

Trait Aggressiveness and Aggressive Behavior: The Simultaneous Influence of Contextual Variables

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Objective: The present research examined whether trait aggressiveness was more associated with aggressive behavior in relevant situations (playing a *high-violence video game* as compared to a *low-violence video game*) and when participants had an agent (perpetrator) rather than a victim role. **Method:** Two studies were conducted with female undergraduate students. In Study 1, female participants first reported their level of trait aggressiveness. After completing the scale, participants were randomly assigned to a behavioral manipulation of the agent or victim role that required participants to either give or receive noise blasts. Afterward, they were randomly assigned to play a high- or low-violence video game. Finally, we assessed a measure of aggression as the dependent variable. Study 2 used a similar design and procedure and was intended to generalize the results to behavioral intentions of aggression using a priming task of the role manipulation through an imagination task. **Results:** Across two studies, playing a high-versus low-violence video game moderated the relationship between trait aggressiveness and aggressive behavior only when female participants were cast in a role relevant to the trait (agent) but not when the role was less relevant to trait aggressiveness (victim). **Conclusions:** Trait aggressiveness was most predictive of aggressive behavior when female participants adopted an agent (perpetrator) role and also played a high-violence video game. This research supports the idea that women acted on their traits more when the situation and the role are more relevant to the trait, because the trait seems like a more valid basis of behavior.

Keywords: social roles, video games, aggressiveness, violence, personality

The present studies examine the simultaneous influence of several contextual variables on the role of trait aggression in undergraduate women's aggressive behavior in a laboratory paradigm. In the following sections, we first describe research in which trait aggressiveness is revealed as a key variable that is a characteristic of the person that produces aggressive behavior. Then, we describe a variable related to the situation (playing high or low violent video games) that can moderate the link between trait aggressiveness and aggressive behavior. Finally, we rely on the agent versus victim roles as another element of the situation that makes traits a more relevant guide to behavior (Krahé, 2020). Taken together, we propose that some situations (i.e., playing *high-violence video games*) and roles (i.e., taking an *agent* role) are more likely to activate relevant traits (trait aggressiveness) as a valid guide to act (aggressive behavior) than other situations (i.e., playing *low-violence video games*) and roles (i.e., being in a *victim* role). We expect that low-violence situations (playing low-violence video games) will be relatively less likely to facilitate

the activation and usage of trait aggressiveness than high-violence situations, and thus the trait aggressiveness scale will be relatively less predictive of behavior in those circumstances regardless of the role (agent or victim). Similarly, we expect that taking on a victim role will be less likely to facilitate the activation of trait aggressiveness than an agent role, and thus trait aggressiveness will be less predictive in this role regardless of the aggressiveness of the situation.

Aggressive Personality and Aggression

Over the last 25 years, the most well-studied individual-difference variable within the domain of aggression research is trait aggressiveness (Allen & Anderson, 2017; Bushman, 2016). In 1995, Bushman showed that both male and female participants scoring higher on a validated trait aggressiveness questionnaire, the Buss-Perry Aggression Questionnaire (BPAQ; Buss & Perry, 1992), were more attracted to media violence, scored higher in aggressive affect, and displayed a greater number of aggressive thoughts and behaviors. In another example showcasing the predictive validity of this trait aggressiveness scale, both male and female participants completed the BPAQ and then were asked to allocate the amount of hot sauce they wanted another person to receive as part of a competitive task. The BPAQ significantly predicted the amount of hot sauce participants gave to confederates (Lieberman et al., 1999). In sum, most prior research has found that both male and female participants who score higher in their aggressive personality show more aggressive behavior (Bettencourt et al., 2006), have more aggressive-

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related affect, attitudes, and cognitions (Bushman, 1996), and also consume more violence (Lemmens et al., 2006).¹

Research has identified a variety of personal and situational moderators of the relationship between aggressive personality and aggressive outcomes (e.g., aggression affect, cognition, behavior), including the metacognitive confidence with which people respond to the items on the scale (Santos et al., 2019), and the perceived malleability associated with the trait (Yeager et al., 2013). Trait aggressiveness has been found to be more capable of predicting aggressive outcomes for individuals who are sure that they are aggressive, and for those who perceive that their standing on this trait is fixed. The goal of the present research is to contribute to this body of knowledge by investigating to what extent aggressive outcomes can be predicted in female participants by the combined influence of the situation involved (i.e., playing a high- vs. low-violence video game) and the role assumed prior to the game (agent vs. victim).

Moderating the Trait–Behavior Link: Violent Video Games

Playing violent video games is a key variable that can moderate the relationship between trait aggressiveness and aggressive behavior (Mathur & VanderWeele, 2019; Prescott et al., 2018). Prior literature has shown that the impact of trait aggressiveness on aggressive behavior is higher for people who report playing violent video games more often as part of their regular life (Anderson & Dill, 2000; Bartholow et al., 2005; Lemmens et al., 2006; Markey & Markey, 2010; Uhlmann & Swanson, 2004), and for participants randomly assigned to play a violent (vs. nonviolent) video game in the lab (Anderson & Dill, 2000; Arriaga et al., 2006; Bartholow et al., 2005). Given our focus on women participants in this research, it is important to note the sample composition of prior studies. For instance, the work of Bartholow et al. (2005) and Lemmens et al. (2006) used only male participants, whereas Anderson and Dill (2000), Arriaga et al. (2006), Markey and Markey (2010), and Uhlmann and Swanson (2004) used both male and female.

Regarding whether gender moderated their results, Markey and Markey (2010) and Uhlmann and Swanson (2004) did not find that including gender as a factor affected their findings. However, other authors reported gender differences in their results (Arriaga et al., 2006). For example, Anderson and Dill (2000) found that the relationship between playing violent video games and aggressive behavior was stronger for men as compared to women, although the effect for women was also significant. Taken together these mixed results, one might expect no gender differences or, if these differences emerged, one might expect the effects to be stronger for men than for women. Examining our hypothesis of the simultaneous impact of contextual variables on a female sample is, therefore, a more conservative and constringent test. In an example of the moderating role of violent video games in the lab, Arriaga et al. (2006) measured trait aggressiveness and then randomly assigned participants to play a violent or nonviolent video game. State hostility was used as the dependent measure in this study. Results indicated that trait aggressiveness was more associated with higher state hostility in the violent (vs. nonviolent) video game conditions. They also showed that women had higher heart rate and skin conductance level when they played violent video games as

compared to men, but no gender effects were found for state hostility. Thus, the predictive validity of trait aggressiveness on the aggression outcome was moderated by the type of video game played.

Although this interaction between trait aggressiveness and aggressive behavior has been replicated several times (see Anderson & Dill, 2000; Arriaga et al., 2006; Bartholow et al., 2005; Gentile et al., 2004; Giumetti & Markey, 2007; Saleem et al., 2012), there are also some cases in which the interaction was not significant (Anderson et al., 2004; Carnagey et al., 2007; Gentile et al., 2009; Konijn et al., 2007). For instance, Anderson et al. (2004) measured trait aggressiveness and then randomly assigned both male and female participants to play either a violent or a nonviolent video game. Next, all participants played a competitive reaction time game in which they could punish their opponent by delivering a noxious blast of white noise (the aggression outcome). Although results showed a main effect of trait aggressiveness on aggressive behavior, no moderation by type of video game played was found. One possibility explored in the current research is that perhaps the video game did not produce the expected effects because some people naturally adopted an agent role, whereas others adopted a victim role.

Specifically, the mixed results in prior research suggest the possibility of an unrecognized moderator variables that might help predict why some researchers have found an interaction between trait aggressiveness and violent (vs. nonviolent) video games, whereas others have not. One potential variable not previously considered is the role adopted by participants. In the present research, we propose that making salient an agent versus a victim role prior to the game can further moderate the effects uncovered in prior research. That is, as explained further shortly, we argue that the previously found interaction between playing violent versus nonviolent games and trait aggressiveness in predicting aggressive actions will occur mostly when people have an agent role made salient. The interaction will not occur, or be reduced, when a victim role is made salient.

Under What Conditions Is the Trait–Behavior Link Moderated by Violent Video Games

As just mentioned, previous findings have presented mixed results regarding the moderating role of violent video games on the trait aggressiveness–aggressive behavior link. We suspect that the role made salient to participants prior to the game can shed new light by identifying a moderating condition under which this relationship is more or less likely to occur. Thus, the present research tested the hypothesized moderating factor of role (agent vs. victim) on the relationship between trait aggressiveness and violent video games in predicting aggressive actions. Our assumption is that trait aggressiveness would be more of a valid basis to predict aggressive behavior when the situation matters a great deal for the trait (e.g., playing a high-violence video game) compared to

¹ Other individual-difference variables have been linked to the prediction of aggressive outcomes (Coie & Dodge, 1998; Tuente et al., 2019). In the present research, we focus on trait aggressiveness as the key personality variable because it is the one most studied in this context (Allen & Anderson, 2017; Bushman, 2016).

a situation that matters much less (e.g., playing a low-violence video game), but only when the situation makes relevant traits a valid basis to guide behavior (i.e., when adopting an agent role). The prediction is that playing violent video games when an agent role is made salient prior to the game will activate trait aggressiveness as a whole (regardless of whether people score high or low) and that is why the scale will be an overall better predictor of aggressive behavior. That is, trait aggressiveness was expected to predict aggressive behavior most strongly when an agent role was made salient and a violent video game was played. It is under these conditions that people would be most likely to access their own level of trait aggressiveness, which could then be used to guide subsequent aggressive behavior.

This approach is in line with previous theoretical models that encompass both the importance of the individual and the situation. For example, the general aggression model (Anderson & Bushman, 2002; Anderson & Dill, 2000) aims to explain the relationships between violent video game exposure and aggressive cognitions, attitudes, and behaviors. This model is conceptualized as a “multi-stage process by which dispositional (e.g., aggressive personality) and situational (e.g., video game play) input variables lead to aggressive behavior by influencing several related internal states and the outcomes of automatic and controlled appraisal (or decision) processes” (Anderson & Dill, 2000, p. 773). Therefore, considering the person along with the simultaneous influence of situational variables is compatible with models of aggression, highlighting the importance of considering both person and situation in combination when examining aggressive behavior.

Overview of the Present Research

In the present research, we explore whether people rely on their traits more when those traits are a valid basis for determining action. Specifically, we examine to what extent trait aggressiveness is more likely to predict aggressive outcomes when the person is put in situations (playing a violent video game) and in roles (being the agent of aggression) that are relevant for that trait (a valid basis) rather than when the situation and/or the role are less relevant to the trait (a less valid basis). We focused exclusively on female participants in our research. Study 1 examined to what extent a situation that is relevant to a participant’s aggressive personality can help increase the predictive validity of trait aggressiveness on aggressive behavior and whether that effect is more likely to emerge in the agent as compared to the victim role. That is, given the presence of mixed results in previous research, the first study was designed to replicate the interaction between trait aggressiveness and playing violent video games by manipulating the conditions predicted to facilitate the emergence of such an interaction effect (being the agent or the victim of the action). Importantly, Study 1 used a behavioral induction for the roles, requiring the participant to serve as the agent (giving noise blasts) or the victim (receiving the noise blasts from others) before playing the video game. In addition, we assessed the effect on an actual measure of aggression. Study 2 used a similar design and procedure and was intended to generalize the results to other common dependent variables in this literature (behavioral intentions of aggression) and procedures (priming the roles through an imagination task).

As noted, the main goal of the current research was to examine whether the consistency between trait aggression and aggressive behavior is greater when female participants are placed in the situations and roles that are relevant (vs. irrelevant) for the trait of aggressiveness (i.e., situations and roles that make one’s level of trait aggressiveness a valid basis for determining action). Importantly, by incorporating a manipulation of role in this research, we sought to identify evidence of process regarding the activation of the trait as a function of the relevance of the situation (making the situation more or less relevant for the trait to be used). In accord with the literature reviewed, we made the following hypothesis:

Hypothesis 1: The role made salient prior to playing a video game (agent vs. victim) will moderate the relationship between trait aggressiveness and type of video game (high vs. low in violence) in determining aggressive behavior.

Study 1

In sum, the goal of the first study was to provide an initial examination of the conditions that facilitate the emergence of the interaction between trait aggressiveness and violent video games on aggression. As noted, we argue that trait aggressiveness should predict aggression outcomes to a greater extent when people are in situations with high relevance to the trait (playing a violent game) under the relevant role (being the agent of the violence), but less so when the role is less relevant to the trait (being the victim of the violence, playing a low-violence video game). Therefore, we manipulated social roles orthogonally with the type of video game by randomly assigning people to agent or victim roles and high- or low-violence video games.

In Study 1, female participants first reported their level of trait aggressiveness (predictor variable). After completing the scale, participants were randomly assigned to a behavioral manipulation of the agent or victim role that required them to either give or receive noise blasts. This behavioral induction was designed to isolate exclusively the key component that was intended to vary (agent vs. victim) while keeping other factors constant (e.g., nature and duration of the task, number of people involved).

Afterward, female participants were randomly assigned to a violent situation (playing a high-violence video game) or to a relatively less violent situation (playing a low-violence video game). Finally, we assessed the effect of these three variables (roles, type of video game, and trait aggressiveness) on a subsequent measure of aggression (dependent measure). Our prediction was that the correspondence between trait aggressiveness and aggressive behavior would be greater for female participants assigned to play a high-violence video game rather than for those playing a low-violence video game. Furthermore, we expected this two-way interaction between trait aggressiveness and type of video game to emerge, especially for individuals who had been assigned to the agent rather than the victim role. That is, trait aggressiveness was expected to predict aggressive behavior best when both situational factors linked to aggressiveness were activated (playing a violent video game and taking the agent role).

Method

Participants and Design

Two hundred and twenty-five female undergraduate students from Universidad Autónoma de Madrid (Spain) participated in the study voluntarily. Participants' ages ranged from 18 to 27 ($M_{\text{age}} = 19.31$, $SD = 1.70$). They were randomly assigned to the cells of a 2 (role: agent vs. victim) \times 2 (type of video game played: high- vs. low-violence) between-subjects factorial design, with trait aggressiveness as an additional predictor. Given the presence of mixed results in previous literature, by default we anticipated a generic small effect (Cohen's $f^2 = .05$; Cohen, 1988). Results indicated that the desired sample size for a test of a three-way interaction with eight predictor variables (the constant, three main effects, three two-way interactions, and the three-way interaction) in a multiple regression model ($\alpha = .05$) with .80 power is $N = 160$ participants (G*Power; Faul et al., 2007). Our final sample slightly surpassed the required sample size because we kept signups open until the end of the semester ($N = 225$ participants).

Procedure

Upon arrival, participants were told that we were interested in testing some materials for future studies. They were also told that their responses were completely anonymous and would be used to validate a variety of instruments and measures. After obtaining informed consent, all participants received instructions asking them to complete several tasks. First, participants had to rate how aggressive they were (trait aggressiveness measure), after which they were randomly assigned to either the agent or the victim role. Following this, participants were randomly assigned to play either a high- or low-violence video game. After completing these experimental tasks, all participants completed a behavioral measure of aggression. Specifically, the behavioral measure was an adaptation of a common laboratory paradigm to study aggressive behavior, namely the teacher–learner paradigm, in which aggressive responses could be administered. Finally, all participants responded to some sociodemographic information, including gender and age, after which they were debriefed and dismissed. None of the participants expressed any concerns about the research, and none of them guessed the hypothesis.

Independent Variables

Trait Aggressiveness. Participants completed the Brief Aggression Questionnaire (BAQ; Webster et al., 2014). This 12-item scale has been shown to be an effective and efficient measure of trait aggressiveness in previous research (Chester et al., 2015; Jones & Neria, 2015; Kalmoe, 2015; Saleem et al., 2015). Participants responded to items describing chronic aggressive tendencies on a 5-point scale (1 = *not at all true of me* to 5 = *very true of me*) with items such as, “Given enough provocation, I may hit another person” and “If I have to resort to violence to protect my rights, I will.” These items showed adequate internal consistency ($\alpha = .80$). Therefore, the final score for each participant was the mean of all 12 items. Higher scores reflected higher levels of trait aggressiveness. Participants' aggressiveness did not vary as a function of the type of video game they were randomly assigned to play, $F(1, 221) = 1.863$, $p = .174$, $\eta_p^2 = 0.008$, the role adopted,

$F(1, 221) = 0.502$, $p = .502$, $\eta_p^2 = 0.002$, or the interaction between them, $F(1, 221) = 1.835$, $p = .177$, $\eta_p^2 = 0.008$.

Role. To vary the role adopted by participants before playing the video game, participants were paired with a fictitious peer to test the quality of the headphones. Testing the quality of headphones while giving or receiving noises was the cover story to vary the roles to which participants were assigned. This cover story, based on a supposed test of the quality of headphones, has been used in prior research to mask other experimental inductions (Briñol & Petty, 2003). Then, participants were randomly assigned to one of two roles. In the agent role condition, they had to deliver a single noise blast to someone else when instructed by clicking a key on the computer keyboard. In the agent role, participants could not hear the noise they were administering to others. In the victim role condition, participants received a noise blast by someone else. Thus, they actually heard the annoying noise. This noise was kept constant in volume and duration and was relatively uncomfortable, similar to a loud whistle (i.e., 80 dB). Although this task has previously been used as a dependent measure to assess aggression in the context of a competitive task of reaction times (Thomaes et al., 2008), we adopted the paradigm to vary the behavioral role taken by participants before playing the video game.²

Type of Video Game. Participants were seated in front of computers in individual cubicles and were randomly assigned to play either a high-violence video game (i.e., Grand Theft Auto: Vice City) or a low-violence video game (i.e., Burnout Paradise) for 25 min. Participants played on a 21-in. (53.34 cm) computer screen and were about 3 feet (0.91 m) from the screen.

We chose this pair of video games because they were assumed to be similar in terms of entertainment, difficulty, and other important features but different in terms of violence (for a previous study using an induction through “Grand Theft Auto: Vice City,” see Engelhardt et al., 2011).³ To further ensure the assumptions behind choosing this pair of video games, we conducted a posttest study. One hundred and thirty-four undergraduates (67 females, 64 males;

² Participants completed a one-item manipulation check to evaluate the role manipulation. Specifically, they were asked, “To what extent did you feel agency during the initial noise task?” They responded using a Likert-type scale anchored by (1 = *not at all* to 9 = *to a great extent*). Results indicated that participants felt more agency during the initial noise task in the agent role ($M = 6.97$, $SD = 2.06$) than in the victim role ($M = 2.06$, $SD = 1.73$), $B = 4.879$, $t(216) = 16.981$, $p < .001$, 95% CI [2.156, 2.722]. No other effects reached significance, $t_s(216) < 1.315$, $p_s > .189$.

³ The high-violent video game is played from a third-person perspective in an open-world environment, allowing the players to interact with the game world at their leisure while engaging in violent behavior such as stealing cars, driving unsafely, pushing people around, crashing into other cars, and killing people with the characters' fists or with weapons. According to Entertainment Software Rating Board (ESRB), this game has a rating of *M* (Mature 17+) because it includes blood and gore, intense violence, nudity, strong language, strong sexual content, and use of drugs. These games are suggested for those over the age of 17. Playing the game from a third-person perspective facilitates the implementation of the previously induced role made salient (manipulation of agent vs. victim role). The low-violent video game, Burnout Paradise, is a driving game in which players can compete in several types of races. This game is also played from a third-person perspective and is set in an open world, the fictional “Paradise City,” allowing the player to engage in relatively nonviolent behavior such as driving fast, earning points from good driving, and competing in street races. According to ESRB, this game has a rating of *E + 10* for those age 10 and older because it includes suggestive language and/or mild fantasy violence.

$M_{age} = 19.08$, $SD = 1.24$) were randomly assigned to play the high-violence (Grand Theft Auto Vice City) or the low-violence (Burnout Paradise) video game. After playing the game for 25 min, all participants responded to a set of 9-point unipolar scales (1 = *not at all* to 9 = *completely*) with the same instruction: "To what extent did you consider the video game _____?" The items were: *difficult*, *enjoyable*, *frustrating*, *exciting*, and *violent* (Anderson & Dill, 2000). The results indicated that the video games did not differ in how *difficult*, $M_{HV} = 4.53$, $SD_{HV} = 2.57$; $M_{LV} = 4.73$, $SD_{LV} = 2.35$; $t(132) = 0.462$, $p = .645$, 95% CI [-0.649, 1.045], *enjoyable*, $M_{HV} = 4.07$, $SD_{HV} = 2.46$; $M_{LV} = 4.81$, $SD_{LV} = 2.37$; $t(132) = 1.756$, $p = .081$, 95% CI [-0.093, 1.567], *frustrating*, $M_{HV} = 5.85$, $SD_{HV} = 2.44$; $M_{LV} = 5.89$, $SD_{LV} = 2.23$; $t(132) = 0.103$, $p = .918$, 95% CI [-0.764, 0.848], or *exciting*, $M_{HV} = 6.51$, $SD_{HV} = 1.70$; $M_{LV} = 6.23$, $SD_{LV} = 1.84$; $t(132) = -0.912$, $p = .364$, 95% CI [-0.889, 0.328], they were perceived to be. In contrast, the video games differed in how *violent* they were perceived to be, $M_{HV} = 7.80$, $SD_{HV} = 1.39$; $M_{LV} = 6.98$, $SD_{LV} = 1.78$; $t(132) = -2.976$, $p = .003$, 95% CI [-1.363, -0.275].

Dependent Measure: Aggressive Behavior

After playing their assigned video game, participants were required to take part in a decision-making task in which they partnered with another student in the experimental setting. Participants were told that the task involved another student (the ostensible partner) in the room to learn some content. This task was presented as unrelated to everything else in the study. That is, participants were told that this task was different than the initial task (testing the quality of headphones) and that the other student was new. After emphasizing that this was a new independent task for learning, all participants were said to be serving as teachers. Teachers had to "punish" the apprentice for each incorrect answer via a noise blast (different from that in the prior task) when evaluating the student (adapted from Buss, 1961; see also Thomaes et al., 2008).

Before the task started, participants were asked to select the intensity they wanted to give to the apprentice when a mistake was made. Participants were then given nine samples of noise, arranged in order of increasing intensity, from which they were instructed to select one in order to punish the "learner." The noise levels ranged from 60 (Level 1) to 100 dB (Level 9) in 5-dB increments. The maximum noise level, 100 dB, is about the same intensity as a smoke alarm. The noise level heard by those in the victim condition in the role induction was right in the middle (Level 5: 80 dB). Thus, aggression was operationalized as the level of noise chosen to deliver to the partner in the single trial and was measured on a scale of 1–9, whereby higher numbers represented more aggressive behavior. No noise blasts were delivered.

Results

The dependent variable was submitted to a multiple regression analysis. Trait aggressiveness (continuous variable), role (dummy coded), type of video game (dummy coded), the two-way interaction terms (i.e., Trait aggressiveness \times Role, Trait Aggressiveness \times Type of video game, Role \times Type of video game), and the three-way interaction term (Trait aggressiveness \times Role \times Type of video game) were entered as predictors. The key predicted three-way interaction was tested by using the PROCESS add-on for SPSS (Model 3;

Hayes, 2013). The continuous variable (i.e., trait aggressiveness) was mean-centered.

Results revealed the three-way interaction between Trait aggressiveness \times Type of video game \times Role was significant, $B = 2.209$, $t(217) = 2.186$, $p = .029$, 95% CI [0.218, 4.201]. In the agent role condition, the two-way interaction between Trait aggressiveness \times Type of video game was significant, $B = 1.807$, $t(217) = 2.358$, $p = .019$, 95% CI [0.297, 3.317]. As illustrated in Figure 1a, among those participants assigned to the agent role, those who played the high-violence video game showed a positive link between trait aggressiveness and engagement in aggressive behavior, $B = 1.786$, $t(217) = 2.897$, $p = .004$, 95% CI [0.571, 3.002]. For those who played the low-violence video game, however, there was no relationship between trait aggressiveness and aggressive behavior, $B = -0.020$, $t(217) = -0.044$, $p = .964$, 95% CI [-0.916, 0.876]. In contrast, for participants who had been assigned to the victim role, there was no main effect of trait aggressiveness, $B = 0.427$, $t(217) = 1.316$, $p = .189$, 95% CI [-0.212, 1.067], nor a two-way interaction between Trait aggressiveness \times Type of video game, $B = -0.201$, $t(217) = -0.611$, $p = .541$, 95% CI [-0.850, 0.448], see Figure 1b.⁴ All other effects maintained their statistical significance when gender was included as a covariate.⁵

Discussion

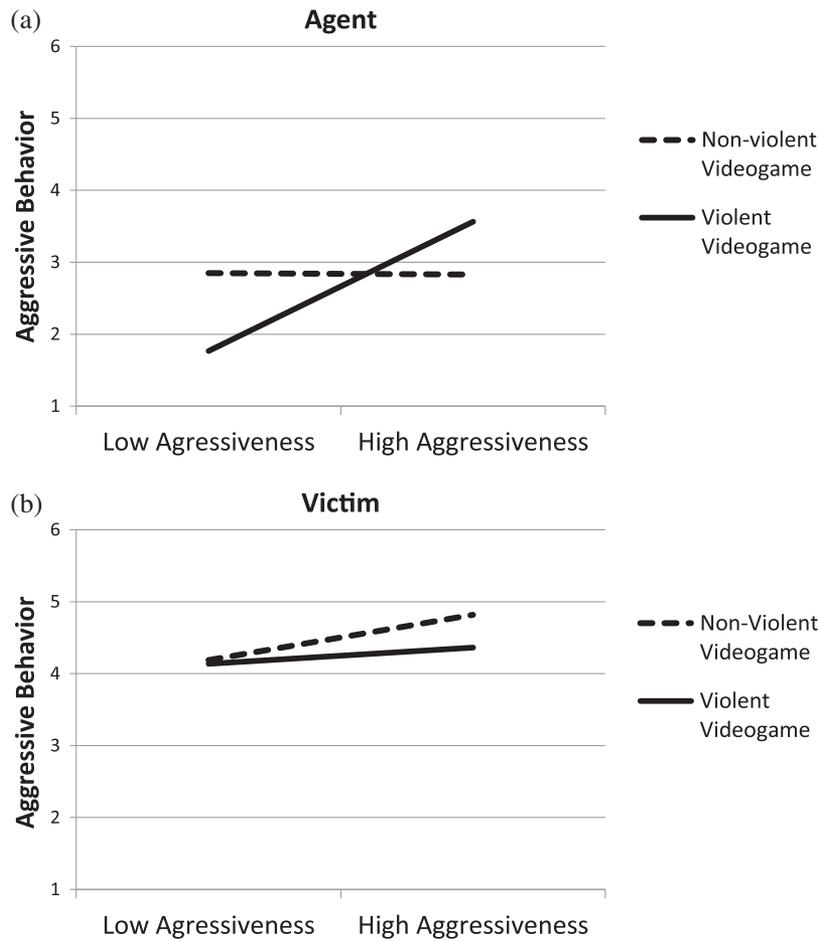
The results of Study 1 showed that the effect of trait aggressiveness on aggressive behavior was moderated by the situation participants were put in and by the role they were assigned to adopt. When an agent role was made salient, we replicated previous studies showing an interaction effect between trait aggressiveness and playing violent video games on female participants (Anderson & Dill, 2000; Arriaga et al., 2006; Bartholow et al., 2005; Gentile et al., 2004; Giumetti & Markey, 2007). As expected, we found that trait aggressiveness predicted aggressive behavior to a greater extent when female participants played a high-violence (vs. low-violence) video game. Thus, the ability of this individual-difference variable to predict actual aggression was more likely to emerge when the situation was relevant to the participants' dispositional tendency—when participants were cast in the agent role.

As noted, we proposed that playing violent video games when an agent role was made salient increases the relevance of trait aggressiveness. Considering violent situations under a relevant role activates

⁴ A significant main effect of trait aggressiveness also emerged, $B = 0.157$, $t(217) = 2.587$, $p = .010$, 95% CI [0.037, 0.277], indicating that people higher in trait aggressiveness behaved more aggressively. Additionally, an unexpected main effect of role emerged, $B = -0.393$, $t(217) = -6.576$, $p < .001$, 95% CI [-0.511, -0.275], indicating that people randomly assigned to the victim role ($M = 4.33$, $SD = 2.13$) behaved more aggressively than people randomly assigned to the agent role ($M = 2.69$, $SD = 1.65$). There was no main effect of type of video game, $B = -0.051$, $t(217) = 0.867$, $p = .387$, 95% CI [-0.167, 0.066]. None of the two-way interactions reached significance, $t(217) < 1.389$, $ps > .166$.

⁵ Gender is an important variable for aggressive behavior (Björkqvist, 2018) and violent video games (Dill & Dill, 1998). Although our sample was composed mostly by female participants, 16 men also participated in the study. The key three-way interaction remained significant when men were included in the analysis, $B = 0.556$, $t(236) = 2.184$, $p = .030$, 95% CI [0.054, 1.058]. All other effects maintained their statistical significance when men were included in the sample and gender was included as a covariate.

Figure 1
Study 1. Aggressive Behavior as a Function of Role, Type of Video Game, and Trait Aggressiveness Separated by Role



Note. Panel (a) = Agent role. Panel (b) = Victim role.

thoughts about one's aggressive personality (i.e., whether one is or is not an aggressive person) and that is why trait aggressiveness scores served as a more valid basis for guiding subsequent aggressive behavior precisely in those situations relative to those assigned to the low-violence situation. In contrast, when a victim role was made salient, trait aggressiveness was not predictive of behavior regardless of the situation—whether participants had played a high- versus low-violence video game.

In sum, Study 1 demonstrated that the utility of trait aggressiveness in predicting aggressive behavior was moderated by both the situation and the role that was made salient. This effect was shown using a behavioral induction of role and by measuring actual aggressive behavior with a well-established lab paradigm of aggression. Although the results of the first study provided fair evidence in favor of the trait use hypothesis, we wanted to replicate and extend the results to other procedures and measures.

Study 2

The goal of the second experiment was to provide a conceptual replication of Study 1 using different procedures and measures. As

in the previous study, female participants began by reporting their level of trait aggressiveness (predictor variable). Then, participants were randomly assigned to a new manipulation of the agent or victim role that required them to recall one past situation in which they were the agent or the victim of violence. In the agent role condition, participants had to recall an episode in which they hurt someone else. In the victim role condition, participants had to recall an episode in which they were hurt by someone else. This induction was designed to vary the role (agent vs. victim) that was salient prior to playing the subsequent video game.

Finally, we sought to extend the results to other dependent measures such as aggressive behavioral intentions. Thus, one of the main goals of this study was to extend the previous findings to an alternative commonly used measure of aggressive behavioral intentions.

Hypothesis 1: As in Study 1, we predicted a three-way interaction between trait, video game, and role, based on the logic that one's own trait aggressiveness is activated in the relevant situation—when the agent role is salient prior to playing a

high-violence game. Therefore, besides the changes introduced in this study, the prediction remains the same as in the first study.

Method

Participants and Design

Three hundred and seventy-one female undergraduate students (47 males, 371 females, and 3 missing data) from the Universidad Autónoma de Madrid (Spain) participated in the study voluntarily. Participants' ages ranged from 17 to 48 ($M_{\text{age}} = 19.82$, $SD = 3.10$). They were randomly assigned to the cells of a 2 (role: agent vs. victim) \times 2 (type of video game played: high- vs. low-violence) between-subjects factorial design, with trait aggressiveness as an additional predictor. An a priori power analysis was conducted using G*Power based on the effect sizes for the three-way interaction obtained in Study 1 ($f^2 = .027$; Cohen, 1988). The desired sample size for a two-tailed test ($\alpha = .05$) with eight predictors (the constant, three main effects, three two-way interactions, and the three-way interaction) with .80 power was a total of $N = 293$ participants. Our final sample size was larger (i.e., 371 participants) than the estimated one because we continued to include participants until the end of the semester.

Procedure

Upon arrival, participants were told that they would be taking part in a study about the materials used in video games. They were then told that their responses were completely anonymous. After obtaining their informed consent, all participants received written instructions asking them to complete several tasks. First, as an ostensible control measure, all participants had to rate how aggressive they were (trait aggressiveness measure). Then, participants were randomly assigned to either recall a situation in which they played the role of the agent (when they hurt others) or the role of the victim (when they were hurt) in a memory task. After completing the memory task, participants were randomly assigned to play either a high-violence (i.e., Grand Theft Auto: Vice City) or a low-violence (i.e., Burnout Paradise) video game. After these inductions, all participants completed the dependent measure, which assessed their aggressive behavioral intentions. Finally, all participants reported their gender and age, after which they were debriefed and dismissed.

Independent Variables

Trait Aggressiveness. To measure trait aggressiveness, we used the same scale as in the previous study, the BAQ (Webster et al., 2014). Analyses revealed that items showed relatively high internal consistency ($\alpha = .88$). Therefore, the final score for each participant was the mean of all 12 items. Higher scores on this measure reflected higher levels of trait aggressiveness.⁶

Role. Participants were randomly assigned to one of two role conditions. In the agent role condition, they had to recall and write down a prior episode in which they hurt someone else. In the victim role condition, participants were randomly assigned to recall and write down a past episode in which they were hurt by someone else. Examination of the episodes listed indicated that all participants followed the instructions.⁷

Type of Video Game. As in Study 1, participants were seated in front of computers in individual cubicles and were randomly assigned to play either a high-violence video game (i.e., Grand Theft Auto: Vice City) or a low-violence video game (i.e., Burnout Paradise) for 10 min. These were the same games as used in Study 1. Participants played on a 21-in. (53.34 cm) computer screen and were about 3 feet (0.91 m) from the screen.

Dependent Measure: Aggressive Behavioral Intentions

Aggressive Behavioral Intentions. After playing a high- or low-violence video game following recall of an agent or victim role, participants were asked to assess the likelihood of engaging in aggressive behavior in the future by responding to three questions, each of which used 9-point scales (1–9). These items were adapted from Santos et al. (2019; see also Cárdbaba et al., 2016). Specifically, the general instruction was, “In the next month, what is the probability that you . . . ?” (1) “. . . will have an intense fight with somebody?” (2) “. . . will have violent thoughts toward someone?” and (3) “will have the urge to break an object due to anger?” Ratings on these items were intercorrelated ($\alpha = .63$) and were thus averaged to form an overall aggressive behavioral intentions index. Higher values on this index indicated a greater self-reported likelihood of being involved in an aggressive event or outcome in the future.

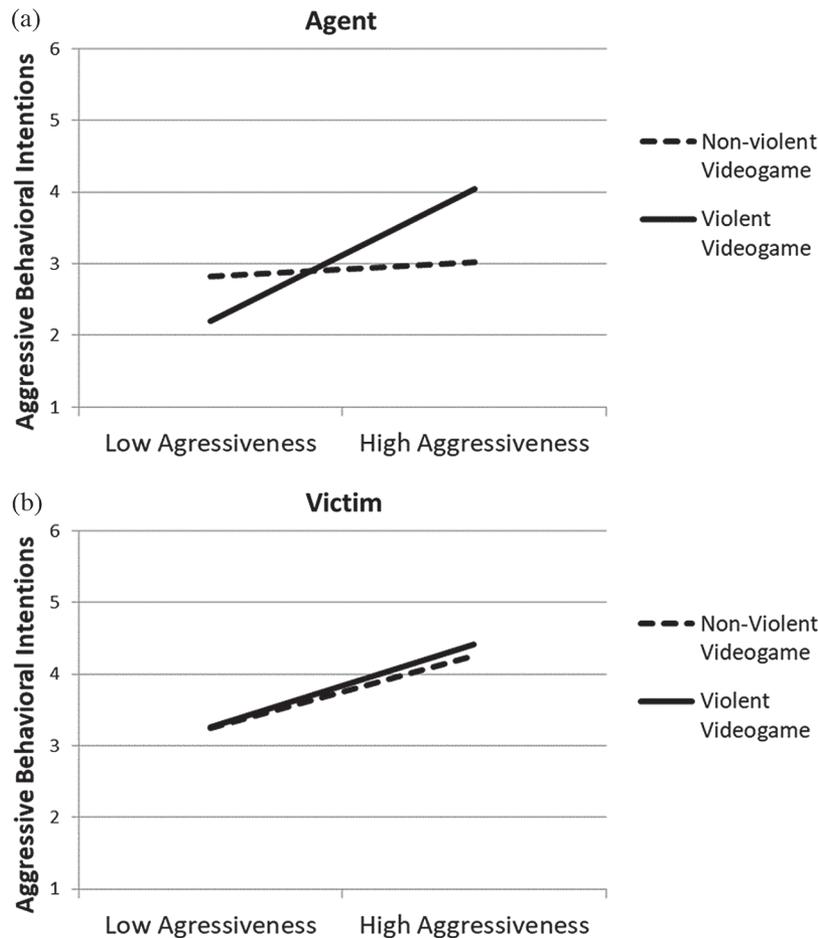
Results

The dependent variable of aggressive behavioral intentions was submitted to a multiple regression analysis following the same procedure as in Study 1. The resulting three-way interaction between role, type of video game, and trait aggressiveness was significant, $B = 1.358$, $t(363) = 2.000$, $p = .046$, 95% CI [0.023, 2.693]. Nonetheless, to examine the basis of this trending interaction, we decomposed it in the same manner as for Study 1. As illustrated in Figure 2a, among participants who were randomly assigned to the agent role, we replicated the significant two-way interaction found in Study 1 between trait aggressiveness and type of video game, $B = 1.475$, $t(363) = 2.959$, $p = .003$, 95% CI [0.495, 2.456]. This two-way interaction revealed that trait aggressiveness was positively associated with aggressive behavioral intentions among those participants who were randomly assigned to play a high-violence video game, $B = 1.653$, $t(363) = 4.665$, $p < .001$, 95% CI [0.956, 2.350]. However, among those participants who were randomly assigned to play a low-violence video game, trait aggressiveness was not associated with aggressive behavioral intentions, $B = 0.117$, $t(363) = 0.254$, $p = .799$, 95% CI [–0.789, 1.024]. In contrast, among those participants who were randomly assigned to the victim role, the interaction between type of video game and trait

⁶ Participants' aggressiveness did not vary as a function of the type of video game to which they were randomly assigned, $F(1, 367) = 0.43$, $p = 0.511$, $\eta_p^2 = .001$, the role, $F(1, 367) = 0.01$, $p = 0.895$, $\eta_p^2 < .001$, or the interaction between them, $F(1, 367) = 0.03$, $p = 0.954$, $\eta_p^2 < .001$.

⁷ Participants completed a manipulation check for the role manipulation. Specifically, they were asked one Likert-type scale item of 9 points (1 = *not at all* to 9 = *to a great extent*). The exact wording was “To what extent did you feel a sense of agency for the act in the episode you described?” Results indicated that participants felt more agency in the agent role ($M = 5.89$, $SD = 2.73$) than in the victim role, ($M = 4.79$, $SD = 2.73$), $B = 1.103$, $t(361) = 3.875$, $p < .001$, 95% CI [0.543, 1.663]. No other effects reached significance, $ts(361) < 1.48$, $ps > .14$.

Figure 2
 Study 2. Aggressive Behavioral Intentions as a Function of, Video Game, Role, and Trait Aggressiveness Separated by Role



Note. Panel (a) = Agent role. Panel (b) = Victim role.

aggressiveness was not even close to significance, $B = -0.489$, $t(363) = 0.254$, $p = .799$, 95% CI $[-0.789, 1.024]$, see Figure 2b.^{8,9} The results produced equivalent values before and after controlling for gender, $B = 1.195$, $t(413) = 1.880$, $p = .061$, 95% CI $[-0.054, 2.444]$. All other effects maintained their statistical significance when gender was included as a covariate.

Discussion

The results of Study 2 replicated the findings from Study 1, showing that female individuals' dispositions are more predictive of aggressive behavioral intentions when situations and roles are more relevant for their traits compared to when situations and roles are less relevant. As hypothesized, in the agent role condition, we found that trait aggressiveness predicted aggressive behavioral intentions to a greater extent when participants were randomly assigned to play a violent (vs. low-violence) video game. This is consistent with the results of previous literature on trait aggressiveness and violent video games and contributes by specifying when this interaction is more likely to emerge. On the contrary, when the notion of being a

⁸ The data analysis also revealed a main effect of trait aggressiveness, $B = 0.943$, $t(363) = 5.545$, $p < .001$, 95% CI $[0.606, 1.272]$, such that participants high in trait aggressiveness reported more aggressive behavioral intentions than those low in trait aggressiveness. Also, a main effect of role emerged, $B = -0.771$, $t(363) = -4.090$, $p < .001$, 95% CI $[-1.141, -0.4003]$, indicating that participants who recalled being hurt ($M = 3.76$, $SD = 1.86$) had more aggressive behavioral intentions than those who recalled hurting someone else ($M = 3.07$, $SD = 1.94$). There was no main effect for type of video game, $B = 0.140$, $t(363) = 0.140$, $p = .456$, 95% CI $[-0.230, 0.511]$. A significant two-way interaction between trait aggressiveness and type of video game emerged, $B = 0.780$, $t(363) = 2.301$, $p = .022$, 95% CI $[0.113, 1.446]$, such that trait aggressiveness was significantly more predictive of aggressive behavior in the high-violence video game, $B = 1.332$, $t(363) = 5.456$, $p < .001$, 95% CI $[0.852, 1.813]$, than in the low-violence video game, $B = 0.552$, $t(363) = 2.351$, $p = .019$, 95% CI $[0.090, 1.015]$. No other effect reached significance, $t_s(363) < 0.306$, $p_s > .759$.

⁹ Forty-seven men also participated in the study but were not included in the main analysis to keep consistency across studies. When those additional male participants were included in analysis while controlling for gender as a covariate, the results produced equivalent albeit nonsignificant values, $B = 1.195$, $t(413) = 1.880$, $p = .061$, 95% CI $[-0.054, 2.444]$. All other effects maintained their statistical significance when men were included in the sample and gender was included as a covariate.

victim of aggression was made salient prior to the game, we found that trait aggressiveness predicted aggressive behavioral intentions regardless of the situation (e.g., playing a high- vs. low-violence video game).

General Discussion

Our results support the hypothesis that the type of situation (related to violence or not) moderates the effects of trait aggressiveness on aggression and aggressive intentions under the appropriate role (Hypothesis 1). Specifically, under the agent role, we found that trait aggressiveness was associated with aggressive behavior to a greater extent when female participants were randomly assigned to a high-violence (vs. low-violence) situation (i.e., playing a high- vs. low-violence video game). That is, this correspondence between personality and situation was facilitated when participants had an agent rather than a victim role made salient.

We ran a more specific test for our precise interaction prediction. This test compared the slope for trait aggressiveness on aggressive behavior in the agent/high-violence video game condition against the other three conditions (agent/low-violence video game, victim/high-violence video game, and victim/low-violence video game). Thus, the dependent variable was submitted to a multiple regression analysis in the collapsed data set. Trait aggressiveness (continuous variable), a recoded independent variable (RIV; 3 = *agent condition and high-violence video game condition*, -1 = *all other experimental conditions*), study (Study 1 = 0, Study 2 = 1), the two-way interaction terms (i.e., Trait aggressiveness \times RIV, Trait aggressiveness \times Study, RIV \times Study), and the three-way interaction term (Trait aggressiveness \times RIV \times Study) were entered as predictors. This key two-way interaction was tested using the PROCESS add-on for SPSS (Model 3; Hayes, 2013). The continuous variable (i.e., trait aggressiveness) was mean-centered.

The results revealed a significant Trait aggressiveness \times RIV two-way interaction, $B = 0.161$, $t(588) = 3.059$, $p = .002$, 95% CI [0.057, 0.264], such that trait aggressiveness was significantly more predictive of the dependent variable (aggression outcome) for participants who were randomly assigned to the agent condition and played the high-violence video game, $B = 0.457$, $t(588) = 4.803$, $p < .001$, 95% CI [0.270, 0.644], than for participants who were assigned to any of the other combinations of experimental conditions, $B = 0.135$, $t(588) = 3.043$, $p = .002$, 95% CI [0.048, 0.223]. Furthermore, this two-way interaction was not qualified by study, $B = -0.028$, $t(588) = -0.532$, $p = .594$, 95% CI [-0.131, 0.075]. The key Trait aggressiveness \times RIV interaction was significant for Study 1, $B = 0.133$, $t(588) = 2.179$, $p = .029$, 95% CI [0.018, 0.359], and Study 2, $B = 0.133$, $t(588) = 2.229$, $p = .026$, 95% CI [0.015, 0.250]. Therefore, our role manipulation allowed us to specify when it is more likely to replicate the traditional interaction between trait aggressiveness and violent video games.

On the one hand, under the agent role, the Trait aggressiveness \times Violent video game interaction replicated the pattern found in previous research (Anderson & Dill, 2000; Arriaga et al., 2006; Bartholow et al., 2005; Gentile et al., 2004; Giumetti & Markey, 2007). On the other hand, under the victim role condition, trait aggressiveness predicted aggressive behavioral intentions to some extent, but the predictive effect did not vary as a function of whether participants had played a high- or low-violence video game. Overall, then, trait aggressiveness was more predictive of aggression when

the agent role was made salient and a violent game was played compared to any other condition.¹⁰ Moreover, when gender was included in the analysis across studies (including the 63 men participants that were collected), the four-way interaction was not significant, $B = 0.124$, $t(643) = 0.815$, $p = .415$, 95% CI [-0.174, 0.422], revealing that the predicted three-way interaction was not driven significantly only by female participants. All other effects in the collapsed data set maintained their statistical significance when gender was included as a covariate. Although the overall number of male participants in our research is low, this finding is in line with previous research showing no gender differences such as the work by Gentile et al. (2004), Markey and Markey (2010), and Uhlmann and Swanson (2004). Despite our research not finding this gender difference, previous research using only female participants has suggested that female participants are especially motivated to play video games when they can identify themselves with the main character in the game (Van Reijmersdal et al., 2013).

Interestingly, the main effect of type of video game was not present in any of the studies or overall. One possibility is that the inclusion of the role variable might be critical for this effect to emerge. In past research findings, an interaction between trait aggression and the type of video game on aggressive behavior, the agent role was likely the default. Another interesting finding was the obtained main effect for the role variable, with those in the victim role engaging in more aggression overall than those in the agent role, though of course, this main effect is qualified by the

¹⁰ We collapsed across the two studies and submitted the dependent variable to a multiple regression analysis. Trait aggressiveness (continuous variable), role (dummy coded), type of video game (dummy coded), study (Study 1 = 0, Study 2 = 1), and all possible combinations of two-, three-, and four-way interactions were entered as predictors. The data revealed an overall main effect of trait aggressiveness, $B = 0.217$, $t(580) = 5.433$, $p < .001$, 95% CI [0.138, 0.295], such that participants high in trait aggressiveness reported more aggressive behavior (index of standardized aggressive behavior and aggressive behavioral intentions) than those low in trait aggressiveness. Also, a main effect of role emerged, $B = -0.298$, $t(580) = -7.565$, $p < .001$, 95% CI [-0.373, -0.220], indicating that participants who were assigned to the victim role ($M = 0.28$, $SD = 0.98$) had more aggressive behavior than those who were assigned to the agent role ($M = -0.28$, $SD = 0.92$). There was no main effect for type of video game, $B = -0.005$, $t(580) = -0.129$, $p = .897$, 95% CI [-0.082, 0.072]. A two-way interaction between type of video game and trait aggressiveness was significant, $B = 0.101$, $t(580) = 2.522$, $p = .012$, 95% CI [0.022, 0.179], meaning that trait aggressiveness was more predictive of aggression for those in high-violence video game condition than for those in the low-violence video game condition. An additional two-way interaction between role and study also emerged, $B = 0.097$, $t(580) = 2.465$, $p = .014$, 95% CI [0.020, 0.174], meaning that the main effect of role was significantly stronger in Study 1 than in Study 2. Importantly, results also revealed a significant three-way interaction among role, type of video game, and trait aggressiveness, $B = 0.116$, $t(580) = 2.915$, $p = .004$, 95% CI [0.038, 0.195], that was not moderated by study, $B = -0.017$, $t(580) = -0.420$, $p = .675$, 95% CI [-0.095, 0.062]. When further decomposing this interaction, the two-way interaction between trait aggressiveness and type of video game was significant for the agent role, $B = 0.229$, $t(588) = 4.065$, $p < .001$, 95% CI [0.118, 0.341], but not for the victim role, $B = -0.013$, $t(588) = -0.255$, $p = .799$, 95% CI [-0.114, 0.088], where only a main effect of trait aggressiveness emerged, $B = 0.217$, $t(588) = 4.197$, $p < .001$, 95% CI [0.115, 0.318]. Analyzed differently, the two-way interaction between trait aggressiveness and role was significant for the high-violent video game condition, $B = 0.140$, $t(588) = 2.481$, $p = .013$, 95% CI [0.029, 0.251], and for the low-violent video game condition, $B = -0.103$, $t(588) = -1.988$, $p = .047$, 95% CI [-0.204, -0.001]. When all 63 men from both studies were included in the sample and gender was included as an additional moderator, all key effects remained unchanged.

obtained three-way interaction. Nevertheless, one could argue that being placed in a victim role, even momentarily, may make people seek retaliation to some extent regardless of other situational cues. Indeed, aggression can be displaced from the provoking person to a different target. In the words of Denson et al. (2006, p. 1032), “displaced aggression occurs when a person is provoked, is unwilling or unable to retaliate against the original provocateur, and subsequently aggresses against a seemingly innocent target” (see also Baumeister & Vohs, 2007). As we did not provide the opportunity to retaliate against the initial provoking individual, we might have created the conditions for displaced aggression to occur.

Limitations

The present research has some limitations that should be considered. First, although we used previously tested video games in our research (see Engelhardt et al., 2011). Second, the low-violence video game selected (Burnout Paradise) included some potential opportunities for aggression. Therefore, it is not a completely neutral video game. However, the posttest study demonstrated that the two games differed in how violent they were perceived to be while maintaining other constructs constant (e.g., frustration, arousal, difficulty). Third, there is a difference in how much time our female participants were allowed to play the games across the two studies (25 min in Study 1 and 10 min in Study 2). This may be one reason that the predicted three-way interaction was not quite significant in Study 2, whereas it was in Study 1. However, playing 10 min was sufficient to detect a similar pattern in each study, and there was no moderation by study in the collapsed data set. Fourth, the present research relied on a convenience sample of college students (prime video game players) and was comprised of female participants. Although gender did not moderate the key three-way interaction when few extra male participants collected were also included in the analysis.

Future Research Directions

The present findings have a number of implications for personality, aggression, violent video games research, and beyond. First, this research makes an important contribution to the aggression literature by revealing conditions under which the impact of trait aggressiveness on aggressive behavior is facilitated for female participants, namely, violent situations such as playing high-violence (vs. low-violence) video games when the agent rather than the victim role has been made salient. A number of studies have shown that trait aggressiveness can reliably predict a variety of aggression outcomes such as aggressive behavior (Bettencourt et al., 2006), aggressive affect (Bushman, 1996), and aggressive intentions (Santos et al., 2019), and the current research introduces a new moderator of this effect, at least when it comes to female participants.

Furthermore, prior research has shown that different situations (e.g., perceiving aggression as a fixed trait, or when both male and female participants are certain of their trait aggressiveness) can increase the extent to which trait aggressiveness predicts aggression outcomes (Santos et al., 2019; Yeager et al., 2013). In addition, previous research has focused specifically on the interaction between trait aggressiveness and violent video games (Anderson & Dill, 2000; Giumetti & Markey, 2007), showing that trait

aggressiveness is more predictive of aggression outcomes when people play violent video games. Our emphasis, however, is on the predictive utility of trait aggressiveness as a function of whether the trait is used or not in a given situation under a given role. Indeed, the current findings are consistent with previous conceptual models, which have theorized about how mental constructs need to be both accessible and perceived as valid in order to guide subsequent responses (e.g., Briñol & Petty, 2022; Loersch & Payne, 2011; Petty et al., 2007). Moreover, this research provides new evidence of a previously unexplored variable also capable of increasing the extent to which trait aggressiveness predicts aggressive behavior in female participants, namely the role assigned to the person.

Another implication of the current findings for the study of traits is the possibility that other traits beyond aggressiveness might be able to predict the corresponding behavior more so when the situation is relevant to the trait and people perceive the trait to be a valid basis for guiding action in that context. For example, Paredes et al. (2021) showed that another trait (identity fusion) was more predictive of willingness to self-sacrifice when both male and female participants were placed in a situation of high (vs. low) relevance to that trait (e.g., consideration of extreme vs. nonextreme outcomes). Future research should explore to what extent the link between traits and behavior can be enhanced in highly relevant situations (e.g., prosocial personality predicting helping behavior, especially for emergencies).

Regarding the study of roles (Chen et al., 2009; Haney et al., 1973; Janis & King, 1954), researchers could benefit from including individual-difference measures that might help distinguish to what extent participants could be affected by taking agent or victim roles. For example, individuals scoring high (vs. low) in dimensions such as agency (McCulloch et al., 2012; Rucker et al., 2018), self-efficacy (Bandura, 1989), or internal locus of control (Jones, 1990) might be more likely to be guided by these trait dimensions when they are assigned to the agent rather than the victim role. Future research should examine to what extent being in the agent role increases the use and reliance on these trait dimensions and others beyond trait aggressiveness (e.g., improving reliance on prosocial dispositions, Moreno et al., 2021).

The current research also contributes to the literature on trait aggressiveness by identifying a new moderating condition (i.e., role) capable of increasing the prediction of aggressive behavior in combination with the situation (playing high- vs. low-violence video games). The specific mechanism underlying this effect needs to be further investigated. We suggest that this effect happens because playing high-violence video games under an agent role leads female participants to rely on their trait aggressiveness, whereas playing low-violence video games or assuming a victim role does not lead people to activate and rely on their aggressiveness. That is, because playing high-violence video games under an agent role gets people to think about how aggressive they are, their trait aggressiveness scores matter more (i.e., are a more valid basis for determining action), and thus predict behavior to a greater extent. Future research should further investigate this possibility.

Moreover, we tested two video games in the present research, but future studies should be undertaken to generalize these findings to other video games (see Wells & Windschitl, 1999). In addition, future research might benefit from identifying more accurately what is the minimum duration of playing needed for each effect to emerge (Anderson et al., 2004) and could benefit from including

a more balanced sample regarding gender and age (Bartholow & Anderson, 2002).

Prevention and Policy Implications

The present research might have some potential implications for clinicians and policy makers. For example, a warning might be included in violent video games explicitly stating the biased nature of the game, which usually only lets players take the agent role. By making potential players aware of the existence of different roles (the agent and the victim), awareness about this new factor might be raised. Along with other researchers and practitioners, we think that the mindset with which people play the games could be an important factor to take into consideration (e.g., Adachi et al., 2015; Jerabeck & Ferguson, 2013).

References

- Adachi, P. J., Hodson, G., Willoughby, T., & Zanello, S. (2015). Brothers and sisters in arms: Intergroup cooperation in a violent shooter game can reduce intergroup bias. *Psychology of Violence, 5*(4), 455–462. <https://doi.org/10.1037/a0037407>
- Allen, J. J., & Anderson, C. A. (2017). General aggression model. In P. Rössler, C. A. Hoffner, & L. Zoonen (Eds.), *The international encyclopedia of media effects* (pp. 1–15). Wiley Online Library. <https://doi.org/10.1002/9781118783764.wbieme0078>
- Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53*(1), 27–51. <https://doi.org/10.1146/annurev.psych.53.100901.135231>
- Anderson, C. A., Carnagey, N. L., Flanagan, M., Benjamin, A. J., Eubanks, J., & Valentine, J. C. (2004). Violent videogames: Specific effects of violent content on aggressive thoughts and behavior. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 36, pp. 200–251). Academic Press.
- Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology, 78*(4), 772–790. <https://doi.org/10.1037/0022-3514.78.4.772>
- Arriaga, P., Esteves, F., Carneiro, P., & Monteiro, M. B. (2006). Violent computer games and their effects on state hostility and physiological arousal. *Aggressive Behavior, 32*(4), 358–371. <https://doi.org/10.1002/ab.20134>
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*(9), 1175–1184. <https://doi.org/10.1037/0003-066X.44.9.1175>
- Bartholow, B. D., & Anderson, C. A. (2002). Effects of violent video games on aggressive behavior: Potential sex differences. *Journal of Experimental Social Psychology, 38*(3), 283–290. <https://doi.org/10.1006/jesp.2001.1502>
- Bartholow, B. D., Sestir, M. A., & Davis, E. B. (2005). Correlates and consequences of exposure to video game violence: Hostile personality, empathy, and aggressive behavior. *Personality and Social Psychology Bulletin, 31*(11), 1573–1586. <https://doi.org/10.1177/0146167205277205>
- Baumeister, R. F., & Vohs, K. D. (Eds.). (2007). *Encyclopedia of social psychology*. Sage Publications. <https://doi.org/10.4135/9781412956253>
- Bettencourt, B. A., Talley, A., Benjamin, A. J., & Valentine, J. (2006). Personality and aggressive behavior under provoking and neutral conditions: A meta-analytic review. *Psychological Bulletin, 132*(5), 751–777. <https://doi.org/10.1037/0033-2909.132.5.751>
- Björkqvist, K. (2018). Gender differences in aggression. *Current Opinion in Psychology, 19*, 39–42. <https://doi.org/10.1016/j.copsyc.2017.03.030>
- Briñol, P., & Petty, R. E. (2003). Overt head movements and persuasion: A self-validation analysis. *Journal of Personality and Social Psychology, 84*(6), 1123–1139. <https://doi.org/10.1037/0022-3514.84.6.1123>
- Briñol, P., & Petty, R. E. (2022). Self-validation theory: An integrative framework for understanding when thoughts become consequential. *Psychological Review, 129*(2), 340–367. <https://doi.org/10.1037/rev0000340>
- Bushman, B. J. (1995). Moderating role of trait aggressiveness in the effects of violent media on aggression. *Journal of Personality and Social Psychology, 69*(5), 950–960. <https://doi.org/10.1037/0022-3514.69.5.950>
- Bushman, B. J. (1996). Individual differences in the extent and development of aggressive cognitive-associative networks. *Personality and Social Psychology Bulletin, 22*(8), 811–819. <https://doi.org/10.1177/0146167296228004>
- Bushman, B. J. (Ed.). (2016). *Aggression and violence: A social psychological perspective*. Routledge. <https://doi.org/10.4324/9781315524696>
- Buss, A. H. (1961). *The psychology of aggression*. Wiley. <https://doi.org/10.1037/11160-000>
- Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology, 63*(3), 452–459. <https://doi.org/10.1037/0022-3514.63.3.452>
- Cárdaba, M. A. M., Briñol, P., Brändle, G., & Ruiz-SanRomán, J. A. (2016). The moderating role of aggressiveness in response to campaigns and interventions promoting anti-violence attitudes. *Aggressive Behavior, 42*(5), 471–482. <https://doi.org/10.1002/ab.21643>
- Carnagey, N. L., Anderson, C. A., & Bushman, B. J. (2007). The effect of videogame violence on physiological desensitization to real-life violence. *Journal of Experimental Social Psychology, 43*(3), 489–496. <https://doi.org/10.1016/j.jesp.2006.05.003>
- Chen, S., Langner, C. A., & Mendoza-Denton, R. (2009). When dispositional and role power fit: Implications for self-expression and self-other congruence. *Journal of Personality and Social Psychology, 96*(3), 710–727. <https://doi.org/10.1037/a0014526>
- Chester, D. S., Merwin, L. M., & DeWall, C. N. (2015). Maladaptive perfectionism's link to aggression and self-harm: Emotion regulation as a mechanism. *Aggressive Behavior, 41*(5), 443–454. <https://doi.org/10.1002/ab.21578>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Erlbaum.
- Coie, J. D., & Dodge, K. A. (1998). Aggression and antisocial behavior. In W. Damon & N. Eisenberg (Eds.), *Handbook of child psychology: Social, emotional, and personality development* (pp. 779–862). John Wiley & Sons.
- Denson, T. F., Pedersen, W. C., & Miller, N. (2006). The displaced aggression questionnaire. *Journal of Personality and Social Psychology, 90*(6), 1032–1051. <https://doi.org/10.1037/0022-3514.90.6.1032>
- Dill, K. E., & Dill, J. C. (1998). Video game violence: A review of the empirical literature. *Aggression and Violent Behavior, 3*(4), 407–428. [https://doi.org/10.1016/S1359-1789\(97\)00001-3](https://doi.org/10.1016/S1359-1789(97)00001-3)
- Engelhardt, C. R., Bartholow, B. D., Kerr, G. T., & Bushman, B. J. (2011). This is your brain on violent videogames: Neural desensitization to violence predicts increased aggression following violent videogame exposure. *Journal of Experimental Social Psychology, 47*(5), 1033–1036. <https://doi.org/10.1016/j.jesp.2011.03.027>
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175–191. <https://doi.org/10.3758/BF03193146>
- Gentile, D. A., Anderson, C. A., Yukawa, S., Ihori, N., Saleem, M., Ming, L. K., Shibuya, A., Liau, A. K., Khoo, A., Bushman, B. J., Rowell Huesmann, L., & Sakamoto, A. (2009). The effects of prosocial video games on prosocial behaviors: International evidence from correlational, longitudinal, and experimental studies. *Personality and Social Psychology Bulletin, 35*(6), 752–763. <https://doi.org/10.1177/0146167209333045>

- Gentile, D. A., Lynch, P. J., Linder, J. R., & Walsh, D. A. (2004). The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance. *Journal of Adolescence, 27*(1), 5–22. <https://doi.org/10.1016/j.adolescence.2003.10.002>
- Giometti, G. W., & Markey, P. M. (2007). Violent video games and anger as predictors of aggression. *Journal of Research in Personality, 41*(6), 1234–1243. <https://doi.org/10.1016/j.jrp.2007.02.005>
- Haney, C., Banks, W. C., & Zimbardo, P. G. (1973). A study of prisoners and guards in a simulated prison. *Naval Research Reviews, 9*, 1–17.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. The Guilford Press.
- Janis, I. L., & King, B. T. (1954). The influence of role playing on opinion change. *Journal of Abnormal Psychology, 49*(2), 211–218. <https://doi.org/10.1037/h0056957>
- Jerabeck, J. M., & Ferguson, C. J. (2013). The influence of solitary and cooperative violent video game play on aggressive and prosocial behavior. *Computers in Human Behavior, 29*(6), 2573–2578. <https://doi.org/10.1016/j.chb.2013.06.034>
- Jones, D. N., & Neria, A. L. (2015). The dark triad and dispositional aggression. *Personality and Individual Differences, 86*, 360–364. <https://doi.org/10.1016/j.paid.2015.06.021>
- Jones, E. E. (1990). *Interpersonal perception*. WH Freeman.
- Kalmoe, N. P. (2015). Trait aggression in two representative U.S. surveys: Testing the generalizability of college samples. *Aggressive Behavior, 41*(2), 171–188. <https://doi.org/10.1002/ab.21547>
- Konijn, E. A., Bijvank, M. N., & Bushman, B. J. (2007). I wish I were a warrior: The role of wishful identification in the effects of violent video games on aggression in adolescent boys. *Developmental Psychology, 43*(4), 1038–1044. <https://doi.org/10.1037/0012-1649.43.4.1038>
- Krahé, B. (2020). Risk factors for the development of aggressive behavior from middle childhood to adolescence: The interaction of person and environment. *Current Directions in Psychological Science, 29*(4), 333–339. <https://doi.org/10.1177/0963721420917721>
- Lemmens, J. S., Bushman, B. J., & Konijn, E. A. (2006). The appeal of violent video games to lower educated aggressive adolescent boys from two countries. *Cyberpsychology & Behavior, 9*(5), 638–641. <https://doi.org/10.1089/cpb.2006.9.638>
- Lieberman, J. D., Solomon, S., Greenberg, J., & McGregor, H. A. (1999). A hot new way to measure aggression: Hot sauce allocation. *Aggressive Behavior, 25*(5), 331–348. [https://doi.org/10.1002/\(SICI\)1098-2337\(1999\)25:5<331::AID-AB2>3.0.CO;2-1](https://doi.org/10.1002/(SICI)1098-2337(1999)25:5<331::AID-AB2>3.0.CO;2-1)
- Loersch, C., & Payne, B. K. (2011). The situated inference model: An integrative account of the effects of primes on perception, behavior, and motivation. *Perspectives on Psychological Science, 6*(3), 234–252. <https://doi.org/10.1177/1745691611406921>
- Markey, P. M., & Markey, C. N. (2010). Vulnerability to violent video-games: A review and integration of personality research. *Review of General Psychology, 14*(2), 82–91. <https://doi.org/10.1037/a0019000>
- Mathur, M. B., & VanderWeele, T. J. (2019). Finding common ground in meta-analysis “wars” on violent videogames. *Perspectives on Psychological Science, 14*(4), 705–708. <https://doi.org/10.1177/1745691619850104>
- McCulloch, K. C., Li, H., Hong, S., & Albarracín, D. (2012). Naïve definitions of action and inaction: The continuum, spread, and valence of behaviors. *European Journal of Social Psychology, 42*(2), 227–234. <https://doi.org/10.1002/ejsp.860>
- Moreno, L., Requero, B., Santos, D., Paredes, B., Briñol, P., & Petty, R. E. (2021). Attitudes and attitude certainty guiding pro-social behavior as a function of perceived elaboration. *European Journal of Social Psychology, 51*(6), 990–1006. <https://doi.org/10.1002/ejsp.2798>
- Paredes, B., Briñol, P., Petty, R. E., & Gómez, A. (2021). Increasing the predictive validity of identity fusion in leading to sacrifice by considering the extremity of the situation. *European Journal of Social Psychology, 51*(2), 239–250. <https://doi.org/10.1002/ejsp.2727>
- Petty, R. E., Briñol, P., & DeMarree, K. G. (2007). The meta-cognitive model (MCM) of attitudes: Implications for attitude measurement, change, and strength. *Social Cognition, 25*(5), 657–686. <https://doi.org/10.1521/soco.2007.25.5.657>
- Prescott, A. T., Sargent, J. D., & Hull, J. G. (2018). Metaanalysis of the relationship between violent video game play and physical aggression over time. *Proceedings of the National Academy of Sciences of the United States of America, 115*(40), 9882–9888. <https://doi.org/10.1073/pnas.1611617114>
- Rucker, D. D., Galinsky, A. D., & Magee, J. C. (2018). The agentic-communal model of advantage and disadvantage: How inequality produces similarities in the psychology of power, social class, gender, and race. In J. M. Olson (Ed.), *Advances in experimental social psychology* (pp. 71–125). Elsevier Academic Press. <https://doi.org/10.1016/bs.aesp.2018.04.001>
- Saleem, M., Anderson, C. A., & Barlett, C. P. (2015). Assessing helping and hurting behaviors through the Tangram help/hurt task. *Personality and Social Psychology Bulletin, 41*(10), 1345–1362. <https://doi.org/10.1177/0146167215594348>
- Saleem, M., Anderson, C. A., & Gentile, D. A. (2012). Effects of prosocial, neutral, and violent video games on college students’ affect. *Aggressive Behavior, 38*(4), 263–271. <https://doi.org/10.1002/ab.21427>
- Santos, D., Briñol, P., Petty, R. E., Gandarillas, B., & Mateos, R. (2019). Trait aggressiveness predicting aggressive behavior: The moderating role of meta-cognitive certainty. *Aggressive Behavior, 45*(3), 255–264. <https://doi.org/10.1002/ab.21815>
- Thomaes, S., Bushman, B. J., Stegge, H., & Olthof, T. (2008). Trumping shame by blasts of noise: Narcissism, self-esteem, shame, and aggression in young adolescents. *Child Development, 79*(6), 1792–1801. <https://doi.org/10.1111/j.1467-8624.2008.01226.x>
- Tuente, S. K., Bogaerts, S., & Veling, W. (2019). Hostile attribution bias and aggression in adults—a systematic review. *Aggression and Violent Behavior, 46*, 66–81. <https://doi.org/10.1016/j.avb.2019.01.009>
- Uhlmann, E., & Swanson, J. (2004). Exposure to violent video games increases automatic aggressiveness. *Journal of Adolescence, 27*(1), 41–52. <https://doi.org/10.1016/j.adolescence.2003.10.004>
- Van Reijmersdal, E. A., Jansz, J., Peters, O., & Van Noort, G. (2013). Why girls go pink: Game character identification and game-players’ motivations. *Computers in Human Behavior, 29*(6), 2640–2649. <https://doi.org/10.1016/j.chb.2013.06.046>
- Webster, G. D., Dewall, C. N., Pond, R. S., Jr., Deckman, T., Jonason, P. K., Le, B. M., Nichols, A. L., Schember, T. O., Crysel, L. C., Crosier, B. S., Smith, C. V., Paddock, E. L., Nezlek, J. B., Kirkpatrick, L. A., Bryan, A. D., & Bator, R. J. (2014). The brief aggression questionnaire: Psychometric and behavioral evidence for an efficient measure of trait aggression. *Aggressive Behavior, 40*(2), 120–139. <https://doi.org/10.1002/ab.21507>
- Wells, G. L., & Windschitl, P. D. (1999). Stimulus sampling and social psychological experimentation. *Personality and Social Psychology Bulletin, 25*(9), 1115–1125. <https://doi.org/10.1177/01461672992512005>
- Yeager, D. S., Trzesniewski, K. H., & Dweck, C. S. (2013). An implicit theories of personality intervention reduces adolescent aggression in response to victimization and exclusion. *Child Development, 84*(3), 970–988. <https://doi.org/10.1111/cdev.12003>

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