Acting Like a Tough Guy: Violent-Sexist Video Games, Identification With Game Characters, Masculine Beliefs, & Empathy for Female Violence Victims

5 AUTHORS, INCLUDING:

Alessandro Gabbiadini
Università degli Studi di Milano-Bicocca
13 PUBLICATIONS **48** CITATIONS

SEE PROFILE

Paolo Riva
Università degli Studi di Milano-Bicocca
31 PUBLICATIONS **140** CITATIONS

SEE PROFILE

Luca Andrighetto
Università degli Studi di Genova
25 PUBLICATIONS **98** CITATIONS

SEE PROFILE

Brad J Bushman
The Ohio State University
232 PUBLICATIONS **12,181** CITATIONS

SEE PROFILE

1

Acting Like a Tough Guy: Violent-Sexist Video Games, Identification With Game Characters,

Masculine Beliefs, & Empathy for Female Violence Victims

4

5

6

Alessandro Gabbiadini[1], Paolo Riva[1], Luca Andrighetto[2], Chiara Volpato[1] and Brad J. Bushman[3, 4]

[1]University of Milano Bicocca, Italy

[2]University of Genova, Italy

[3]The Ohio State University, USA & [4]VU University Amsterdam, The Netherlands

11

12

13

16

Author Notes

Correspondence concerning this article should be addressed to

Alessandro Gabbiadini,

University of Milano-Bicocca, Department of Psychology,

Piazza Ateneo Nuovo, 1, 20126 – Milano, Italy.

E-mail: ale.gabbiadini@gmail.com

Phone number : ++39 348.0010477

Fax number : ++39 02.64483716

25

Abstract

Empathy—putting oneself in another's shoes—has been described as the "social glue" that holds society together. This study investigates how exposure to sexist video games can decrease empathy for female violence victims. We hypothesized that playing violent-sexist video games would increase endorsement of masculine beliefs, especially among participants who highly identify with dominant and aggressive male game characters. We also hypothesized that the endorsement of masculine beliefs would reduce empathy toward female violence victims. Participants (N=154) were randomly assigned to play a violent-sexist game, a violent-only game, or a non-violent game. After gameplay, measures of identification with the game character, traditional masculine beliefs, and empathy for female violence victims were assessed. We found that participants' gender and their identification with the violent male video game character moderated the effects of the exposure to sexist-violent video games on masculine beliefs. Our results supported the prediction that playing violent-sexist video games increases masculine beliefs, which occurred for male (but not female) participants who were highly identified with the game character. Masculine beliefs, in turn, negatively predicted empathic feelings for female violence victims. Overall, our study shows who is most affected by the exposure to sexist-violent video games, and why the effects occur. (200 words)

Introduction

44

45   "Empathy is about standing in someone else's shoes, feeling with his or her heart, seeing

46   with his or her eyes. Not only is empathy hard to outsource and automate, but it makes the

47   world a better place."

48   — Daniel H. Pink, author

49   Empathy is an emotional response that corresponds to the feelings of another person, such as

50 feeling distress when seeing another person in distress. Empathy does indeed make the world "a

51 better place" to live and it is one of the best predictors of prosocial behavior [1,2,3]. Numerous

52 studies have shown that playing violent video games reduces feelings of empathy and makes people

53 numb to the pain and suffering of others (for a meta-analytic review see [4]).

54 People feel empathy for other individuals, not for objects. In some video games, such as the very

55 popular *Grand Theft Auto* (*GTA*) games, female characters are treated as sex objects rather than as

56 individuals worthy of respect. *GTA* main male characters are always depicted as hyper-masculine,

57 dominant, and aggressive men. In contrast, the female characters are portrayed as sexual objects—

58 usually prostitutes or pole-dancers—who are peripheral to the game narrative and whose sole

59 purpose is to entertain the main male characters [5]. For example, after paying a prostitute for sex,

60 players can kill her and get their money back. Rather than being punished for such behaviors,

61 players are often rewarded (e.g., through points, extra health to their character, etc.).

62 Although sex-typed video game characters in the virtual world might affect perceptions of men and

63 women in the real world, there is a dearth of research on this topic. In one study, male college

64 students who saw photos of sex-typed male and female video game characters (vs. professional men

65 and women) were more tolerant of sexual harassment against a female college student by a male

66 professor [6,7] In another study, female college students who embodied sexualized video game

67 characters (vs. non-sexualized game characters) were more likely to view themselves as a sexual

68 object, which in turn increased their acceptance of rape myths [5]. In a third study, both male and

female participants were more aggressive after playing a violent game as male character than as a female character [8]. Yet, none of these studies assessed the role of individual differences (i.e., moderators) and/or underlying mechanisms (i.e., mediators) of the obtained effects. The present research fills these important gaps in the literature by testing a moderator variable (i.e., identification with the violent-sexist video game character and gender), and a mediator variable (i.e., masculine beliefs) of the effects of exposure to violent sexist video games on empathy for female violence victims

Who is Most Affected: The Moderating Role of Identification With the Game Character

Previous research has largely ignored moderators of the effects of violent-sexist video games on players. The notion of identification with a virtual avatar, as an online self-representation, has been investigated in past research [9,10,11]. In particular, some works have shown that when experiencing a virtual world, players are likely to establish a connection between themselves and their game character, and even imagine themselves to *be* that character [12,13,11]. For example, participants in one study [13] played either a first-person shooter war game or a racing game and then completed a measure of automatic attitudes using the Implicit Association Test [14]. The researchers found that participants who played a war game had stronger associations between military-related concepts and the self, whereas participants who played a racing game had stronger associations between racing-related concepts and the self. These results suggest an automatic shift in players' implicit self-perceptions. Identification with violent video game characters can also influence behavior. For example, one study found that the more boys identified with violent game characters, the more aggressive they were after the game was turned off [11].

Building on these previous findings, in the present work we tested whether the identification with the game character would interact with exposure to violent sexist games in predicting a reduction in

93 empathic feelings toward female violence victims. More specifically, we expected that players who

94 highly identified with violent sexist game character would display a greater endorsement of

95 masculine beliefs. Furthermore, we expected that the interactive effects of exposure to violent sexist

96 games and identification with the game character on masculine beliefs would be stronger for male

97 (compared to female) players. Drawing from this theoretical framework, we propose that

98 identification with the game character and participants' gender could play a key-moderating role in

99 the effects of violent-sexist games on empathy for female violence victims.

Why the Effect Might Occur: The Mediating Role of Masculine Beliefs

102 Previous research has largely ignored mediators of the effects of violent-sexist video games

103 on players. One scholar notes that the video game culture assumes that the default player is male,

104 which can lead to the maintenance of masculinity in the virtual world [15]. Another scholar

105 proposed that adolescent and young adult males often use video game spaces to explore their

106 masculine identity [16]. Masculinity refers to normative beliefs about how men are expected to

107 think, feel, and behave [17]. Traditionally, men are considered to be aggressive, dominant,

108 competitive, strong, powerful, and independent [17,18]. Theories of hegemonic masculinity assert

109 that modern media convey myths about male dominance and female submission in order to support

110 a patriarchal social structure [19]. In other words, media stereotypes construct a stylized view of

111 masculinity and femininity that influences the thoughts, feelings, and behaviors of those who

112 consume these media. In the mediated world, men are expected to control their feelings in order to

113 be less vulnerable and more powerful. Emotions such as fear and empathy are prohibited because

114 "real men" are not supposed to express these feelings [20,18]. However, not all emotions are

115 prohibited. Feelings of anger and rage are encouraged in "real men" because they are associated

116 with high status and power.

117   The portrayal of men in the media as socially powerful and physically violent reinforces

118   assumptions about how men and boys should act in society, as well as how they should treat women

119   and girls [21]. Exposure to sex-typed media characters can have real world consequence. For

120   example, one study found that television programs that depict women as sex objects increased the

121   likelihood of sexual harrassment [22]. A meta-analytic review found that masculine beliefs were

122   positively associated with aggression against women [23]. In general, males are more likely than

123   females to agree with myths and beliefs supportive of violence against women, show less empathy

124   for female violence victims, and consider violence against females to be a less serious problem (see

125   [24]). We propose that the exposure to violent and sexist video games could reinforce masculine

126   beliefs, hampering the ability for players to feel empathy for female violence victims. Because

127   masculine norms are strongly reinforced in *GTA* video games, we propose that *GTA* gameplay will

128   increase masculine beliefs. Masculine beliefs, in turn, are expected to be negatively related to

129   empathy for female violence victims.

Overview

131   The present study investigates the short-term effects of playing violent-sexist video games

132   on empathy for female violence victims. We consider identification with the game character as one

133   possible moderator, expecting larger effects of the game content for participants who strongly

134   identify with the hyper-masculine, violent, male game character in *GTA*. Further, we proposed

135   participants' gender as second possible moderator, assuming that the effects of the game content

136   would be stronger for male participants than for female participants. As a possible mediator, we

137   propose that violent-sexist games reduce empathy for female violence victims by increasing

138   masculine beliefs. Combining these hypotheses, we propose a conditional process model ([25]; see

139   Fig 1). In this model, we predict that violent-sexist video games will increase masculine beliefs,

140   which in turn will be negatively related to empathic feelings for female violence victims, especially

141   among male participants who display higher levels of identification with the violent male game

142 character. To test whether these effects are specific to violent-sexist video games, we also included

143 violent-only video games in our design, as well as nonviolent (control) video games.

144

145   *--- Insert Figure 1 about here ---*

146

147   **Fig 1. Conditional process moderated mediation model (Model 11 in PROCESS [24])**

Materials and Method

Participants

150   Participants were 154 Italian high school student volunteers (43.4% male, 15 to 20 years old,

151 *(M* = 16.82, *SD* = 1.24). The study was reviewed and approved by University of Milano-Bicocca

152 ethics committee (Prot. N. 0024403/12) before the study began. Both the high school and the

153 university review board gave their written consent for the study; parents' consent was collected

154 through an official written communication sent by the office school management before the

155 beginning of the data collection. Parental informed consent and participant written assent rates were

156 both 100%.

Procedure

158   Participants were told that investigators were testing cognitive abilities in order to develop a

159 new video game that would be distributed in the near future. After providing basic demographic

160 information (age, nationality, gender), participants were randomly assigned to play a violent-sexist

161 video game (i.e., *GTA San Andreas* or *GTA Vice City*; both rated 18+ for violent and sexual

162 content), a violent-only video game (i.e., *Half Life 1* or *Half Life 2*; both rated 16+ for violent

163 action, but no sexual content or violence toward women), or a non-violent video game (i.e., *Dream*

164 *Pinball 3D* or *Q.U.B.E. 2*; both rated 10+ with no violent or sexual content).

165 *Half-Life* is a first-person shooter video game where the player has the same visual perspective as

166 the character. In both games used in this study (*Half Life 1*, *Half Life 2*), players fight in a post-

167 apocalyptic future. Although there is a female co-protagonist (Alyx), she is portrayed in a non-

168 sexual manner. In contrast, all female characters in *GTA* are portrayed in a sexual manner. By

169 selecting video games that use different representation of women, it is possible to differentiate

170 between sexual violence exposure (i.e., *GTA*) and exposure to violent games not involving sexism

171 exposure (i.e. , *Half Life*).

172 *Dream Pinball 3D* is a classic pinball simulation game featuring different tables to play on, while

173 *Q.U.B.E. 2* is a first-person puzzler in which the player has to solve an array of physics-based

174 challenges.

175 For all the three video game conditions, participants first watched the introductory video of the

176 game for about one minute, in order to familiarize themselves with the game. Next, they practiced

177 by playing a preselected scene for 5 minutes. During the practice session, participants were taught

178 how to control their character and how to interact with the game world. When the practice session

179 ended, participants played the game alone for 25 minutes

180 For all the three games, participants were asked to pursue a specific goal or mission. We attempted

181 to keep the mission as similar as possible for the violent-sexist and the violent-only games. For

182 violent-sexist games (both *GTA San Andreas* and *GTA Vice City*), the mission was to destroy a rival

183 criminal gang. Both missions started in a private-club, and then move through the streets of the city.

184 During the gameplay, players were frequently exposed to female prostitutes and lap dancers;

185 indeed, those are common elements in all the episodes of the GTA saga. For the violent-only games

186 (both *Half Life 1* and *Half Life 2*), players were asked to complete a mission whose goal was to

187 destroy a group of enemies. The game's action in both Half life 1 and Half life 2, takes place in a

188 suburban area of the city, and then moves to a few abandoned buildings. For the neutral control

189 games (both *Dream Pinball 3D* and *Q.U.B.E. 2*), the mission was simply to accumulate as many

190 points as possible.

191 All games in all conditions were played at an intermediate level to avoid boredom (from the game

192 being too easy) and frustration (from the game being too difficult).

193   After gameplay, participants completed some video game manipulation checks. They were

194   first asked to report the title of the video game they played, rated how violent, involving, and

195   exciting they thought the game was (1=*not at all* to 7=*extremely*), and rated how sexualized the

196   female figures in the game were (1=*not at all* to 7=*extremely*). Given the popularity of the GTA

197   series among young people, we also measured how frequently they played the video game they

198   were randomly assigned to play in this experiment (0=*never played before* to 7=*every day*).

199   One moderator was participant gender. As a possible second moderator, we measured how much

200   participants identified with their video game character using the 6-item (e.g., "When I am playing, it

201   feels as if I am my character" and "My character is an extension of myself"; 1=*completely disagree*

202   to 7=*completely agree*) of the Player Identification Scale [26] (Cronbach α=.92).

203   As a possible mediator, we measured masculine beliefs. We used 12 items (e.g., "Boys should be

204   encouraged to find a means of demonstrating physical prowess" and "It is OK for a guy to use any

205   and all means to 'convince' a girl to have sex"; 1=*completely disagree* to 7=*completely agree*) from

206   the revised Male Role Norms Inventory (MRNI-R; Cronbach α=.78) [27] Levant, Rankin,

207   Williams, Hasan, & Smalley, 2010).

208   The dependent variable was how much empathy participants felt toward female violence victims.

209   When people become desensitized to violence, they become numb to the pain and suffering of

210   violence victims [28]. Participants were shown one of two photos (randomly determined) of an

211   adolescent girl who had been physically beaten by an adolescent boy (see S1 Appendix).

212   Participants rated whether they felt sympathetic, moved, compassionate, tender, warm, softhearted,

213   disregarded (reverse-coded) and indifferent (reverse-coded) [see 29] for her (1=*not at all* to 7=*very*

214   *much*; Cronbach α=.83).

215   About 2 weeks later, following the completion of the study, all participants were fully debriefed. No

216   participants expressed suspicion about the true purpose of the study. In particular, none of the

217   participants reported a link between video games and gender-based violence or sexism. The

218   experimenter then disclosed the purpose of the study, and discussed the potentially harmful short-

219   terms effects of violent and sexist video games on players. A group discussion followed.

Results

Preliminary Results

Stimulus sampling.

223   To increase the generalizability of our findings, we used two video games of each type and

224   two photos of interpersonal violence [30]. Independent-sample *t*-tests found no significant

225   differences between the two different violent-sexist games, between the two different violent-only

226   games, or between the two nonviolent games on identification with the main video game character,

227   masculine beliefs, or empathy for female violence victims (*p*s>.12). Thus, the two violent-sexist

228   games were combined, the two violent-only games were combined, and the two nonviolent games

229   were combined for subsequent analyses.

230   There were no significant differences between the two photos of the adolescent boy beating the

231   adolescent girl on how much empathy participants felt for her (*p*s>.10). Thus, the data from two

232   photos were combined for subsequent analyses.

Video game manipulation check items.

234   Five items were included to assess whether the video game manipulation was successful.

235   First, we checked the name of the game reported by each participant. All participants correctly

236   named the video game they played. We then tested whether the violent video games were rated to

237   be more violent than the nonviolent games. A one-way between subjects ANOVA found a

238   significant difference in violence ratings for the video games, $F(2,150)=182.16$, $p<.001$, $\eta^2=.70$.

239   Post-hoc comparisons using Tukey's Honestly Significant Difference (HSD) test indicated that the

240   violent-sexist games ($M=5.11$, $SD=1.23$) and the violent-only games ($M=4.09$, $SD=1.25$) had

241   significantly higher violence ratings than the nonviolent games ($M=1.20$, $SD=.53$), ds=4.13 and

242   3.01, respectively. However, the violent-sexist games also had higher violence ratings than the

violence-only games (*M*=5.11, *SD*=1.23; *d*=.82). Then, we checked ratings of familiarity. A one-way between-subjects ANOVA found a significant difference in frequency of play for the video games, $F(2,152)=4.28$, $p=.015$, $\eta^2=.053$. Post-hoc test revealed significantly that violent-sexist games had higher frequency of play (*M*=2.10, *SD*=1.54; *p*=.013) than both violent-only (*M*=1.36, *SD*=1.31) and neutral games (*M*=1.58, *SD*=1.03). Thus, violence ratings and frequency of play were included as covariates in all analyses. No statistically significant differences between violent-sexist (*M*=4.18, *SD*=1.56), violent-only (*M*=3.94, *SD*=1.42), and neutral games (*M*=3.82, *SD*=1.76) were found for game involvement, $F(2,151)=0.70$, $p>.49$. Moreover, no significant differences between violent-sexist (*M*=3.71, *SD*=1.55), violent-only games (*M*=3.65, *SD*=1.68), and neutral games (*M*=3.18, *SD*=1.58) were found of game excitement, $F(2,151)=1.67$, $p>.19$. Finally, we tested whether female characters were rated as more sexualized in the violent-sexist video games than in the violent-only games. As expected, female characters in the *GTA* games were rated to be more sexualized (*M*=5.88, *SD*=1.43) than female characters in the *Half Life* games (*M*=2.16, *SD*=1.31), $t(101)= 13.67$, $p<.001$, $d=2.72$. Taken together, these results suggest that the video game manipulation was successful.

Primary Results

Since playing violent video games that are not necessarily sexist have been already shown to reduce feelings of empathy, we contrast coded the type of video game as follow: +1=violent-sexist games, 0=violent-only games, -1=non-violent games. Data analysis revealed that the type of video game was positively associated with masculine beliefs (*r*=.203, *p*=.011). Participant gender (1=male vs. 0=female) was associated with both masculine beliefs (*r*=.507, *p*<.001) and identification with the game character (*r*=.241, *p*=.003). Mean comparison revealed that participant gender impacted the masculine beliefs such that male participants showed greater endorsement of masculine beliefs (*M*=3.23, *SD*=0.82) than female did (*M*=2.44, *SD*=0.52; *t*(152)=7.25; *p*<.001; *d*=1.15). Participant gender also influenced the identification with the game character such that boys identified more

268   with the game character (*M*=4.63, *SD*=1.20) than girls (*M*=3.96, *SD*=1.45; *t*(152)=3.05; *p*=.003;

269   *d*=0.50). Further, the level of identification with the game character was positively associated with

270   masculine beliefs (*r*=.197, *p*=.014). Finally, masculine beliefs were negatively associated with

271   empathy for female violence victims (*r*=-.348, *p*<.001; see Table 1).

272

273

274   Table 1. *Bivariate correlations*

	1	2	3	4	5	6	7	8
1. Type of video game	1							
2. Masculine beliefs	.203*	1						
3. Participants' gender	.022	.507**	1					
4. Identification with the game character	.073	.197*	.241**	1				
5. Empathy for female violence victims	.000	-.348**	-.137	-.005	1			
6. Violence ratings	.809**	.038	-.016	.082	.094	1		
7. Frequency of play	.155	.236**	.335**	.117	-.018	.078	1	
8. Participants' age	-.521**	-.085	.100	.046	-.003	-.249**	-.020	1

275

276   *Note*. Type of video game was coded +1=violent-sexist games, 0=violent-only games, and -1=non-violent

277   games. *p < .05. **p < .01. ***p < .001.

278

279   We conducted a series of one-way between-subjects ANOVAs to test the effects of type of

280   video game played on three dependent variables: (1) identification with the game character, (2)

281   masculine beliefs, and (3) empathy for female violence victims. The first ANOVA found a

282   significant effect for type of video game played on identification with the game character,

283   *F*(2,152)=6.06, *p*=.003, η^2=.073. Post-hoc comparisons using Tukey's Honestly Significant

284   Difference (HSD) test indicated that participants who played a violent game identified with the

285   character more than did participants who played a neutral game (*d*=0.62, *p*=.003) or a violent-sexist

286   game (d=0.57, p=.04). No differences were found between the neutral and the violent-sexist games

287   (p=.67).

288   The second ANOVA found a significant effect for type of video game played on masculine

289   beliefs $F(2,152)$=3.33, p=.038, η^2=.004. Post-hoc tests indicated that participants who played a

290   violent-sexist game reported higher masculine beliefs than did participants who played a neutral

291   game (d=0.50, p=.03). No statistically differences were found between violent-sexist games and

292   violent-only games (p=.24) or between violent-only and neutral games (p=.57) on masculine

293   beliefs.

294   The third ANOVA found no significant effect for type of video game played on empathy

295   for female violence victims (p=.31). Descriptive statistics by experimental conditions for each

296   dependent variable are reported in Table 2.

297

298   Table 2. *Means and standard deviations (in parenthesis) by experimental conditions for each of the*
299   *considered dependent variables.*

	Neutral game (males n=21; females n=29)	Violent-only game (males n=25; females n=30)	Violent-sexist game (males n=22; females n=26)
Identification with the game character	3.89 (1.57)$_b$	4.76 (1.21)$_a$	4.12 (1.18)$_b$
Masculine beliefs	2.62 (0.72)$_b$	2.77 (0.73)$_b$	3.02 (0.86)$_a$
Empathy for female violence victims	5.03 (0.95)$_a$	5.29 (0.92)$_a$	5.02 (1.16)$_a$

300   *Note.* Different letters indicate means statistically differences between experimental conditions.

301

302   To test our predictions, we then conducted a conditional process model by using the

303   PROCESS macro Model 11 for SPSS with 1000 bootstrapping samples [24]. In this model, the type

304   of video game played was entered as predictor, the identification with the game character as a

305   moderator, masculine beliefs as the mediator, and empathy toward female violence victims as the

306   outcome variable. We predicted that participants' gender would moderate the effects of the

307   identification with the game character on the relationship between the type of video game and

308   masculinity beliefs. (see Figure 1). Participant age, video game violence rating, and frequency of

309   video game play were also included as covariates.

310   Considering the moderated path from the type of video game to masculine beliefs, analyses

311   revealed that the main effects of type of video game played, identification with the game character,

312   participant gender, participant age, and frequency of gameplay were not significant (b_s<.56,

313   t_s(140)<1.47, p_s>.14), whereas the main effect of violence rating was significant (b=-.10, SE=.047,

314   t(140)=-2.07, p=.039). The two-way interaction between type of video game played and participant

315   gender was significant (b=-1.05, SE=.45, t(140)=-2.29, p=.023), whereas the interactions between

316   type of video game played and identification with the game character (b=.02, SE=.065, t(140)= .32,

317   p=.74) and between participant gender and identification with the game character (b=-.03, SE=.083,

318   t(140)=.36, p=.71) were both nonsignificant. Crucially, all these effects were qualified by our

319   predicted 3-way interaction between type of video game played, participant gender, and

320   identification with the game character on masculine beliefs (b=.26, SE=.10, t(140)=2.55, p=.011;

321   see Table 3).

322
323

Table 3. *Regressions of type of video game (neutral, only-violent, sexist-violent) on empathy for female violence victims when masculine beliefs is the mediator and participants' gender and identification with the game character are the moderators*

	b	*SE*	*p*
Masculine beliefs			
Type of video game	.229	.273	.40
Participants' gender	.561	.38	.14
Identification with the game character	.063	.049	.20
Age	-.013	.052	.80
Violence rating	-.099	.047	.04
Frequency of play	.026	.043	.54
Type of video game X Participants' gender	-1.05	.457	.02*
Type of video game X Identification with the game character	.021	.065	.74
Participants' gender X Identification with the game character	.030	.083	.71
Type of video game X Participants' gender X Identification with the game character	.265	.103	.01*
Empathy for female violence victims			
Age	-.039	.079	.61
Violence ratings	.099	.074	.18
Frequency of play	.052	.061	.38
Masculine beliefs	-.465***	.109	.0001***

324

Note. b = unstandardized beta weight; *SE* = standard error; **p* < .05. ***p* < .01. ****p* < .001.

For male participants, simple slope analyses showed a significant positive relationship between identification with the game character and masculine beliefs for males who played with a violent-sexist game (b=.32, SE=.12, $t(62)$=2.65, p=.009), but not for males who played violent-only game (b=.095, SE=.078, $t(62)$=1.21, p=.23) or for males who played a nonviolent game (b=-.13, SE=.97, $t(62)$=-1.33, p=.18; see Fig 2). For female participants, there was no significant relationship between identification with the game character and masculine beliefs in any of the three video game conditions (b_s<.082, $t_s(76)$<1.81, p_s>.075).

--- Insert Figure 2 about here ---

Fig 2. Interactive effect of video game content and identification with the game character on masculine beliefs for male participants. The difference between violent-sexist game players and violent-only and nonviolent game players is significant for values of identification with video game characters greater than 4.2931.

Then, considering the path from masculine beliefs (i.e., the mediator variable) to empathy for female violence victims (i.e., the outcome variable), analyses revealed that masculine beliefs negatively impacted the dependent variable (b=-.45, SE=.11, $t(146)$=-4.17, p<.001).

As first support of our moderated mediational hypothesis, we found a significant indirect effect of the type of video game on empathy for female violence victims via increased masculine beliefs for males [-0.1846 (95% CI=-0.3 to -0.0410)] but not for females [-0.0406 (95% CI=-0.1318 to 0.0097)] who played with a violent-sexist game. No effect was found for males [-0.0486 (95% CI=-0.1733 to 0.0363)] or females [-0.0294 (95% CI=-0.0799 to 0.0041)] in the violent-only game condition. Similarly, no indirect effect of type of video game on empathy was found for males [-0.0874 (95% CI=-0.0134 to 0.3363)] or females [-0.0181 (95% CI=-0.0783 to 0.286)] in the nonviolent game condition. Further, conditional indirect effects of type of video game on empathy

351   for female violence victims were significant only for males in the violent-sexist game condition at

352   values of identification with the game character greater than 4.2583 [-0.1920 (95% CI=-0.4668 to -

353   0.0492] (see Fig 2). These results suggest that violent-sexist games decreased empathy for female

354   violence victims for boys who strongly identified with the violent game character, and did so by

355   increasing masculine beliefs.

Discussion

357   The present research is in line with previous studies showing that violent video games can

358   desensitize individuals to real-life violence [4,31], including violence against women [6]. More

359   important, it moves beyond the question of whether violent games are harmful *per se* to address the

360   important questions of who is most likely to be harmed by violent-sexist video games, and through

361   what mechanism does the harm occur.

362   A possible answer to the "who" question is players that identify with the violent-sexist game

363   character. Results support the prediction that playing violent-sexist video games increases

364   masculine beliefs and decreases empathy for female violence victims, especially for boys and

365   young men who highly identified with the male game character. Previous research has shown that

366   video games are especially likely to increase aggression among players who identify with violent

367   game characters [11], and that a reduced empathy is one of the major predictor for aggression

368   against women [32]. Exposure to media violence is one of the many factors that can influence

369   empathy levels [33]. Violent video games, in particular, might reduce empathy levels because

370   players are linked to a violent character. If the video game is a first person shooter, players have the

371   same visual perspective as the killer. If the video game is third person, players control the actions of

372   the violent character from a more distant visual perspective. Because they are forced to adopt the

373   visual perspective of the perpetrator, it is difficult for players to put themselves in the shoes of the

374   victim. In general, we argue that it is important to take individual differences into account when

375   considering violent video game effects (see also [34]).

376   A possible answer to the "why" question (i.e., through which mechanism) is masculine beliefs.

377   Results showed that masculine beliefs were negatively related to empathic feelings for female

378   violence victims. To our knowledge, the present research is the first to elucidate the underlying

379   mechanism that links violent video games playing to desensitization of violence against women.

380   Speaking to the specificity of our effects, it is noteworthy that type of video game played

381   directly affected identification with the game character and masculine beliefs, whereas it did not

382   directly affect empathy for female violence victims. However, we found an indirect conditional

383   effect of violent-sexist games (vs. only-violent vs. neutral) on empathy, which consistently emerged

384   through the mediation of masculine beliefs and the moderation of identification with the game

385   character. Accordingly, the effects were statistically significant only for highly identified male

386   participants who played the GTA games, which are both violent and sexist. We found no significant

387   effects for violent-only or nonviolent video games on masculine beliefs or empathic feelings. As in

388   previous research (e.g., [8]), gender differences in identification with the game character emerged

389   (i.e., males identified more with the male game character than females did). In addition, males had

390   higher masculine beliefs than females did. This finding can be interpreted in light of the theoretical

391   framework of identification with a virtual character. Video game identification has been considered

392   as an altered experience of the self, in which players may come to perceive themselves to actually

393   be their game character, thus assuming the character's point of view [13]. This process has been

394   described also as "an imaginative process" involving cognitive, emotional, and motivational

395   dimensions ([35], p. 250). The player shares the character's perspective (cognitive), feelings

396   (emotional), and goals (motivational) [35,36,37]. Furthermore, identification with a virtual

397   character has been found to be greater in video games with an articulate plot, in which the assigned

398   role fosters a sense of "vicarious self-perception" [38]. This is the case with GTA, in which players

399   assume the role of a man who is aggressive, misogynistic, cruel, and greedy. Since that, it is not

400   surprising that we found that male players who identified with the main video game character ended

401 up adopting his point of view more easily than female players, as indicated by an increase in

402 masculine beliefs and a decrease in feelings of empathy for female violence victims.

403   This investigation of virtual representations of males and females in video games is

404 extremely relevant, because video games have distinct features compared to other forms of media

405 [5] and different effects on males and females. Unlike images in traditional media, game characters

406 are designed to respond to a user's actions [39], which can promote a powerful experience that goes

407 beyond passive media consumption. Often these interactions mirror communication in the physical

408 world, and users often react to virtual situations in natural and social ways [39,5].

Limitation and Future research

410   Our study, like all studies, has limitations. Few main limitations stand out. First, we used a

411 self-report measure of empathy. Future research should consider other measures of empathy that are

412 less subject to demand characteristics, such as physiological measures (e.g., heart rate, skin

413 conductance).

414 Second, we examined only two moderators (i.e., participant gender and identification with the game

415 character) and only one mediator (i.e., masculine beliefs). Future research should examine other

416 possible moderators (e.g., trait aggressiveness, social dominance orientation) and mediators (e.g.,

417 dehumanization, women objectification; [see 22]).

418 Third, our study was based on a short exposure to violent-sexist video games (i.e., about 25

419 minutes). Although it is impressive that we were able to obtain significant effects after such a brief

420 exposure, we do not know what the consequences would be for longer exposures. If the effects

421 occur after only 25 minutes of play in a laboratory experiment, they are probably magnified after

422 longer periods of play outside the lab. Indeed, individuals usually play video games for much

423 longer periods of time (from 8 hours to 13 hours per week; [40, 41]). Previous experimental

424 research has shown that the effects of violent video games can accumulate and get larger over time,

425 at least over a three-day period [41].

426 Fourth, we did not measure sexist thoughts after a certain amount of time, so we cannot ascertain if

427 and how long the observed effects last. However, previous experimental research has shown that

428 the effects of violent video games can last at least 24 hours after gameplay if players ruminate about

429 the content of the game [43].

430 Fifth, *GTA* is a well-known game, and the simple act of playing it could have primed masculine and

431 sexist thoughts regardless of the actual gameplay. Indeed, media audiences often make their

432 assessment of characters and narratives using existing schemes rather than actual on-screen

433 action/content [44]. Thus, future studies should test whether similar effects are obtained for less

434 well-known sexist-violent videogames than *GTA*. Furthermore, future studies should test whether

435 the empathy reduction linked with violent-sexist video games is specific to female violence victims

436 or whether it extends to male violence victims. Future research should also examine video games

437 with female characters that are not depicted in a sexualized manner.

438 Sixth, we did not actually test whether feelings of empathy mediate aggression against women. As a

439 first step, this study focused on empathy for female violence victims. Future studies should explore

440 whether violent-sexist video games also increase aggression against women.

441 **Conclusion**

442   One of the best predictors of aggression against girls and women is lack of empathy [32].

443 The present research shows that violent-sexist video games such as GTA reduce empathy for

444 female violence victims, at least in the short-term. This reduction in empathy partly occurs because

445 video games such as GTA increase masculine beliefs, such as beliefs that "real men" are tough,

446 dominant, and aggressive. Our effects were especially pronounced among male participants who

447 strongly identified with the misogynistic game characters. Daniel Pink was correct in noting that

448 empathy makes the world a better place. Unfortunately, it appears that GTA might make the world

449 a worse place for females.

450

References

1. Batson CD. Prosocial behavior and altruism. In: Lindzey G, Gilbert D, Fiske ST, editors. The Handbook of Social Psychology, Oxford University Press; 1998. pp. 282–316.

2. Eisenberg N, Miller PA. The relation of empathy to prosocial and related behaviors. Psychol Bull. 1987;101: 91-119. doi: 10.1037/0033-2909.101.1.91

3. Hoffman ML. Empathy and prosocial behavior. In: Lewis M, Haviland-Jones JM, Barrett LF, editors. Handbook of Emotions, Third Edition. Guilford Publications; 2008. pp. 440–455.

4. Anderson CA, Shibuya A, Ihori N, Swing EL, Bushman BJ, Sakamoto A, Rothstein HR, Saleem M, Barlett CP. Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: A meta-analytic review. Psychol Bull. 2010;136: 151-173. doi: 10.1037/a0018251

5. Fox J, Ralston RA, Cooper CK, Jones KA. Sexualized avatars lead to women's self-objectification and acceptance of rape myths. Psychol Women Quart. 2014. In press; doi: 10.1177/0361684314553578.

6. Dill K, Brown B, Collins M. Effects of exposure to sex-stereotyped video game characters on tolerance of sexual harassment. J Exp Soc Psychol. 2008;44: 1402-1408. doi:10.1016/j.jesp.2008.06.002

7. Dill K, Thill K. Video game characters and the socialization of gender roles: Young people's perceptions mirror sexist media depictions. Sex Roles. 2007;57: 851-864. doi: 10.1007/s11199-007-9278-1

8. Yang GS, Huesmann LR, Bushman BJ. Effects of playing a violent video game as male versus female avatar on subsequent aggression in male and female players. Aggressive Behav. 2014;40: 537-541. doi: 10.1002/ab.21551

9. Bailenson JN, Beall AC. Transformed social interaction: Exploring the digital plasticity of avatars. In: Schroeder R., Axelsson A, editors. Avatars at work and play: Collaboration and interaction in shared virtual environments. London: Springer-Verlag; 2006. pp. 1-16.

10. Dunn RA, Guadagno RE. My avatar and me: Gender and personality predictors of avatar-self discrepancy. Comput Hum Behav. 2012;28: 97-106. doi: 10.1016/j.chb.2011.08.015

11. Konijn EA, Nije Bijvank M, Bushman BJ. (2007). I wish I were a warrior: The role of wishful identification in effects of violent video games on aggression in adolescent boys. Dev Psychol. 2007;43: 1038-1044. doi: 10.1037/0012-1649.43.4.1038

12. Gabbiadini A, Mari S, Volpato C, Monaci MG. Identification processes in online groups: Identity motives in the virtual realm of MMORPGs. J Media Psychol. 2014;26: 141-152. doi: 10.1027/1864-1105/a00119

493 13. Klimmt C, Hefner D, Vorderer, P., Roth, C., & Blake, C. (2010). Identification with video
494   game characters as automatic shift of self-perceptions. Media Psychol. 2010;13: 323-338.
495   doi: 10.1080/15213269.2010.524911

496 14. Greenwald AG, McGhee DE, Schwartz JLK. Measuring individ-ual differences in implicit
497   social cognition: The Implicit Association Test. J Pers Soc Psychol. 1998;74: 1464–1480.

498 15. Gray KL. (2012). Deviant bodies, stigmatized identities, and racist acts: Examining the
499   experiences of African–American gamers in Xbox Live. New Rev Hypermed Multimed.
500   2012;18: 261–276.

501 16. Jansz J. The emotional appeal of violent video games for adolescent males. Commun Theor.
502   2005;15: 219–241.

503 17. Mahalik JR, Locke BD, Ludlow LH, Diemer MA, Scott RPJ., Gottfried M, et al.
504   Development of the Conformity to Masculine Norms Inventory. Psychol Men Masc.
505   2003;4: 3-25. doi: 10.1037/1524-9220.4.1.3

506 18. Volpato C. Psicosociologia del maschilismo. Roma-Bari: Laterza; 2013. [Psychology of
507   masculinity].

508 19. Connell R. Gender and Power: Society, the Person, and Sexual Politics. Stanford, Calif:
509   Stanford University Press; 1987.

510 20. Levant R.F., Majors R.G., Kelley M. Masculinity ideology among young African American
511   and European American women and men in different regions of the United States. Cult Div
512   Mental Health. 1998;4: 227–236. doi:10.1037/1099-9809.4.3.227

513 21. Götz M, Lemish D, Aidman A, Moon H. Media and the make-believe worlds of children:
514   When Harry Potter meets Pokémon in Disneyland. Mahwah, NJ: Lawrence Erlbaum; 2005.

515 22. Galdi S, Maass A, Cadinu M. Objectifying media: their effect on gender role norms and
516   sexual harassment of women. Psychol Women Quart. 2014;38: 398-413. doi:
517   0361684313515185.

518 23. Murnen SK, Wright C, Kaluzny G. If boys will be boys, then girls will be victims? A meta-
519   analytic review of the research that relates masculine ideology to sexual aggression. Sex
520   Roles. 2002;17: 359-375. doi: 10.1023/A:1020488928736

521 24. Flood M, Pease B. Factors influencing attitudes to violence against women. Trauma,
522   Violence Abuse. 2009; 10(2):125-142. doi: 10.1177/1524838009334131

523 25. Hayes AF. Introduction to mediation, moderation, and conditional process analysis. New
524   York: The Guilford Press; 2013.

26. Van Looy J, Courtois C, De Vocht M, De Marez L. Player identification in online games: validation of a scale for measuring identification in MMOGs. Media Psychology. 2012;15:197–221.

27. Levant RF, Rankin TJ, Williams C, Hasan NT, Smalley KB. Evaluation of the factor structure and construct validity of the Male Role Norms Inventory-Revised (MRNI-R). Psychol Men Masc. 2010;11: 25-37. doi: 10.1037/a0017637

28. Bushman BJ. Anderson CA. Comfortably numb: Desensitizing effects of violent media on helping others. Psychol Sc. 2009;20: 273-277. doi: 10.1111/j.1467-9280.2009.02287.x

29. Batson CD, Fultz J, Schoenrade PA. Distress and empathy: Two qualitatively distinct vicarious emotions with different motivational consequences. J Pers. 1987;55: 19–39. doi: 10.1111/j.1467-6494.1987.tb00426.x.

30. Wells GL, Windschitl PD. Stimulus sampling and social psychological experimentation. Pers Soc Psychol Bull. 1999;25: 1115–1125. doi:10.1177/01461672992512005

31. Carnagey NL, Anderson CA, Bushman BJ. The effect of video game violence on physiological desensitization to real-life violence. J Exp Soc Psychol. 2007;43: 489–496. doi:10.1016/j.jesp.2006.05.003

32. Sanday PR. The socio-cultural context of rape: A cross-cultural Study. J Soc Issues. 1981;37: 5-27. doi: 10.1111/j.1540-4560.1981.tb01068.x

33. Krahé B., Möller I. Longitudinal effects of media violence on aggression and empathy among German adolescents. J App Dev Psychol. 2010;31: 401-409. doi: 10.1016/j.appdev.2010.07.003

34. Gabbiadini A, Riva P, Andrighetto L, Volpato C, Bushman BJ. Interactive effect of moral disengagement and violent video games on self-control, cheating and aggression. Soc Psychol Personal Sci. 2013;5: 451-458. doi: 10.1177/1948550613509286

35. Cohen J. Defining Identification: A Theoretical Look at the Identification of Audiences with Media Characters. Mass Comm & Soc. 2001;4: 245–264. doi:10.1207/S15327825MCS0403_01

36. Lin JH. Identification matters: A moderated mediation model of media interactivity, character identification, and video game violence on aggression. J Commun. 2013;63: 682-702. doi:10.1111/jcom.12044

37. Peng W. The mediational role of identification in the relationship between experience mode and self-efficacy: Enactive role-playing versus passive observation. Cyberpsychol Behav. 2008;11: 649-652. doi: 10.1089/cpb.2007.0229

38. Goldstein NJ, Cialdini RB. The spyglass self: A model of vicarious self-perception. J Pers Soc Psychol. 2007;92: 402-417.

39. Blascovich J, Loomis J, Beall A, Swinth K, Hoyt C, Bailenson JN. Immersive virtual environment technology as a methodological tool for social psychology. Psychol Inq. 2002;13: 103-124.

40. ESRB. How much do you know about video games? ESRB, 2014; Available: http://www.esrb.org/about/video-game-industry-statistics.jsp

41. Statista. Daily time spent playing video games per capita in the United States in 2008, 2013 and 2018 (in minutes). Statista. 2015: Available: http://www.statista.com/statistics/186960/time-spent-with-videogames-in-the-us-since-2002/

42. Hasan Y, Bègue L, Scharkow M, Bushman BJ. The more you play, the more aggressive you become: A long-term experimental study of cumulative violent video game effects on hostile expectations and aggressive behavior. J Exp Soc Psychol. 2012;49: 224-227. DOI: 10.1016/j.jesp.2012.10.016

43. Bushman, BJ. Gibson B. Violent video games cause an increase in aggression long after the game has been turned off. Soc Psychol Pers Sc. 2011; 2: 29-32. doi: 10.1177/1948550610379506

44. Raney AA. Expanding disposition theory: Reconsidering character liking, moral evaluations, and enjoyment. Comm Theory, 2004;14: 348-369.

583 **Supporting Information files**

584 **S1 Fig 1 caption.** Figure 1 (for illustrative purposes only) used to measure empathy toward a

585 female victim of violence. Participants indicated how much pain they thought the girl was feeling,

586 and how much they thought she was suffering (1=*not at all* to 7=*very much*; Cronbach α=.79).

587 **S1 Fig 2 caption.** Figure 2 (for illustrative purposes only) used to measure empathy toward a

588 female victim of violence.

589

590

591