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Intense acts of violence during video game play make daily life aggression appear innocuous: A new mechanism why violent video games increase aggression

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HIGHLIGHTS

- Two experiments address a new mechanism why violent video games increase aggressive behavior.
- Playing violent video games alters the perception of one's own aggressive behavior.
- This biased perception in turn accounts for the violent video game effect.

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ABSTRACT

Computer players often deny that playing violent video games makes them aggressive, which is in contrast to the findings of a recent comprehensive meta-analysis. The present research examines whether comparison processes between the players' intense acts of violence in a video game and their comparatively harmless aggressive behavior in daily life not only account for this apparent discrepancy but also underlie the effect of playing violent video games on aggressive behavior. In fact, two experiments reveal that playing a violent video game leads to a bias in the perception of what counts as aggressive, which in turn evokes aggressive behavior.

Introduction

Empirical investigations have shown that playing violent video games is associated with an increase in aggressive behavior. The most comprehensive meta-analysis so far (Anderson et al., 2010) found that violent video game exposure significantly increases aggressive thoughts, hostile affect, and aggressive behavior. Although effect sizes are only small to medium and some studies fail to find that violent video games cause aggression (e.g., Adachi & Willoughby, 2011), it appears that individuals who frequently play violent video games become more aggressive. However, if one asks avid computer players whether violent video games make them aggressive, you will most likely get a definite "no" (Bushman, 2012). I argue that comparison processes between the players' behavior in a video game and their behavior in daily life account for this apparent discrepancy. In many violent video games, the player uses guns and missiles to kill as many game characters as possible. Relative to those intense acts of violence, daily life aggressive behavior appears to be harmless. That is, after causing serious injury and death during video game play, acts such as shouting at or shoving others are perceived as relatively non-aggressive. In contrast, someone who does not play violent video games is more likely to perceive daily life aggression as such it is.

What is more important: The violent video game player's biased view of what counts as aggressive may explain why playing violent video games increases aggression. Most individuals restrain themselves from yielding violent impulses. However, when an impulse is perceived as relatively harmless, the impulse is less likely to be stifled. For instance, a blow in a real-life argument appears to be innocuous compared to killing (during video game play) and thus one does not inhibit the impulse to perform the blow. Taken together, the comparison approach suggests that performing intense violent acts during video game play leads to a bias in the perception of the aggressiveness of one's subsequent behavior. This biased perception in turn should increase the likelihood of aggressive behavior.

Previous research into why playing violent video games increases subsequent aggressive behavior has mainly highlighted the role of priming existing knowledge structures. For instance, playing violent video games increases the accessibility of antisocial thoughts, which in turn evoke aggressive behavior (Anderson & Dill, 2000; Anderson et al., 2004). Both the present comparison and the priming approach suggest that playing violent video games increases subsequent aggressive behavior. In terms of underlying processes, however, the comparison approach and the priming mechanism differ. According to the comparison approach, after violent video game play one's own aggressive behavior

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should be viewed as less aggressive. According to the priming mechanism, stimuli are more likely to be interpreted as an aggressive cue after playing violent video games (Kirsh, 1998; Srull & Wyer, 1979) and thus daily life aggressive behavior should be perceived as *more* aggressive. I will return to the priming perspective in the Discussion of Experiment 1 as well as the General Discussion.

To sum up, the present two experiments examine the comparison prediction that playing violent video games decreases the perception of one's own daily life aggressive behavior being aggressive. Experiment 2 also examines whether perceptions of what counts as aggressive underlie the effect of playing violent video games on aggressive behavior.

Experiment 1

In Experiment 1, participants played a violent video game or a neutral video game. About half of the participants were asked to imagine that they performed a wide spectrum of daily-life aggressive behaviors. For each behavior, they indicated its aggressiveness. To examine whether playing violent video games also affects the perception of aggressive behavior shown by others, the remaining participants rated the same behaviors but performed by someone else. When judging other persons, the self plays an important part (Dunning & Hayes, 1996). For instance, people's assessment of another person's athleticism depends in part on their own athletic activity (Dunning & Cohen, 1992). Importantly, however, the impact of video game play on perceptions of aggressiveness should be more pronounced for the player's own behavior than for behavior performed by others. Research on social comparison has shown that individuals are particularly likely to compare themselves with others who are similar to them (Wood, 1989) and who are viewed as relevant to the self (Lockwood & Kunda, 1997). Because there is nothing more similar or relevant to the self than the own person, one's behavior in a video game should be more likely to serve as a comparison standard for one's own subsequent behavior than for others' behavior (Higgins, 1996), and thus playing a violent (relative to a neutral) video game should lead players to perceive their daily life aggressive behavior to be particularly non-aggressive.

Method

Participants, procedure, and materials

Participants were 82 adults (61 women, 21 men, mean age: 21.9 years). As in previous research (Greitemeyer, Osswald, & Brauer, 2010), participants learned that they would take part in two unrelated studies, the first study about the enjoyment factor of video games, the second study about impression formation. Then, participants played a randomized assigned violent (Counterstrike, Trooper Assassin) or neutral (Super Bubbles, Penguin) video game. To make sure that any findings were not due to specific features of the particular video games employed, two violent and two neutral video games were used.[1] After 15 minutes, the experimenter explained that the game session was over, and participants responded to two items measuring their liking of the video game (Cronbach's $\alpha = .97$), three items measuring perceived difficulty of the video game (Cronbach's $\alpha = .78$), and two items measuring excitement properties of the video game (Cronbach's $\alpha = .49$). These items were assessed on Likert-type scales from 1 (*not at all*) to 7 (*very much*). To assess mood, participants indicated how they feel at the moment. The scale was from 1 (*bad*) to 7 (*good*). Such a one-item mood measure has been used in previous studies on affective forecasting (e.g., Greitemeyer, 2009). Afterwards, they were told that the first study was over.

To measure perception of daily life aggressive behavior, I adapted a procedure by Matlock and Aman (2011). Participants read 52 aggressive behaviors that were either shown by them (e.g., "I shove or push others") or by someone else (e.g., "Someone shoves or pushes others"). For each behavior, participants indicated to what extent this behavior can be characterized as being aggressive, on a scale from 1 (*not at all*) to 9 (*very much*). These ratings were highly correlated (Cronbach's $\alpha = .99$) and were thus pooled in a perceived aggressiveness scale. Finally, participants were thanked and asked what they thought the study was about. None of the participants noted the hypothesis that playing violent video games affects the perception of daily life aggressive behavior. The same applies to Experiment 2.

Results and discussion

The pattern of findings was similar across the two violent and two neutral video games so the data were collapsed. When testing a priori predictions, an overall analysis of variance fails to provide an adequate statistical test of possible mean differences across conditions. Instead, planned comparisons are more adequate to answer specific research questions (Rosenthal & Rosnow, 1985; Steiger, 2004). Therefore, when examining whether one's own behavior after playing a violent (relative to a neutral) video game is perceived as particularly nonaggressive, planned contrasts were performed on the data. In fact, participants who played the violent video game perceived their daily life aggressive behavior as being less aggressive ($M = 4.23$, $SD = 2.40$; contrast weight: 3) compared to participants who played the violent video game and rated others' behavior ($M = 6.26$, $SD = 0.87$; contrast weight: -1), participants who played the neutral video game and rated their own behavior ($M = 5.40$, $SD = 2.12$; contrast weight: -1), and participants who played the neutral video game and rated others' behavior ($M = 6.17$, $SD = 1.07$; contrast weight: -1), $t(78) = 3.73$, $p < .001$, $d = 0.84$. In contrast, no significant orthogonal contrast was found when comparing the violent video game/others' behavior condition (contrast weight: 2) with the neutral video game/own behavior condition (contrast weight: -1) and neutral video game/others' behavior condition (contrast weight: -1; violent video game/own behavior condition received the contrast weight 0), $t(78) = 1.00$, $p = .318$, $d = 0.36$. Finally, no significant orthogonal contrast was found when comparing the neutral video game/own behavior condition (contrast weight: 1) with the neutral video game/others' behavior condition (contrast weight: -1; violent video game/own behavior condition and violent video game/others' behavior condition both received the contrast weight 0), $t(78) = 1.45$, $p = .151$, $d = 0.46$. These findings are illustrated in Fig. 1.[2]

Playing the violent video game ($M = 4.56$, $SD = 1.29$) led to more negative mood scores than playing the neutral video game ($M = 5.02$, $SD = 1.06$), but the difference did not achieve traditional levels of statistical significance, $t(80) = 1.77$, $p = .081$, $d = 0.39$. Liking of the violent video game ($M = 2.32$, $SD = 1.27$) was lower than liking of the neutral video game ($M = 4.40$, $SD = 1.53$), $t(80) = 6.65$, $p < .001$, $d = 1.48$. Moreover, the violent video game was perceived as being

[1] In a pilot test ($N = 114$), participants played either one of the violent or one of the neutral video games and responded to the question how violent the content of the video game was (among other items that are not relevant for the present context), using a scale from 1 (*not at all*) to 7 (*very much*). The content of the violent video games ($M = 5.06$, $SD = 1.53$) was perceived as being more violent than the content of the neutral video games ($M = 1.06$, $SD = 0.31$), $t(112) = 18.34$, $p < .001$, $d = 3.62$. There were no significant differences between the two violent video games and between the two neutral video games, respectively.

[2] As just noted, planned comparisons are more adequate than an overall analysis of variance (ANOVA) to test a priori predictions. For the sake of completeness, ratings of perceived aggressiveness were also subjected to a 2 (video game condition: violent vs. neutral) × 2 (person's behavior: own vs. other) ANOVA. The ANOVA revealed a main effect of person's behavior, $F(1, 78) = 13.09$, $p = .001$, $\eta^2 = .14$. Own behavior ($M = 4.87$, $SD = 2.30$) was perceived as being less aggressive than behavior of other's ($M = 6.21$, $SD = 0.96$), which illustrates a self-serving bias (Alicke, 1985). In contrast, neither the main effect of video game condition, $F(1, 78) = 1.93$, $p = .169$, $\eta^2 = .02$, nor the interaction between video game condition and person's behavior was significant, $F(1, 78) = 2.61$, $p = .110$, $\eta^2 = .03$.