance

Alianna Panganiban

Psychology Research Methods

R830 302 Section 002

Professor Zambrano

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In current times, the engagement of video games among students has surged as its industry is the fastest growing entertainment sector globally. This also includes the technological equipment and platforms to access gaming services such as PCs, Consoles, mobile devices, etc. Gaming has been a prevalent form of entertainment for young adults and a growing community across the world. There are multiple concerns about the impact it can have on student life and academic success. Various studies suggest that there is a complex relationship between video game exposure and achievements in school indicating that there is a negative association. Individuals with greater impulsiveness and attention problems spend more time playing video games and underestimate their problems on self-reports (Gentile et al. 2012). These studies propose that the immersive and overstimulating nature of gaming could potentially divert students' priorities from academic responsibilities. On the contrary, there is research demonstrating that there can be cognitive benefits that can be obtained from certain games.

In a normal school setting, students enjoy video game activities and have made the mathematics learning process more interesting. The integration of video games in education transforms the learning experience to more captivating interactive activities. Capturing student's attention enables them to actively participate. Learning approaches, such as using Minecraft, which encourage students' creativity and understanding of concepts or teaching programming by making an action game might thus be more effective compared to the traditional approaches (Garneli et al 2017). Virtual problem-solving can represent the relevance of mathematical concepts in various ways with practical applications of real world scenarios. Educational games are designed to adjust the difficulty level based on a student's ability. Multiplayer modes can help students work together on analytical tasks while also improving technology literacy skills.

Another previous analysis suggests that increased video gaming was associated with reductions in academic performance, and increased in others. Research demonstrates that teacher assessments of student performance are inherently subjective, including judgments of the student's attitudes and hobbies (Drummond 2014)

There is also evidence that discovers video games potentially have an effect with personality structure and cognitive processes that are needed for academic success. Students who reported playing more violent video games over a period of years also engaged in more aggressive behavior in their own lives (Anderson 2000) and had a larger impact on externalizing behavior in the short term (Coyne et al 2018). This raises the question if video games serve as a coping mechanism, providing an outlet or a means of focus for these individuals? "Video game playing may be a useful means of coping with pent-up and aggressive energies" (Anderson 2000). It is a popular pastime leisure activity for those who have gaming devices that are easily accessible. In the technology era, there has been an increased exposure to behavior that we consider appropriate from television and media sources. Most games portray instrumental aggression and half portray a clear theme of retribution, a variable known to increase aggression in the viewer (Dill et al 2005). This aligns with the study's investigation suggesting that there are multifaceted effects that lie beyond just academic outcomes. It's important to recognize that violent video games are just one of many potential factors contributing to real-world violence. Other factors, such as access to firearms and mental health issues, also play significant roles. Some individuals can be susceptible to the possible effects of recent advancements in the realism of violence in video games, while others may not be strongly influenced.

In the study provided, it will conduct an investigation on the relationship between violence in a video game setting and academic performance on New Jersey Institute of

Technology students as the demographic. The primary objective of this research is to assess if frequency and duration of playing video games impact the academic performance of students according to grades, study habits, and overall educational success. This research explores the relationship between these two variables without manipulating any factors. This aimed to provide insight of any changes of student achievements to the correlation between being exposed to video games that require the brain to think. Choosing this method of design offers a valid perspective of any connection between the variables during the study. The foundation of the hypothesis is that the notion of substantial gaming habits, especially those featuring intense gameplay, can produce consequences of the trajectory of a student's academic career. Building upon these findings, we hypothesize that increased exposure to video games is associated with a decline in academic achievement.

Method

Design

In the current study, a non-experimental and correlational design was utilized to learn about the association between intense video games and academic performance.

Participants

The participants that were involved in the study included 100 undergraduate students from New Jersey Institute of Technology in Newark, New Jersey. This included individuals that were Caucasian/White: 45%, African American/Black: 20%, Asian/Pacific Islander: 15%, Hispanic/Latino: 10%, Multicultural: 5%. The age range was from 18-35 years old. The gender consisted of 45 Males, 50 Females, 3 Non-Binary, 2 Prefer Not To Say. Participants were recruited by being sent an email that included a Qualtrics link. The inclusion criterion is that one

must be currently enrolled as an undergraduate or graduate student at New Jersey Institute of Technology. The restrictions of accessing the form is that one would need an NJIT UCID email to ensure that they are a part of the organization. Convenience sampling is a non-probabilistic sampling method that selects individuals who are readily available for the study and is cost-effective and time-efficient. Also, Snowball Sampling was utilized when the first participants referred more of their gamer friends through a shareable link of the survey. They ended up sending it to a Discord server, which is a communication platform for the online gaming community. The recruitment process of the participants consisted of voluntarily filling out the questionnaire that was directed by the hyperlink. The participants were free to decide whether or not to be involved in the psychological study, reflecting informed consent.

Materials

Exposure To Video Games and Academic Performance Survey Questionnaire

The Qualtrics survey that was filled out is a primary instrument for data collection. It was designed to gather relevant information about the participants utilizing demographic questions and questions in order to measure both variables of exposure to video games and academic performance. The survey consisted of a series of structured questions and responses 1-5 to choose from that applied. Those items were rated on a 5-point Likert scale and semantic differential format. The ethical considerations ensured the privacy and confidentiality of the individuals and email verification maintains integrity.

Exposure to Video Games

For exposure to video games, the variable was assessed using a 5-point likert scale. This was a self assessed scale that figures out a quantified total amount of time an individual spends actively on a game. This measurement includes the duration of gaming sessions, in minutes. The

operational definitions for exposure to video games are the cumulative number of total time an individual spends actively engaged in video games over a week. Other definitions consisted of the frequency of gaming sessions and the intensity of the type of content that is being played on the games (action, adventure, simulation, educational) or ratings (E for Everyone, T for Teen, R). An example of a survey question that was asked to the participants was "How often do you engage in video games activities a week?" with responses ranging from 1 being None and 5 being four or more times a week. It also contained questions that asked participants "over the past week, how was your overall gaming experience?" ranging from 1 being strongly dissatisfied to 5 being strongly satisfied.

Academic Performance

Academic performance was measured using the 5- point likert scale on the survey. The operational definitions to be measured were factors such as the satisfaction with current Grade Point Average (GPA) in school and Exams are a standardized measure of a student's knowledge and skills in specific academic areas. Assignment and homework completion is an important factor to consider as it is the student's ability to meet the requirements of their coursework. Also considering regular attendance records over the course of a semester. For example, the survey questions asked "How satisfied are you with your overall Grade Point Average for the academic year?" and "How satisfied are you with your current exam scores?" including responses on a 5 point scale.

Results

Students that spend time having long exposure to playing video games is associated with a decline in academic performance. The sample of 100 participants for time being spent on

playing video games in hours computed a descriptive statistics of M = 2.882, SD = 0.86. With a slight difference, the rate of academic performance totalled to M = 2.398, SD = 0.99. There was a significant negative correlation between academic performance scores as time spent playing video games increased r= -.46, p =.05. (See table 1)

Discussion

The purpose of this study is to discover the relationship between exposure to video games and college student's academic performance. The evidence investigates the negative slope on the regression line within our scatter plot. We explore the contributing factors that were also observed associated with this correlation. This can propose new methods to approach future research in order to deeper understand the importance of video game exposure and academic performance among collegiate students.

The research presented on the regression line within the scatter plot showed a notable association between the increased exposure to video games and the decline in overall academic performance for the participants of our sample. An explanation can be that students may spend less time studying and engaging in extracurricular school activities as their involvement in the video game world intensifies. The implications of these findings show that there may be risks associated with excessive video game exposure concerning the academic life students encounter. The survey asked a question about how much time is spent playing video games and compared to another question asked about the time spent undertaking educational studies. Time management is the element of our results as the frequency in gaming sessions can overtake the time that can be used to spend on academic tasks. The stimulating and alluring environment that the video games provide can have a reduced concentration to action on academic tasks.

These results align with the existing research that often discussed the potential impact of excessive video game exposure. Prior studies have concluded that prolonged gaming sessions have been associated with attention deficit and might influence both short-term and long-term memory capacities. The authors concluded that they have an impact on cognitive functions such as attention span, memory, and problem solving skills. Video game playing is associated with greater subsequent attention problems and impulsiveness (Gentile et al 2012). The conclusions drawn from their research suggest that extended periods of video game exposure is in relation to negative outcomes in cognitive functioning.

Additionally, addressing the limitations in the study can provide more context for the conclusions being made from the results. Keep in mind the participants have individual differences in learning styles and mental capabilities. Acknowledging that student's have distinct preferences can help consider that cognitive abilities differ as well. The sampling methods come with certain validity concerns as it is limited generalizability which may not accurately represent the broader population. Selection bias can be introduced because certain individuals are more likely to be included in the study because of their accessibility. Participants of the study were college students and may not extend to other educational levels. The reliance on self-reported data can lead to confounding variables that may not be accounted for in the study. Individuals may understate or overstate their gaming and student performance.

It is essential to consider the composite factors in the nature of this relationship as the negative correlation can be influenced by. The survey also asked questions for the genre and content of video games that the participants preferred as well as the duration of each session. Different genres may require varying levels of cognitive functions and influence different engagement.

Further research can have a more comprehensive examination of gaming habits, academic engagement, and multiple factors that can enhance our understanding about the relationship between video games and academic performance. The study can provide more intricate methods to account for psychological aspects such as incorporating cognitive assessments or learning styles. Also, monitoring actual gameplay and utilizing tools to track gaming habits more effectively.

Conclusion

These findings show that society should be more aware of the importance of promoting a healthy balance between gaming and education. The outcomes from this study could push for evidence-based strategies to support students in managing their recreational activities in a way that optimally complements their academic pursuits. It also identifies the crucial aspect of how students should be educated to use technology.

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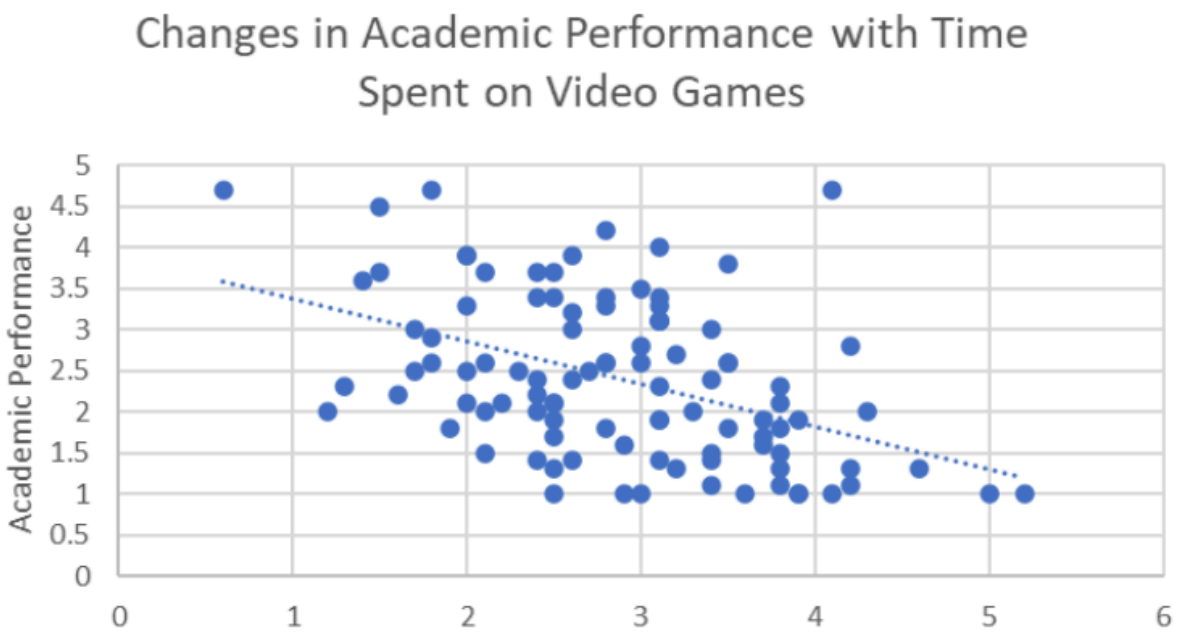
Appendix

Table 1



Exposure to Video Games and Academic Performance Project Survey

Start of Block: Demographics

Q1 What is your age?

- **18-24 years old (1)**
- **25-29 years old (2)**
- **30-39 years old (3)**
- **40-49 years old (4)**

- **50+ years old (5)**

Q2 What is your gender?

- **Male (1)**
- **Female (2)**
- **Non-binary / third gender (3)**
- **Prefer not to say (4)**

Q3 What is your college educational level?

- **Freshmen (1)**
- **Sophomore (2)**
- **Junior (3)**
- **Senior (4)**
- **Graduate School (5)**

Q4 Are you currently employed?

- **Yes, full time (1)**
- **Yes, part time (2)**
- **Not applicable (Student, Retired, etc.) (3)**

Q5 Do you currently play video games and what is your primary gaming platform?

- **PC, Desktop, Laptop (1)**
- **Console (Playstation, Xbox etc.) (2)**
- **Mobile (smartphone or tablet) (3)**
- **VR (Virtual Reality) (4)**
- **None at all (5)**

Q6 How often do you engage in video game activities in a week?

- **None (1)**
- **Once a week (2)**
- **Twice a week (3)**
- **Three times a week (4)**
- **Four or more times a week (5)**

Q7 How long do you play video games in each session?

- **less than 30 minutes (1)**
- **30 minutes - 1hr (2)**

- **1-2 hours (3)**
- **2-3 hours (4)**
- **4+ hours (5)**

Q8 Video games are my top form of entertainment compared to other activities (television, music, sports, etc.)

- **Strongly agree (1)**
- **Somewhat agree (2)**
- **Neither agree nor disagree (3)**
- **Somewhat disagree (4)**
- **Strongly disagree (5)**

Q9 The gaming content/genre that I play is intense and requires my attention

- **Strongly Agree (1)**
- **Somewhat agree (2)**
- **Neither agree nor disagree (3)**
- **Somewhat disagree (4)**
- **Strongly disagree (5)**

Q10 Over the past week, how satisfied were you with the experience you've had playing video games?

- **Extremely dissatisfied (1)**
- **Somewhat dissatisfied (2)**
- **Neither satisfied nor dissatisfied (3)**
- **Somewhat satisfied (4)**
- **Extremely satisfied (5)**

Q11 How satisfied are you with your overall Grade Point Average for the academic year?

- **Extremely dissatisfied (1)**
- **Somewhat dissatisfied (2)**
- **Neither satisfied nor dissatisfied (3)**
- **Somewhat satisfied (4)**
- **Extremely satisfied (5)**

Q12 How many hours per week do you typically dedicate to school related work?

- **0-2 hours (1)**
- **3-5 hours (2)**

- **6-8 hours (3)**
- **9-11 hours (4)**
- **12+ hours (5)**

Q13 How would you describe your study habits?

- **Rarely study (1)**
- **Somewhat disorganized (2)**
- **Neutral (3)**
- **Moderately disciplined and focused (4)**
- **Very disciplined and focused (5)**

Q14 How satisfied are you with your current exam scores?

- **Extremely Dissatisfied (1)**
- **Somewhat Dissatisfied (2)**
- **Neither satisfied Nor Dissatisfied (3)**
- **Somewhat satisfied (4)**
- **Extremely satisfied (5)**

Q15 How do you perceive your overall academic performance?

- **Below Average (1)**
- **Average (2)**
- **Neutral (3)**
- **Proficient (4)**
- **Excellent (5)**