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# The Resident Evil study: do depictions of race matter in action video games?

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Received: 16 October 2023 / Accepted: 30 November 2023
Published online: 11 December 2023


**Abstract**
Considerable research has examined the issue of whether action video games contribute to aggression. Increasingly, evidence has called this association into question. However, little research has considered whether racial depictions in action games can influence racial attitudes or aggression toward people of similar ethnicities as those depicted in the games. In the current study, 103 young adults were randomized to play versions of the Resident Evil game franchise with either a majority of African race zombies or Caucasian race zombies. Results were mixed. On a test of mild aggression, participants were more aggressive toward a confederate of the same race as the zombies in the game and this was particularly true for white confederates. However, game version had no impact on ethnocentric attitudes. Game version may have small effects on prank-level aggression toward similar race individuals, but game effects don't easily influence deeper attitudes that may lead to real-life racism.

**Keywords** Race · Video games · Attitudes

For decades, psychologists have been interested in the issue of video games' impact on youth behavior. In the main, this has related to research on violence in games (e.g., [15]) or issues related to pathological gaming (e.g., [16, 17] for a larger discussion of video game research). However, since the murder of George Floyd in 2020 and the subsequent protests, riots, and debates over racism in the US and elsewhere, new attention has focused on race and racial depictions in media. In this brief report, we briefly review research in this field, discuss our current study and offer some conclusions for moving forward.

## 1 Brief literature review

Decades of research into video games has proved elusive regarding any clear consensus in the field over how serious video game behavior impacts may be [17]. Much of the research focused on video game violence, wherein early research ultimately led the American Psychological Association [2] to conclude action games were associated with aggression. However, the APA position statement was widely critiqued as misleading even when released and a subsequent reanalysis of its methods found that the evidence could not support associations between action games and aggression [7].

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Likewise, experimental studies, though mixed, increasingly suggest that action games have little impact on aggressive behavior (e.g., [9, 10]).

By comparison, little evidence has examined the issue of race as it applies to video game effects. Some evidence suggests that the narrative of video game effects itself may be racially motivated, with the bad behavior of white youth blamed on video games, but not for black youth (e.g., [12]). However, whether depictions of race in video games influence racial attitudes in real life is less clear. The few existing studies have come to mixed conclusions. One representative study [3] generally did not find that race depictions in games led to increased aggression or racial stereotyping, though there were complex interactions between embodiment and racial depictions. A second representative study [21] suggested that racial depictions are associated with aggression and more racist attitudes.

With so few studies and ongoing concerns about quality issues in many legacy studies [6], there clearly is room for more work on this topic. Thus, we have conducted a new study to examine two main hypotheses.

H1: Playing a game in which players shoot black zombies will increase aggression toward a black confederate in real life, whereas playing a game in which players shoot white zombies will increase aggression toward a white confederate in real life.

H2: Playing a game in which players shoot black zombies will increase ethnocentric attitudes. This effect may be primarily true for white participants.

## 2 Methods

### 2.1 Participants

Participants in the study were 103 undergraduate students at a liberal arts university in the US south. Initially, 123 participants were recruited but 20 (16%) were able to guess the study hypothesis when asked on debriefing and were subsequently excluded from analysis. The mean age of participants was 19.93 (range, 18–33, $SD = 2.05$). 76.7% of the sample were female. Regarding ethnicity, 53.4% where white, 15.5% were black, 17.5% were Latino, 6.8% were Asian, and 6.8% were other. Participants were recruited via a computerized recruitment system for the psychology department. Participants consisted mainly of first-year and second-year students.

## 3 Materials

### 3.1 Video games

Scholarship has indicated that poor matching of video game conditions has been common to previous research [1]. Thus, for this experiment, two games were selected for this study from the same game series, namely *Resident Evil 5* (RE5) and *Resident Evil 6* (RE6). Both were M-rated shooter games featuring zombie antagonists. Although categorization by genre can be subjective, Steam (the most common online market for games) lists both as action games, and Wikipedia lists both as third-person shooters and survival-horror. The Resident Evil wiki lists both as third-person shooter and horror (survival or dramatic) genres. However, RE5 takes place in Africa and, as such, most of the zombies happen to be black, whereas RE6 takes place in several settings, but the gameplay used in this study took place in a fictional American town where the majority of zombies were white. Using these games allowed to randomize participants to racial (black/white) conditions while ensuring the gameplay was otherwise very similar.

### 3.2 Confederate

Our second independent variable was simply the race of the confederate. As discussed in the cold pressor task, participants had the opportunity to put another person's hand in a bucket of ice water as a measure of mild aggression. Participants were randomized to either a black or white confederate. All confederates were women.

### 3.3 Distractor tasks

The hypotheses of video game studies can be easy to detect and demand characteristics can influence study results. In our study, we included two surveys, namely of music preferences and mating preferences, to make our hypotheses less obvious. Participants filled these out along with the ethnocentrism outcome measure. As there were no actual hypotheses regarding these measures, we don't discuss them further.

### 3.4 Ethnocentrism

Ethnocentrism is feature of racism that involves explicit preferences for one's own ethnic group and corresponding non-preference for interacting with those from other ethnic groups, or negative attitudes toward other ethnicities. The Multiethnic Climate Inventory, a 10-item Likert scale [11] was used to measure ethnocentrism with the current study. "I don't like some other races or cultures" and "I want to do social things only with people of my own race and culture" are two examples of questions from this survey. For the current study, coefficient alpha was 0.803.

### 3.5 Aggressive behavior

The ice water task [18, 20] was used to measure aggressive behavior in the current study. For the ice water (or cold pressor) task, the participant has the opportunity to place another person's hand in a bucket of uncomfortably cold ice water after having an opportunity to test the ice water to see that it is painfully cold. The participant is able to determine, from 0 to 20 s, how long the other person (a confederate) should place her hand in the bucket of ice water. Prior to this, the participant is informed that this is necessary for a second experiment involving pain tolerance. Our version of the ice water task used a live confederate (either black or white, randomized), to increase the salience of the task. At five-second intervals, the confederate was scripted to indicate in various ways that her hand was uncomfortable and that she was in pain. The participant can elect not to place the confederate's hand in the water and can determine how long the participant's hand stays in the water, if electing to place it in the water. The length of time from 0 to 20 s, represents aggressive behavior.

Other variations of the cold pressor task have used a hypothetical victim of the task when, in reality, no one would receive the actual ice water immersion (e.g., [20]. However, as demonstrated by Vasquez and colleagues, as little as 5 s exposure is rated as painful. Given our experiment used a live confederate who would actually immerse her hand in ice-water, a 20-s maximum was used consistent with other, prior studies (e.g., [13] to ethically minimize pain and health risks for the confederate.

### 3.6 Video game ratings

Participants were asked to rate the video games related to how exciting (4 items, alpha = 0.877), challenging (5 items, alpha = 0.752) and difficult (3 items, alpha = 0.868) they were. Independent *t*-tests revealed that the games did not differ in terms of how exciting or challenging they were, but did differ in regards to difficulty with RE5 rated as more difficult ($M = 2.70$, $SD = 0.82$) than RE6 ($M = 2.03$, $SD = 0.97$), $t(101) = 3.74$, $p < 0.001$). As such, difficulty will be included as a covariate in subsequent analyses.

### 3.7 Procedure

All procedures described within passed local IRB. Informed consent was obtained from all participants. This included a renewal of informed consent upon debriefing. Upon entry to the lab, participants filled out an informed consent, then were randomized to one of the video game conditions. Participants played the game for 30 min. After playing the game, participants filled out all surveys including the distractor questionnaires, ethnocentrism, and video game ratings. Finally, participants were told that, though this experiment was finished, the lab was also conducting a second experiment on pain tolerance. For that, the lab needed a neutral, objective party to assign a "participant" (the confederate), to put their hand in a bucket of ice water for anywhere between 0 through 20 s. Participants were told that anything above 20 s was too dangerous. Participants were also randomized to confederate condition (black or white confederate). Participants were informed they could select 0 s (a non-aggression outcome). If they did select a number greater than 0, they were made aware that they could also revise their decision if they felt that the person's

**Table 1** Means and standard deviations for groups as relate to aggressive behavior

| Mean | Standard | Deviation |
|---|---|---|
| RE5/white confederate | 6.22 | 3.23 |
| RE5/black confederate | 8.57 | 6.61 |
| RE6/white confederate | 10.15 | 6.00 |
| RE6/black confederate | 7.92 | 6.34 |

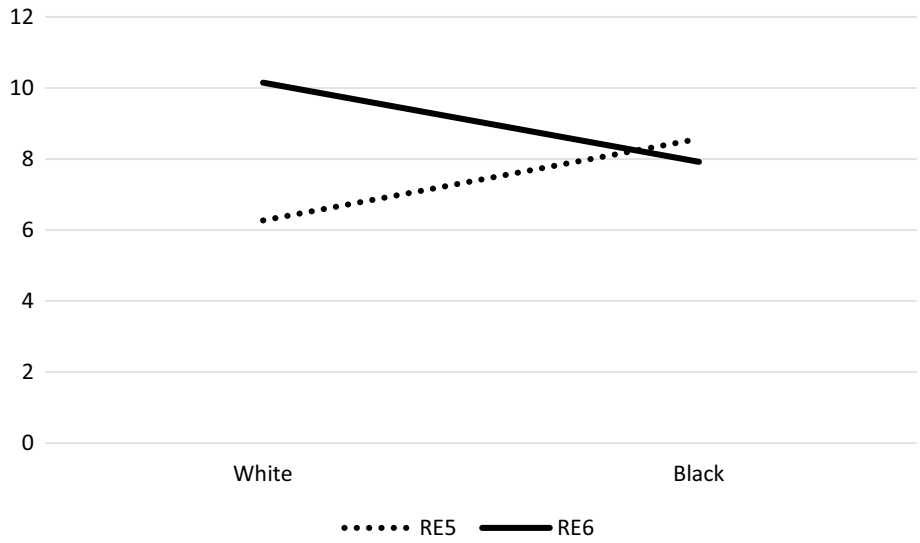


**Fig. 1** Group outcomes for aggressive behavior

hand was in the bucket too long. Every 5 s, the confederate used a scripted exclamation to indicate they found the ice water to be very uncomfortable. Following the ice water task, participants were debriefed and specifically asked to guess the study hypothesis.

## 4 Results

### 4.1 Aggressive behavior

For four participants, at the time of their session, one of our confederates had become acutely sick and was unable to participate. As such, the ice water task was not run for these participants. Given the ice water task is the final procedure, it had no bearing on their ethnocentrism data; as such that data was retained for them.

Regarding aggressive behavior (H1), results were null for game condition and confederate. Participants were no more aggressive in either game condition, nor overall more aggressive to black or white confederates. However, the interaction between game condition and confederate neared significance $F(1, 94) = 3.87$, $p = 0.052$, $\eta_p^2 = 0.040$. Such borderline results are difficult to interpret, as *p*-values near 0.05 can be susceptible to "p-hacking" and false positive results. However, there's always the risk, particularly in a smaller sample, that an overfocus on *p* values may ignore real results. We were hesitant to dismiss this threshold result for two reasons. First, the effect size is large enough to be above the typical concerns for false-positive "noise" effects [8]. Second, our research lab is not known for an over-focus on positive findings for video game effects. Thus, it seemed unlikely we would be accused of being over-eager to find positive outcomes. As such, we are confident in concluding that small, but non-noise effects may exist.

When the analyses were confined to white participants only, all results were non-significant. With only non-white participants the interaction effect was significant $F(1,42) = 9.05$, $p = 0.004$, $\eta_p^2 = 0.177$, similar to the full sample.

Table 1 presents the means and standard deviations for each game/confederate group, and Fig. 1 presents these results in graphic form. As can be seen, most of the variation occurred for white confederates, with the harshest outcomes for white confederates in the RE6 condition.

### 4.2 Ethnocentrism

Regarding the ethnocentrism outcome (H2), no effects were found for game condition, confederate, nor the crucial interaction between confederate and game condition $F(1, 98) = 1.36$, $p = 0.247$, $\eta_p^2 = 0.014$. Rerunning the results with only white participants similarly produced null results for the main interaction outcome ($p = 0.409$). Thus, H2 was not supported.

## 5 Discussion

In this study we sought to address questions about whether racial depictions in video games might have larger ramifications for behavior and attitude in the real world. Interestingly, our results were rather mixed and nuanced.

Regarding our first hypothesis, that racial depictions in video games would influence aggressive behavior toward confederates of the same race, results indicated that such depictions had a small influence on prank-level aggression. Fascinatingly, there was more variance around white participants than black, with the harshest outcomes reserved for white women in the white zombies game condition. We can, of course, only speculate why this might be. It is possible that the current historical moment with debates about the systemic racism construct may have sensitized participants to aggression toward black women, but not white women. Similarly, "Karen" memes, and essays blaming white women for racism, "white women's tears" and "white supremacy" (e.g., [4, 14, 19]) may have conversely normalized aggression toward white women. By contrast, participants may have been more hesitant to engage in aggression toward black women, even when primed by a video game featuring black zombies. It may be possible that prevailing social mores easily override the relatively weak effects of video games. Follow up analyses by ethnicity found that this effect was pronounced for non-white participants, rather than white participants. We note that it is important to be mindful of past, historical injustices without merely inverting them in the present and believe it is important to work toward reducing aggression toward people of all races. We offer the cautionary note that the effect size of our results were small, and are relevant mainly for prank-level aggression and should not be generalized to more serious aggression.

Regarding ethnocentrism, our second hypothesis was not supported. Our results did not find that playing racialized games influenced ethnocentric attitudes, a core facet of racism. Put in colloquial terms, our results do not suggest that video games make people more racist in real life.

## 6 Limitations

As with any study, ours has limitations. First, as with any experiment, the video game exposure time was relatively brief. It is possible that longer exposures may result in greater effects, although related to video game violence studies, longitudinal studies have generally not supported the existence of socialization effects [5]. Second, racism is a complicated construct, and it is possible that other aspects of racist behavior or attitudes not measured in this study may produce more substantial results. Third, our study examined for effects on behavior within several minutes of having played the video game. However, it is possible that such effects may diminish rapidly, and we included no long-term test for effects. Fourth, although we matched our games as closely as we could, it remains possible that some aspects of the game, such as combat movements, weapon choices, pacing, etc., may still differ between the games. Fifth, zombies in the game were not sex-matched to the confederates. Resident Evil zombies are very often male, whereas our confederates were female and it's possible more effects may have been seen with male confederates (albeit the relative dearth of male psychology students makes them harder to recruit). Lastly, our experiment occurred in an artificial setting with college students, many of whom are exposed to progressive worldviews on race and racism, and generalization to other populations is limited.

## 7 Conclusions

Taken together, our results are somewhat mixed, but suggest that, overall, impacts of race depictions in games are unlikely to be a substantial contribution to racism or racist behavior in real life. Racism is a serious issue, and it is important that it be tackled in an empirical, objective manner. We hope that our paper provides one useful piece of data on this topic.

**Acknowledgements** Questions about race and the potential impact of media and technology on racism have become more urgent in the last few years. Current evidence on video games suggests that some forms of content such as violence have less impact than was previously thought. However, we know less about race depictions in games and how these might influence player attitudes and behaviors. Our results, with some nuances, were unable to support the hypothesis that video games are a primary medium through which attitudes on race are likely to flow.

**Author contributions** CJF designed the study, analyzed results, and wrote the first draft. All other authors (CB, MH, BK, SM, KM, JM, AM, LR, SS, CW, MW) contributed equally to collecting data, entering data into SPSS and editing the final draft and are presented in alphabetical order.

**Funding** There was no funding for this study.

**Data availability** SPSS outputs from our study are available at: https://osf.io/kfu2g. Raw data from our study is available at: https://osf.io/emv67

**Code availability** SPSS output for our study is available at: https://osf.io/kfu2g

### Declarations

**Competing interests** There are no competing interests to report.



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