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O papel das atitudes frente as armas no impacto de jogos violentos em jovens adultos

Attitudes Towards Guns' Role in Violent Video Games Impacts Among Young Adults

*El papel de las actitudes hacia las armas en el impacto de los videojuegos violentos en los
jóvenes*

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Resumo

O presente estudo objetivou observar os impactos dos videogames violentos nas intenções agressivas e na pró-sociabilidade, considerando o papel mediador das atitudes frente as armas. Coletamos dados de 324 jovens adultos do Brasil (idade média: 22,02, DP = 4,41, 51,5% mulheres). Em um modelo de equação estrutural, a violência retratada nos jogos favoritos dos participantes apresentou efeitos diretos na maior intenção de agressão e menor pró-sociabilidade. Além disso, as atitudes frente as armas mediaram efeitos indiretos da violência nos jogos. Em resumo, os resultados observados destacam um modelo de mediação significativo. Os dados também corroboram a ideia de que a mídia pode moldar e formar atitudes, contribuindo para o desenvolvimento de políticas públicas relacionadas ao controle de armas.

Palavras-chave: videogames; agressão; comportamento de ajuda; atitude.

Abstract

The present study aimed to observe violent video games' impacts on aggressive intentions and prosocialness, mediated by attitudes towards guns. We collected data from 324 young adults from Brazil (mean age: 22.02, SD = 4.41, 51.5% women). In a Structural Equation Model, violence depicted in participants' favorite games had direct effects on higher aggression intention and lower prosocialness. Furthermore, attitudes towards guns mediated indirect effects of this variable. In summary, the observed results highlight a significant mediation model. The data also corroborates the idea that media can shape and form attitudes, contributing to the development of public policies regarding gun control.

Keywords: video games; aggression; helping behavior; attitude.

Resumen

El presente estudio tuvo como objetivo observar los impactos de los videojuegos violentos sobre las intenciones agresivas y la prosocialidad, mediados por actitudes hacia las armas. Recopilamos datos de 324 adultos jóvenes de Brasil (edad media: 22,02, DE = 4,41, 51,5% mujeres). En un modelo de ecuación estructural, la violencia representada en los juegos favoritos de los participantes tuvo efectos directos sobre una mayor intención de agresión y una menor prosocialidad. Además, las actitudes hacia las armas mediaron los efectos indirectos de la violencia en los juegos. En resumen, los resultados observados resaltan un modelo de mediación significativo. Los datos también corroboran la idea de que los medios pueden moldear y formar actitudes, contribuyendo al desarrollo de políticas públicas relacionadas con el control de armas.

Palabras Clave: juegos de video; agresión; conducta de ayuda; actitud.

Introduction

Video games have become one of the most popular forms of entertainment in contemporary society. Contrary to the stereotype that video games are only popular among young men, they now have a diverse audience (Greitemeyer, 2022). Violent video games are among the most popular games in the industry, as evidenced by the sales figures for 2023. Three of the best-selling game franchises were violent, and they sold over one billion copies (Clement, 2023).

The consumption of violent video games can have psychological consequences, particularly increased aggression and decreased prosocial behavior, actions that aim to cause harm or benefit others, respectively (Santos et al., 2024a, Zheng et al., 2021). A meta-analysis conducted by Anderson et al. (2010) on this topic demonstrated a positive correlation between

video game violence and aggression-related variables. Conversely, there was a negative correlation between video game violence and prosocial behavior-related variables.

Although these impacts usually show an effect size ranging from small to medium, the significant presence of games in individuals' daily lives highlights the possible social consequences of video game violence (Greitemeyer, 2022). This author also highlights the importance of understanding other possible variables that impact the game violence x aggressive/prosocial behavior relationship. In this study, we will investigate video game violence impacts on aggression and prosocialness specifically in a Brazilian sample.

Among possible mediators of this relationship, the present study will focus on attitudes towards guns. These are evaluative variables composed of cognitive and emotional aspects that form the individual assessment of guns (Nascimento et al., 2016). In the model by Branscombe et al. (1991), these attitudes are composed of three main factors: Rights (the idea that gun ownership is a fundamental right), Protection (which justifies gun ownership for reasons of self-defense), and Crime (which, contrary to the previous factors, refers to the idea that banning guns would reduce crime).

Previous research with children indicates, for example, that consuming violent media (specially games and films) increases the likelihood of engaging with guns in an experimental setting (Chang & Bushman, 2019; Dillon & Bushman, 2017). Furthermore, the meta-analysis by Benjamin et al. (2017) pointed out the impacts of the presence (real or in images) of guns on aggression and related variables. Thus, it is possible to hypothesize that consuming violent media impacts favorable attitudes towards weapons and that these serve as a mediator of media's impacts on aggressive and prosocial outcomes.

These relationships are supported by the General Aggression Model (GAM, Anderson & Bushman, 2002). This model posits that biopsychosocial and developmental variables impact both single aggressive actions and the development of aggressive traits: these impacts are both direct and interactive (Anderson & Bushman, 2018). Among the variables that increase the probability of aggression, both in the short and long-term, violent media is one of the most studied using the GAM: focusing on long-term impacts, the consequences of consuming violent media would be desensitization, the development of hostile biases, and the increase in beliefs and attitudes related to aggression (Santos et al., 2023).

Specifically addressing attitudes, they would affect aggressive behavior when an evaluation is relevant to the execution of the action and when components of attitudes are related to behavioral specificities (Blankenship et al., 2019). Applying these assumptions to the

present study, consuming more violent games would be positively related to favorable attitudes towards guns, which, in turn, would present a positive relationship with aggression and a negative relationship with prosocialness.

Therefore, the present study contributes to the theoretical gap regarding the mediating role of attitudes in the video game violence x negative outcomes' relationship, also considering that the majority of recent studies on guns' role in violent media impacts were carried out with children and adolescents. Furthermore, the study of the three themes in the Brazilian context is necessary: the country is one of the largest gaming consumer markets worldwide, and even so, research on the topic is scarce (Statista, 2022). The debate about weapons is also pervasive in Brazil, with an ambiguous social perception oscillating between risk and protection (Nonato & Modesto, 2021). Thus, the present study aimed to: a) examine video game violence's impacts on aggression and prosocialness, b) test the mediating role of attitudes towards guns in this relationship.

Method

This study used a cross-sectional design for data collection.

Sample

The research sample consisted of 324 young adults from Brazil, with an average age of 22.02 years ($SD = 4.41$). The majority of the participants were women (51.5%), from middle-class families (56.8%), and had been playing video games for an average of 9.2 years ($SD = 5.80$). On average, the participants played video games for 6.1 hours per week ($SD = 10.21$). This was a non-probabilistic convenience sample, estimated using G*Power (Faul et al., 2009) with a 95% test power to detect a small effect size (Cohen's $d = 0.18$).

Instruments

Violence in Favorite Game (Medeiros et al., 2020).

One-factor scale developed in the Brazilian context to study game violence, consisting of three items. Those are: 1 "How violent is the content of your favorite video game?", 2 "How many deaths are there in your favorite video game?", and 3 "How bloody is your favorite video game?", answered on a seven-point scale ranging from 1 (Not at all) to 7 (Very much). The alpha of the measure in the present study was 0.91.

Attitudes Towards Guns Scale (Branscombe et al. 1991, validated in Brazil by Nascimento et al., 2016).

This scale consists of 17 items that comprise three factors: rights (e.g., "People should be allowed to have handguns in their homes"), protection (e.g., "Criminals don't attack people

who have guns”), and crime (e.g., “Many murders would not take place if a handgun had not been available”). The factor alphas were: rights = 0.91, protection = 0.86, and crime = 0.77. These items are answered on an 8-point Likert scale (1 = Strongly Disagree to 8 = Strongly Agree).

***Buss-Perry Aggression Questionnaire* (Buss & Perry, 1992, validated in Brazil by Gouveia et al., 2008).**

Dispositional aggression measure. The Brazilian version consists of 26 items divided in four factors. However, for the present study, only the physical aggression (e.g., “If someone hits me, I hit them back”) and verbal aggression items (e.g., “I can’t help getting into arguments when people disagree with me”) were used. Both factors were combined into the “Aggression Intention” factor ($\alpha = 0.75$). The response scale is five points and ranges from 1 (Strongly disagree) to 5 (Strongly agree).

***Prosocialness Scale* (Caprara et al., 2005, validated in Brazil by Santos et al., 2024b).**

One-factor scale consisting of 16 items to measure prosocial tendencies (e.g., “I try to help others”). It is answered on a five-point scale ranging from 1 (almost never true) to 5 (almost always true). The alpha in the present study was 0.88.

Procedures

Data collection was carried out in public and private universities, in the classroom context, with the responsible teachers’ agreement. Before answering the questionnaire, students were informed about the voluntary nature of their participation and ethical guarantees. Due to the inclusion of questions regarding firearms, participants were required to be at least 18 years old, considered the legal age of adulthood in Brazil. The present study was evaluated and approved by the Institutional Research Ethics Committee. Participants offered informed consent through a form on the questionnaire’s first page. The applicators were present throughout the process to answer questions asked by individuals who completed the questionnaires. On average, students took around 30 minutes to answer the entire questionnaire.

Data Analysis

Data were analyzed using JASP (Jasp Team, 2024). In addition to descriptive analysis to characterize participants, bivariate correlations and structural modeling equations (SEM) were performed to test the mediating role of attitudes towards guns in the relationship between violent games and aggressive/prosocial behavior. For SEM, the following fit indices were

considered: the Tucker-Lewis Index (TLI), the Goodness-of-fit Index, and the Comparative Fit Index (≥ 0.90), and the Root-Mean-Square of Residuals (SRMR, ≤ 0.08) (Kline, 2023).

Results

Bivariate Correlations

As detailed in **Table 1**, video game violence showed a positive correlation with both Rights and Protection factors of the attitudes towards guns measure. On the other hand, the Rights factor was positively related to aggression and negatively to prosocialness, while protection only showed a correlation between aggression and crime with prosocialness.

Table 1.

Means, Standard Deviations and Bivariate Correlations.

	Mean (SD)	GV	GR	GP	GC	PA
GV	2.85 (2.02)	-				
GR	2.60 (1.60)	.16**	-			
GP	2.52 (1.47)	.16**	.74**	-		
GC	5.46 (1.81)	-.06	-.43**	-.30**	-	
AI	2.15 (.62)	.07	.13*	.12*	.02	-
Pr	3.57 (.64)	-.02	-.12*	-.02	.14*	-.13*

Notes: GV = Violence in Favorite Game, GR = Attitudes towards guns - Rights, GP = Attitudes towards guns - Protection, GC = Attitudes towards guns - Crime, AI = Aggression Intention, Pr = Prosocialness.

Structural Equation Modeling

After correlation analysis, We tested the mediating role of attitudes towards guns using Structural Equation Modeling (**Table 2**). This model showed adequate model fit indices (GFI = 0.97, CFI = 0.96, TLI = 0.96, SRMR = 0.06). Specifically, game violence showed both direct and indirect impacts on aggression intention and prosocialness.

Table 2.

Structural Equation Modeling.

Relations	Coefficient	p
Game violence → Aggression Intention	.02	< .01
Game violence → Prosocialness	-.01	.01
Game violence → Rights → Aggression Intention	.01	< .01
Game violence → Protection → Aggression Intention	.01	.01
Game violence → Crime → Aggression Intention	-.01	< .01
Game violence → Rights → Prosocialness	-.02	< .01
Game violence → Protection → Prosocialness	.01	< .01
Game violence → Crime → Prosocialness	-.01	< .01

Notes: Estimator: ULS, 1000 bootstrapped samples, Missing Data Handling: List wise Deletion.

Discussion

The present study aimed to investigate the mediating role of attitudes towards guns in the relationship between video game violence and aggression/prosocialness. Results fulfilled this goal, as the tested model showed both adequate fit indices and statistically significant direct and indirect effects. These results are further discussed below.

Initially, video game violence showed a positive relation with aggression and a negative relation with prosocialness. These results are in line with the meta-analysis by Anderson et al.

(2010): this research indicated that higher consumption of violent games is associated with the development of an aggressive personality, which involves the intention of aggressive behavior and a lower probability of helping other people (Anderson & Bushman, 2018). The observed data is also in line with previous research in the Brazilian context (Medeiros et al., 2020), highlighting that the link between violent media and aggression is also present in Latin American contexts (Miles-Novelo et al., 2022).

Furthermore, game violence also showed a positive correlation with the factors Rights and Protection from the attitudes towards guns measure, corroborating the idea that violent media contributes to the development of aggressive attitudes (Santos et al., 2023). Considering that a significant portion of current video games contains some form of violence (American Psychological Association, 2020) and that this is often based on the use of guns, the consumption of violent games can function as a model for not only behavior but also attitudes: In the context of the game, using guns usually leads to positive outcomes and can therefore encourage a positive view of those weapons in real life (Chang & Bushman, 2019).

The Rights and Protection factors also correlated with aggression intention, indicating that a positive view of guns (e.g., that owning them is a right and that they ensure protection) is related to a higher probability of aggressive tendencies. Prosocialness, on the other hand, negatively correlated with Rights and positively correlated with Crime. These results are in line with previous research (e.g., Martin et al., 2001). Thus, attitudes towards guns can be considered a risk factor for subsequent harmful behavior (Nickerson et al., 2019). Further research can investigate these relationships in more specific acts of aggression/prosocial behavior, such as intimate relationships, bullying, and volunteering.

Finally, the mediation model showed that all attitude factors mediated game violence's impacts on both aggressive intention and prosocialness. These data corroborate a discussion by Cooke (2004): exposure to content that contains guns has more harmful impacts according to the individual's evaluation of guns, increasing when those seem positive. However, it's important to highlight that these mediation relationships need further testing, especially using an experimental design.

Conclusions

Although this study has made contributions, it is subject to certain limitations. Firstly, the use of correlational data collection prevents the direct assessment of behavior. Additionally, the topics covered in the research could be influenced by social desirability. It is also worth

noting that the video game violence measure used in the study focuses only on the respondent's favorite game: therefore, results could be affected by further game and media exposure.

Future studies could expand the video game measure by focusing on the violence displayed in the general gaming experience, such as adapting questions like “How violent is the content of the games you usually play?”. Another alternative for further studies would be to investigate the prosocial content of the favorite game and relate it to the same variables analyzed in the present study.

The variables investigated in this study can also be used to develop experimental research, focusing on short-term impacts and the role of attitudes towards guns in this scenario. Finally, focusing on sociodemographic characteristics, testing the presented relationships in different groups (e.g., children and adolescents) could provide relevant information.

Therefore, the present study provides valuable insights into the relationship between attitudes, media violence, and behavioral tendencies. It highlights the importance of gun perception in this discussion and shows how video game violence can lead to positive views of gun possession. The findings also stress the need to consider these factors when developing public policies on security. Moreover, the study sheds light on the impact of media violence in Latin America, confirming that its effects are present across different cultures (Miles-Novelo et al., 2022).

Conflict of Interests Statement

The authors declare that there are no conflicts of interest.

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