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Running Head: MEDIA VIOLENCE AND THE SELF

Media violence and the self:

The impact of personalized gaming characters in aggressive video games on aggressive behavior

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Abstract

A recent development in video games is that players can design and personalize their own in-game characters. It was predicted that this innovation could lead to elevations in the intensity of the psychological effects of video games. The present study confirmed this hypothesis, revealing that participants who played an aggressive video game using their own, personalized character exhibited higher levels of aggressive behavior than participants who played an aggressive game with a non-personalized character. The aggressive behavior levels of the own-character players also exceeded those of individuals who played a non-aggressive game, regardless of whether or not they used a personalized character. Process analyses revealed that participants playing a violent video game with a personalized game character experienced more arousal and self-activation than they did when playing with an impersonal, default game character, which in turn increased aggressive responses.

Key words: Media violence – aggression – video games – self-activation – identification

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Media violence and the self:
The impact of personalized gaming characters in aggressive video games on aggressive behavior

Over the last 10 years, playing video games has become extremely popular (Gentile, Lynch, Linder, & Walsh, 2004). Among adolescents, the amount of time spent playing video games per day now exceeds even that of television viewing (Huston, Wright, Marquis, & Green, 1999). The most popular and profitable video game genres typically contain aggressive content, such as first person shooters (Anderson & Bushman, 2001), sports simulators, and car racing games (Fischer, Kubitzki, Guter, & Frey, 2007). Recently, video games have been created that enable players to generate their own, in-game character. For example, the Nintendo Wii console enables its users to design their own "Mii"; a customizable game character whose physical attributes (e.g. haircut, hair color, nose, mouth, physical stature, etc.) can be modified to match the player's own (Nintendo, 2009). There is ample evidence that playing aggressive video games can increase real-life aggressive tendencies (e.g., Anderson & Bushman, 2001, Anderson & Dill, 2000; Bushman & Anderson, 2002). The present research tests whether these personalized game characters can amplify the effects of playing violent video games on aggressive behavior.

Violent Video Games and the Self

Media violence research has consistently revealed that video games with aggressive content increase aggressive cognitions, emotions, and behaviors in those who play them. For example, partakers of violent video games have been found to display elevated levels of aggressive expectation within their social environment (Bushman & Anderson, 2002), and administer more noise blasts and electric shocks to other participants when in Milgram-derived experimental paradigms (Anderson & Dill, 2000; Bartholow & Anderson, 2002; Bushman, 1998). The effects of aggressive video games on aggressive responses have mainly

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been explained by the General Aggression Model (GAM), which assumes that aggressive behavior results from the interplay between personality variables and situational variables, which influence "several related internal states and the outcomes of automatic and controlled appraisal (or decision) processes'' (Anderson & Dill, 2000, p. 773). The GAM addresses processes of priming, imitation, and learning triggered by aggressive game content. That is, video games (as well as other forms of violent media) show their recipients what aggression is (learning), how it is performed (imitation; modeling), and trigger pre-existing cognitive knowledge structures, emotional associations, and behavioral scripts about aggression (priming).

Drawing on these theoretical conceptions, the GAM identifies a multitude of self-relevant processes that can be triggered by violent video games, such as aggressive self-perceptions; increased arousal and associated self-activation; identification with aggressive game content; and self-efficacy beliefs about aggressive behavior (cf. Anderson et al., 2004; Anderson & Dill, 2000; Bushman, 1998). For example, investigations by Uhlmann and Swanson (2004) highlighted that playing aggressive video games can foster increased automatic associations between aggression and one's own self-concept. Similarly, Fischer et al. (in press) found that players of racing games exhibited higher risk tolerance in critical road traffic situations because they perceived themselves as being more 'reckless' after playing street-racing games (where traffic rules *have* to be violated), compared to their self-perceptions after playing non-racing-related video games. The present research aims to extend these previous investigations by showing that increased identification with a game character can combine with increased levels of self-activation elicited by aggressive media content to intensify the effect of violent video games on aggressive behavior.

The Present Research

The present research tested whether playing violent video games with a personalized game character would lead to increased levels of aggressive behavior. To answer this

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question, a current video game trend that enables players to create their own in-game character was utilized. Players of an aggressive sports game (boxing) and players of a non-aggressive game (bowling) were compared, with both groups either playing with a self-customized game character or one that was provided as the game's default. It was hypothesized that the aggressive game would evoke greater levels of self-activation in its players compared to the non-aggressive game. It has been functional in evolution that situational triggers of aggression (such as those now provided by violent media) alert the cognitive system via priming and spreading neuronal activation (Bushman, 1998), encouraging the preparation of potential aggression-management behaviors (e.g., defend; attack; flee). This increase in cognitive alertness (or arousal; Zillmann, 1983) should be accompanied by increased reflection upon aggression-relevant resources within the self (i.e. self-activation; Brewer & Gardner, 1996; Verplanken, Walker, Davis, & Jurasek, 2008) that may be functional for dealing with potential aggression, such as skills related to the performance of aggression, and the norms and values related to it. It was predicted that this effect would be particularly pronounced in the personalized character condition, where players have a strong, in-game visual representation of the self to identify with – and are thus more likely to find attacks upon it self-relevant and self-activating. Therefore, aggressive attacks on the game character should be more relevant to the player, leading to increased levels of self-activation in order to prepare for an appropriate response. Finally, since increased self-activation has been shown to increase the consistency between the activation of self-aspects (e.g. aggressive values and norms) and related behaviors (e.g. aggression; Verplanken et al., 2008), increased alertness for aggression and associated self-activation of aggression-relevant resources should result in a specific increase in levels of aggressive behavior when individuals play a violent video game using a personalized (high identification) character. In summary, it was hypothesized that players playing an aggressive game with a personalized character would show the highest levels of aggression (relative to

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the remaining three conditions). In addition, it was expected that increased levels of self-activation would mediate this effect when participants played a violent game with a personalized game character.

Method

Participants and design

Seventy-six students (50 women and 26 men; ages ranging from 18 to 47; $M = 22.56$, $SD = 4.66$) at a German university participated in the study in exchange for course credit. One participant's data was excluded from further analyses because he did not finish the questionnaire. The study had a 2 (*type of game*: aggressive vs. non-aggressive) x 2 (*personalized game character*: yes vs. no) between-subjects design. Participants were randomly assigned to one of the four experimental conditions, with eighteen in the low aggression/non-personalized character condition, and nineteen in each of the other three.

Material and procedure

At the experiment's onset, participants were informed that they would take part in two distinct studies, with the first being a marketing survey on various video games, and the second a study on different food additives. The participants' first task was to play a video game, which they were to evaluate in terms of quality and consumer appeal. Participants in the non-personalized character conditions played either the aggressive or non-aggressive video game with a default character, which was unrelated to the participants' personal appearance (i.e., a typical, medium-age Nintendo cartoon figure without typical male or female characteristics). In contrast, participants in the personalized character conditions were instructed to design their own figure before playing either of the games. These were created via the Nintendo Wii's Mii feature, which allows the player to model each facet of their character's physical appearance after themselves. Upon finishing, participants began to play their designated video game. In the two aggressive conditions, this was a boxing simulator, with the two non-aggressive conditions featuring a bowling simulator. Both of these games

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featured in the Nintendo title "Wii Sports", allowing for potential differences in software to be minimized. All participants played their respective game for twenty-five minutes. After playing, participants reported how much they enjoyed the game and whether they would recommend it to other people. These items were not significantly related to the main dependent measures, and were thus not considered further. As a manipulation check, identification with the game character was measured with the item "I could identify with the game character", on a scale from 0 (*not at all*) to 6 (*very much*). Next, self-activation was measured by asking participants how awake, strong, attentive, active, upset and motivated they felt, on a scale from 1 (*not at all*) to 5 (*very much*). The reliability of this scale was satisfactory; $\alpha = .72$. .

Upon finishing the questionnaire, participants were thanked and told that the first study was over. They were then informed that a second marketing study would take place, involving testing the taste of hot and sweet sauces (although only hot sauces were employed). However, because the experimenter needed to be blind to the experimental condition, it would be the participants' own task to administer an undetermined amount of hot chili sauce to a subsequent participant. This subsequent participant would then have to consume all of the dispensed sauce (in reality, this individual did not exist). Participants were informed that the chili sauce was extremely hot, and that it had been found that 84% of all Germans did not like its taste. However, it was stressed that the amount they would dispense for the following participant to consume was entirely their own decision. After this introduction, the experimenter gave the participants a bottle of hot chili sauce, a spoon, and a plastic cup. Participants were first asked to use the plastic spoon to test the hotness of the chili sauce themselves, and then to pour an undetermined amount of the sauce into the plastic cup. The amount administered was measured in grams and utilized as a behavioral measure of aggression (Fischer & Greitemeyer, 2006; McGregor et al., 1998). After finishing, the participants were thoroughly debriefed about the real aim of the study. Special attention was

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given to inform participants that they did not harm anybody in context of the hot chili task. No participant had suspicions about the hypothesis of the experiment.

Results

Check for background effects

The variables of participant age and gender were not significantly associated with aggressive behavior, nor did they interact with the experimental conditions; all Fs < 1.

Identification with the game character

A 2 (*type of game*: aggressive vs. non-aggressive) x 2 (*personalized game character*: yes vs. no) analysis of variance (ANOVA) revealed a significant main effect of personalized game characters; $F(1, 71) = 20.55$, $p < .001$, $\eta^2 = .22$. Thus, participants who created their own figure ($M = 3.05$, $SD = 1.90$) reported higher levels of character-identification than those who played using a non-personalized, default game character ($M = 1.41$, $SD = 1.21$). Thus, the study's manipulation was successful.

Self-activation

The ANOVA revealed a significant main effect for type of game, $F(1, 71) = 7.88$, $p < .01$, $\eta^2 = .10$, with participants who played the aggressive (boxing) video game ($M = 3.09$, $SD = 0.57$) reporting higher levels of self-activation than those who played the non-aggressive (bowling) game ($M = 2.69$, $SD = 0.67$). Following the analytic strategy recommended by Rosenthal and Rosnow (1985), the main hypothesis was directly tested with a planned contrast: participants who played the aggressive game with their own, personalized character ($M = 3.31$, $SD = 0.45$; contrast weight: 3) reported higher levels of self-activation than individuals who played the aggressive game with a non-personalized game character ($M = 2.87$, $SD = 0.61$; contrast weight: -1); these levels also surpassed those of participants who played the non-aggressive game, regardless of whether they used personalized ($M = 2.68$, $SD = 0.59$; contrast weight: -1) or non-personalized ($M = 2.71$, $SD = 0.76$; contrast weight: -1) game characters; $t(71) = -3.46$, $p = .001$, $d = -1.00$.

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Aggressive behavior

The ANOVA revealed a significant main effect for type of game, $F(1, 71) = 7.54$, $p < .01$, $\eta^2 = .10$. Participants who played the aggressive video game administered a larger quantity of hot chili sauce for a subsequent participant to consume ($M = 10.88$, $SD = 11.18$) than those who played the non-aggressive game did ($M = 5.61$, $SD = 3.44$). Thus, the classic media violence effect was replicated. More importantly (and in support of the study's main hypothesis), a planned contrast revealed that participants who played the aggressive game with a personalized game character administered more hot chili sauce ($M = 12.92$, $SD = 15.04$; contrast weight: 3) than participants who played the aggressive game with a non-personalized character ($M = 8.84$, $SD = 4.70$; contrast weight: -1), as well as participants who played the non-aggressive game with ($M = 5.32$, $SD = 3.52$; contrast weight: -1) and without ($M = 5.92$, $SD = 3.42$; contrast weight: -1) their own character; $t(71) = 2.83$, $p < .01$, $d = -0.56$. This pattern of results is depicted in Figure 1. Aggressive behavior significantly correlated with self-activation ($r = .34$, $p < .01$).

Mediational analyses

Next, it was tested whether differences in the level of self-activation would mediate the effect of our main contrast (i.e., playing an aggressive game with a personalized game character vs. all remaining conditions) on aggressive behavior. To test this potential mediation effect, a bootstrapping analysis based on 1,000 bootstraps was run (Preacher & Hayes, 2004). Results showed a significant direct effect of the contrast on aggression, $t = 2.82$, $p < .01$, which was reduced to non-significance, $t = 1.85$, $p > .05$, when controlling for the possible mediator self-activation, which still was significant, $t = 2.21$, $p = .03$. Moreover, this analysis revealed a significant indirect effect (LL 99 $CI = 0.27$; UL 99 $CI = 4.94$; $p < .01$). Hence, the aggression-related impact of playing a violent video game using a personalized game character was mediated by increased levels of self-activation.

Discussion

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A recent development in video games is that players can create their own game character and designate its physical attributes. It was hypothesized that this innovation could amplify the psychological effects of video games. In line with expectations, the present study revealed that participants who played an aggressive video game with their own personalized character exhibited higher levels of aggressive behavior than participants who played an aggressive game with a non-personalized character, as well as players of a *non*-aggressive game with and without personalized game characters. In sum, the present investigation shows that the recent trend in video games to enable participants to use their own personalized game characters increases the negative effects of aggressive video games on aggressive responses.

Process analyses revealed that playing an aggressive video game with a personalized game character (relative to playing with an impersonal, default game character) increased self-activation, which in turn enhanced aggressive behavior. Although the GAM addresses self-relevant processes as a function of violent media consumption in its core assumptions (cf. Anderson & Bushman, 2001; Anderson & Dill, 2000; Bushman, 1998), the effects of video games on processes of the self are a rather under-investigated area in video game research (cf. Gentile & Gentile, 2008). Thus, the present study is an important step towards incorporating processes of the self into the literature on video games. However, future research in this vein is definitely needed. For instance, it would be interesting to test whether similar effects of personalized game characters are found for other types of software, such as pro-social games (Greitemeyer & Osswald, in press-a, in press-b) or racing games (Fischer et al., 2007).

A limitation of the present study is the brevity of the employed dependent measures for identification and self-activation, and that the alpha for self-activation was only in an acceptable range. Hence, future research should use extended and standardized measures. In addition, we did not find any gender differences in aggression; a reason for this may be the unbalanced gender distribution in our sample (i.e., 50 women and only 25 men). Moreover, we used boxing as aggressive behavior. To a certain extent, this is a socially acceptable type

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of aggressive behavior. Thus, it would be fruitful for future research to test whether similar aggression-elevating effects of personalized game characters occur when participants play a video game that condones socially unacceptable aggressive behavior (e.g., killing of other game characters).

In conclusion, the present research suggests that the negative effects of playing violent video games on aggressive behavior may be further accentuated when players create their own game character (rather than using a pre-existing, default game character). As an increasing number of video games are offering their players this game-play option, convincing parents to screen their children's exposure to this form of media is more necessary than ever.

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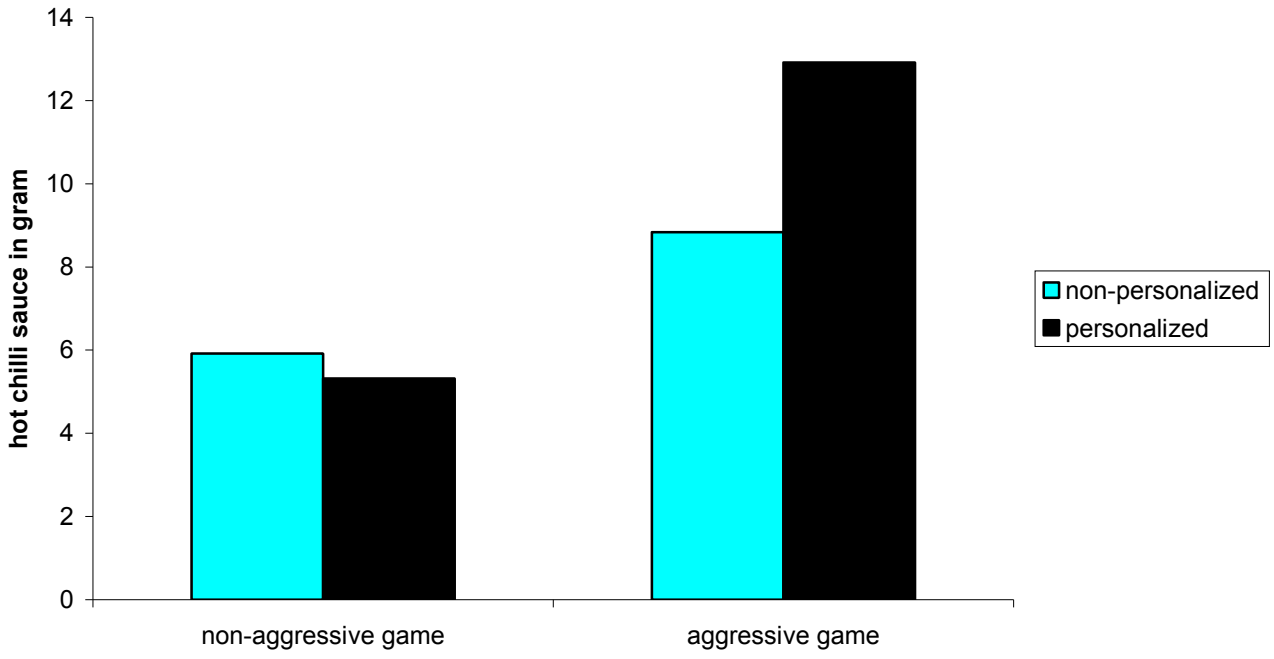

Figure 1: Aggressive behavior (chili sauce in grams) as a function of experimental condition.

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