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# “Remain Calm. Be Kind.” Effects of Relaxing Video Games on Aggressive and Prosocial Behavior

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Jodi L. Whitaker<sup>1</sup> and Brad J. Bushman<sup>1,2</sup>

## Abstract

Research shows that violent video games increase aggressive behavior and decrease prosocial behavior, but could relaxing video games have the opposite effects? In two experiments, participants were randomly assigned to play a relaxing, neutral, or prosocial video game for 20 min. In Experiment 1, participants competed with an ostensible partner on a competitive reaction time task in which they could behave in an aggressive manner (by blasting their partner with loud noise), or in a prosocial manner (by giving their partner money). In Experiment 2, participants reported their mood after playing the video game. After the study was over, they could help the experimenter by sharpening pencils. Compared to those who played violent or neutral video games, those who played relaxing video games were less aggressive and more helpful. Playing a relaxing video game put people in a good mood, and those in a good mood were more helpful.

## Keywords

aggression, altruism, emotion, emotion regulation, helping/prosocial behavior

“Remain calm. Be kind.”

—Colin Powell, World Business Forum, New York, September 23–24, 2008

As the former U.S. Secretary of State, Collin Powel knows a lot about the importance of being kind in negotiations with others. As a retired Four-Star General for the U.S. Army, he also knows a lot about violence and aggression. Remaining in a calm, positive mood state may be one means of increasing kind, prosocial behavior and decreasing hostile, aggressive behavior.

How does one remain calm? One can use techniques such as yoga, deep breathing, and muscle relaxation. One can also use the media. According to mood management theory (e.g., Zillmann, 1988), people often use the media to induce desired moods. Video games may be the ideal form of media for managing mood states because they are active rather than passive. Until recently, it has not been possible to use a video game to induce a calm state because relaxing video games did not exist. However, a new genre of video games focuses on relaxing players rather than revving them up. For example, in the game *Endless Ocean*, players adopt the role of a scuba diver exploring the sea in search of marine species and sunken treasure. In this underwater world, none of the species can harm players. We hypothesize that playing such relaxing video games can promote calm, positive feelings.

Relaxation is incompatible with feelings of stress, which in turn are associated with anger and aggression. Thus, a state of

relaxation, which itself may be considered a positive experience, is instead associated with positive affect, such as feeling peace and happiness. Positive psychology therapy techniques have emphasized the use of relaxation to increase positive feelings and subsequent prosocial behavior. For example, listening to relaxing music has been shown to increase feelings of relaxation and positive affect and to decrease negative affect (Davis & Thaut, 1989).

The experience of positive affect has also been shown to increase prosocial behaviors (e.g., Fried & Berkowitz, 1979; Isen & Levin, 1972), such as volunteering. Several theories have been proposed to explain why positive affect can increase acts of kindness. Of these, priming theory and mood management theory seem most plausible. One theory proposes that state of relaxation promotes empathy and helps one feel “connected” with others, thus prompting a more considerate and prosocial attitude (Smith 2001). This is consistent with priming theory, which posits that people who experience positive affect have other positive associations activated. Such activation primes people to perceive situations in a more prosocial, helpful manner, thus increasing the likelihood of offering aid (Clark & Isen, 1982).

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**Table 1.** Ratings of How Entertaining, Enjoyable, Relaxing and Violent the Relaxing, Neutral, and Violent Video Games Were Judged to Be. Effects of Relaxing, Neutral, and Violent Video Games on Aggressive and Prosocial Behaviors

Video Game	Entertaining Rating	Enjoyable Rating	Relaxing Rating	Violent Rating	Aggressive Behavior (Experiment 1)	Monetary Reward (Experiment 1)	Pencils Sharpened (Experiment 2)
Relaxing	5.38 <sup>a</sup> (1.39)	5.45 <sup>a</sup> (1.02)	9.34 <sup>b</sup> (1.09)	1.23 <sup>a</sup> (0.71)	3.57 <sup>b</sup> (2.25)	6.56 <sup>a</sup> (2.35)	5.11 <sup>c</sup> (4.27)
Neutral	5.95 <sup>a</sup> (1.41)	5.87 <sup>a</sup> (1.63)	5.95 <sup>c</sup> (0.95)	5.50 <sup>c</sup> (1.06)	4.58 <sup>c</sup> (2.22)	6.24 <sup>c</sup> (2.18)	3.72 <sup>a</sup> (2.11)
Violent	5.57 <sup>a</sup> (1.59)	5.23 <sup>a</sup> (1.53)	2.13 <sup>a</sup> (1.19)	9.78 <sup>b</sup> (0.71)	5.60 <sup>a</sup> (2.46)	5.33 <sup>b</sup> (2.46)	3.97 <sup>a</sup> (2.53)

Standard deviations are in parenthesis. Means in the same column with the same superscripts are not significantly different at the .05 level. Entertaining, enjoyable, relaxing, and violent ratings for video games were made using a 10-point scale (1 = *not at all*, 10 = *extremely*). Aggressive behavior is the intensity and duration of noise given to an ostensible partner averaged across the 25 trials. Monetary reward is the number of nickels participants gave their ostensible partner across the 25 trials. Pencils sharpened is the total number of pencils sharpened for the experimenter.

Mood management theory posits that someone in a good mood may be more inclined to help others in order to maintain their positive mood (Zillmann, 1988). One of the primary goals of mood management is to experience positive affect. If a person is already experiencing positive affect, then he or she will act in ways to prolong that positive feeling. Acting in an aggressive manner is likely to decrease positive affect and increase negative affect, whereas acting in a prosocial manner would instead sustain the existing positive affect. Individuals would thus be more likely to perform prosocial behaviors when in a good mood. It is important to note that the explanations of priming theory and mood management theory for the link between positive affect and subsequent prosocial behavior are not mutually exclusive.

Because of the established links between relaxation and positive affect, and between positive affect and prosocial behavior, it is reasonable to expect that relaxation should increase prosocial behavior. Just as playing violent games can induce negative feelings, playing relaxing games can induce positive feelings. We therefore propose that positive affect will mediate the effect of relaxing video games on prosocial behavior.

The present research is the first to examine the effects of relaxing video games on prosocial and aggressive behavior. Experiment 1 tests whether relaxing video games do in fact increase prosocial behavior and decrease aggressive behavior. Experiment 2 tests whether positive affect mediates the effect of relaxing video games on prosocial behavior. We predict that relaxing video games induce positive mood states in players, which in turn will increase prosocial behavior.

## Experiment 1

In Experiment 1, we compared the effects of violent, neutral, and relaxing video games on aggressive and prosocial behavior. Research has shown that violent games increase aggressive behaviors and decrease prosocial behaviors (Anderson et al., 2010). Recent research has also shown that prosocial games increase prosocial behavior (e.g., Gentile et al., 2009). However, no research has investigated the role of relaxing video games on aggressive and prosocial behavior. We predicted that relaxing games would increase prosocial behavior and decrease aggressive behavior, whereas violent games would have the opposite effect (i.e., decrease prosocial behavior and increase aggressive behavior).

## Method

**Participants.** Participants were 150 college students (46% males;  $M_{\text{age}} = 19.6$ ) who received course credit.

**Procedure.** Participants were told the researchers were studying different types of computer games, and that they would play one game alone and one game with a partner. Participants were randomly assigned to play either a relaxing game (Endless Ocean; the fishing mini-game in *The Legend of Zelda: Twilight Princess*), a neutral game (*Super Mario Galaxy*; *Wii Sports Resort*), or a violent game (*Resident Evil 4*; *No More Heroes*) for 20 min on the Nintendo Wii, which was attached to a 21-inch (53.34 cm) Sony TV set. Participants were about 3 feet (0.91 m) from the TV set. The video games were pretested and selected to be similar in terms of how entertaining and engaging they were, but different in terms of how violent and relaxing they were (see Table 1).

Next, participants completed a competitive reaction time task (Taylor, 1967), which is a well-validated measure of laboratory aggression (e.g., Giancola & Zeichner, 1995). We modified the task to measure prosocial behavior as well as aggressive behavior. On each of the 25 trials, the participants competed with an ostensible partner of the same gender to see who could press a button faster. The winner of each trial would be rewarded with money, whereas the loser would be punished with a noxious noise blast. Prior to each trial, participants selected the amount of money to give their partner (if the partner won the competition), as well as the intensity and duration of the noise to give their partner (if their partner lost the competition). The rewards ranged from Level 1 = \$0.05 to Level 10 = \$0.50; a no reward Level 0 was included. Intensity levels ranged from Level 1 = 60 dB to Level 10 = 105 dB (about the same as a smoke or fire alarm). Duration levels ranged from Level 1 = 0.5 s to Level 10 = 5 s. For both intensity and duration, a nonaggressive Level 0 was also included. At the end of each trial, participants were given feedback on the punishment and reward levels set by their partner. The ostensible partner set random punishment and reward levels across the 25 trials. Participants won half of the trials (randomly determined).

The instructions given to participants for the competitive reaction time task were as follows:

You will compete with a partner to see who can press a button faster. The slowest person on each trial hears a noise through a

pair of headphones. You will set the noise levels for your partner, and your partner will set the noise levels for you. The noises will NOT harm your ears. After you set the noise intensity and duration for your partner, you can also choose a level of reward for him or her. Your partner will receive the reward if he or she wins the trial, just as you will win the reward your partner set for you if you win the trial. You can set the intensity, duration, and reward levels by sliding the respective bars over here [point to screen]. When the target square turns red, press the mouse button as fast as you can. The computer says “You WON!” if you were faster, or “You LOST!” if you were slower. You will always see the punishment and reward levels your partner set for you after each trial, but you’ll only hear the noise if YOUR PARTNER was faster, and you’ll only receive the reward if YOU were faster. Likewise, your partner will always see the punishment and reward levels you set, but he or she only hears noise if YOU were faster and receives the reward if HE OR SHE was faster. You will repeat this process 25 times.

Next, the participants listed their three favorite games. The number of M-rated games listed was used to measure habitual exposure to violent games. A debriefing followed.

## Results

**Aggressive behavior.** Noise intensity and duration levels were averaged across the 25 trials to obtain a more reliable measure of aggression. Data were analyzed using a 3 (Relaxing vs. Neutral vs. Violent Video Game)  $\times$  2 (Gender) analysis of variance (ANOVA). As expected, the type of game participants played significantly influenced aggressive behavior,  $F(2, 144) = 8.58, p < .001$  (see Table 1). Planned contrasts showed that participants who played a violent game were more aggressive than participants who played the other games,  $F(1, 144) = 13.40, p < .001, d = 0.60$ . Participants who played a neutral game also were more aggressive than participants who played a relaxing game,  $F(1, 144) = 3.90, p < .05, d = 0.40$ . Men were more aggressive than women,  $M_s = 5.11$  and  $4.11$ , respectively,  $F(1, 144) = 5.07, p < .03, d = 0.37$ . The interaction between Video Game Content and Gender was not significant,  $F(2, 144) = 0.72, p < .49$ . Analysis of Covariance (ANCOVA) using the number of M-rated games as the covariate yielded the same pattern of results.

**Prosocial behavior.** To measure prosocial behavior, monetary rewards were averaged across the 25 trials. Data were analyzed using a 3 (Relaxing vs. Neutral vs. Violent Game)  $\times$  2 (Gender) ANOVA. As expected, the type of game participants played significantly affected prosocial behavior,  $F(2, 144) = 4.62, p < .01$  (see Table 1). Planned contrasts showed that participants who played a relaxing game gave their partner more money than did participants who played the other games,  $F(1, 144) = 4.84, p < .02, d = 0.36$ . Participants who played a neutral game also gave their partner more money than participants who played a violent game,  $F(1, 144) = 4.38, p < .03, d = 0.42$ . Men were more generous than women,  $M_s = 6.49$  and  $5.66$ , respectively,  $F(1, 144) = 6.23, p < .01, d = 0.41$ .

The interaction between Video Game Content and Gender was not significant,  $F(2, 144) = 0.66, p < .52$ . ANCOVA (with the number of M-rated games as the covariate) yielded the same pattern of results.

## Discussion

As predicted, violent and relaxing video games had opposite effects on aggressive and prosocial behavior. In both men and women, relaxing games decreased aggressive and increased prosocial behavior, whereas violent video games increased aggressive and decreased prosocial behavior (in comparison to neutral games). These are the first experimental results to show that relaxing video games can make people more kind and less aggressive.

## Experiment 2

In Experiment 2, we sought to replicate and extend the results of Experiment 1 by focusing on the mechanisms underlying the link between relaxing video games and prosocial behavior. Because previous research has demonstrated that positive affect can increase prosocial behavior, we measured positive affect as a possible mediator of the effect of relaxing video games on prosocial behavior. We predicted that playing relaxing games would increase positive affect and that positive affect, in turn, would increase prosocial behavior.

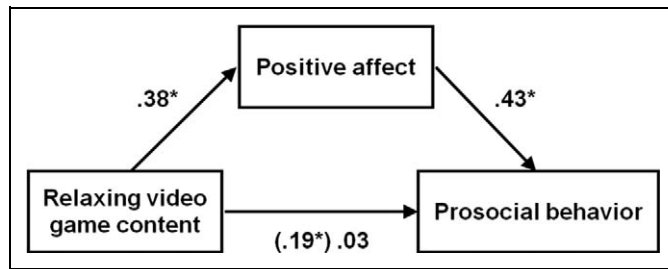
In addition, Experiment 2 used a different measure of prosocial behavior: in Experiment 1, participants could act in a prosocial manner toward their ostensible partner with an effortless button press that gave their partner money. In Experiment 2, participants could help the experimenter sharpen pencils after the experiment was over, which required their personal time and effort. This particular measure of prosocial behavior (i.e., number of pencils sharpened for the experimenter) has been validated in previous research (e.g., Chambers & Ascione, 1987).

## Method

**Participants.** Participants were 116 college students (39% males;  $M_{\text{age}} = 19.4$ ), who received course credit.

**Procedure.** Participants were told the researchers were studying video game aptitude. After giving their consent, participants were randomly assigned to play a relaxing, neutral, or violent game for 20 min. We used the same games as in Experiment 1.

Next, participants completed a questionnaire that measured their mood. Participants rated how strongly they felt 18 different emotional states “right now, at the present time” (0 = none/not at all to 8 = extremely/a great deal), including the following positive mood states: amusement, excitement, happiness, love, joy, and pride. A number of other emotional states were added as fillers (e.g., boredom, sadness, and anger). Finally, participants listed their three favorite video games. The number of games rated M (Mature) for players 17 years and older was used to measure habitual exposure to violent games.



**Figure 1.** Mediating effect of positive mood on the link between playing a relaxing video game and prosocial behavior. *Relaxing video game* = 1; *neutral or violent video game* = 0. Positive mood is the average of the following mood states: amusement, excitement, happiness, love, joy, and pride. Prosocial behavior is the number of pencils sharpened for the experimenter, presumably after the study was over ( $*p < .05$ ). The value in parentheses is the direct effect of relaxing video games on prosocial behavior when positive affect is excluded from the model.

After participants listed their three favorite video games, the experimenter announced that the study was over, but said she could really use some help sharpening pencils for another study if the participant had any free time. The number of pencils the participants sharpened was used to measure prosocial behavior. A debriefing followed.

## Results

**Prosocial behavior.** The number of pencils sharpened were analyzed using a 3 (Relaxing vs. Neutral vs. Violent Game)  $\times$  2 (Gender) ANOVA. As expected, the type of game participants played significantly influenced the number of pencils participants sharpened for the experimenter,  $F(2, 111) = 3.45, p < .04$  (see Table 1). Planned contrasts showed that participants who played a relaxing game sharpened more pencils than participants who played a neutral or violent game,  $F(1, 111) = 4.04, p < .05, d = 0.40$ . The latter two groups did not differ,  $F(1, 111) = 0.12, p < .72, d = 0.07$ . The main effect for gender was non-significant as was the interaction between video game content and gender,  $F_s(2, 111) = 0.03$  and  $1.50$ , respectively,  $ps > .23$ . ANCOVA (using the number of M-rated games as the covariate) yielded the same pattern of results.

**Mediating the role of positive affect on prosocial behavior.** The ratings for the positive mood states (i.e., amusement, excitement, happiness, love, joy, and pride) were averaged to create a composite measure of positive affect (Cronbach's  $\alpha = .81$ ). Video game condition was coded 1 for the relaxing games. Because the planned contrasts showed no difference between the neutral and violent video games, both were coded 0. As expected, positive affect significantly mediated the effect of playing a relaxing game on the number of pencils sharpened (see Baron & Kenney, 1986). As can be seen in Figure 1, relaxing video game content was positively related to positive affect, which was, in turn, positively related to the number of pencils sharpened. The direct effect of video game content on the number of pencils sharpened became nonsignificant after including positive affect in the model. The indirect effect of video game content on the number of pencils sharpened was significant

using the bootstrap procedure (Preacher & Hayes, 2004),  $z = 3.07, p < .002$ . The 95% confidence interval ranged from 0.02 to 2.50, which excluded the value zero.

## Discussion

As predicted, playing relaxing video games increased prosocial behavior compared to playing neutral or violent video games. This effect was significantly mediated by positive mood. Those who played a relaxing video game were in a better mood than those who played neutral or violent video games. The resulting positive mood produced from playing a relaxing video game, in turn, significantly increased the number of pencils participants sharpened for the experimenter. These results are consistent with mood management and priming theories.

## General Discussion

Research has consistently shown that playing violent games increases aggressive thoughts, angry feelings, physiological arousal levels, and aggressive behaviors, and decreases empathic feelings and prosocial behaviors (see Anderson et al., 2010). However, the emerging genre of relaxing video games offers a counterpoint to the observed negative effects of violent games. These two experiments demonstrate that relaxing video games not only decrease aggression but also increase prosocial behavior. Experiment 1 showed that playing relaxing video games decreased the amount of aggression toward an ostensible partner in a subsequent activity. In addition, those who played a relaxing game gave more money to their partner, a veritable act of kindness. Experiment 2 examined a different kind of prosocial behavior—sharpening pencils for the experimenter after the study had ended, which required considerably more effort from the participants. Those who played relaxing video games helped the experimenter more by sharpening more pencils, presumably after the study was over.

Experiment 2 also sought to explain the mechanism underlying the link between playing relaxing video games and prosocial behavior. Based on priming and mood management theories, we proposed that positive affect mediates the link between playing a relaxing video game and behaving in a prosocial manner. As expected, those who played a relaxing video game showed an elevated positive mood state afterward, which, in turn, facilitated helping behavior.

This research provides support for the theoretical links between relaxation, positive mood, and prosocial behavior. Moreover, these studies demonstrate that playing different kinds of video games can promote different types of behavior. Future research, however, should replicate these findings and test for other potential mediators of the link between relaxing video game play and prosocial behavior.

In summary, these are the first experiments testing the effects of relaxing video games on players. The results indicate that playing relaxing video games can help one feel better and also behave in a more prosocial manner, or in the words of Colin Powell, relaxing video games can help players “remain calm and be kind.”

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## Bios

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