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Why do people play violent video games? Demographic, status-related, and mating-related correlates in men and women

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ABSTRACT

The numerous negative and positive consequences of playing violent video games are well-documented. Specifically, violent games improve many aspects of cognition and attention but can also increase aggression. Compared to these established effects of exposure to violent video games, very little is known about who plays violent video games and why they play them. Taking an evolutionary psychological approach to address this gap, in two studies we surveyed 1000 men and women who reported playing video games in the past 30 days. We assessed three classes of predictors of violent video game exposure: demographic, status-related, and mating-related. In both studies, women who played the most violent video games reported feeling a greater sense of mate value than women who played fewer violent video games. Women also reported being motivated to play violent video games because doing so enhanced their sense of attractiveness to romantic partners. In both studies, men reported playing more violent video games than women as did both men and women who reported higher sexual interest. These findings highlight the counterintuitive and complex motivations underlying violent video game exposure. We discuss the need for more research on who plays violent video games and why they play them.

1. Introduction

Video games are in the majority of homes and smartphones in the industrialized world (Entertainment Software Association [ESA], 2014). Parents, teachers, scholars, and public health experts are concerned about the graphic violence inherent in most popular video games (Thompson & Haninger, 2001). Although effect sizes tend to be small, hundreds of studies now show that playing violent video games can increase aggression, aggressive thoughts, and hostile feelings in children and adults (for a recent meta-analysis, see Anderson et al., 2010). In light of these potentially harmful consequences of playing violent games, we investigated who is most likely to play these games and why they are attracted to them. In two independent studies, we surveyed 1000 video game players to identify individual differences that correlate with violent video game play. Specifically, using an evolutionary psychological framework, we examined three classes of predictors: demographics, status-related variables, and mating-related variables.

1.1. Who plays violent video games? The importance of competition

Whereas the bulk of gaming research has investigated the consequences of playing violent video games, very little is known about the individual differences of the players. Studies largely demonstrate that boys and men spend more time playing video games than girls and women (Funk & Buchman, 1996; Lucas & Sherry, 2004; Möller & Krahé, 2009; Ogletree & Drake, 2007; Olson et al., 2007). Gender alone, however, doesn't explain variation in game play and choices as the percentage of women playing video games is increasing (ESA, 2014). Thus, there must be other factors that can better explain variation in video game play and choices.

A small body of research has identified challenge and competition as the leading motivations for playing video games (Yee, 2006). As violent games tend to have more intense competition, it may explain why individuals that are more motivated to compete may consider them more enjoyable and may spend more time playing them (Vorderer, Hartmann, & Klimmt, 2003). Similarly, video games are thought to satisfy the basic human needs of competence (feeling efficacious), autonomy (feeling in control), and social connectedness (Przybylski, Rigby, & Ryan, 2010). Competence and autonomy are most likely to be satisfied by playing competitive games, which tend to be primarily violent.

Violent competition has long been a part of human history. Moreover, the competitive aspect of video games makes them a close

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analogue to face-to-face competitions (just as sports are often considered ritualized combat; Lorenz, 1963). As in other primate species, intra-sexual competition has likely shaped the evolution of men's secondary sexual traits (Dixson, Dixson, & Anderson, 2005; Grueter, Isler, & Dixson, 2015) and psychological propensities to compete for status and mating opportunities (Archer, 2009; Puts, 2010). Video games, especially violent ones, may provide an outlet for psychological status seeking, and people may play more violent video games to improve their self-perceived social standing, dominance, or value as a romantic partner (known as *mate value*). For example, as players typically improve with practice, playing video games should heighten feelings of competency (Oei & Patterson, 2013; Powers, Brooks, Aldrich, Palladino, & Alfieri, 2013). Further, because of the general tendency for people to attribute wins to themselves and losses to external circumstances (i.e., the self-serving bias; Campbell & Sedikides, 1999), positive performance in competitive games has the potential to heighten self-esteem (Campbell & Sedikides, 1999). This increase in global self-esteem and competence could in turn result in a greater motivation to improve, and therefore, the self-perception that an individual is of a greater mate value.

This general idea of a relationship between preferences for violent video games and status and mate value is largely untested in the literature. However, in one notable exception, Welling, Persola, Wheatley, Cárdenas, and Puts (2013) randomly assigned heterosexual men to win or lose a violent video game competition. Relative to men that lost a competition, men that won demonstrated an increased preference for a short-term feminine romantic partner. This effect was thought to occur because winning the competition temporarily elevated participants' sense of mate value (although the authors did not measure mate value directly).

1.2. The current research

We asked survey respondents to list up to five games that they are currently playing and the amount of violence in each game, which served as our criterion variable. We then asked respondents to complete a questionnaire that assessed demographics (e.g., gender, age), mating-related predictors (e.g., self-perceived mate value, sexual interest, relationship status) and status-related predictors (e.g., dominance, intelligence). We hypothesized that people play violent video games as a means to improve their sense of social standing and mate value relative to rivals, and a desire to secure a greater number of mates. We therefore predicted that people who play violent video games should score higher on self-ratings of their own mate value and report greater sexual interest. We also predicted that violent video game players should perceive themselves to be more dominant as repeated play of violent competitive games should increase feelings of dominance (or dominant individuals are attracted to violent games). Due to gender differences in violent video game play, status/dominance, and mating strategies, we modeled all potential interactions with gender in our regression models.

2. Study 1

All research was approved by the ethics committee at UNSW Australia and was conducted in accordance with the Declaration of Helsinki. All data and the complete surveys for both studies are provided in the supplementary materialsand on github (https://github.com/latrodektus/VVGameplay/). Only respondents who reported playing video games in the past 30 days were allowed to participate.

2.1. Method

2.1.1. Participants

Five hundred people responded to the survey, which was posted on Amazon's Mechanical Turk between August 16–17, 2014 and were paid USD$1.00. Of these respondents, we removed data from those who failed at least one of two attention checks ($n = 17$),[1] had missing data for the mate value, sexual interest, or dominance questionnaires ($n = 5$), reported playing games without Entertainment Software Rating Board (ESRB) ratings ($n = 9$) and classified themselves as 'other' in relationship status ($n = 2$). The final sample consisted of 467 respondents, 158 of whom were women ($M_{age} = 30.92$, $SD = 8.51$, 18–67 years).

3. Materials

3.1. Violent video game play

Following prior research, to estimate violent video game exposure, participants were asked to list the titles of up to five games that they currently play, rate how often they play each game, and the extent of the violent content within each game (rated on 7-point scales to estimate). This allowed us to calculate a total violent video game exposure value by adding the exposure levels of each game, which was calculated by the level of violence in each game (1–7) multiplied by how often they played the game (1–7), then averaged over 5 games (e.g., Anderson & Dill, 2000; Bartholow, Bushman, & Sestir, 2006; Uhlmann & Swanson, 2004).[2] This resulted in individuals falling within a scale of 1–49, with a greater value signifying the choice to spend a greater proportion of their weekly game playing time playing violent games.

3.2. Demographics

We next asked details about the individual which included gender, age, country of residence, and four questions about relative height, weight, strength (men only), and body shape (women only). We also included a 7-point Likert scale of their sexuality (1 = attracted to men only; 7 = attracted to women only).

3.3. Status-related variables

We next asked questions about the level of education, current occupation, current earnings and expected future earnings (we averaged current and expected future earnings as both were highly correlated, $r(465) = .72$, $p < 0.0001$). We also asked 10 vocabulary questions to measure intelligence based on the General Social Survey Wordsum Vocabulary Test (see Cor, Haertel, Krosnick, & Malhotra, 2012). These questions required respondents to choose the correct meaning of a word from five options. We added intelligence as a status-related variable as intelligence can be tied to education and level of employment and earning potential (Strenze, 2007). Finally, we asked 15 questions to assess trait levels of dominance (Fabiansson, 2013).

3.4. Mating-related variables

We also asked questions about their current relationship status, how long they have been in this relationship, and the relative age of their partner. If they had a partner, we asked whether they had children, and if they did, the gender and age of their children. We asked these questions to explore whether the presence of a greater number of male or female offspring altered the preferences in the types of games being played.

We next included the 4-item Mate Value Scale to measure participants' perceived desirability as a mate (Edlund & Sagarin, 2014). The revised Sociosexuality Inventory (SOI) assessed attitudes

[1] In both studies, we added questions in the first and last third of the survey to ensure that participants were paying attention.

[2] We also independently collected the ESRB ratings of each of the games listed to provide an objective measure of violence in each game. However, we used the subjective ratings in the analyses because ESRB ratings and subjective ratings were highly correlated, $r = .79$ in Study 1 and $r = .72$ in Study 2.

towards sexuality, with higher scores indicating a greater tendency to engage in sexual relationships without emotional commitment (Penke & Asendorpf, 2008). We also included 5 items from the Conflict Tactics Scale (CTS) to assess levels of intimate partner violence directed at a current or most recent romantic partner (Straus, Hamby, Boney-McCoy, & Sugarman, 1996).

4. Results

4.1. Sample characteristics

All participants reported living in the US or Puerto Rico ($n = 1$). Most participants reported being in a long-term, monogamous relationship (62%) or being single (29%). The modal duration of participants' current relationship was 2–5 years. Ninety percent of participants reported being heterosexual, 7% bisexual, and 3% homosexual. Participants reported their height ($M = 4.34$, $SD = 1.16$) and weight ($M = 4.41$, $SD = 1.25$) as being slightly greater than average. Both values were significantly different from the scale midpoint of 4.00, $ps < 0.001$. Men reported being slightly stronger than average ($M = 4.44$, $SD = 1.17$), and significantly different from the scale midpoint of 4.00, $t(308) = 6.67$, $p < 0.001$; by contrast, women reported an average body shape ($M = 3.99$; $SD = 1.32$), that did not differ from the scale midpoint, $t < 1$. The most common occupational categories were professional (24%), transportation (18%), executive/managerial (15%), and sales (13%). For highest level of educational attainment, 35% completed high school, 42% completed university, and 10% completed a higher degree. Ninety percent of participants reported earning less than USD $75,000 per year. We did not explore the relationship between these variables and violent video game play due to the low variance in these characteristics.

4.2. Primary analyses

The correlations, descriptive statistics, and internal consistency estimates are reported in Table S1. Replicating prior work, men reported higher levels of violent video game exposure than women ($M_{men} = 19.64$, $SD_{men} = 8.38$; $M_{women} = 16.11$, $SD_{women} = 9.34$), $t(465) = 4.0$, $p < 0.0001$, $d = 0.40$. This means that men on average chose to spend relatively more time playing violent video games than women. Nonetheless, the exposure distributions overlapped between the genders even at higher exposure values (Fig. S1), suggesting that it is common for women players to spend a large proportion of their game time playing violent compared to non-violent video games.

Table 1 shows the results from the multiple regression analyses with violent video game exposure as the criterion variable (see Table S2 for the full table with effect sizes). In the interest of building a replicable knowledge base, we focus on results that were replicated in both studies. There was a significant positive relationship between sexual interest and violent video game exposure for both genders (Fig. S2), $r(465) = 0.19$, $p < 0.0001$. Participants with greater amounts of education also reported playing fewer violent video games (Fig. S3). There was also a significant positive association between mate value and the exposure to violent video games, which was qualified by a significant interaction between gender and mate value. Post-hoc tests showed that for men, there was no correlation between mate value and exposure to violent video games, $r(307) = 0.01$, $p = .83$. However, women that played more violent video games reported higher mate value than women who played fewer violent video games, $r(156) = .21$, $p = .01$ (Fig. 1). There was no effect of age, dominance, intelligence, income, or intimate partner violence on violent video game play.

4.3. Exploratory analyses

We also examined whether the number of male or female offspring for either gender could explain violent video game exposure. In this analysis, we only used individuals that were either married ($n = 290$) or recently divorced ($n = 18$) as these individuals were most likely to have children and because including individuals outside of this category resulted in a distribution heavily weighted towards zero. We examined whether exposure to violent video games was affected by the number of sons and/or daughters with an interaction of each with gender. We show that once again there was a significant effect of gender, $F(1,302) = 8.21$, $p = 0.004$, and an interaction between gender and the number of sons, $F(1,302) = 4.34$, $p = 0.038$, such that women with more sons played more violent video games than women with fewer sons. There was no interaction between the number of daughters and gender, $F < 1$, nor individual effects of sons, $F < 1$, or daughters, $F(1,302) = 1.73$, $p = 0.19$.

Table 1
Multiple regression analysis predicting violent video game play from demographic, status-related, and mating-related variables in Study 1. The model explained a significant amount of the variance in violent video game play, $R^2 = .15$, $F(32,434) = 2.48$, $p < .0001$. Coefficients are unstandardized. The measure of intimate partner violence was log-transformed to adjust for skew. The model controls for sexual orientation, relationship status, and education. $^{*}p < .05$.

Predictors	Coefficient	F-statistic	p-Value
Demographics			
Male gender	33.44	8.32	0.004*
Age	0.01	0.02	0.88
Status-related			
Trait dominance	0.52	0.66	0.42
Intelligence	−0.70	2.24	0.16
Income	1.49	1.07	0.30
Mating-related			
Mate value	1.52	2.31	0.13
Sexual interest	0.09	19.18	<0.0001*
Intimate partner violence	−0.48	1.04	0.31
Interactions with gender			
Trait dominance	−0.07	0.02	0.90
Intelligence	0.70	2.16	0.12
Income	−1.14	1.02	0.31
Mate value	−1.89	7.68	0.006*
Sexual interest	−0.02	−0.14	0.71
Intimate partner violence	−1.74	0.19	0.66

4.4. Discussion

Women who reported playing the most violent video games also reported feeling like a better "catch" to current or future romantic relationship partners. By contrast, men reported playing more violent video games than women, regardless of self-reported mate value. Study 1 also found that mothers with more sons played more violent video games than mothers with fewer sons.

5. Study 2

In Study 2, we attempted to replicate the gender × mate value interaction of Study 1. The secondary aim of Study 2 was to identify conscious mating-related motivations for playing violent video games that might mediate the interaction. Specifically, we asked whether women report playing violent games because doing so makes them feel more attractive to romantic partners.

5.1. Method

5.1.1. Participants

Five hundred people responded to the survey, which was posted on Amazon's Mechanical Turk between September 1–2, 2014 and were paid USD$0.96. Of these respondents, we removed data from those who failed at least one of two attention checks ($n = 30$), had missing data for the mate value, sexual openness, or dominance questionnaires ($n = 5$), or reported playing games without ESRB ratings ($n = 1$) and

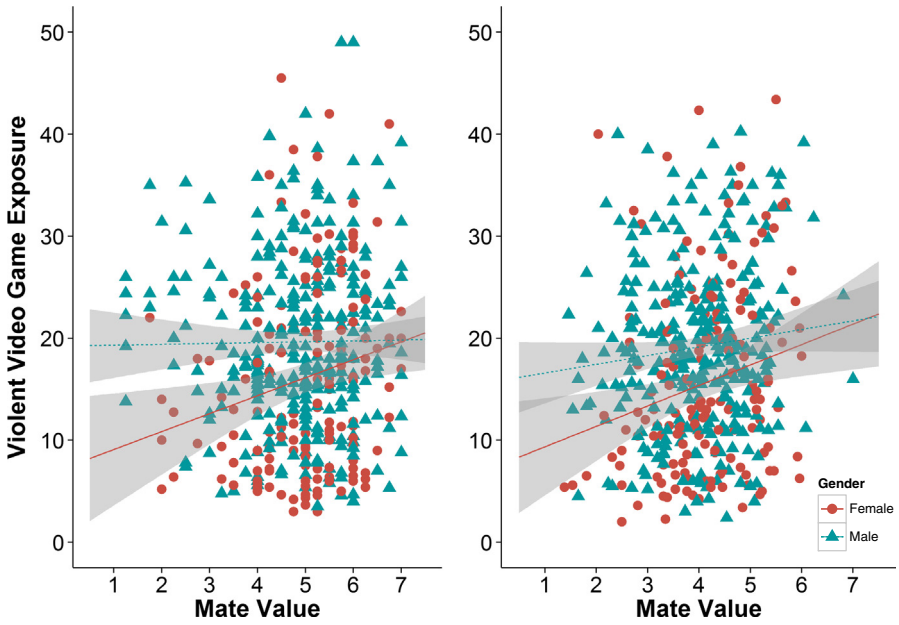

Fig. 1. Scatterplots showing the interaction between self-reported mate value and gender associated with violent video game play in Study 1 (left panel) and Study 2 (right panel). Women are red and men are blue. Shaded areas are 95% confidence intervals. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

classified themselves as 'other' in relationship status ($n = 2$). The final sample consisted of 462 respondents, 161 of whom were women ($M_{age} = 30.68$, $SD = 9.09$, 18–67 years).

6. Materials

The design of Study 2 was similar to Study 1, except that we removed the Conflict Tactics Scale as it had no association with violent video game exposure, and we removed the questions about the number of male and female offspring to maintain the questionnaire at a similar length as our goal with the replication was to more closely examine our significant relationships (below). We also added an additional 22-item mate value questionnaire to more comprehensively assess self-reported mate value, and asked four questions that explored the mating-related motivation for video game play (i.e., "Gaming makes me feel strong and sexy" and "…more attractive to the opposite sex"; 1 = does not apply to me at all, 7 = applies to me very much).

7. Results

7.1. Sample characteristics

All participants reported living in the US. Most participants reported being in a long-term, monogamous relationship (57%) or being single (36%). The modal duration of participants' current relationship was 2–5 years. Eighty-six percent of participants reported being heterosexual, 9% bisexual, and 5% homosexual. Participants reported their height ($M = 4.27$, $SD = 1.08$) and weight ($M = 4.37$, $SD = 1.25$) as being slightly greater than average. Both values were significantly different from the scale midpoint of 4.00, $ps < .001$. Men reported being slightly stronger than average ($M = 4.38$, $SD = 1.20$), and significantly different from the scale midpoint of 4.00, $t(300) = 5.53$, $p < .001$; by contrast, women reported an average body shape ($M = 3.98$; $SD = 1.33$), that did not differ from the scale midpoint, $t < 1$. The most common occupational categories were professional (22%), transportation (21%), executive/managerial (13%), and sales (13%). For highest level of educational attainment, 33% completed high school, 45% completed university, and 8% completed a higher degree. Ninety percent of participants reported earning less than USD $75,000 per year. As in Study 1, we averaged both current and expected future income because they were highly correlated, $r(460) = 0.73$, $p < 0.0001$.

7.2. Primary analyses

The correlations, descriptive statistics, and internal consistency estimates are reported in Table S3. As in Study 1, men reported higher levels of violent video game exposure than women ($M_{men} = 19.13$, $SD_{men} = 8.21$; $M_{women} = 15.60$, $SD_{women} = 9.15$), $t(460) = 4.10$, $p < 0.0001$, $d = 0.41$; however, there was once again an overlap in exposure to violent video games in both genders even at higher levels of exposure (Fig. S1).

Table 2 shows the results from the multiple regression analyses with violent video game exposure as the criterion variable (See Table S4 for the full table with effect sizes). As in Study 1, participants higher in sexual interest also reported playing more violent video games than participants lower in sexual interest (Fig. S2), $r(460) = 0.16$, $p = 0.0008$. The relationship between education level and violent video game exposure was not as strong in Study 2, as only individuals with a primary education reported playing more violent video games than individuals with higher levels of education (Fig. S3). Once again, there was a significant positive association between mate value and the exposure to violent video games, which was qualified by a significant interaction between gender and mate value (Fig. 1). Also replicating Study 1, post-hoc tests showed that for men, the correlation between mate value and exposure to violent video games was not significant, $r(299) = .10$, $p = .08$. However, women who played more violent video games reported higher mate value than women who played fewer violent video games, $r(159) = .21$, $p = .008$ (Fig. 1). There was no effect of dominance, intelligence, or income (Table 2); however, there was an effect of age with older individuals playing fewer violent video games $r(460) = -0.19$, $p < 0.0001$.

The measure of mating motivation mirrored the pattern observed for the mate value measure. Specifically, there was a significant gender × mating motivation interaction, such that there was no correlation between mating motivation and violent video game exposure for men, $r(299) = 0.07$, $p = 0.20$, but there was a strong, positive correlation for women, $r(159) = 0.47$, $p < 0.0001$ (Fig. 2).

Table 2
Multiple regression analysis predicting violent video game play from demographic, status-related, and mating-related variables in Study 2. The difference between Model 1 and 2 is that Model 2 included self-reported motivation to play games in order to appear more attractive to romantic partners as an explanatory factor. Coefficients are unstandardized. The models control for sexual orientation, relationship status, and education.* $p < .05$.

	Model 1	$R^2 = .15$		Model 2	$R^2 = .21$	
Predictors	Coefficient	F-statistic	*p*-Value	Coefficient	F-statistic	*p*-Value
Demographics						
Male gender	3.99	9.80	0.002*	8.97	14.20	0.0002*
Age	−0.16	11.82	0.0006*	−0.14	9.89	0.002*
Status-related						
Trait dominance	−0.13	0.38	0.54	−0.18	0.40	0.53
Intelligence	0.08	0.25	0.62	0.29	0.27	0.61
Income	0.25	0.65	0.42	0.35	0.69	0.41
Mating-related						
Mate value	2.17	7.94	0.005*	0.86	8.44	0.004*
Sexual interest	0.03	9.50	0.002*	0.004	10.10	0.002*
Mating motivation	–	–	–	5.91	18.75	<0.0001*
Interactions with gender						
Trait dominance	−0.27	0.16	0.69	−0.20	0.09	0.77
Intelligence	0.02	0.04	0.84	−0.10	0.093	0.92
Income	−0.41	0.49	0.49	−0.40	0.41	0.52
Mate value	–	4.35	0.04*	−0.73	3.32	0.07
Sexual interest	0.02	0.02	0.88	0.04	0.0069	0.93
Mating motivation	–	–	–	−4.86	11.50	0.0007*

7.3. Mediation analyses

We conducted mediation analyses to determine whether being motivated to play violent games to feel more attractive to romantic partners would increase the amount of violent video game exposure, which would increase self-reported mate value. To test for the conditional indirect effect, we included gender as a moderator. We used Hayes (2013) PROCESS Model 8 with 50,000 resamples. Results indicated that there was indeed a significant conditional indirect effect, estimate = −.014 (*SE* = .004; 95% CI −.023, −.007). Post-hoc tests revealed that for women, there was a significant indirect effect, estimate = .017 (*SE* = .004; 95% CI .010, .025), but not for men, estimate = .003 (*SE* = .002; 95% CI −.001, .007). Results are displayed in Fig. 3. We also tested the reverse model in which mate value mediated the effect of mating motivation on violent video game exposure. This model showed no significant mediation for women or men.

7.4. Discussion

Study 2 replicated and extended the main finding of Study 1. Specifically, women (but not men) who reported playing the most violent video games also reported a higher sense of mate value. As in Study 1, men reported more violent video game exposure, regardless of mate value. Study 2 found that women who reported that they played video games to feel sexier and more attractive to romantic partners did indeed play more violent video games. Moreover, mediation analyses showed that playing violent video games manifested itself in a higher sense of mate value for women.

8. General discussion

Video games are undeniably part of global culture. If we are to understand which players are most at risk for aggression, addiction,

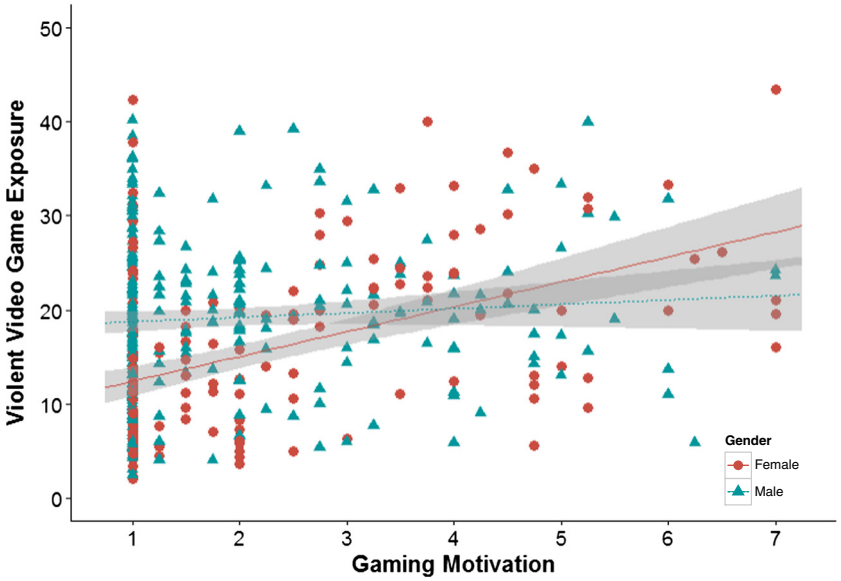

Fig. 2. Scatterplot showing interaction between mating motivation to play violent video games and gender with the relationship with violent video game exposure in Study 2. Women are red and men are blue. Shaded areas are 95% confidence intervals. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

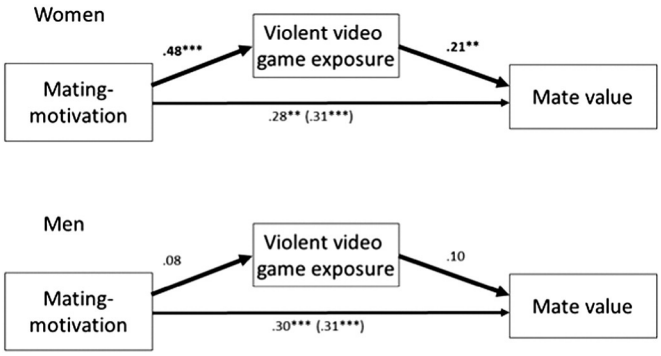

Fig. 3. Mediation analyses showing that the effect of wanting to play video games to feel more attractive to romantic partners on perceived mate value was mediated by violent video game play. This mediation was only significant for women. The reverse model with mate value mediating the effect of mating motivation on violent video game exposure was not significant for either gender. Values in parentheses are zero-order correlations. Coefficients are standardized. $^{**}p < .01$; $^{***}p < .001$.

and other adverse consequences of playing violent video games, research is needed to determine who is most motivated to play them and why. Here we show that the motivations behind the games people choose to play are complex, extending beyond simple entertainment value.

Our findings dovetail nicely with recent theoretical and empirical work on motivation for playing video games (Olson et al., 2007, 2010). For instance, it has been suggested that violent and non-violent video games are so appealing because they satisfy the basic human needs of competence (feeling efficacious), autonomy (feeling in control), and social connectedness (Przybylski et al., 2010). Our data go one step further in that playing violent video games may enhance social connectedness by improving women's sense of mate value (Studies 1 & 2).

However, the benefits of violent video game exposure must be tempered by the risk for aggression and hostility that can arise after playing these games (Anderson et al., 2010). For instance, although men and women differed in their average exposure to violent video games, we found that there was a substantial overlap between the genders even at higher exposure levels (Fig. S1). Thus, at least among players, the preference for men to play more violent video games than women may be smaller than previously assumed. Indeed, the gender differences we observed were in the small-to-moderate range (Cohen, 2013). Furthermore, a recent meta-analysis found that violent video games increase aggression equally in men and women (Anderson et al., 2010). Thus, exposure to violent video games also has the potential to pose a risk to women, as well as those around them.

Our results suggest that the drive to play violent video games is strongly associated with sexual perceptions. Participants who scored higher in sexual interest and openness were more likely to play violent video games. Because increasing the number of sexual partners necessitates being more sexually competitive and desirable, there may be a strong association with playing more violent, competitive video games as this allows the practice of competitive behaviors which may enhance the perception of mate value. Our research, however, cannot determine whether individuals that play more violent games have a desire to increase their sexual activity or whether individuals with greater sexual activity are drawn to competitive, violent games. Our examinations into self-perceived mate value and gaming motivation, however, do provide some insight into this relationship. The mediation analyses showed that women who are motivated to play more violent video games to appear more attractive to romantic partners actually do play more violent video games, which in turn was associated with feeling like a higher quality romantic partner. As the reverse mediation model was not significant, these findings suggest a causal role of playing violent video games in enhancing mate value, specifically for women. Future work should experimentally manipulate violent video game play and assess changes in mate value over time.

One mechanism underlying the relationships between violent video game exposure and self-perceived status and mate value is the interactive and immersive nature of virtual competitions. For example, virtual competitions can elicit neural (Hosokawa & Watanabe, 2012; Kätsyri, Hari, Ravaja, & Nummenmaa, 2013), physiological (Ivarsson, Anderson, Åkerstedt, & Lindblad, 2013; Oxford, Ponzi, & Geary, 2010), and behavioral responses (Ewoldsen et al., 2012; Greitemeyer & Mügge, 2014) that mirror those of real competitions. Of particular interest, however, is that in contrast to athletic competitions, video game competitions rely on cognitively-mediated behavioral responses that do not require physical superiority. Repeated play improves these cognitive abilities as studies demonstrate that playing video games improves working memory, auditory and visual processing, and fine motor skills (Oei & Patterson, 2013; Powers et al., 2013). Thus, we suggest that the cognitive benefits of repeated violent video game exposure and greater wins in a competitive scenario can improve perceptions of an individual's ability and self-esteem through the self-serving bias (Campbell & Sedikides, 1999). Individuals that perceive themselves in an overly favorable manner should therefore have enhanced feelings of status and mate value.

Interestingly, the same relationship between exposure to violent video games, mate value, and motivation to attract romantic partners was not seen in men. This begs the question of why exposure to violent video games correlates with women's self-perceived mate value, but not men's. One possibility is that direct competitions are more common between men than between women, and men and women have very different means of navigating competitions and social hierarchies (Archer, 2009; Vaillancourt & Sharma, 2011; Wilson & Daly, 1985). Because a man's mating success is at least partly determined by his social status (Muller & Mazur, 1997; Hill et al., 2013), men generally have an understanding of where they fall in a social hierarchy and their potential mating success (Archer, 2009; Puts, 2010). Combined with the fact that men generally overestimate their abilities and performance (Beyer & Bowden, 1997), playing violent video games may not correlate with men's self-perceived mate value, but instead may alter their expectations of attaining higher quality mates (Welling et al., 2013).

Women, in contrast, compete indirectly by decreasing a rival's social status (Vaillancourt & Sharma, 2011), particularly via reputational derogation among peers in order to ostracize a rival (Vaillancourt, 2013). Additionally, women are generally more likely than men to underestimate their abilities and performance (Beyer & Bowden, 1997). The introduction of video games as a means of competition allows women to compete on potentially more equal footing with men, and as a result, may allow women to better ascertain their performance relative to men. This increase in gender-comparison in intersexual competition in video games may be responsible for the shift in the self-perception of mate value specifically in women; this is despite the fact that a woman's mate value is largely determined by her physical appearance (Buss & Schackelford, 2008). This requires further exploration as previous studies examining competitions demonstrate men outperform women in mixed competitions, even when no differences in ability exist (Gneezy, Niederle, & Rustichini, 2003; Gneezy & Rustichini, 2004).

We found that women with sons played more violent video games than women with daughters or men with children of either sex. We see two possibilities for this association. First, given that violent video game play in childhood is male biased (Olson et al., 2007), mothers may participate in violent video games to socially bond with their sons. The immediate positive feedback from playing with their sons may further explain the positive associations we found between women's self-perceived mate value ratings and greater exposure to violent video games. In contrast, women may be driven to play more violent video games for the opportunity to practice more competitive behaviors in a household with a greater proportion of males. This may allow mothers to better ascertain their mate value when surrounded

by other competitive males. Our current data do not allow us to explore this relationship directly, but future studies exploring this relationship would be informative.

Another striking finding is that the exposure towards violent video games was not correlated with aggressive behavior and dominance. Specifically, neither the intimate partner violence scale in Study 1, nor the dominance scale in either study correlated with violent video game exposure. However, the aggression measure in the present research was a selection of fairly extreme acts of intimate partner violence. Furthermore, the dominance scale largely measured the tendency to take charge in interpersonal situations, rather than striving to be on top of the hierarchy, per se. Future studies could benefit from using more conventional measures of trait aggressiveness and dominance to determine whether there are any correlations between those measures and violent video game exposure.

9. Conclusions

Our results highlight the necessity to step back and question why people are motivated to play video games in general, and violent games in particular. Although there are many studies that demonstrate increases in aggression after playing violent video games (Anderson et al., 2010), the interpretation and implications of the data remain controversial (e.g., Ferguson & Kilburn, 2010). Furthermore, studies exploring the effect of cooperative violent video games demonstrate a positive effect on prosocial behavior and reduced prejudice (Adachi, Hodson, Willoughby, & Zanette, in press; Greitemeyer & Osswald, 2010). We found here that gaming motivations are complex, and this complexity may be adding to the noise in studies examining their effects on aggression. In these studies, we identified two previously unexamined motivations—enhanced mate value and sexual interest—as predictors of violent video game exposure. Perhaps further exploring the relationship between gaming motivation and choice may help uncover why certain individuals become addicted to video games more easily than others. Gentile et al. (2011) found that approximately 9% of youth engaged in pathological video gaming. That study reported that lower social competence predicted video game addiction. Our results suggest that addicted individuals may be striving for social competence and connectedness, but may be spending too much time gaming to accomplish the goal of effectively connecting with others.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.paid.2015.06.018.

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