

Violent Entertainment and Cooperative Behavior: Examining Media Violence Effects on Cooperation in a Primarily Hispanic Sample

AQ: au
AQ: 1

Raul A. Ramos
Texas A&M International University

Christopher J. Ferguson
Stetson University

Kelly Frailing
Texas A&M International University

The impact of violent entertainment on viewer behavior remains disputed in the academic community. Although most studies focus on negative outcomes such as aggression, some studies also consider whether violent entertainment may reduce positive behaviors such as cooperation. The current article describes 2 studies of violent TV influences on cooperative behavior. The first study examined whether exposure to violent TV shows impacted cooperative behavior using the prisoner's dilemma task in a sample of 181 mostly Hispanic young adults. Results indicated that exposure to violent TV had no impact on short-term cooperative behavior. Long-term exposure to violent TV in real life also did not predict the level of cooperative behavior. The second study examined how motivational factors influenced the relationship between violent TV and cooperative behavior. Overall, these results do not support traditional media effects models of violent entertainment, at least in regard to short-term influences in an experimental setting.

Keywords: media violence, TV, cooperative behavior, prosocial behavior

In the past, some studies have linked exposure to violent media with increased levels of aggression and decreased levels of cooperative behavior (Anderson et al., 2003; Bushman & Anderson, 2002, 2009; Donnerstein & Linz, 1995; Huesmann & Miller, 1994). Furthermore, some of these scholars claim unequivocal evidence exists that violent media diminishes prosocial or cooperative behavior. Other studies have found no link between violent media and desensitization (Bennerstedt, Ivarsson, & Linderoth, 2012; Ramos, Ferguson, Frailing, & Romero-Ramirez, 2013) or have concluded that links between media violence and negative outcomes such as increased aggression or de-

creased prosocial behavior have been overstated in the past (Ferguson, 2002, 2009; Freedman, 2002; Olson, 2004; Savage, 2004). Thus, this issue remains a topic of much debate (Anderson & Bushman, 2001; Ferguson, Garza, Jerabeck, Ramos, & Galindo, 2012).

The current literature is unclear on the effects of violent media on cooperative behavior. Sheese and Graziano (2005) found that exposure to video game violence may diminish prosocial behavior and consequently decrease cooperative behavior. However, the sample size ($N = 48$) was small and not representative (involving only six females, for instance). Another study, with a larger sample size, reported that social context, rather than content, is more crucial to behavioral outcomes (Ewoldsen et al., 2012). Similarly, Adachi and Willoughby (2011) found that competitiveness, not violent content in video games, drove negative outcomes.

With film or TV images, results have similarly been inconsistent (see Ramos et al., 2013 for a review). Bushman and Anderson (2009) reported helping behavior differences between

Raul A. Ramos, Texas A&M International University; Christopher J. Ferguson, Department of Psychology, Stetson University; Kelly Frailing, Texas A&M International University.

AQ: 8

Correspondence concerning this article should be addressed to Christopher J. Ferguson, Department of Psychology, Stetson University, 421 North Woodland Boulevard, DeLand, FL 32723. E-mail: CJFerguson1111@aol.com

attendees of a violent R-rated film and attendees of a children's film. However, they did not use random assignment, nor was the confederate used in the task blinded to the movie condition, introducing significant confounds into this study. In contrast, Ramos et al. (2013), using random assignment to media conditions carefully matched on variables other than violence, found no difference between violent and nonviolent TV shows on subsequent viewer empathy toward victims of real-life violence.

Researching cooperative behavior has presented a unique challenge given the complexities of such behavior that may not have been sufficiently addressed in past media research (Hammerstein, 2003). Taking an eclectic and evolution-based theoretical approach, this article bridges the gap between the biological and psychological components of cooperative behavior and presents original data on the effects of exposure to violent media on cooperative behavior using a modified prisoner's dilemma task (PDT).

Theories Behind the Evolution of Cooperative Behavior

In this section, we consider several theoretical issues related to cooperation and media's role in such behaviors. We begin by discussing evolutionary theories regarding cooperative behavior, including theoretical reasons why media may or may not influence such behaviors. We then consider the usefulness of the PDT as an indicator of cooperativeness. Finally, we examine the degree to which conscious reflections on mood states may be triggered by media experiences and may influence cooperative behavior.

The term evolution, when referring to cooperative behavior, can be thought of as encompassing "several processes; including cultural transmission, learning, imitation, and, of course, natural selection acting on genotype frequencies in populations" (Hammerstein, 2003, p. 2). Currently, the theory behind biological evolution has shifted toward an individual-level focus and away from focus on the populations or species as a whole (Axelrod & Hamilton, 1981; Hammerstein, 2003). This more recent approach models itself more closely after Darwin's original emphasis on the individual as the most effective operating site for natural selection. Before this shift in focus, cooperative behavior

was considered an adaptive phenomenon that occurred at the group level, functioned at the group level, and subsequently improved biological fitness at the group level (Trivers, 1971). As the focus changed, researchers quickly saw the need to explain why a behavior that is beneficial for the group but may not be for the individual (with respect to the cost/benefit ratio) had developed (Axelrod & Hamilton, 1981). The answer came in the form of two theories, kinship theory and reciprocation theory (Hamilton, 1964; Trivers, 1971). Briefly, kinship theory builds itself on the idea that genes not only seek to promote themselves, but to promote their replicas located in those genes related to them (Hamilton, 1964). In effect, kinship theory explains why an individual would cooperate with a sibling or close relative, but does not account for nonfamilial individuals or members of a different species.

To account for cooperative behavior in non-related individuals, reciprocation theory was developed. Reciprocation theory builds itself on the basis that altruistic behaviors are favored for by natural selection because of the long-term benefit to the altruist, even when there is no familial relationship with the recipient, effectively ruling out kin selection (Trivers, 1971). Furthering the strength of his theory, Trivers (1971) discusses the possibility that natural selection could favor an individual who might be the recipient of altruistic behavior and then manage to cheat his way out of repaying the debt. He contends selection will not favor a cheater if there are severe repercussions for cheating that outweigh the cost of reciprocating. When combined, these two theories provide an effective explanation for why cooperative behavior exists. Cooperative behavior promotes the biological fitness of our species. The ability to cooperate as a species is necessary to ensure our survival and growth (Trivers, 1971).

Evolutionary theorists have not generally spoken to the issue of how exposure to violent media might influence cooperative behavior or whether it should at all. Indeed, perhaps the most direct attempt to address this issue is the Catalyst Model of violence (Ferguson et al., 2008), which specifically excludes media violence as a causal factor, given it is too distal an influence in comparison with real-life exposure to violence. This conflicts with traditional media effects theories that have specifically stated

that the influence of exposure to media violence should be no different from exposure to violence in real life including abuse (e.g., [Bushman & Huesmann, in press](#)). In contrast, authors speaking from an evolutionary perspective consider the equating of real-life to fictional violence as unrealistic and suggest that whatever reward structures may exist in regards to consuming violent media are unlikely to survive against real-life reward and punishment structures and thus have little actual impact on behavior ([Elson & Ferguson, in press](#)).

The Prisoner's Dilemma

To effectively measure and make predictions about cooperative behavior, many researchers have used the PDT ([Axelrod & Hamilton, 1981](#); [Ewoldsen et al., 2012](#); [Sheese & Graziano, 2005](#); [Trivers, 1971](#)). The PDT has been a key tool in attempting to understand the psychological mechanisms behind cooperative behavior. Essentially, the PDT is composed of a payoff matrix ([Axelrod & Hamilton, 1981](#); [Rapoport & Chammah, 1965](#); [Trivers, 1971](#); see [Figure 1](#)).

During the task, players can choose to cooperate or defect (that is, compete). In the matrix, C_1 and C_2 represent the possible choice of cooperation between the two players and D_1 and D_2 represent the possible choice of defections between the two players. In general, the payoff works in a way that $T > R > P > S$, where T stands for the temptation to defect, R stands for the reward received during mutual cooperation, P stands for punishment for mutual defection, and S stands for the sucker's payoff. The logical solution to this task is to defect. If player 1 defects, he receives the highest reward possible, assuming that player 2 chooses to cooperate. If player 2 also chose to defect, the answer for player 1 is still to defect because $P > S$. No

matter the choice of player 2, the logical choice for player 1 should be defection, because with defection, one both reaps the highest likelihood of the highest reward and also avoids the sucker's payoff. The dilemma exists in the fact that if both players chose to cooperate they would receive the payoff R and $R > P$. Mutual cooperation will yield a higher outcome for both players when compared with mutual defection, but risks the sucker's payoff.

Based on biological evolution and on game theory, cooperation is not a strategy that would be selected for ([Axelrod & Hamilton, 1981](#); [Brosig, 2002](#)). If the logical solution to the PDT is defection, then it becomes necessary to explain why participants cooperate. [Trivers \(1971\)](#) predicted that the system behind human altruistic behavior is a complex psychological system. To ensure the stability of cooperative behavior, natural selection needed to promote the psychological attributes that ensured the existence and continuation of such behavior.

Drive Cooperation

Emotions play an essential role in cooperative relationships ([Cosmides & Tooby, 2000](#); [Fessler & Haley, 2003](#); [Frank, 1988](#); [Trivers, 1971](#)). Emotions can influence cooperative behavior in three important ways. They can (a) drive an individual to reciprocate prosocial or antisocial behavior, (b) drive an individual to maintain or repair a damaged relationship, and (c) cause an individual to terminate the relationship altogether ([Fessler & Haley, 2003](#)). Emotions can also be used to signal the propensity to cooperate and predict another individual's willingness to cooperate ([Frank, 1988](#)).

Perception of one's own emotional state could potentially influence decisions about whether or not to be cooperative and can be

	C_2	D_2
C_1	R, R	S, T
D_1	T, S	P, P

Figure 1. The prisoner's dilemma matrix.

F1

AQ: 2

understood through evolutionary theory. For example, from an evolutionary standpoint, gratitude was selected for to regulate human response to altruistic acts (Trivers, 1971). This tit-for-tat behavior is often the foundation for establishing a relationship or strengthening an existing relationship through reassurance (Axelrod & Hamilton, 1981; Ewoldsen et al., 2012; Fessler & Haley, 2003). In contrast, anger can lead a cooperative individual to choose to no longer cooperate if the behavior is not being reciprocated. Although anger may be a component of such decisions, simple learning mechanisms may also change cooperative behavior if it is not reciprocated. However, we suggest that emotional and cognitive components may work together in cases of unreciprocated cooperation.

Bringing It All Together

The notion that exposure to violent (or more broadly, negatively valenced media) can influence behavior through emotional states has been explored in previous research (Oliver & Bartsch, 2011; Oliver & Raney, 2011). Some scholars suggest that violent content in media may diminish an individual's empathic responses and change the emotional responses necessary for cooperative behavior (e.g., Anderson et al., 2003). The argument from this approach is that continual exposure to media violence creates and reinforces aggressive scripts in which individuals will respond to ambiguous circumstances with greater anger and less empathy. Violent media may cause viewers to perceive greater anger and less gratitude during a cooperative task and as such be less inclined to cooperate.

If exposure to violence has an effect on an individual's perceptions of their emotional state and leads to increased anger, then individuals exposed to violent TV shows will no longer be able to properly regulate their cooperative behaviors during a PDT. That is to say, they should be more prone to anger responses when the other player defects and to gratitude responses when they win at the other player's expense. The exposure to approximately 1 hr of stimuli should allow for any temporary valence reactions (emotions) to translate into a more sustained state (i.e., mood). We expect this should result in fewer cooperative behaviors in trials following violent TV exposure as com-

pared with nonviolent TV exposure. We approached the testing of our hypothesis through two studies, both of which are described and discussed below.

Study 1

Method

Participants. Participants were 181 college students from a small university in the southern United States receiving extra course credit as an incentive for voluntary participation. There were 71 male participants accounting for 39.2% of the participant group and 110 female participants accounting for 60.8%. The mean age of the participants was 21.79 ($SD = 5.97$). In terms of ethnic frequency, 171 (94.5%) participants were Hispanic, six (3.3%) were White, two (1.1%) were Black, and two (1.1%) categorized themselves as other.

Materials.

TV episodes. For this study, participants were randomly assigned to one of six TV episodes. There were two types of TV episodes that a participant could be assigned to watch, namely violent and nonviolent. For each type, three TV episodes were selected as exemplars. They were chosen based on both Adachi and Willoughby's (2011) comments on equivalence related to video games and on shows that were found to be equivalent in prior research (Ramos et al., 2013) on variables other than violent content (e.g., recentness, dramatics, network release, presence of female characters, et cetera). For the nonviolent category, the three TV shows chosen were *Parenthood*, *Private Practice*, and *Glee*. *Parenthood* is a family drama with comedic moments involving the travails of an extended American family. *Private Practice* is a medical drama that centers around physicians juggling their lives as practitioners with their private lives. *Glee* is a high-school drama/comedy in which the students frequently participate in singing and dancing. All three episodes were prescreened by the experimenters to ensure absence of violent content. For the violent exemplars, the three shows chosen were *Law and Order: Special Victims Unit*, *Once Upon A Time*, and *Bones*. *Law and Order: Special Victims Unit* is a crime drama that focuses on the cases of the detectives of the special victims unit, a unit dealing with sex crimes and crimes

against minors. *Once Upon A Time* is a fantasy drama in which characters from popular fairy tales (Snow White, Rapunzel, Prince Charming, et cetera) are transported into our modern world. Lastly, *Bones* is a crime drama that focuses on a forensic anthropologist. In *Bones*, the scientists and detectives attempt to solve cases using the cadavers and bones of victims. All six shows feature a mixture of male and female lead characters.

Matching media conditions between violent and nonviolent conditions is widely known to be difficult because violent and nonviolent programming often differs on variables other than simply violent content, which can introduce confounds (Adachi & Willoughby, 2011). In comparing any two shows it would be difficult to ascribe differences due to violent content because the shows may also differ on other variables. This issue can be addressed in part by the use of multiple exemplars, which should smooth out some differences between individual shows, particularly if the exemplars in both conditions are similar on variables other than those of interest. Thus, shows in both categories were selected to be conceptually similar in terms of general pacing, length, popularity, and presence of female lead characters.

Demographic questionnaire. The demographic questionnaire contained questions regarding the basic demographic information of the participant. The information collected from this questionnaire included the participant's age, gender, ethnicity, place of birth, marital status, parents' marital status, level of education, and level of parents' education.

Follow-up survey. The follow-up survey was composed of three items that inquired about the TV episode that participants had just watched. For example, one item asked, "How exciting did you find the show?" Answers ranged from 1 (not at all) to 5 (very much so). These items were reasonably consistent ($\alpha = .83$) and were combined into a single enjoyment index. A fourth item asked about how violent the show appeared to be.

Prior exposure to TV violence. Using a commonly used 5-point Likert scale approach (e.g., Lenhart et al., 2008; Olson et al., 2007), participants were asked to name their three favorite TV shows, record how often they viewed them, and rate the violent content of those shows. A composite index of previous exposure

to violent TV content could thus be compiled by adding together the multiplied values of time by violent content across the three shows. This provides an estimate of prior exposure to violent TV content in the participants' real lives. Assessing "real life" exposure to violent media content has been an area fraught with controversy, and there is concern over the validity of currently used approaches. We acknowledge that an approach such as this is imperfect at best, but note that few if any approaches to measuring media viewing are without controversy.

Prisoner's dilemma task. As described earlier in the manuscript, the PDT is a widely used task in which players are given the opportunity to cooperate or defect. Mutual cooperation results in a small mutual reward. Defecting offers the opportunity to get a larger reward; however, if both players defect, neither is rewarded. Rewards offered in the current version were of token financial value (i.e., pennies) and were designed simply to make the competition for rewards salient. Use of multiple trials allowed us to examine, to a greater degree, the interplay between participants who, after the first trial, may be responding as much to each other as they are to the exposure to a TV program.

Procedure. Participants from undergraduate courses attended one of six sessions being offered. Each session had been randomly assigned one of the six TV episodes used for this study. Using one-way ANOVAs, shows in the nonviolent condition did not differ from each other in terms of violent content or enjoyment, nor did shows in the violent condition. Means and standard deviations for exemplars are presented in Table 1. Violent shows were rated as being more violent in the follow-up survey than were nonviolent shows ($t(179) = 6.97, p < .001$); violent shows also were rated as slightly more enjoyable than nonviolent shows ($t(179) = 3.87, p < .001$). Sessions occurred in the university movie theater, which seats about 200. Thus, the small groups of about 20 participants could be physically spread out. At the beginning of each session, the experimenter explained that the participants would be asked to rate the quality of a TV show. The investigator then turned on the projector and began the TV episode. Following this, participants completed the demographic questionnaire and the follow-up survey and then were taken in groups of

Table 1
Descriptive Statistics Related to Show Enjoyment and Violence Perception

Show	Enjoyment	Violence	Uncooperativeness
<i>Glee</i> (NV)	9.85 (3.29)	1.30 (0.95)	8.17 (1.09)
<i>Bones</i> (V)	12.17 (2.59)	2.27 (0.94)	7.63 (0.89)
<i>Once upon a time</i> (V)	12.29 (2.73)	2.35 (1.32)	7.69 (1.09)
<i>Parenthood</i> (NV)	11.07 (3.16)	1.50 (0.81)	7.80 (1.20)
<i>Law and order: SVU</i> (V)	12.18 (2.52)	2.59 (1.01)	8.35 (1.46)
<i>Private practice</i> (NV)	10.18 (2.97)	1.44 (0.64)	7.91 (1.16)

Note. (V) is violent, (NV) is nonviolent. Numbers in parentheses are standard deviations.

two to participate in the PDT. Players played through five trials of the PDT. Lastly, participants were thanked for their participation and they were debriefed.

Results

Does exposure to violent TV decrease cooperation? To answer the fundamental question of our study, we used the PDT in two ways. First, we summed cooperative trials across all trials of the PDT to get an overall cooperation index. However, given that latter trials on the PDT may involve emotional responding to the opposing player's previous behaviors rather than the TV episode, we also considered outcomes on the first trial alone.

Overall cooperation was examined using an ANOVA design with violence condition and gender as independent variables, and show excitement as a covariate due to the significant differences in enjoyableness between violent and nonviolent shows. Although the gender variable approached significance ($F(1, 167) = 2.99, p = .09, r = .13$) with females more cooperative than males, the effect of violent programming on cooperative behavior was non-significant ($F(1, 167) = 0.01, p = .91, r = .00$). Given this effect size is no different from zero, Type II error is not a possible explanation. The interaction between gender and violent condition was similarly nonsignificant. The means and SDs for uncooperativeness are presented in Table 1.

The results did not change when only the outcome for the first trial of the PDT was considered. Generalized linear modeling for binary outcomes (cooperate vs. defect) was used to test the hypothesis that violent media would influence the first trial on the PDT. A model involving main effects for gender and media violence,

as well as their interaction was tested. This model was not a good fit to the data ($\chi^2(3) = 2.65, p = .45$), nor was a model examining TV violence exposure specifically ($\chi^2(1) = 0.08, p = .78$). As such, exposure to TV violence in the laboratory setting neither influenced cooperativeness overall, nor cooperation on the first trial.

We also examined whether prior exposure to TV violence would influence overall cooperativeness. To do so, we used an OLS regression model with gender and real-life TV violence exposure as predictor variables, and cooperative behavior on the PDT overall as the outcome. In this equation, prior TV violence exposure was not a significant predictor of cooperativeness on the PDT ($\beta = -.10, p = .17$). Influence of TV violence exposure in real life on the first trial of the PDT was examined using logistic regression with gender as the control variable. Once again, real-life TV violence use did not predict the first trial of the PDT ($p = .68$).

Discussion

Results from the first study did not find evidence for links between exposure to violent TV in the experimental setting and subsequent cooperative behavior. Nor was evidence found linking prior exposure to violent TV in real life to cooperative behavior. These results conflict with views linking violent media exposure to decreased cooperativeness. However, as we argued earlier, it is possible that motivational structures may play a role in such relationships. These were not examined in the first study. In Study 2, we examined whether the motivational structures of individual participants may create idiosyncratic results in viewers of violent media.

Study 2

Method

Participants. Participants were 146 college students from a small university in the southern United States receiving extra course credit as an incentive for voluntary participation. There were 47 male participants accounting for 32.2% of the participant group and 99 female participants accounting for 67.8%. The mean age of the participants was 21.13 ($SD = 4.91$). In terms of ethnic frequency, 133 (91.1%) participants were Hispanic, six (4.1%) were White, three (2.1%) were Black, and four (2.8%) categorized themselves as other.

Materials. Materials for the study were identical to Study 1 with the following exceptions:

Hedonic and eudaimonic motivations. To examine how motivation may influence media exposure, Oliver and Raney's (2011) scale for measuring hedonic and eudaimonic motivations for media use was used as part of the follow-up survey. This measure is able to examine two potential motivations for media use, namely watching media for pleasure (hedonic) and watching media to get meaning (eudaimonic). It is possible that individuals who value different motivations for viewing media may have very different responses to violence in the media. Both subscales consisted of Likert scale items and had good internal consistency (.81 for hedonic motivations and .88 for eudaimonic motivations). Examples of hedonic scale items included "It's important to me that I have fun when watching a movie" and "I find that even simple TV shows can be enjoyable as long as they are fun" whereas examples of eudaimonic items included "I like TV shows that focus on meaningful human conditions" and "I like TV shows that make me more reflective."

Prisoner's dilemma task. The PDT was used in this study the same way as in Study 1 with one exception. Before the first trial and after each subsequent trial, participants were asked to record whether their mood had several emotions related to guilt, gratitude, righteousness, and anger, which may have influenced cooperation. Inclusion of this analysis allowed us to understand participants' perceived mood states and how they might influence choices made within the PDT. This also allowed us to

examine, to a greater degree, the interplay between participants who, after the first trial, may be responding as much to each other as they are to the exposure to a TV program.

Procedure. As with Study 1, participants from undergraduate courses attended one of six sessions being offered. Each session had been randomly assigned one of the six TV episodes used for this study. As with Study 1, violent shows were rated as being more violent in the follow-up survey than were nonviolent shows ($t(94.38) = 12.69, p < .001$), although with this sample, nonviolent shows were rated as enjoyable ($M = 14.36, SD = 3.19$) as violent shows ($M = 14.00, SD = 3.23$) ($t(142) = 0.67, p = .50$). At the beginning of each session, the experimenter explained that the participants would be asked to rate the quality of a TV show. Use of a group format was viewed as consistent with the social context of most media viewing experiences. The investigator then turned on the projector and began the TV episode. Following this, participants completed the demographic questionnaire, the follow-up survey, and then were taken in groups of two to participate in the PDT. Lastly, participants were thanked for their participation and they were debriefed.

Results

Does exposure to violent TV decrease cooperation? To answer the fundamental question of our study, we used the PDT in two ways. First, we summed cooperative trials across all trials of the PDT to get an overall cooperation index. However, given that latter trials on the PDT may involve emotional responding to the opposing player's previous behaviors rather than the TV episode, we also considered outcomes on the first trial alone.

Overall cooperation was examined using an ANOVA design with violence condition and gender as independent variables. As with Study 1, neither gender, violent content ($F(1, 142) = 2.94, p = .09, r = .14$) nor the interaction between the two variables were significant. The results did not change when only the outcome for the first trial of the PDT was considered. Generalized linear modeling for binary outcomes (cooperate vs. defect) was used to test the hypothesis that violent media would influence the first trial on the PDT. A model involving main effects for gender and media violence,

as well as their interaction was tested. This model was not a good fit to the data ($\chi^2(3) = 1.52, p = .68$), nor was a model examining TV violence exposure specifically ($\chi^2(1) = 0.30, p = .59$). As such, exposure to TV violence in the laboratory setting neither influenced cooperativeness overall nor cooperation on the first trial. Exposure to violent TV in real life also did not predict cooperativeness ($r = .02, p = .80$).

To examine how exposure to violent TV influenced mood state, we used generalized linear modeling with randomized TV violence exposure and gender as independent variables and mood state just following the TV show as the outcome variable. Only one participant each reported feeling angry or guilty and these were dropped from the analyses. The resultant model was not a good fit to the data ($\chi^2(3) = 0.50, p = .91$) and the results for TV violence specifically were nonsignificant ($\chi^2(1) = 0.06, p = .80$).

How do motivations react with exposure to violent TV? To examine whether eudaimonic or hedonic motivations influenced reactions to violent TV, an OLS regression procedure was used. Cooperativeness was examined as the outcome, with gender, exposure to real-life violent TV, the randomized experimental TV violent condition, and interaction terms involving the two motivations and the randomized violence exposure condition as predictors. The resultant regression equation was nonsignificant ($R(5, 139) = 1.31; p = .28$).

We examined whether motivational structures could explain attraction to violent TV. We ran a stepwise regression with real-life exposure to violent TV as the outcome. Stepwise regression was used in this case, as our analyses were exploratory rather than theoretical. Predictor variables were gender, eudaimonic, and hedonic motivation. The resultant regression equation was significant ($R(1, 143) = 4.23; Adj R^2 = .024; p = .035$). Only eudaimonic motivation was retained in the model ($\beta = .18, p = .035$), with higher eudaimonic motivations indicative of greater exposure to violent TV in real life.

How does mood influence cooperativeness? To examine the degree to which mood state influences decisions about cooperativeness, we used Generalized Linear Modeling with defect/cooperate decisions as the outcome for each trial. Gender and mood state were considered at predictor variables. These analyses were conducted for each of the five trials of the PDT to

examine how changes in mood state influenced decisions to cooperate.

Most participants across trials reported having a neutral mood state. Mood states related to anger, righteousness, and guilt were generally rare across trials. Responses for "angry" ranged from 0.7 to 6.2% of the sample across trials, with righteousness ranging from 8.2% to 14.4% and guilt, 0.7% to 5.5%. However, feeling grateful was a common response and appeared to increase across the trials. In the pretrial phase, only 7.5% of participants reported feeling grateful. After the first trial, the number increased to 31%. The number of participants identifying as grateful stayed at about the same level for the further trials, 29% after Trial 2, 24.7% after Trial 3, 23.6% after Trial 4, and 30.8% after Trial 5.

Results for the first and second trials were nonsignificant for both gender and mood state, suggesting that mood coming off of the TV program was not a critical component of decisions to cooperate. However, by trial three, mood state was a significant predictor of cooperation. The overall model was a good fit to the data ($\chi^2(6) = 15.41, p = .01$), with only mood state as a significant predictor (Wald $\chi^2(5) = 10.81, p = .03$). As was expected, grateful individuals were more likely to cooperate (33 cooperate vs. 9 defect) than individuals reporting a neutral mood (49 cooperate vs. 33 defect). The models returned to nonsignificance for Trials 4 and 5. Results did not differ when only gratitude was compared with neutrality.

Discussion

Results of the second study were mainly in line with those of the first in regards to cooperative behavior. Neither exposure to violent TV in the experiment nor in real life predicted cooperative behavior in the PDT, nor did exposure to violent TV influence mood state. Only one participant reported feeling angry after watching the TV program, and this person had watched a nonviolent TV show. Furthermore, interactions with eudaimonic and hedonic motivations and violent TV were also insignificant. Overall, these results suggest that violent TV influences on cooperativeness are minimal. However, eudaimonic motivations did predict a tendency to watch violent TV shows; the effect was small but significant. This finding is curi-

ous, given one might have expected a stronger linkage between hedonic motivations and TV violence exposure. Without further research, we can only speculate why an inclination to find meaning in media would be associated with increased violent TV exposure, but it may be that some individuals seeking to understand the darker sides of the human condition may be attracted to violent media and find meaning within the same.

As for impact of perceived emotions on the PDT, results indicated that only gratitude influenced more cooperative behavior during the PDT and only during one of the trials. Overall gratitude increased among participants after the first trial and it may be that, overall, participants considered the PDT to be a game-like experience. Naturally, emotional reactions to the PDT might change were the stakes higher or more impactful. Why gratitude would seem to be so important for a middle trial, but not others is unclear. It is possible that the middle portion of the experience indicated a peak for the PDT in regards to participant investment. It also should be recognized that one outcome out of five may simply be a statistical artifact and, thus, should be interpreted with great caution.

Thus, we are confident that our results suggest limited impact of violent TV viewing on cooperative behavior, but the motivational and emotional structure of cooperative behavior should be further explored.

General Discussion

In these two studies, we investigated the effects of media violence on cooperative behavior and found no significant differences in cooperative behavior for those who were exposed to a violent TV show as compared with those who were exposed to a nonviolent TV show. Interactions between media violence and motivational structures in the second study were, likewise, nonsignificant. Neither experimental exposure to violent TV, nor exposure to violent TV in real life predicted reductions in cooperative behavior. In the face of these results, we are forced to reject our hypothesis that exposure to TV violence should reduce cooperative behavior because of its influence on emotions, especially anger and gratitude. In our second study, gratitude did influence cooperative behavior, but in only one of five trials. Viewing of

violent TV had little actual impact on emotion. It could be argued that the use of binary measures of self-report data instead of scalar measures would increase the likelihood of Type II errors, but the use of multiple scalar measures for each mood state for the six total trials (one pre-PDT and five post-PDT) could have potentially overwhelmed the participants, possibly introducing confounding variables of frustration and impatience. Instead the magnitude of the effect sizes is small enough that it is unlikely Type II error explains our null results.

These results run contrary to the proposition set forth by [Anderson et al. \(2003\)](#), who maintain that violent media may diminish empathy and the prosocial responses requisite for cooperation. Our results also stand in contrast to those of [Sheese and Graziano \(2005\)](#), who found that exposure to violent media in the form of video games decreased prosocial behavior, including cooperative behavior as measured by PDT. Recent reviews have suggested that citation bias is a common issue in media effects literature, and such bias can potentially influence research results ([Ferguson, 2010](#)). We noted citation bias in some past studies such as that by [Sheese and Graziano \(2005\)](#) and express the concern that the results they obtained, although certainly published in good faith, may be characteristic of this ongoing issue in the field. Moreover and as noted above, their sample size was small ($N = 48$). These are serious limitations that impact the generalizability of their findings. It also does not appear that [Sheese and Graziano \(2005\)](#) considered the potentially confounding effects of the amount of violent video games participants play outside the laboratory, which is problematic. It is possible that TV and video game influences may differ in some regards, although prior research has not indicated significant discrepancies between these two media forms ([Sherry, 2001](#)) in outcomes related to aggressiveness or decreased empathy.

Our two studies attempted to overcome limitations of the extant literature by recruiting a larger sample that is representative of the university at which the research was conducted and by assessing the effects of the amount of violent TV watched outside the laboratory setting, as well as that watched within. As noted, the hypothesis that violent TV contributes to decreased cooperation was not supported. In this

case, null effects are telling (see Pashler & Harris, 2012). They reveal that exposure to violent TV does not have a reductive effect on cooperative behavior. Of course, we are trained in the social and behavioral sciences to seek out and report on statistically significant results and hold them in very high regard. That high regard is deserving, but it should not blind us to the value of null effects such as we found in this study.

That our effect sizes were trivial helps to rule out Type II error as a possible counterexplanation. Our results also highlight the importance of careful replication in media effects research, which may help restrain a tendency toward exaggeration of media effects in the social sciences (Weems et al., 2012).

Although much mention is often made about the potential impact of media violence on the development of aggressive scripts (Anderson et al., 2003), our results suggest that the impact of media violence is minimal. This may be explained, in part, through evolutionary approaches to aggression, such as the Catalyst Model (Ferguson et al., 2008), which suggests that impact of media is likely small to negligible due to its inability to override other social or biological influences. That the PDT task is a face-to-face task (unlikely many laboratory tests of aggression) may have made social and biological inhibitions of aggression particularly salient. Thus, our results highlight the inability of a culturally representative violent TV program to override other social and biological inhibitions on aggression in a social context.

Our results also did not indicate that exposure to TV violence had a noticeable impact on perceived emotional states such as gratitude or anger. On the surface this may appear to conflict with other research indicating that differently valenced media may influence emotional states (e.g., Oliver & Bartsch, 2011). However, we suggest our results indicate that there are problems more simply with assumptions that violent media, as a whole, are negatively valenced and impact emotional states differently from nonviolent media. That is to say, theories indicating that negatively and positively valenced media influence emotions differently may still hold, but that it is important not to assume that violent content necessarily indicates negatively valenced media. Indeed, given that the shows we included were matched on characteristics other

than violent content, our results may simply indicate that violent content is not a salient characteristic, in and of itself, of the emotional valence of a media experience. We tested the hypothesis, particularly in Study 2, that violent TV might induce emotional states that would lead to reduced cooperation. Although we certainly do not imply that TV does not elicit emotional reactions from viewers, our study suggests that the specific mechanisms from violent content to anger or agitation do not appear to occur. It is possible that violent media, to the extent it is enjoyed or considered thoughtful (in certain movies such as *Schindler's List*, e.g.), could evoke a range of both positive and negative emotions and that attempting to reduce such responses to violence = anger or agitation = lack of cooperation (or promotion of aggression) is too simplistic. Indeed our results suggested that individuals who are motivated to seek meaning in media are more likely to seek out violent media, a finding that differs from more typical depictions of violent media as inherently antisocial and harmful.

From a more sophisticated theoretical perspective in which “violent media” is seen less as all-encompassing, and research attends both to other structures within media and to the motivations of viewers themselves, it may be possible to understand how violent media itself may foster prosocial behavior in some viewers (see Granic et al., 2014). For instance in one early study (Mueller, Donnerstein, & Hallam, 1983), violent movies led to increased, rather than decreased prosocial behavior. Studies of violent video games have suggested similar outcomes (e.g., Bennerstedt et al., 2011; Ferguson & Garza, 2011), indicating that it may be time to drop violent/prosocial dichotomies in media studies. That is to say, many discussions of violent/prosocial media imply that a particular source of media cannot be both violent and prosocial at the same time, although given prosocial themes in much action-oriented entertainment, this appears to be an overly rigid view. Future researchers may wish to take a more idiosyncratic approach looking at and disentangling mood and cognitive states from each other and examining for individualistic rather than group-level responses. For instance, word reaction time tests or similar word-based outcomes have often been labeled “aggressive thoughts” but if such measures do not correlate

with affective measures of anger, they may indicate that people may have cognitive responses to media that do not necessarily evoke emotional reactions. Thus, it may be possible for media to get people thinking without necessarily changing their moods or, by extension, their behavior.

At present, our analyses look at perceived emotional states that are conscious and due to specific reflection. It is possible that different tests of emotion that are more implicit or tap into emotion at a deeper level may return different results. Nonetheless, the perceived presence or absence of violence in the TV shows did not appear to influence their reflections on their own mood states and, in turn, did not influence their willingness to cooperate. It may be that particular forms of media, violent or not, create a variety of reflections in people that are not consistent across individuals. Or it may be that violent content is not the most salient feature of a media source that influences emotional states, as opposed to the narrative, structure, and characterization. For instance, a movie in which good heroes triumph, even violently, over adversaries, may leave viewers in a positive mood state and perfectly willing to cooperate.

We note also that our study is one of few in the media effects literature to consider a Hispanic majority sample. Hispanics continue to be underrepresented in the psychological literature, and this study is an opportunity to diversify the literature on media effects. Although media effects theories of violence have typically not illustrated reasons why people of different ethnicities may respond more or less to media violence, this may be one issue that needs to be examined in greater depth in psychological science.

Limitations

The first limitation of our two studies is in the slight modification of the PDT such that both players defecting would lead to an all-around loss. We believed that this adjustment maintained a greater degree of variance in responses to the task for which both cooperation and defecting would be viable behaviors, thus giving greater salience to potential media effects. However, we acknowledge that altering a standard procedure always comes with risks and the

potential remains for results to differ based on this adjustment.

The next limitation of these studies is the media that were utilized. Although the TV shows were matched on factors other than violent content and the shows we deemed violent and nonviolent were respectively rated as such by participants, we do not claim that shows used in the current study are necessarily reflective of all available violent content. It is also worth noting that our results relate to short-term effects due to a single exposure to violent TV. Longer-term influences due to multiple exposures may be different, although previous TV viewing habits measured in our study had no more influence on outcomes than did the short-term randomized exposure. We also encourage future researchers to conduct more in depth analyses of viewers' mood states, possibly using pre-post designs to analyse changes in mood state before and after viewing violent media. Analyses that examine individual-level changes, which may vary from one individual to the next, rather than group differences, would be particularly valuable.

Other limitations include the participant samples of the two studies and the PDT reward. Although the samples (young, primarily Hispanic, and majority female) are highly representative of the university at which the studies were conducted, they are nevertheless not representative of the population at large. This lack of representativeness limits our ability to generalize our findings. Finally, the rewards offered for participation in the PDT (pennies) were trivial, and it is possible that with more substantial rewards, results would differ.

Future Directions

There are a number of different directions in which future research on the effects of media violence on cooperative and other prosocial behavior can and should go. First, replication is in order. Replication of our results with diverse samples would be highly desirable. More research with male samples in particular may be valuable, as some research reveals that women are more cooperative than men, including during PDT (Kummerli et al., 2007). Further, we acknowledge that the PDT is only one measure of cooperativeness, and it is possible that our failure to find effects may be related to some-

thing specific in regard to the PDT. We would welcome further research examining this issue with alternate measures of cooperativeness.

Second, it is important to attempt to replicate these results using different media. We used network TV shows, but the violent content of those shows may be considered tame next to some cable shows, movies, and video games. More research is needed to determine the effects of different violent media on cooperative behavior. A study that aims to replicate this one but replaces violent TV with violent movies or video games would be particularly telling and help us to draw firmer conclusions about the effects of a variety of violent media on this type of prosocial behavior.

Third, although our results suggest that violent TV influences on cooperation are nonexistent, additional research might consider potential mediators and moderators of such influences. In the present study, we examined motivations for media viewing as potential moderators, but further research might consider preexisting mental health issues, aggression, and other potential variables.

Conclusion

It is important to note that many studies on the effects of media exposure on behavior rely heavily on fictional portrayals of violence (Anderson et al., 2003; Anderson & Bushman, 2001; Bushman & Anderson, 2002, 2009; Ferguson, 2002, 2009; Ferguson et al., 2012; but see Ramos et al., 2013). From TV to movies to video games, these depictions, no matter how realistic, are fictionalized violence. Participants in these studies do not witness actual violence against others. Witnessing fictionalized violence that is known to be fictional and actual violence that is known to be real may trigger different underlying mechanisms and produce very different effects on emotion and on behavior. Perhaps our ability to distinguish between actual and fictional violence and our knowledge that the violence seen on TV, in movies, and in video games is not real disallows the emotional and behavioral responses that would diminish prosocial behavior, whereas witnessing real violence permits and might even facilitate said responses. Experiencing actual violence in childhood is strongly associated with criminal and violent behavior in adulthood (e.g., Widom,

1989), so it does not stretch the bounds of credulity to imagine that witnessing actual violence may produce similarly negative outcomes that, importantly, are not produced by witnessing fictionalized violence. More research is needed to uncover the effects of witnessing real versus fictional violence on behavior. A host of ethical issues arise here, but one solution is offered by Ramos et al. (2013), who exposed participants to both fictional and real onscreen violence with a disclaimer before the latter. Further study in this vein should help researchers determine the effects of witnessing fictional versus real violence on emotion and behavior and may serve to expand the scope of our collective interest from the effects of violent media on behavior to include the effect of real violence on behavior and what can be done to ameliorate the most negative of these effects.

References

- Adachi, P. C., & Willoughby, T. (2011). The effect of video game competition and violence on aggressive behavior: Which characteristic has the greatest influence? *Psychology of Violence, 1*, 259–274. doi:10.1037/a0024908
- Anderson, C. A., Berkowitz, L., Donnerstein, E., Heusmann, L. R., Johnson, J., Linz, D., . . . Wartella, E. (2003). The influence of media violence on youth. *Psychological Science in the Public Interest, 4*, 81–110.
- Anderson, C. A., & Bushman, B. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: A meta-analytic review of the scientific literature. *Psychological Science, 12*, 353–359. doi:10.1111/1467-9280.00366
- Axelrod, R., & Hamilton, W. D. (1981). The evolution of cooperation. *Science, 211*, 1390–1396. doi:10.1126/science.7466396
- Bennerstedt, U., Ivarsson, J., & Linderöth, J. (2012). How gamers manage aggression: Situating skills in collaborative computer games. *Journal of Computer Supported Collaborative Learning, 7*, 43–61. doi:10.1007/s11412-011-9136-6
- Brosig, J. (2002). Identifying cooperative behavior: Some experimental results in a prisoner's dilemma game. *Journal of Economic Behavior and Organization, 47*, 275–290. doi:10.1016/S0167-2681(01)00211-6
- Bushman, B. J., & Anderson, C. A. (2002). Violent video games and hostile expectations: A test of the General Aggression Model. *Personality and Social*

- Psychology Bulletin*, 28, 1679–1686. doi:10.1177/014616702237649
- Bushman, B. J., & Anderson, C. A. (2009). Comfortably numb: Desensitizing effects of violent media on helping others. *Psychological Science*, 20, 273–277. doi:10.1111/j.1467-9280.2009.02287.x
- Bushman, B., & Huesmann, L. R. (In press). Twenty-five years of research on violence in digital games and aggression: A reply to Elson & Ferguson (2013). *European Psychologist*.
- Cosmides, L., & Tooby, J. (2000). Evolutionary psychology and the emotions. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (pp. 91–115). New York, NY: Guilford Press.
- Donnerstein, E., & Linz, D. (1995). The media. In J. Q. Wilson & J. Petersilia (Eds.) *Crime* (pp. 237–266). San Francisco, CA: Institute for Contemporary Studies Press.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotions*, 6, 169–200. doi:10.1080/02699939208411068
- Elson, M., & Ferguson, C. J. (In press). Does doing media violence research make one aggressive? The ideological rigidity of social cognitive theories of media violence and response to Bushman and Huesmann (2013), Krahe (2013), and Warburton (2013). *European Psychologist*.
- Ewoldsen, D. R., Eno, C. A., Okdie, B. M., Velez, J. A., Guadagno, R. E., & DeCoster, J. (2012). Effect of playing violent video games cooperatively or competitively on subsequent cooperative behavior. *Cyberpsychology, Behavior, and Social Networking*, 15, 277–280. doi:10.1089/cyber.2011.0308
- Ferguson, C. J. (2002). Media violence: Miscast causality. *American Psychologist*, 57, 446–447. doi:10.1037/0003-066X.57.6-7.446b
- Ferguson, C. J. (2009). Media violence effects: Confirmed truth or just another X-file? *Journal of Forensic Psychology Practice*, 9, 103–126. doi:10.1080/15228930802572059
- Ferguson, C. J. (2010). Blazing angels or resident evil? Can violent video games be a force for good? *Review of General Psychology*, 14, 68–81. doi:10.1037/a0018941
- Ferguson, C. J., & Garza, A. (2011). Call of (civic) duty: Action games and civic behavior in a large sample of youth. *Computers in Human Behavior*, 27, 770–775. doi:10.1016/j.chb.2010.10.026
- Ferguson, C. J., Garza, A., Jerabeck, J., Ramos, R., & Galindo, M. (2012). Not worth the fuss after all? Cross-sectional and prospective data on violent video game influences on aggression, visuospatial cognition, and mathematics ability in a sample of youth. *Journal of Youth and Adolescence*, 41, 817–972. doi:10.1007/s10964-012-9803-6
- Ferguson, C. J., Rueda, S., Cruz, A., Ferguson, D., Fritz, S., & Smith, S. (2008). Violent video games and aggression: Causal relationship or byproduct of family violence and intrinsic violence motivation? *Criminal Justice and Behavior*, 35, 311–332. doi:10.1177/0093854807311719
- Fessler, D. M. T., & Haley, K. J. (2003). The strategy of affect: Emotions in human cooperation. In P. Hammerstein (Ed.), *Genetic and cultural evolution of cooperation* (pp. 7–36). Cambridge, MA: The MIT Press.
- Frank, R. H. (1988). *Passions within reason: The strategic role of the emotions*. New York, NY: Norton.
- Frank, R. H. (2001). Cooperation through emotional commitment. In R. M. Nesse (Ed.), *Evolution and the capacity for commitment* (pp. 57–76). New York, NY: Russell Sage.
- Freedman, J. L. (2002). *Media violence and its effect on aggression*. Toronto, Canada: University of Toronto Press.
- Granic, I., Lobel, A., & Engels, R. E. (2014). The benefits of playing video games. *American Psychologist*, 69, 66–78. doi:10.1037/a0034857
- Hamilton, W. D. (1964). The genetical evolution of social behaviour II. *Journal of Theoretical Biology*, 7, 17–52. doi:10.1016/0022-5193(64)90039-6
- Hammerstein, P. (Ed.). (2003). *Genetic and cultural evolution of cooperation*. Cambridge, MA: The MIT Press.
- Huesmann, L. R., & Miller, L. S. (1994). Long-term effects of repeated exposure to media violence in childhood. In L. R. Huesmann (Ed.), *Aggressive behavior: Current perspectives* (pp. 153–186). New York, NY: Plenum Press. doi:10.1007/978-1-4757-9116-7_7
- Kummerli, R., Colliard, C., Fiechter, N., Petitpierre, B., Russier, F., & Keller, L. (2007). Human cooperation in social dilemmas: Comparing the Snowdrift game with the Prisoner's Dilemma. *Proceedings of the Royal Society B-Biological Sciences*, 274, 2965–2970. doi:10.1098/rspb.2007.0793
- Lenhart, A., Kahne, J., Middaugh, E., MacGill, A., Evans, C., & Mitak, J. (2008). *Teens, video games and civics: Teens gaming experiences are diverse and include significant social interaction and civic engagement*. Retrieved from [Http://www.pewinter.net.org/PPF/r/263/report_display.asp](http://www.pewinter.net.org/PPF/r/263/report_display.asp). Retrieved July 2, 2011.
- McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral affect? *Psychological Bulletin*, 127, 249–266. doi:10.1037/0033-2909.127.2.249
- Mueller, C. W., Donnerstein, E., & Hallam, J. (1983). Violent films and prosocial behavior. *Personality and Social Psychology Bulletin*, 9, 83–89. doi:10.1177/0146167283091011
- Oliver, M., & Bartsch, A. (2011). Appreciation of entertainment: The importance of meaningfulness via virtue and wisdom. *Journal of Media Psychol-*

- ogy: *Theories, Methods, and Applications*, 23, 29–33. doi:10.1027/1864-1105/a000029
- Oliver, M., & Raney, A. (2011). Entertainment as pleasurable and meaningful: Identifying hedonic and eudaimonic motivations for entertainment consumption. *Journal of Communication*, 61, 984–1004. doi:10.1111/j.1460-2466.2011.01585.x
- Olson, C. K. (2004). Media violence research and youth violence data: Why do they conflict? *Academic Psychiatry*, 28, 144–150. doi:10.1176/appi.ap.28.2.144
- Olson, C. K., Kutner, L., Warner, D., Almerigi, J., Baer, L., Nicholi, A., & Beresin, E. (2007). Factors correlated with violent video game use by adolescent boys and girls. *Journal of Adolescent Health*, 41, 77–83. doi:10.1016/j.jadohealth.2007.01.001
- Pashler, H., & Harris, C. R. (2012). Is the replicability crisis overblown? Three arguments examined. *Perspectives on Psychological Science*, 7, 531–536. doi:10.1177/1745691612463401
- Ramos, R. A., Ferguson, C. J., Frailing, K., & Romero-Ramirez, M. (2013). Comfortably numb or just yet another movie? Media violence exposure does not reduce viewer empathy for victims of real violence among primarily Hispanic viewers. *Psychology of Popular Media Culture*, 2, 2–10. doi:10.1037/a0030119
- Rapoport, A., & Chammah, A. M. (1965). *Prisoner's dilemma*. Ann Arbor, MI: The University of Michigan Press.
- Savage, J. (2004). Does viewing violent media really cause criminal violence? A methodological review. *Aggression and Violent Behavior*, 10, 99–128. doi:10.1016/j.avb.2003.10.001
- Sheese, B. E., & Graziano, W. G. (2005). Deciding to defect: The effects of video-game violence on cooperative behavior. *Psychological Science*, 16, 354–357. doi:10.1111/j.0956-7976.2005.01539.x
- Sherry, J. (2001). The effects of violent video games on aggression: A meta-analysis. *Human Communication Research*, 27, 409–431. doi:10.1111/j.1468-2958.2001.tb00787.x
- Trivers, R. (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology*, 46, 35–57. doi:10.1086/406755
- Weems, C. F., Scott, B. G., Banks, D. M., & Graham, R. A. (2012). Is TV traumatic for all youths? The role of preexisting posttraumatic-stress symptoms in the link between disaster coverage and stress. *Psychological Science*, 23, 1293–1297. doi:10.1177/0956797612446952
- Widom, C. S. (1989). The cycle of violence. *Science*, 244, 160–166. doi:10.1126/science.2704995

Received January 31, 2013

Revision received April 17, 2014

Accepted April 18, 2014 ■