

The (Not So) Evil Within? Agency in Video Game Choice and the Impact of Violent Content

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**Christopher J. Ferguson¹, Kay Colon-Motas¹,
Carolyn Esser¹, Connor Lanie¹, Skylar Purvis¹,
and Mark Williams¹**

Abstract

Background. The degree to which violent video games do, or do not contribute to aggressive behavior and hostility remains controversial in the scientific community, with scholars not yet having come to a consensus about effects. Recent studies have examined whether other issues such as frustration or competition might explain some video game influences that were previously thought to be due to violent content.

Aim. The current study examines whether player agency in determining choice of game played influences aggressive outcomes.

Methods. Young adult players were randomized either to play a violent game, a non-violent game, or to be given the choice between several violent and non-violent games. Players were examined for subsequent aggressive behavior using the ice water task as well as for stress levels and hostility.

Results. Game condition did not influence hostility, stress, or aggressive behavior, whether with randomized or chosen games.

Conclusion. The present study provided no evidence that violent video games contribute to aggressive behavior. Lack of influence for agency in game choice can be understood given the lack of any aggression effect for violent game exposure.

¹Stetson University, USA

Corresponding Author:

Christopher J. Ferguson, Department of Psychology, Stetson University, 421 N. Woodland Blvd., DeLand, FL 32729, USA.

Email: CJFerguson1111@aol.com **[AQ: 1]**

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Introduction

Scholars, politicians and parents have been debating the potential impact of violent games on aggressive behavior for several decades. Despite numerous studies neither scholars (Quandt et al., 2015) nor clinicians (Ferguson, 2015a), nor the general public (Przybylski, 2014) have come to agree that violent games lead to aggression or violence in the real world. A recent meta-analysis has likewise concluded that research evidence is unable to link violent games to aggression among children and adolescence (Ferguson, 2015b) and other studies have associated the release of violent video games with reductions in violent crime (Cunningham, Engelstatter, & Ward, 2016; Markey, Markey, & French, 2015). Given the difficulty in causally linking violent games to real-life aggression, scholars have turned to understanding the issues in the research field that may have led groups such as the American Psychological Association (2005) to believe such links existed.

In recent years, scholars have taken a closer look at the research evidence, examining for potential confounds. For instance, some scholars have expressed the concern that competitiveness (Adachi & Willoughby, 2011), narrative context (Sauer, Drummond, & Nova, 2015), pace of action (Elson, Breuer, Van Looy, Kneer, & Quandt, 2015), difficulty (Kneer, Elson, & Knapp, 2016) or frustration (Przybylski, Deci, Rigby, & Ryan, 2014) may have been confounded with violent content in previous studies. Other scholars have attempted pre-registered designs of violent video game experiments, from the concern that questionable researcher practices may have resulted in spurious outcomes (Engelhardt, Mazurek, Hilgard, Rouder, & Bartholow, 2015; McCarthy, Coley, Wagner, Zengel, & Basham, in press). In general, results from such studies have indicated concern that other variables, rather than violent content, may be sufficient to explain links between some games and the slight increases in aggressive behavior seen by some players in the lab.

Numerous past studies have examined this issue without having reached a clear conclusion. In a recent example of a typical study, Bean and Ferro (2016) randomized participants to play either violent or non-violent video games and measured subsequent aggressiveness. The authors found no evidence that violent games increased aggressiveness and concluded that aggression appears to be innate rather than easily influenced by transient environmental exposures. Other recent experiments have used similar methods, coming to similar conclusions (e.g. McCarthy et al., in press). Although prior experimental studies had been mixed, with some finding effects and others not, recent meta-analytic results suggest that publication bias presented the evidence to effects as stronger than it actually was (Hilgard, Engelhardt, & Rouder, in press).

Does Agency Matter?

One issue that has not yet been examined in significant detail is the role of player agency in the media selection process. Most video game experiments randomly assign

players to play specific games, games they might not otherwise choose to play. Although this is a typical aspect of experimental designs, this does create a problem for external validity. The specific issue is that in the real-world people most often choose which video games they play, rather than being randomly assigned to play them.

Theoretically this becomes an issue from the Self Determination Theory framework, which suggests that people specifically chose media that they wish to consume in order to meet specific needs they may have (Przybylski, Rigby, & Ryan, 2010). From such a perspective a *mismatch* between a specific game and a person's current needs, particularly if the game impedes motivations, can be expected to increase frustration and, thus, aggression, irrespective of its content. Given that it is likely the case that most people who enjoy violent games also likely enjoy non-violent games but that the reverse may be less often the case, the randomization process of experiments may, itself, introduce confounds that limit interpretability. In other words, what is being ascribed to violent content may, instead, reflect merely a poor match between a game and a player's motivations.

Current Study

As of yet, the possible role of player agency in video game effects has not been examined to a significant extent. The clearest means to do so would involve a randomization procedure in which some individuals were randomized to play a violent game, some to play a non-violent game, with the rest randomized to a choice condition in which they were given the opportunity to play either a violent or non-violent game. This introduces an element of agency for some of the participants. Naturally, self-selecting groups may, ultimately, vary on constructs aside from exposure to violent video games. However, we are unaware of any theories of media effects that suggest violent video game players should be naturally less inclined toward violence. Indeed, advocates for causal effects (e.g. Anderson & Dill, 2000) have explicitly predicted otherwise. Thus, were individuals who chose to play violent video games to demonstrate reduced aggression compared to randomized groups of either violent or non-violent gamers, this would lend credence to concerns that randomized experiments of violent video game effects potentially lack external validity and that agency is a critical component to understanding media effects.

With this in mind the current study was designed to test the role of agency in violent video game effects with aggressive behavior, hostility and stress as outcomes. We wished to examine aggressive behavior specifically but also emotions related to hostility and stress as reported by respondents similar as to Bean and Ferro (2016). This design will test the following hypotheses:

Hypothesis 1: Randomized exposure to a violent video game will result in higher aggression, hostility and stress than randomized exposure to a non-violent video game.

Hypothesis 2: Self-selected exposure to a violent video game will not result in higher aggression, hostility and stress than randomized exposure to a non-violent video game.

Hypothesis 3: Males will select violent video games more often than females in the choice condition and will experience less stress following play of these games.

Methods

Note that all procedures were preregistered at: <https://osf.io/n8jvm/>

Participants

Participants in the study were university undergraduates from a small university in the US. Participants were given extra credit for participation in the study. Of 101 initial participants, 2 expressed suspicion about the hypotheses during the debriefing and were excluded from the analyses, resulting in a final sample of 99. The sample was about evenly split by gender (48.5% male). Regarding ethnicity, the majority reported Caucasian ethnicity (66.7%) with significant minorities reporting African American (10.1%), Hispanic (13%) or Other ethnicities (10.1%). Mean age of the participants was 19.11 ($SD = 1.33$).

Materials

Aggressive behavior. Aggressive behavior was measured in this study using an ice water task. In the ice water task, participants are given the opportunity to immerse a confederate's hand in a bucket of freezing ice water for up to ten seconds. Participants are given the opportunity to test the ice water first to see that it is unpleasant. A cover story was used explaining that the experimenters were conducting a separate study on pain tolerance and needed an objective participant to tell the confederate how long to maintain their hand in the ice water for a 10-second maximum. The participant was also informed that, if they were uncomfortable with this task, they did not have to perform it (thus providing a no aggression option). A script was used for the confederate to exclaim about the discomfort he was feeling and asking to let his hand be removed from the ice water. This task improves upon previous aggression measures (see Ritter & Eslea, 2005 for discussion) by being more salient, involving a present victim who, due to the script, clearly wishes to avoid the discomfort of the ice water.

State hostility. Feelings of hostility were operationally defined as the total score on the State Hostility Scale (Anderson, Deuser, & DeNeve, 1995). The State Hostility Scale (SHS) is a 35-item, 5-point Likert-type scale in which respondents are asked to report their current mood. A series of adjectives are presented to the respondent and they are asked to rate how strongly they disagree or agree (i.e., 1 for "strongly disagree" and 5 for "strongly agree") with each word. In this study, the SHS was highly reliable at pretest (Cronbach's $\alpha = .91$) and posttest (Cronbach's $\alpha = .95$).

State stress. In order to examine current stress, the state anxiety form of the State/Trait Anxiety Inventory (STAI, Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) was

employed. The STAI consists of 20 Likert items such as “I feel calm” or “I feel nervous” which measure *current anxiety*. With the current sample the STAI demonstrated good internal reliability at pretest (Cronbach’s $\alpha = .80$) and posttest (Cronbach’s $\alpha = .92$).

Video games. For the randomized exposure, two games were selected in consultation with another research group that has experience on the issue of careful game matching and has done extensive game pre-testing in the past (Adachi & Willoughby, 2011). The games selected were *Mortal Kombat* and *Forza Racing* both for the XBOX One. *Mortal Kombat* is a violent action game in which players fight one-on-one with other characters in the game, often resulting in gruesome “fatalities” or bloody finishing movies. *Forza Racing* is a high paced competitive racing game with no violent content at all. Both games are highly competitive, fast-paced and action oriented.

For participants in the choice condition, 3 exemplar violent and 3 exemplar non-violent games were offered as choices. The violent games were *Call of Duty: Advanced Warfare*, *Mortal Kombat X* and *The Evil Within*. The non-violent games were *Forza 5*, *NBA 2k15* and *FIFA 14*.

Procedure

Upon entering the lab, participants first filled out the pretest hostility and stress measures. Following this, they were randomized either to play *Mortal Kombat*, *Forza* or were randomized to the choice condition. Given that participants could select either violent or non-violent games in the choice condition, the randomization was developed to provide twice as many participants to the choice condition with the presumption they would then self-select roughly equally to the self-selected violent and non-violent game exposure conditions. This was done to keep the numbers in the cells roughly equal. Game play was solitary and lasted approximately 30 minutes.

Following game play, participants were administered the follow up measures and the demographic questionnaire then, lastly, the ice water task. Finally, participants were debriefed and provided with proof of participation.

All analyses were conducted in SPSS software using ANCOVA procedures with gender as covariate.

Results

All cell means and standard deviations are presented in Table 1.

To examine H1 and H2, we conducted a repeated measures ANCOVA with gender as covariate. Neither game condition [$F(3, 91) = 1.09, p = .36, r = .11$] nor the interaction between game condition and time [$F(3, 91) = 0.84, p = .48, r = .10$] were significant. Further, although all cell means increased from pre to post, there was no observed trend for violence exposure to be related to this trend, with the choice violence condition demonstrating the least increase over time. However, we did observe that choice conditions tended to show less increase in hostility over time than non-choice conditions. Bayes factor analysis for violent content returned 4.66 in favor of the null, lending support to the null hypothesis.

Table 1. Cell Means and Standard Deviations for All Conditions.

Outcome Variable	Randomized V	Randomized NV	Choice V	Choice NV
Hostility Pre	66.59 (22.48)	63.63 (10.80)	62.74 (13.95)	63.65 (17.51)
Hostility Post	81.86 (25.16)	76.63 (26.72)	68.37 (16.64)	72.13 (22.29)
Stress Pre	37.50 (10.71)	33.30 (7.44)	36.04 (9.10)	34.00 (11.58)
Stress Post	40.82 (12.26)	39.78 (13.24)	37.70 (9.62)	36.52 (12.54)
Aggressive Behavior	6.23 (3.46)	4.56 (3.46)	5.26 (3.40)	6.09 (2.70)

Note. V = violent, NV = non-violent game condition; numbers in parentheses are standard deviations.

We ran a similar analysis with the stress outcomes. Neither game condition [$F(3, 90) = 0.68, p = .56, r = .09$] nor the interaction between game condition and time [$F(3, 90) = 0.79, p = .50, r = .09$] were significant. As with the hostility outcomes, an examination of cell means suggested no particular trend for violent games to be associated with increased stress. Bayes factor analysis for violent content collapsed across choice and non-choice conditions returned 4.26 in favor of the null, lending support to the null hypothesis.

Lastly, to test aggressive behavior as an outcome, we ran a one-way ANCOVA with gender as covariate. Results for game condition were, once again, non-significant [$F(3, 94) = 1.41, p = .25, r = .12$]. Examination of cell means once again indicated no particular trend for violent conditions to be more aggressive than non-violent conditions. Bayes factor analysis for violent content returned 3.86 in favor of the null, lending support to the null hypothesis.

To test H3, whether males selected violent video games more often than females, chi-square analysis was used (the preregistration had suggested t-test, but chi-square appeared most appropriate given the dichotomous outcome. Results did not differ either way.) Contrary to expectations, no significant differences were found ($\chi^2 = 0.297, p = .59$). However, post-game stress did prove to be higher among women in the violent game choice condition ($M = 42.58, SD = 10.93$) than for males ($M = 33.80, SD = 6.42$) [$t(16.89) = 2.46, p = .025$]. However, this appeared to be solely a gender effect as similar means were observed for the choice non-violent condition ($M = 40.25, SD = 12.84$) for females and for males ($M = 32.45, SD = 11.40$). Analyzing these groups using a group by gender ANCOVA with pre-game stress as the covariate revealed only a gender main effect [$F(1, 45) = 9.64, p = .003, r = .42$] with no effect for the condition by gender interaction [$F(1, 45) = 0.00, p = .96, r = .01$].

Discussion

Scholars continue to dispute whether violent video games contribute to hostility, stress and aggressive behavior. The current analysis sought to examine whether agency might play a role in determining outcomes from violent game play. However, our results revealed that violent content in video games had no discernible impact on behavioral or mood outcomes at all (H1), contrary to our hypotheses. Bayes factor analyses confirmed that the best interpretation for violent content in video games is the

null hypothesis. Thus, there were few effects in place that might have made the impact of agency (H2) discernible.

Also to our surprise, female participants were as likely to select violent games as males and were no more stressed by such games. Thus, H3 was not supported. Although the effects were null, we find them to be important in contrasting with common gender stereotypes of female players as being less inclined toward action oriented violent games than males. That was not found to be the case in the current study. Nor did female players who chose such games find them to be particularly unpleasant. This does differ from one recent study of teens, wherein teen girls were stressed by violent games (Ferguson et al., 2015). In that study, participants were randomized to play violent or non-violent games so, in that case, being forced to play an unwanted game may have led to some stress. We were not able to discern the same among the young adult sample here. As such, examining stress reactions to media content in the content of agency still may be worth exploring.

Our research is consistent with that of an increasing number of other experimental studies (e.g. Bean & Ferro, 2016; McCarthy et al., in press). It appears that hypotheses about video game violence effects may be part of the larger replication crisis influencing psychological science. Indeed, it appears that evidence for video game violence effects has weakened rather than strengthened in recent decades.

As with all studies, the current study has important limitations. Although our sample size is on par for common sample sizes in this field, larger samples are always welcome. Nonetheless, the use of Bayes factors helps lend support to the null hypothesis in our case. Further, the matching of violent and non-violent games is always a difficult process (Adachi & Willoughby, 2011) and we don't claim to have made perfect matches. Lastly, as with most video game studies, ours took place in an artificial laboratory environment and it's not always clear how easy it is to generalize such studies to the real world.

Ultimately our study did not provide evidence to support contentions that exposure to violent video games contributes to heightened aggression, stress or hostility. By contrast, our work supports the concerns expressed by some scholars that it may be time to reconsider such claims of harm (Copenhaver, 2015; Sauer et al., 2015).

Declaration of Conflicting Interests

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Author Biographies

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