

Do Violent Video Games Increase Aggression and Reduce Helping Behaviors?

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Abstract

Video games are one of the most widely consumed types of entertainment media, and it is necessary to understand their impact on the audience. Thus, the present study aimed to observe the impacts of violent video games on aggressive and prosocial behavior. To this end, 67 participants (mean age: 23.6, $SD = 4.88$, 69.7% women), divided into two groups, played a violent or neutral game for 20 minutes and answered a Tangram assignment task to measure behavior. The results demonstrated effects on the players' aggressive behaviors when compared to participants who played a neutral game. However, there were no statistically significant differences regarding the reduction in helping behavior, therefore only partially corroborating the hypotheses. Thus, the results highlight that violent games can be a risk factor for the development of behaviors of the same nature. Furthermore, the need for further studies to investigate possible mediators of this relationship is highlighted.

Keywords: video games, aggression, prosocial behavior, media exposure, social psychology

VIDEOGAMES VIOLENTOS AUMENTAM A AGRESSÃO E REDUZEM COMPORTAMENTOS DE AJUDA?

Resumo

Videogames são um dos tipos de mídia mais consumidos para entretenimento, sendo necessário compreender seus impactos na audiência. Nesse sentido, o presente estudo objetivou observar os impactos de videogames violentos no comportamento agressivo e pró-social. Para tal, 67 participantes (média de idade: 23,6 anos; $DP = 4,88$; 69,7% mulheres), divididos em dois grupos, jogaram um jogo violento ou neutro por 20 minutos e responderam uma tarefa de atribuição de Tangram para mensurar o comportamento. Os resultados demonstraram efeitos nos comportamentos agressivos dos jogadores quando comparados com os participantes que jogaram um jogo neutro. Contudo, não houve diferenças estatisticamente significativas quanto a redução do comportamento de ajuda, corroborando apenas parcialmente as hipóteses levantadas. Desse modo, os resultados destacam que jogos violentos podem ser um fator de risco para o desenvolvimento de comportamentos da mesma natureza. Ademais, destaca-se a necessidade de estudos posteriores, de modo a investigar possíveis mediadores dessa relação.

Palavras-chave: videogames, agressão, comportamento pró-social, exposição à mídia, psicologia social

¿LOS VIDEOJUEGOS VIOLENTOS AUMENTAN LA AGRESIÓN Y REDUCEN LAS CONDUCTAS DE AYUDA?

Resumen

Los videojuegos son uno de los medios de entretenimiento más consumidos y es necesario comprender sus impactos en la audiencia. En este sentido, el presente estudio tuvo como objetivo observar los impactos de los videojuegos violentos en el comportamiento agresivo y prosocial. Para ello, 67 participantes (media de edad: 23,6 años; $DE = 4,88$; 69,7% mujeres), divididos en dos grupos, jugaron un juego violento o neutral durante 20 minutos y respondieron a una tarea de Tangram para medir el comportamiento. Los resultados demostraron efectos sobre las conductas agresivas de los jugadores en comparación con los participantes que jugaron un juego neutral. Sin embargo, no hubo diferencias estadísticamente significativas en cuanto a la reducción de la conducta de ayuda, corroborando solo parcialmente las hipótesis planteadas. Por tanto, los resultados destacan que los juegos violentos pueden ser un factor de riesgo para el desarrollo de conductas de la misma naturaleza. Además, se destaca la necesidad de realizar más estudios para investigar posibles mediadores de esta relación.

Palabras clave: videojuegos, agresión, comportamiento prosocial, exposición a los medios, psicología social

Video games are consumed by male and female children, adolescents and adults. They have been the largest source of entertainment for millions of people worldwide since the end of the twentieth century. This popularity is mainly due to the dynamic characteristics of video games, since games can have several gameplay formats and explore a wide variety of themes in their content (Brockmyer, 2022).

Likewise, their levels of sophistication can vary greatly, offering diverse complexity gameplay experiences. The increase in the realism of video games, in turn, has increased the concern about the impacts of this type of media on players, since video games attract their consumers in a cognitive, emotional, and social manner and trigger short- and long-term effects that are not always welcome (e.g., Prescott et al., 2018), such as solving conflicts in an aggressive and non-prosocial way. This is because, as pointed out by Coyne et al. (2018), violent content is present in many genres of video games, including children's games and educational games.

But how can one define these types of behavior affected by video games? In psychology, aggression is characterized as any behavior that aims to cause harm to a target that, in turn, wants to avoid this harm (Bushman & Huesman, 2010). On the other hand, prosocial behavior refers to any intentional behavior that aims to help/benefit another individual or group (e.g., sharing information about a job opening, giving an unpretentious compliment, helping someone carry heavy objects; Santos et al., 2024). Thus, while aggression is harmful to life in society, the positive benefits of helping behavior highlight the importance of the development and promotion of such behavior (Coyne et al., 2018).

And how can violent video games impact the likelihood of both types of behavior? The General Aggression Model (GAM) (Anderson & Bushman, 2002) helps in this understanding: using the short-term cycle (the person in a specific social encounter) of this theoretical model, situational variables (such as the media being consumed), together with individual characteristics, affect the behavioral response through the internal state (affect, cognition, and arousal) and, subsequently, the evaluation and decision process (Bushman & Anderson, 2020).

Specifically addressing the relationship between media and behavior, the effects of the content will usually be consistent with this content (Santos et al., 2023); thus, being exposed to violent video games would lead to increased aggression and a decrease in prosocial behavior, for example. Although this claim has been demonstrated in previous international studies (e.g., Anderson et al., 2008; Greitemeyer, 2022; Zhang et al., 2021), research on the topic in the Brazilian context is scarce.

It is relevant to analyze the short-term effects of violent video games on Brazilians' behavior for a few reasons: from a theoretical-methodological point of view, Miles-Novelo et al. (2022) highlight the need for further research on the impact of violent media in the Latin American context. From a social point of view, Brazil is one of the world's largest video game markets (Bianchi, 2024), making it necessary to understand how this consumption can impact the audience.

Therefore, the objective of this study was to investigate the short-term impacts of violent video games on aggressive and prosocial behavior in Brazilian adults. The main hypotheses of the study are that, compared to a control group, participants who consumed a violent game would show higher levels of aggression and lower levels of prosocial behavior.

Method

Participants

Sixty-seven college students participated in the experiment, with an average age of 23.6 (SD = 4.88; ranging from 18 to 36). Most participants were female (69.7%), Catholic (36%), middle-class (75.8%), who had been playing video games for 9.3 years (SD = 7.00), and spent 5.4 hours per week playing (SD = 8.60). Of these, only one participant expressed suspicion about the intention of the experiment and was excluded from subsequent analyses. Thus, 33 participants formed the experimental group (violent video game) and 33 the control group (neutral video game). This sample size was estimated using the G*Power software (Faul et al., 2009) with 80% test power to detect a medium effect size (Cohen's $d = 0.50$). Participants for each group were selected by randomization. Data collection was conducted in 2020.

Instruments and materials

A violent video game and a neutral video game were selected for the study. For the experimental group, *Grand Theft Auto V* (GTA V) was used, approved for viewers aged 18 and older. It is a third-person game in which players complete missions on an open map, mostly using aggressive actions (from hand-to-hand violence to the use of firearms). For the control group, *Peggle* was chosen, a casual puzzle game whose objective is to hit all the pins with the number of balls provided. It is a game suitable for all audiences.

Tangram assignment task (Saleem et al., 2015).

Experimental measurement of the intention to help or hurt others, based on the assignment of puzzles with various difficulty levels, whose consequence is to prevent another participant from winning a prize or to assist them in this process (Kjærvik et al., 2024). The tangram consists of seven geometrically shaped pieces – *tans* – (e.g., square, diamond, triangle) that are used to form several options for specific designs. In the task, participants receive a list of 30 possible designs that can be formed with the *tans*, divided into three levels of complexity (low, medium and high, 10 tangrams in each level). What characterizes the complexity of each tangram is the number of pieces needed to form the figure. With the list in hand, participants should assign 11 tangrams to the “other participant,” who should solve them within 10 minutes or less and would be eligible to win a gift card. Thus, this task measures both helping behavior (number of easy tangrams assigned) and aggressive behavior (number of difficult tangrams assigned).

Assignment motivation (Saleem et al., 2015).

Agreement questionnaire composed of four items, two measuring the motivation to help ($\omega = 0.50$; e.g., “I wanted to help the other participant win the prize”) and two measuring the motivation to hurt ($\omega = 0.63$; e.g., “I wanted to make it difficult for the other participant to win the prize”).

Demographic questions and manipulation check.

In addition to personal questions (e.g., gender and age), an item was added about the level of violence (e.g., “How violent is this game for you?”) and the graphic realism of the video game played (e.g., “How graphically violent is this game, realistic graphics with lots of blood?”). Both were answered on a Likert scale, ranging from 1 (“It is not violent at all”) to 5 (“Extremely violent”).

Procedures

The invitation to participate in the experiment was made individually by the researcher and in classrooms after the research was presented at the beginning of 2020. Participants were told that the experiment was an analysis of the effects of video games on cognition. Upon arriving at the laboratory, participants played one of the two video games – violent or neutral – for 20 minutes, depending on their random allocation. After this playing time, participants answered the demographic questionnaire and then received the list of tangrams and instructions about assigning 11 tangrams to another participant, who should solve them within 10 minutes or less and would be eligible to win a R\$25 gift card; as summarized previously, the assignment of easy or difficult tangrams at this stage was used to measure the intention to help or hurt. They would then receive the tangrams that a previous participant had assigned to them to also be solved within 10 minutes. After assigning tangrams, participants answered the motivation questionnaire. Then they received the tangrams that were supposedly assigned to them to be solved. After a training round, the time to solve the tangrams was timed. At the end of the experiment, participants were thanked for their voluntary participation and a debriefing was held, when the real objectives of the experiment and the suspicion analysis were revealed. The application was individual and lasted 40 minutes on average.

All ethical precepts of human subject research were respected and followed, and the study was evaluated and approved by the institution's Research Ethics Committee before it was carried out (CAAE: 49842515.3.0000.5188). In addition, all participants had to sign a Free and Informed Consent Form.

Data analysis

Data was analyzed using JASP (JASP Team, 2024). Descriptive, correlational, and mean comparison analyses (t-test and multivariate analysis of variance – ANOVA) were performed.

Results

Manipulation check

As a fundamental requirement of an experimental study, a manipulation check was initially performed. Student's t-test for independent samples indicated that participants in the experimental group perceived the game as more violent ($M = 3.90$; $SD = 1.10$; $SE = 0.19$) than those in the control group ($M = 1.03$; $SD = 0.17$; $SE = 0.03$) [$t(64) = -14.84$; $p < 0.001$; $d = -3.65$ ($95\% CI = -4.45/-2.85$)], proving that manipulation was successful.

Correlation of variables

The correlation between all the main variables of the study was performed to verify whether the direction and magnitude of the tangram scores and motivations emerged as theoretically expected, and whether these variables somehow correlated with the graphic realism of the video game that was played – violent or neutral – and the participants' characteristics. Table 1 summarizes those results.

Table 1

Relationships between behaviors and other variables used in the study.

	B. help	B. aggressive	M. to help	M. to harm	Sex	Realism	Age
B. helping	–						
B. aggressive	–0.85**	–					
M. to help	0.26*	–0.47**	–				
M. to hurt	–0.42**	0.32**	–0.15	–			
Sex	0.15	–0.12	0.13	–0.10	–		
Realism	–0.09	0.15	–0.11	0.00	–0.09	–	
Age	0.02	0.06	–0.02	–0.15	0.07	–0.08	–

Note: ** $p < 0.001$, * $p < 0.05$; B. = Behavior, M. = Motivation.

Helping and aggressive behavior presented negative correlation ($r = -0.85$, $p < 0.001$). The motivation to help was related to both types of behavior in the expected direction (B. helping: $r = 0.26$, $p < 0.05$; B. aggressive: $r = -0.47$, $p < 0.001$). The same occurred with the motivation to harm, which showed a statistically significant correlation with both types of behavior (B. helping: $r = -0.42$, $p < 0.001$; B. aggressive: $r = 0.32$, $p < 0.001$). However, in addition to the graphic realism, participant's gender and age did not present correlation with helping and aggressive behavior and with the assignment motivations (to help/hurt). It means that these variables do not have to be controlled in future analyses.

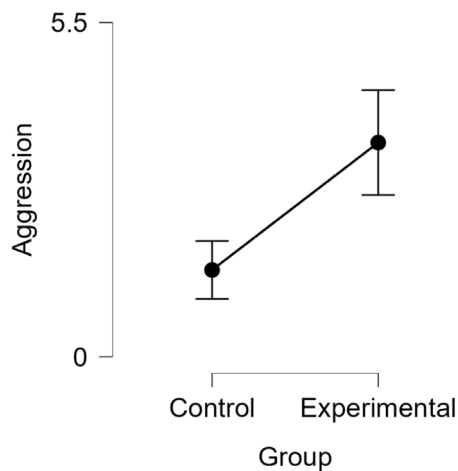
Comparison of means

To assess whether there was an effect of the type of video game played on the observed behavior, ANOVA for independent samples was performed [$F(1, 64) = 4.52$, $p < 0.05$; $d = 0.52$;

$\eta^2p = 0.06$] and showed that participants who played the violent video game ($M = 4.24$; $SD = 3.15$; $SE = 0.54$) were more aggressive toward “the other participant” than participants in the control group ($M = 2.90$; $SD = 1.73$; $SE = 0.30$). The assumption of homogeneity of variances was verified using Levene’s test, which indicated equivalent variances between groups [$F(1, 64) = 0.001$, $p = 0.97$]; see Figure 1.

Figure 1

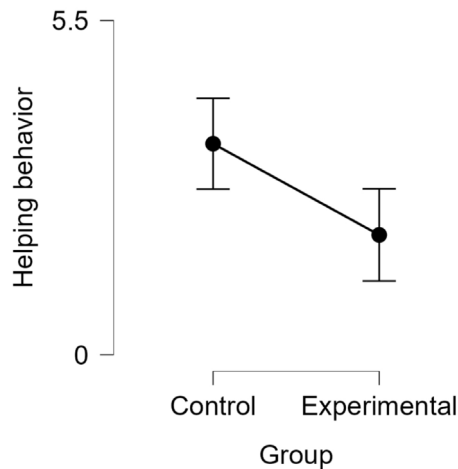
Differences between groups regarding aggression.



Note: The bars indicate 95% confidence intervals.

The same procedure was performed with helping behavior. Although the mean of the helping behavior of participants who played the violent video game ($M = 3.57$; $SD = 2.37$; $SE = 0.41$) was lower than those of the control group ($M = 4.39$; $SD = 2.34$; $SE = 0.40$), the analysis did not reveal a significant difference between them [$F(1, 64) = 1.98$, $p = 0.16$; $d = 0.34$; $\eta^2p = 0.03$]. Figure 2 shows these differences and the overlap of the confidence intervals.

Figure 2
Differences between groups regarding helping behavior.



Note: The bars indicate 95% confidence intervals.

Discussion

This study aimed to observe the impacts of violent video games on aggressive and helping behavior. This objective was achieved, given that the results showed that violent video games influence aggressive behavior in players when compared to participants who played a neutral game, but there were no statistically significant differences regarding the reduction in helping behavior, partially corroborating the hypotheses raised.

Initially, the correlations between behavior and assignment motivations found here followed the theoretically expected direction, ensuring the validity of the tangram assignment task (Saleem et al., 2015; Saleem et al., 2017). Thus, there was evidence that assigning difficult tangrams is motivated by the desire to harm (and not to help) the other participant; on the other hand, choosing easy tangrams is motivated by the desire to help (and not to harm) the other participant. Those data demonstrate the importance of the role of intentions in the prosocial and antisocial domains (Graziano & Habashi, 2010). Nevertheless, the differences found here appear to be non-significant in the neutral game.

Moving on to the main results, the significant effects of violent games on aggressive behavior, measured by the tangram assignment, are consistent with previous literature on the subject. In a meta-analysis of this relationship in a longitudinal manner, for example, Burkhardt and Lenhard (2022) observed that in the long term, the consumption of violent games increased aggression, even when the impacts of the participants' initial levels of aggression were controlled. Furthermore, this study is corroborated by previous data from the Brazilian context, which showed a correlation between the consumption of violent games and aggression (Medeiros et al., 2020).

From a theoretical point of view, these impacts correspond to the short-term effect indicated by GAM with regard to aggression: as summarized by Santos et al. (2023), violent media is a situational variable that increases behavior consistent with its content through its effects on the subject's internal state and on judgment and decision-making processes. Further studies can analyze the role of these mediating routes.

As for helping behavior, previous research also found no negative effects of violent video games on this variable. Greitemeyer and Osswald (2010), studying a sample of adults and using classic violent and non-violent video games, did not find this effect. An extension of this experiment, this time using modern and graphically realistic video games, also found no impact (Tear & Nielsen, 2013). Some possible explanations for this happening are moral conscience (Bastian et al., 2011) or the personal characteristics and motivations of the participants (Bender et al., 2013). Therefore, understanding other variables involved in this relationship is essential.

Another explanatory factor may have been the disproportionate sample size regarding the sex of the participants in this experiment, with only 30.3% of men. Previous evidence demonstrates differences between the sexes both in aggression, with men being more predisposed to it (e.g., Eliot, 2021; Maneiro et al., 2022), and in prosociality, with women presenting higher levels of this variable (e.g., Hay et al., 2021). Finally, other possibilities are that the effects of violent games on helping behavior may have been only indirect or that the sample size was not sufficient to identify a significant minor effect.

Despite this, the contributions of this study stand out. Experimental results were presented on the behavioral impacts of violent media, a topic that has been little studied in the Brazilian context. The behavioral measure used here also has some advantages over other measures of aggressive and helping behavior. Among them (e.g., low cost; it does not depend on computer programs; it is easy to apply to children and adults), the most relevant is the possibility of measuring both types of behavior at the same time. Besides, although the results are negatively correlated, they can be analyzed with correlational and experimental variables.

On the other hand, the measure has as its main limitation precisely its negative correlation between types of behavior. When an individual scores high in one behavior, they will automatically score low in another. However, with the existence of the average level, this limitation can be reduced by increasing the minimum score to characterize the behavior as aggressive or helping (Saleem et al., 2015). Other study limitations are the sample size and use of convenience sampling, as well as the lack of measurement of other variables that could contribute to the understanding of the results observed.

Thus, future research can replicate and expand the results found here, comparing, for example, the convergent validity of the tangram assignment task with other classic aggressive and helping behavioral measures. According to the GAM theoretical assumptions, variables such as affect, cognition, and arousal can also be observed, seeking to understand the indirect effects of video games through mediating routes. In addition, empathy should also be taken into account, given its importance in understanding helping behavior (Kamas & Preston, 2021). In

this sense, it is important to highlight the need for future research to evaluate this research problem using multiple behavioral tasks, as well as physiological and self-report measures, in order to contextualize the results obtained.

Finally, the results presented by this study also have practical applications. In particular, these data serve as evidence of the importance of developing public policies regarding responsible media consumption, especially with regard to violent games. Furthermore, it is possible to use the results in making interventions and producing awareness-raising materials on the topic.

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Contribution of each author to the work:

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Isabella L. S. Santos: Manuscript development

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