

# A Meaner, More Callous Digital World for Youth? The Relationship Between Violent Digital Games, Motivation, Bullying, and Civic Behavior Among Children

Christopher J. Ferguson  
Stetson University

John Colwell  
University of Westminster

The relationship between violent digital games and youth behavior remains contested in the scholarly literature. To date considerable scholarship has focused on university students, with fewer studies of adolescents or children. The current study examines correlational relationships between violent game exposure and bullying behaviors, antisocial attitudes, civic attitudes, and civic behaviors in a sample of 304 children from the United Kingdom (Mean age = 12.81). The paper also considered motivational influences on use of violent digital games. Results indicated that violent game exposure did not correlate meaningfully with either antisocial or civic behaviors or attitudes. These results are discussed in a motivational and developmental context.

*Keywords:* video games, violence, bullying, civic behavior, motivation

The relationship between violent digital games and the well-being of children and adolescents has been debated hotly in the academic literature (Bushman & Huesmann, 2014; Kutner & Olson, 2008; Sherry, 2007; Williams, 2013). For example, professional groups such as the American Psychological Association (APA, 2015)<sup>1</sup> have released policy statements claiming that violent games can be harmful to children, but this position contrasts with that expressed in an open letter to the APA in 2013 by 230 Scholars asking them to retire such policy statements due to inconsistencies in the literature (Consortium of Scholars, 2013). To date, a considerable portion of the literature has been conducted on university student samples (Greitemeyer, Traut-Mattausch, & Osswald, 2012; Tear & Nielsen, 2013; Velez & Ewoldsen, 2013), and the current paper attempts to address questions regarding the relationship between vi-

olent digital games and children's attitudes and behavior.

## Violent Video Game Research Among Adolescents

Those studies that have been conducted with youth are often correlational or longitu-

---

<sup>1</sup> This task force statement quickly proved very controversial, as numerous scholars expressed concerns that the composition of the task force comprised individuals who had taken conflict-of-interest public positions on video games prior to being included on the task force, and that the resultant meta-analysis was methodologically unsound (see Wofford, 2015). Concerned that the APA's task force nomination process was nontransparent and appeared to be "stacked" with scholars who had taken anti-game positions publically in the past, over 230 scholars wrote to the APA when the task force was originally convened requesting that they retire all of their policy statements on media violence (Consortium of Scholars, 2013). The APA did not acknowledge or respond to this open letter in their task force statement, and the resultant task force statement repeated many of the problems warned of by the Consortium of Scholars, including the apparently selective exclusion of null studies from consideration, overemphasis on bivariate correlations rather than controlled effect sizes, failure to consider systematic methodological weaknesses in the literature, and continued lack of transparency (neither the task force meta-analysis' effect size contributions nor their notes on exclusion/inclusion of specific studies from the meta-analysis have been made public).

---

This article was published Online First July 18, 2016.

Christopher J. Ferguson, Department of Psychology, Stetson University; John Colwell, Department of Psychology, University of Westminster.

Correspondence concerning this article should be addressed to Christopher J. Ferguson, Department of Psychology, Stetson University, 421 North Woodland Boulevard, DeLand, FL 32729. E-mail: CJFerguson1111@aol.com

dinal studies, and results have been mixed. Perhaps the largest such correlational study was a national study from the United Kingdom (Parkes, Sweeting, Wight, & Henderson, 2013) that found that the relationship between digital game use and children's mental health including externalizing behavior disorders was minimal.

Some early longitudinal studies (Hopf, Huber, & Weiß, 2008; Möller & Krahe, 2009) suggested that violent game use demonstrated small to moderate correlations with later adolescent aggression, although such studies did not always control well for other important variables. Meta-analyses of these early studies sometimes suggested that video games could influence aggressive adolescent behavior although not all meta-analyses agreed (Sherry, 2001). These early studies were subsequently improved upon with better designed studies controlling for personality, family environment, and socioeconomic status (Hull, Brunelle, Prescott, & Sargent, 2014; Willoughby, Adachi, & Good, 2012) although such studies did not always use well-validated and standardized measures of clinical aggression. However, such studies suggested that violent digital games had a statistically significant but very small relationship with subsequent aggression, typically less than half a percentage variance overlap ( $r$  values of  $\sim .06$ – $.07$  with other factors controlled, see Ferguson, 2015). One of these longitudinal studies was subsequently reanalyzed to suggest that competitive content, rather than violent content, may influence later aggression (Adachi & Willoughby, 2013). Other longitudinal studies have suggested that violent digital games have no discernible relationship with subsequent adolescent aggression (Breuer, Vogelgesang, Quandt, & Festl, 2015; Ferguson, 2011; Ferguson, San Miguel, Garza, & Jerabeck, 2012; von Salisch, Vogelgesang, Kristen, & Oppl, 2011). Some studies suggest that youth who are more aggressive may be inclined to play more violent video games (Breuer et al., 2015; von Salisch et al., 2011) but that there is no inverse effect of violent video games increasing aggression. Thus, evidence linking digital games to subsequent aggression has been mixed, suggesting either negligible effect to small effects at most.

### **Bullying and Civic Behaviors**

Most prior research on violent video games and aggression have focused on relatively mild and esoteric aggressive acts in the laboratory (giving hot sauce, cold ice water, or bursts of noise to another) or surveys of hypothetical aggressiveness (e.g., "If someone bumped into me, I would shove them back."). Relatively few have examined bullying behaviors specifically. As with most aggressive acts among youth, bullying behaviors have been declining in recent years (Finkelhor, Turner, Ormrod, & Hamby, 2010), yet this issue remains one of great importance.

Of the few studies to examine bullying, results have been mixed. Several studies have indicated a general lack of relationship (Ferguson et al., 2012) or small effects for girls but not boys (Olson et al., 2009). One further study did find clearer evidence for correlations (Dittrick, Beran, Mishna, Hetherington, & Shariff, 2013). It is worth considering that, at times, the scholarly community may appear overeager to link bullying to violent media. For instance, one recent study (Coyne, 2016) used relaxed standards of evidence (i.e., greater than  $p = .05$ ) in some analyses to claim links between TV violence and aggression, despite overall trivial effect sizes ( $\beta$  values between  $.02$  and  $.06$ ). This points to the need both for more rigorous evaluations and a greater familiarity and respect for the concept of the trivial in academic psychology. Thus, further evidence would be welcome.

Much less research has examined the relationship between digital games and prosocial or civic behavior among youth. Again, much of what has been done has focused on college students (Greitemeyer et al., 2012) although this research has not always replicated (Tear & Nielsen, 2013). As with the aggression realm, some early research suggested links between digital game violence and decreased prosocial attitudes (Funk, Baldacci, Pasold, & Baumgardner, 2004) although the applicability of this work, typically involving the completion of fictional stories by youth, to real world empathy or pro-social behavior remained unclear. Later scholarship suggested that digital game use in general (Lenhart et al., 2008) or violent game use specifically (Ferguson & Garza, 2011; Granic, Lobel, & Engels, 2014) might be asso-

ciated with increased prosocial attitudes and behaviors, or that video games could have both positive and negative influences in different realms (Williams, 2006). This may be because violent content may not be the most salient aspect of behavioral influence (Adachi & Willoughby, 2011) and other factors such as cooperativeness (Velez & Ewoldsen, 2013) or goal frustration (Przybylski, Deci, Rigby, & Ryan, 2014) may be more crucial for the influence of behavior. Other research suggests that the way in which youth play video games has more influence on issues related to desensitization than does violent content (Ballard, Visser, & Jocoy, 2012). Specifically, playing competitively appears to often increase aggression, whereas playing cooperatively appears to often reduce aggression.

Much of this research does focus specifically on prosocial or helping behaviors as opposed to civic behaviors, which could be defined as involvement in the community. However, Ferguson and Garza (2011) did note that playing violent games with parents was associated with small increases in both prosocial and civic behaviors. Other studies have indicated that the social platform of on-line gaming could be associated with increased civic awareness (Williams, 2006) and that social bonding in games can increase civic involvement (Molyneux, Vasudevan, & Gil de Zúñiga, 2015).

In some research, parental involvement appears to be a crucial variable, with positive parental involvement eliminating any effects from violent video game play (Ferguson & Garza, 2011; Wallenius & Punamäki, 2008). Thus, controlling for parental influences may be crucial in video game research examining prosocial or civic outcomes.

Taken together, it is difficult to make firm conclusions regarding the influence of violent digital games on children's behavior. In the following section, we discuss some theoretical reasons for why this may be.

### **The Forgotten Role of Development and Motivation in Media Effects**

Media scholars have often postulated digital game effects consistent with "hypodermic needle" approaches (Katz & Lazarsfeld, 1955) in that no consumers are "immune" to the effects

of violent digital games (Anderson, Bushman, Donnerstein, Hummer, & Warburton, 2014) or that the effects should be similar to exposure to violence in one's family or real life (Bushman & Huesmann, 2014). Advocates of this position suggest that aggression is due to cognitive scripts learned from watching others and that media violence does not differ from real-life violence in this respect. However, this assumption of equivalence between real-life and fictional violence is a significant assumption. Such an approach may both have a "common sense" appeal to some and also fit in well with political and social narratives regarding the "culture war" of objectionable media content (Bolek, 2012). However, other scholars have commented on the disconnect between the research focusing on college students and its subsequent application to youth (Kutner & Olson, 2008), the intrusion of politics and ideology into the field (Quintero-Johnson, Banks, Bowman, Carveth, & Lachlan, 2014), the lack of a developmental focus (Kirsh, 2003), or the absence of a motivational focus (Oswald, Prorock, & Murphy, 2014; Przybylski, Weinstein, Murayama, Lynch, & Ryan, 2012).

In some previous research with children with preexisting mental health problems, scholars have advocated combining developmental and motivational theoretical models (Ferguson & Olson, 2014). For instance, it has been noted that exposure to media violence is developmentally normative (Olson, 2010; Savage, 2004) rather than aberrant and that the effects of media may be too distal to have direct impact on consumers. Further, effect sizes for samples of children and adolescents demonstrate lower effects than for college students (Sherry, 2001).

Scholars have also suggested that the media experience is not a passive one and that it is important to understand the developmental and motivational processes that underlie media use (Przybylski, Rigby, & Ryan, 2010; Sherry, Lucas, Greenberg, & Holmstrom, 2013). For instance, children use digital games to meet needs, including social, autonomy, or competence needs that go unmet in real life (Colwell, 2007). Further, research indicates that motivational issues and expected gratifications help to drive video game genre selections, once again suggesting that exposure is selective (Scharkow, Festl, Vogelgesang, & Quandt, 2015). Other research suggests that social con-

text can influence game selection and motivation (De Grove & van Looy, 2015). Thus, understanding the digital game experience from an active user perspective, rather than a hypodermic needle perspective may be more illustrative to our understanding of digital game effects.

In contrast to previous approaches to media exposure, which have tended to assume an imitative cause/effect relationship, the current paper employs the Catalyst Model (Ferguson & Beaver, 2009). The Catalyst Model is an evolutionary approach to understanding antisocial behavior, which characterizes such behavior as resulting from genetic predisposition combined with early exposure to proximal violence such as violence in the family. The Catalyst Model views media exposure as too distal to have significant impact on antisocial behavior (see also Kennedy & Ceballo, 2014 regarding the need to distinguish between community and media violence exposure). From this perspective, small correlations might be expected between violent media exposure and antisocial behavior, but these are likely to be dispositional in nature, and are likely to approach zero once critical control variables related to gender, genetics, family violence exposure, mental health, and personality are controlled (Breuer et al., 2015).

The Catalyst Model arguably has some benefits over traditional hypodermic needle models of aggression. For example, the Catalyst Model suggests that human brains engage in deeper processing of the meaning and impact of violence exposure allowing for distinctions in the impact of fictional versus real-life violence. In this sense, the Catalyst Model is consistent both with evidence regarding the development of reality testing in children (Woolley & Van Reet, 2006) as well as neuroscience evidence that brains actively suppress emotional reactions to fictional media (Weber, Ritterfeld, & Mathiak, 2006; see also British Broadcasting Channel [BBC], 2015 for updated discussion of this study<sup>2</sup>), suggesting that human brains process this exposure differently from that of real-life violence. The Catalyst Model, via discussions of stylistic catalysts, also allows for distinctions regarding how criminals may learn small, pragmatic, or stylistic tasks from media to enhance crime, without media influencing the motivation to commit crime in the first place (Surette, 2013; Surette & Maze, 2015). In this sense, the

Catalyst Model allows for a more subtle, careful examination of media effects without the temptation to compare such effects to the impact of real-life violence (Anderson, 2011; Bushman & Huesmann, 2014; Saleem & Anderson, 2012.)

The current study aims to improve on previous research by examining violent digital game use in a sample of children from the United Kingdom from a motivational perspective. In the current study we seek to examine not only the relationship between violent digital games and antisocial and civic attitudes and behaviors, but also the motivational structure which predicts violent game use. We test the following hypotheses:

1. Exposure to violent games will be related to increased antisocial attitudes (H1).
2. Exposure to violent games will be related to increased bullying behavior (H2).
3. Exposure to violent games will be related to decreased civic attitudes (H3).
4. Exposure to violent games will be related to decreased civic behavior (H4).
5. Relationships between video games and antisocial/bullying and civic outcomes will become nonsignificant once gender and parental involvement are controlled. H1–H4 test standard models of media effects. The fifth hypothesis (H5) is derived from the Catalyst Model. In this sense, our hypotheses are designed to allow for a contrast between traditional hypodermic needle models of aggression and the Catalyst Model.
6. Parental involvement will be related to decreased exposure to violent video games. This hypothesis is predicated on the commonly expressed belief that parents are concerned about violent video games and seek to reduce children's exposure to them (Bushman, Gollwitzer, & Cruz, 2015).

<sup>2</sup> Perhaps as a "sign of the times" the original paper and similar others appear to have been interpreted originally in accordance with hypodermic needle models. However, during BBC (2015) coverage of the issue, the original author emphatically stated that the paper could not be used to link violent games to aggressive behavior. Discussion of the study and similar studies by Dr. Simone Kuhn noted that the pattern of results were consistent with the brain disregarding an emotional reaction to fictional media, not desensitization to violence in real life.

7. Children motivated by catharsis-seeking will be more inclined to seek out violent digital games due to belief such games will relax them (Oswald et al., 2014).

Studies using child samples remain relatively few in number. Further, very few consider violent video game use in the context of children's motivations for using such games. Thus, the current study was developed in order to address this underconsidered research area.

## Methods

### Participants

Participants in the current study were 304 children from the United Kingdom. Permission was given to the authors for recruitment by a school in the United Kingdom, and parents were asked for consent for a questionnaire to be administered to students. Students who received parental consent and who gave assent for participation in the study were surveyed in school. Mean age of the participants was 12.81 ( $SD = .45$ , Range = 11 to 14). Gender breakdown demonstrate roughly equal representation of males (50.7%) and females (46.7%), with eight respondents (2.6%) who did not report gender.

### Measures

**Videogame play.** Respondents were asked to name their three favorite videogames and to report on a five-point scale (almost never to very often) how often they played each one. They were also asked how many hours each week they played games in recent months. Violent content in videogames was assessed using Entertainment Software Rating Board (ESRB) ratings for each game. The six ESRB categories approximate a scale of aggressive content. The product of category level and frequency was computed for each game, and then summed for the three games, thus providing a measure of exposure to violent game play. This approach has been found to be effective and valid in previous research (Kutner & Olson, 2008; Lenhart et al., 2008) and removes some potential for demand characteristics that comes with similar surveys which ask respondents to rate the violent content of the games they play themselves.

**Parental involvement.** In order to assess parental involvement in video game use, six

Likert-type items were included to assess this variable. Example items include "I play video games with my parents" and "My parents ask me about the video games I play." Scores on the scales were added to produce a score for parental involvement. These items were included to assess potential parental impact on any relationship between video game exposure and outcomes. Coefficient alpha for this scale was .84. Parental involvement is included as a potential control variable.

**Video game motivation.** Sixteen Likert-type items adapted from Kutner and Olson's (2008) video game motivation scale were used to assess youth motivations for playing video games. This scale measures four potential motivations including fun (e.g., "it's just fun"), catharsis (e.g., "it helps me get my anger out"), social (e.g., "it helps me make new friends"), and bored (e.g., "it's something to do when I'm bored"). Coefficient alphas for the individual subscales ranged from .50 (bored), .59 (social), .76 (catharsis), and .77 (fun). Thus, catharsis and fun motives have acceptable reliability; however, results for social and bored motives will need to be considered with care due to lower reliability.

**Antisocial attitudes.** Participants responded to 11 four-point Likert-type items from the Negative Life Events scale subscale for aggressive personality traits and attitudes (NLE; Paternoster & Mazerolle, 1994). Example items include "It's important to be honest with your parents even if they become upset or you get punished" and "At school it is sometimes necessary to play dirty in order to win." This scale has been widely used in criminological research as well as in previous media violence research with youth samples. Coefficient alpha for the present scale was .75. Although this variable will be examined as a dependent variable, it was primarily included as a control variable, consistent with the Catalyst Model.

**Bullying behavior.** To assess bullying behavior, seven Likert items were used to measure bullying (Olweus, 1996). The Olweus bullying scale has been in widespread usage for decades. A second set of seven scales measured the extent to which the student had been bullied. Coefficient alpha for the present sample was .82 for bullying behavior and .80 for bullying victimization.

**Civic attitudes.** To assess civic attitudes, three items were developed in Likert format. These items were “it is important to give to charity,” “it is important to help others in need,” and “it is important to be involved in the community.” Coefficient alpha with the present sample was .77. Although this variable will be included as a dependent variable, it will also be used as a dispositional control variable for civic behavior, consistent with the Catalyst Model.

**Civic behavior.** To measure civic behavior, three behavioral statements adapted from Lenhart et al. (2008) were used involving “yes” or “no” responses covering the last 12 months. Example items include “I have volunteered in my community (e.g., by tutoring, mentoring, doing environmental work, working with the elderly).” Scores on the scale were summed to produce a score for civic behavior.

**Procedure.** Students who had parental consent were asked to complete the questionnaire in a quiet room during a form period during the normal school day. Students were kept separate while they filled out the survey. All survey responses were anonymous. Data were analyzed using SPSS software.

## Results

### Descriptive Results

Use of video games was very common in the present sample. 70.3% of the sample reported playing video games, although significant gender differences were noted, with far more boys (93.9%) than girls (43.5%) saying that they played video games. Boys also reported far more exposure to violent video games ( $M = 31.95$ ,  $SD = 20.07$ ) than did girls ( $M = 8.79$ ,  $SD = 14.41$ );  $t(274.11) = 11.24$ ,  $p < .001$ ,  $r = .56$  (95% CI = .48, .63).

Zero-order correlations were calculated between our four main outcome variables as well as violent video game exposure for both the full sample and for those only who play games. Antisocial attitudes correlated positively with bullying behavior and negatively with civic attitudes, but did not relate significantly to civic behavior. However civic attitudes did correlate significantly with civic behavior, and negatively with bullying behavior. Civic behavior and bullying behavior were not significantly correlated. Violent game exposure only correlated with antisocial attitudes and only for the full sample, not for the gamers only subsample. These results are presented in Table 1.

Partial correlations were also calculated between violent video game exposure and outcome variables. These results are presented in Table 2. In no case was violent video game exposure related to worse outcomes.

### Predicting Antisocial Attitudes (H1)

An OLS multiple regression analysis was conducted with independent variables gender, age, parental involvement, and violent game play. Results are shown in Table 3 for both the whole sample, and for video game players only. As can be seen in Table 3, gender is the only significant predictor for antisocial attitudes, with males scoring higher than females, for the whole sample. A similar pattern emerged for players only, but in this case the gender effect was a strong trend. Violent video games did not predict antisocial attitudes ( $p = .58$ ). Null results were further analyzed using Bayesian analyses. The regression Bayes factor calculator provided by Rouder (2015) was used to calculate Bayes factors. With this calculator, Bayes factors can be compared both with and without a target predictor model. Worsening Bayes factors with the predic-

Table 1  
*Zero-Order Correlations Between Antisocial Attitudes, Civic Attitudes, Bullying, Civic Action, and Violent Video Games (VVG)*

Outcome variables	Bullying	Civic attitudes	Civic action	VVG
Antisocial attitudes	.59** (.63**)	-.26** (-.29**)	-.07 (-.07)	.15* (.08)
Bullying		-.29** (.35**)	-.08 (-.09)	.10 (.04)
Civic attitudes			-.20** (.18*)	-.09 (-.09)
Civic action				.09 (.12)

*Note.* Players only are shown in parenthesis.  
\*  $p < .05$ . \*\*  $p < .001$  (2-tailed).

Table 2  
*Partial Correlations Between Violent Video Games (VVG), With Outcomes Related to Antisocial Attitudes, Civic Attitudes, Bullying, and Civic Behavior, Controlling for Gender*

Predictor variable	Sample group	Antisocial attitudes	Civic attitudes	Bullying	Civic action
VVG	Whole sample	.05	.02	-.02	.17**
	Players	.01	-.03	-.05	.18*

\*  $p < .05$ . \*\*  $p < .01$ .

tor inclusion indicates support for the null hypothesis. Without the video game violence variable, the Bayes factor supported the alternative hypothesis ( $BF = 6.60$ ). With the video game violence variable included, the Bayes factor worsened significantly ( $BF = 1.88$ ), indicating support for non-inclusion of the video game violence variable in the model.

### Predicting Civic Attitudes (H2)

An OLS multiple regression analysis was conducted with independent variables gender, age, parental involvement, and violent game play. Results are shown in Table 4 for both the whole sample, and for players only. As with antisocial attitudes, gender was the only significant predictor, but with this time, females scored significantly higher than males for the whole sample. For players only there were no significant predictors. Violent video games did not predict civic attitudes ( $p = .84$ ). Null results were further analyzed using Bayesian analyses. Without the video game violence variable, the Bayes factor proved to be indeterminate,

Table 3  
*Multiple Regression Summary Table With Gender, Age, Parental Involvement, and Violent Games Play as Predictor Variables and Antisocial Attitudes as Criterion Variable*

Predictor	Whole Sample			Players		
	Beta	<i>t</i>	Sig	Beta	<i>t</i>	Sig
Gender	-.19	-2.90	.004	-.14	-1.83	.07
Age	.04	-.66	n.s.	.01	.13	n.s.
Par/involve	-.03	-.57	n.s.	.03	-.38	n.s.
Viol/games	.04	.55	n.s.	.09	1.01	n.s.
	$R = .22 R^2 = .04$			$R = .19 R^2 = .01$		

Note. n.s. = non-significant.

Table 4  
*Multiple Regression Summary Table With Gender, Age, Parental Involvement, and Violent Games Play as Predictor Variables and Civic Attitudes as Criterion Variable*

Predictor	Whole sample			Players		
	Beta	<i>t</i>	Sig	Beta	<i>t</i>	Sig
Gender	.18	2.65	.008	.13	1.62	n.s.
Age	.03	.55	n.s.	-.01	-.10	n.s.
Par/involve	.06	1.03	n.s.	.11	1.51	n.s.
Viol/games	.01	.20	n.s.	-.10	-1.27	n.s.
	$R = .19 R^2 = .04$			$R = .22 R^2 = .03$		

Note. n.s. = non-significant.

weakly supporting the null ( $BF = 1.18$ ). With the video game violence variable included, the Bayes factor worsened significantly, becoming clearly supportive of the null ( $BF = 4.64$ ), indicating support for noninclusion of the video game violence variable in the model.

### Predicting Bullying Behavior (H3)

An OLS multiple regression analysis was conducted with independent variables gender, age, parental involvement, violent game play, and antisocial behavior. Results are shown in Table 5 for both the whole sample, and for players only. For both the whole sample and for players only, there were two significant predictors, age and antisocial attitudes. Older participants were more like to engage in bullying behavior as were those with higher antisocial attitudes.

Table 5  
*Multiple Regression Summary Table With Gender, Age, Parental Involvement, Violent Games Play, and Antisocial Attitudes as Predictor Variables and Bullying Behavior as Criterion Variable*

Predictor	Whole sample			Players		
	Beta	<i>t</i>	Sig	Beta	<i>t</i>	Sig
Gender	-.07	-1.22	n.s.	-.04	-.53	n.s.
Age	.10	2.01	.05	.12	1.94	.05
Par/involve	.05	1.06	n.s.	.00	.04	n.s.
Viol/games	-.00	-.04	n.s.	.06	.93	n.s.
Antisocial	.52	10.48	.001	.53	8.36	.001
	$R = .55 R^2 = .29$			$R = .56 R^2 = .30$		

Note. n.s. = non-significant.

The bullying measure included one item “hit or beat another kid,” which arguably is the clearest measure of aggressive behavior. The multiple regression analysis was repeated with this measure as the dependent variable (DV), and a very similar result was obtained, except on this occasion antisocial attitudes was the single highly significant predictor. Violent video games did not predict bullying behavior ( $p = .97$ ). Null results were further analyzed using Bayesian analyses.

Without the video game violence variable, the Bayes factor supported the alternative hypothesis ( $BF = 3.55e^{19}$ ). With the video game violence variable included, the Bayes factor worsened significantly ( $BF = 5.82e^{18}$ ), indicating support for noninclusion of the video game violence variable in the model.

#### Predicting Civic Behavior (H4)

An OLS multiple regression analysis was conducted with independent variables gender, age, parental involvement, violent game play, and civic attitudes. Results are shown in Table 6 for both the whole sample, and for players only. Two significant predictors emerged for the whole sample: higher violent game play and higher civic attitudes predicted higher civic behavior. A similar pattern of results was obtained for players only, but the effect did not reach significance. Bayesian analyses conducted with all five predictor models warned that results were slightly supportive of the null ( $BF = 2.24$ ), however with only civic attitudes and violent games included the Bayes factor supported the alternative ( $BF = 19.89$ ).

Table 6  
*Multiple Regression Summary Table With Gender, Age, Parental Involvement, Violent Games Play, and Civic Attitudes as Predictor Variables and Civic Behavior as Criterion Variable*

Predictor	Whole sample			Players		
	Beta	<i>t</i>	Sig	Beta	<i>t</i>	Sig
Gender	.05	.70	n.s.	.03	.35	n.s.
Age	.02	.35	n.s.	.05	.74	n.s.
Par/involve	.03	.53	n.s.	.05	.70	n.s.
Viol/games	.13	1.92	.056	.13	1.62	n.s.
Civic attitudes	.19	3.29	.001	.12	1.64	n.s.
	$R = .22$ $R^2 = .05$			$R = .22$ $R^2 = .03$		

Note. n.s. = non-significant.

#### Parental Involvement and Violent Video Games (H6)

It is not unreasonable to speculate that youth’s exposure to violent video games may be related to reduced parental supervision. To examine this, we ran a simple bivariate correlation between violent game exposure and parental involvement. The resultant correlation,  $r = .001$ ,  $p = .995$ , was not significant. There is no correlational relationship between violent game play and the extent to which parents are involved in such play.

#### Motivational Factors as Predictors of Video Game Play (H7)

It is of interest to see how the motivational factors are related to hours of play, and in particular time spent in playing violent video games. Zero order correlations indicated that hours of play were related to social motivations only,  $r = .26$ ,  $p < .01$ . Exposure to violent video games was related to fun,  $r = .45$ ,  $p < .001$ , catharsis,  $r = .36$ ,  $p < .001$ , social,  $r = .44$ ,  $p < .001$ , and bored,  $r = .18$ ,  $p < .05$ , motivations. Multiple regression analyses were conducted to ascertain which variables best predicted each type of play, and the results are shown in Table 7. Hours of play were best represented by male gender and social motivations, whereas violent video game exposure was related to male gender only in multivariate analyses. However, when motivations to play violent video games were reanalyzed only on those players who had exposure to violent video games, both fun and catharsis motives emerged, alongside gender, as motivations for exposure to violent video games.

## Discussion

Controversies regarding the role of violent video games in societal aggression and prosocial and civic behavior have been ongoing. The current analysis examined the correlation between violent game use and aggression and civic attitudes and behavior in a sample of schoolchildren in the United Kingdom. Results indicated that violent game exposure was not correlated with aggressive attitudes or bullying behavior. Violent games were also not correlated with civic attitudes but had a weak posi-



Table 7  
*Motivational Factors Predicting Video Game Play*

Predictor	Hours of play			Violent game play			Violent game play (players only)		
	Beta	<i>t</i>	Sig	Beta	<i>t</i>	Sig	Beta	<i>t</i>	Sig
Gender	-.15	-2.54	.01	-.52	-10.40	.001	-.26	-3.07	.003
Fun	-.06	-.81	n.s.	.09	1.46	n.s.	.22	2.23	.028
Catharsis	.02	.23	n.s.	.10	1.68	n.s.	.20	2.12	.036
Social	.20	2.58	.01	.00	.09	n.s.	.09	.84	n.s.
Bored	.04	-.69	n.s.	.04	.4	n.s.	.06	.76	n.s.
	<i>R</i> = .25 <i>R</i> <sup>2</sup> = .06			<i>R</i> = .57 <i>R</i> <sup>2</sup> = .32			<i>R</i> = .58 <i>R</i> <sup>2</sup> = .34		

Note. n.s. = non-significant.

tive correlation with civic behaviors. Overall, our results do not lend evidence to the belief that violent video games contribute to negative outcomes in youth. As such, H5 was supported, but not H1–H4. Results thus support the Catalyst Model, but not traditional hypodermic needle models of media violence exposure.

Though small in effect size, the link between violent game play and civic behavior is interesting, particularly given it is in the opposite direction expected. It is important to note that these data are correlational, not causal, and thus explaining this finding is speculative by nature. However, gaming in general is a social activity and that may be particularly true for action-oriented games. In such a context, games can be viewed as creating social cultures among youth that, in turn, promote civic engagement. Gaming, including action-oriented violent games, thus can provide a mechanism for secondary civic development. Or, put another way, how games are used by youth may be more crucial than the content of those games.

Interestingly, parental involvement was unrelated to violent video game play (H6). It would seem intuitive to suspect that greater parental involvement might lead to greater restriction of content, but this does not seem to be the case. There may be several explanations for this. Consistent with our observations in the current study, parents may not be seeing behavioral impacts for their children when playing more violent video games and, thus, may not always see a benefit in being restrictive. Or parents may be using involvement and coplaying as an opportunity to discuss more controversial content. Finally, as parents become accustomed to playing violent games themselves, they may see

them as less threatening (Ivory & Kalyanaraman, 2009). Further, as younger parents are more likely to be gamers themselves, they may see games, including more violent ones, as a normal part of the social culture (Przybylski, 2014). This may lead such parents both to be more involved in gaming with their kids but also less worried about restricting violent games. The general public appears to be increasingly skeptical of video game effects (Przybylski, 2014; Pew Research Center, 2015), with increasing numbers of individuals disagreeing that violent games lead to societal problems, and younger adults more skeptical than older adults. This may indicate that concerns about violent video games are decreasing as a priority for modern parents.

Regarding exposure to video games, being motivated to use video games socially predicted greater exposure to video games in general. However, although a variety of motives including fun, social, catharsis, and bored motivations, predicted violent game use in bivariate analyses, only male gender predicted violent game use in multivariate analyses. This changed, though, when only children who had exposure to violent video games were considered. Among such children, both fun and catharsis motivations were predictors of violent game exposure. These results suggest kids may seek out such games both as entertainment, but also for the perception that they may reduce stress, thus supporting H7. This suggests one interesting line of future research may come in examining different motivational structures present in male and female gamers, and how male and female gamers may be motivated by different types of games. Further, it is not yet

clear how effective video games, including violent games, are in reducing stress. It would be beneficial for future research to consider this question.

Thus, youth seem to endorse beliefs that games can be useful in achieving needs not always met in real life, a finding consistent with Self-Determination Theory (Przybylski et al., 2010). Youth, and boys in particular, may view violent, action-oriented games as a platform to both enjoy themselves and reduce stress. However, it's important to note that it would be simplistic to conclude that youth are merely attracted to violence. Motivations for use of video games appear to be complex, with people more inclined to play games that help meet their motivational needs rather than simply consuming violent content for its own sake (Ryan, Rigby, & Przybylski, 2006.) Or, put another way, there are plenty of violent games that are terrible, plenty of nonviolent games that are great and players are not simply mindlessly drawn to violent content any more than they are mindlessly influenced by it.

### **Contrasting Fictional With Real-Life Violence**

As noted earlier in the manuscript, one assumption of hypodermic needle models of media effects is that the human brain does not distinguish between fictional and real-life violence. This appears to be a long-standing assumption and references to this idea that viewers of fictional violence should model witnessed behaviors in media no different than with real-life exposure to violence has roots as far back as the 1972 Surgeon General's report on TV violence. This report stated at the time "We know that children imitate and learn from everything they see, see-parents, fellow children, schools, the media; it would be extraordinary, indeed, if they did not imitate and learn from what they see on television." Such views have been repeated through the present day with claims that media exposure to violence and exposure to real life should be equivalent in effects (Bushman & Huesmann, 2014) or present charts claiming that media violence has more impact than does child abuse or broken homes (Saleem & Anderson, 2012) as well as abusive parenting, substance abuse, and poverty (Anderson, 2011).

We suggest that the time has come to seriously reevaluate these assumptions. We believe that research evidence has become increasingly clear that human brains do not process fictional media in the same way as real-life events and that the human mind goes through a kind of "fiction detection" process. That children begin a process of reality testing development as early as age 3 has been understood for some time (Woolley & Van Reet, 2006) and it is remarkable that this developmental literature has been ignored by media psychology for so long. Further, evidence from some brain imaging studies suggests that brains are able to suppress emotional responses to fictional stimuli (Weber et al., 2006 and see BBC, 2015 for further discussion of these results), indicating that detecting stimuli as fictional reduces our response to them.

With this in mind, the "one size fits all" perspective on learning expressed in the 1972 Surgeon General's report appears to be naïve. Evidence for the view that humans learn from virtual violence in the same way they do from their immediate environment is lacking. Further there are clear theoretical reasons to be skeptical of such claims. The Catalyst Model notes that development is most likely to be influenced by proximal social forces, particularly those able to interact epigenetically with biological predispositions. This is likely to require real-life exposure to social others, primarily parents, peers, and those others able to cause direct impact on the child's social world. Fictional media, by contrast, is simply too distal to have this sort of impact. Further, as noted, developmental research indicates that children quickly begin to develop fiction detectors and these observations need to be better incorporated into media psychology. Put simply, media psychology too often operates under the assumption that humans work like robots, having no motivation or agentic function other than to unquestionably and, without fail, mimic whatever they see. This perspective is an increasingly unpersuasive and unsatisfying one.

We find that, in conjunction with other evidence (Breuer et al., 2015; Devilly, Callahan, & Armitage, 2012) that it may be time to move beyond content-based theories of media effects. By contrast, it may be more crucial to understand both how people play (Adachi, Hodson, Willoughby, & Zanette, 2014) and why they

play (Przybylski et al., 2012). Continuing focus on content may have appeal as a morally valenced issue, but it remains unclear that such an approach has been particularly effective if our goal is to understand the complexities in the interaction between video games and youth.

### Limitations and Conclusions

As with all studies, the current study has limitations. The study is correlational and causal inferences cannot be drawn from the data presented. Further, the study is based on adolescent self-report, wherein data from other respondents would be desirable. Nonetheless, the study does avoid some pitfalls common in other research, such as asking participants to themselves rate the content of the video games they play, which can introduce demand characteristics.

The issue of potential impact of violent video games on youth behavior remains a controversial one. The current study adds to evidence that violent video games may have only minimal relationship with adolescent behavior. We hope that the current study will add positively to the ongoing debate on violent video game effects.

### References

- Adachi, P. C., Hodson, G., Willoughby, T., & Zannette, S. (2014). Brothers and sisters in arms: Intergroup cooperation in a violent shooter game can reduce intergroup bias. *Psychology of Violence, 5*, 455–462.
- 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. <http://dx.doi.org/10.1037/a0024908>
- Adachi, P. J., & Willoughby, T. (2013). Demolishing the competition: The longitudinal link between competitive video games, competitive gambling, and aggression. *Journal of Youth and Adolescence, 42*, 1090–1104. <http://dx.doi.org/10.1007/s10964-013-9952-2>
- American Psychological Association. (2015). *APA review confirms link between playing violent video games and aggression*. Retrieved from <http://www.apa.org/news/press/releases/2015/08/violent-video-games.aspx>
- Anderson, C. (2011). Video game effects on children and adolescents. Retrieved from [http://www.learningtoendabuse.ca/sites/default/files/Craig\\_Anderson.pdf](http://www.learningtoendabuse.ca/sites/default/files/Craig_Anderson.pdf)
- Anderson, C., Bushman, B., Donnerstein, E., Hummer, T., & Warburton, W. (2014). SPSSI Research Summary on Media Violence. Retrieved from <http://www.spssi.org/index.cfm?fuseaction=page.viewPage&pageID=1899&nodeID=1>
- Ballard, M., Visser, K., & Jocoy, K. (2012). Social context and video game play: Impact on cardiovascular and affective responses. *Mass Communication & Society, 15*, 875–898. <http://dx.doi.org/10.1080/15205436.2011.632106>
- Boleik, B. (2012). Senator Jay Rockefeller: Study video game violence. *Politico*. Retrieved December 25, 2012, from <http://www.politico.com/story/2012/12/sen-jay-rockefeller-wants-shooter-games-and-violence-studied-85298.html>
- Breuer, J., Vogelgesang, J., Quandt, T., & Festl, R. (2015). Violent video games and physical aggression: Evidence for a selection effect among adolescents. *Psychology of Popular Media Culture, 4*, 305–328. <http://dx.doi.org/10.1037/ppm0000035>
- British Broadcasting Channel (BBC). (2015). *Are video games really that bad?* London, UK: Horizon.
- Bushman, B. J., Gollwitzer, M., & Cruz, C. (2015). There is broad consensus: Media researchers agree that violent media increase aggression in children, and pediatricians and parents concur. *Psychology of Popular Media Culture, 4*, 200–214. <http://dx.doi.org/10.1037/ppm0000046>
- Bushman, B. J., & Huesmann, L. (2014). Twenty-five years of research on violence in digital games and aggression revisited: A reply to Elson and Ferguson (2013). *European Psychologist, 19*, 47–55. <http://dx.doi.org/10.1027/1016-9040/a000164>
- Colwell, J. (2007). Needs met through computer game play among adolescents. *Personality and Individual Differences, 43*, 2072–2082. <http://dx.doi.org/10.1016/j.paid.2007.06.021>
- Consortium of Scholars. (2013). *Scholar's open statement to the APA task force on violent media*. Retrieved from <http://www.scribd.com/doc/223284732/Scholar-s-Open-Letter-to-the-APA-Task-Force-On-Violent-Media-Opposing-APA-Policy-Statements-on-Violent-Media>
- Coyne, S. M. (2016). Effects of viewing relational aggression on television on aggressive behavior in adolescents: A three-year longitudinal study. *Developmental Psychology, 52*, 284–295. <http://dx.doi.org/10.1037/dev0000068>
- De Grove, F., & van Looy, J. (2015). Young people at play: Behaviors, motives and social structure. *Computers in Human Behavior, 43*, 263–271.
- Devilly, G., Callahan, P., & Armitage, G. (2012). The effect of violent videogame playtime on anger. *Australian Psychologist, 47*, 98–107. <http://dx.doi.org/10.1111/j.1742-9544.2010.00008.x>
- Dittrick, C. J., Beran, T. N., Mishna, F., Hetherington, R., & Shariff, S. (2013). Do children who

- bully their peers also play violent video games? A Canadian national study. *Journal of School Violence*, *12*, 297–318. <http://dx.doi.org/10.1080/15388220.2013.803244>
- Ferguson, C. J. (2011). Video games and youth violence: A prospective analysis in adolescents. *Journal of Youth and Adolescence*, *40*, 377–391. <http://dx.doi.org/10.1007/s10964-010-9610-x>
- Ferguson, C. J. (2015). Do angry birds make for angry children? A meta-analysis of video game influences on children's and adolescents' aggression, mental health, prosocial behavior and academic performance. *Perspectives on Psychological Science*, *10*, 646–666. <http://dx.doi.org/10.1177/1745691615592234>
- Ferguson, C. J., & Beaver, K. M. (2009). Natural born killers: The genetic origins of extreme violence. *Aggression and Violent Behavior*, *14*, 286–294. <http://dx.doi.org/10.1016/j.avb.2009.03.005>
- 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. <http://dx.doi.org/10.1016/j.chb.2010.10.026>
- Ferguson, C. J., & Olson, C. K. (2014). Video game violence use among “vulnerable” populations: The impact of violent games on delinquency and bullying among children with clinically elevated depression or attention deficit symptoms. *Journal of Youth and Adolescence*, *43*, 127–136. <http://dx.doi.org/10.1007/s10964-013-9986-5>
- Ferguson, C. J., San Miguel, C., Garza, A., & Jera-beck, J. M. (2012). A longitudinal test of video game violence influences on dating and aggression: A 3-year longitudinal study of adolescents. *Journal of Psychiatric Research*, *46*, 141–146. <http://dx.doi.org/10.1016/j.jpsychires.2011.10.014>
- Finkelhor, D., Turner, H., Ormrod, R., & Hamby, S. L. (2010). Trends in childhood violence and abuse exposure: Evidence from 2 national surveys. *Archives of Pediatrics and Adolescent Medicine*, *164*, 238–242. <http://dx.doi.org/10.1001/archpediatrics.2009.283>
- Funk, J. B., Baldacci, H. B., Pasold, T., & Baumgardner, J. (2004). Violence exposure in real-life, video games, television, movies, and the internet: Is there desensitization? *Journal of Adolescence*, *27*, 23–39. <http://dx.doi.org/10.1016/j.adolescence.2003.10.005>
- Granic, I., Lobel, A., & Engels, R. C. (2014). The benefits of playing video games. *American Psychologist*, *69*, 66–78.
- Greitemeyer, T., Traut-Mattausch, E., & Osswald, S. (2012). How to ameliorate negative effects of violent video games on cooperation: Play it cooperatively in a team. *Computers in Human Behavior*, *28*, 1465–1470. <http://dx.doi.org/10.1016/j.chb.2012.03.009>
- Hopf, W. H., Huber, G. L., & Weiß, R. H. (2008). Media violence and youth violence: A 2-year longitudinal study. *Journal of Media Psychology: Theories, Methods, and Applications*, *20*, 79–96. <http://dx.doi.org/10.1027/1864-1105.20.3.79>
- Hull, J. G., Brunelle, T. J., Prescott, A. T., & Sargent, J. D. (2014). A longitudinal study of risk-glorifying video games and behavioral deviance. *Journal of Personality and Social Psychology*, *107*, 300–325. <http://dx.doi.org/10.1037/a0036058>
- Ivory, J. D., & Kalyanaraman, S. (2009). Video games make people violent—well, maybe not that game: Effects of content and person abstraction on perceptions of violent video games' effects and support of censorship. *Communication Reports*, *22*, 1–12. <http://dx.doi.org/10.1080/08934210902798536>
- Katz, E., & Lazarsfeld, P. F. (1955). *Personal influence: The part played by people in the flow of mass communications*. New York, NY: Free Press.
- Kennedy, T. M., & Ceballos, R. (2014). Who, what, when, and where? Toward a dimensional conceptualization of community violence exposure. *Review of General Psychology*, *18*, 69–81. <http://dx.doi.org/10.1037/gpr0000005>
- Kirsh, S. J. (2003). The effects of violent video games on adolescents: The overlooked influence of development. *Aggression and Violent Behavior*, *8*, 377–389. [http://dx.doi.org/10.1016/S1359-1789\(02\)00056-3](http://dx.doi.org/10.1016/S1359-1789(02)00056-3)
- Kutner, L., & Olson, C. (2008). *Grand theft childhood: The surprising truth about violent video games and what parents can do*. New York, NY: Simon & Schuster.
- 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 January 22, 2013, from [http://www.pewinternet.org/PPF/r/263/report\\_display.asp](http://www.pewinternet.org/PPF/r/263/report_display.asp)
- Möller, I., & Krahé, B. (2009). Exposure to violent video games and aggression in German adolescents: A longitudinal analysis. *Aggressive Behavior*, *35*, 75–89. <http://dx.doi.org/10.1002/ab.20290>
- Molyneux, L., Vasudevan, K., & Gil de Zúñiga, H. (2015). Gaming social capital: Exploring civic value in multiplayer video games. *Journal of Computer-Mediated Communication*, *20*, 381–399. <http://dx.doi.org/10.1111/jcc4.12123>
- Olson, C. K. (2010). Children's motivations for video game play in the context of normal development. *Review of General Psychology*, *14*, 180–187. <http://dx.doi.org/10.1037/a0018984>
- Olson, C. K., Kutner, L. A., Baer, L., Beresin, E. V., Warner, D. E., & Nicholi, A. I., II. (2009). M-rated video games and aggressive or problem behavior among young adolescents. *Applied Developmental*

- Science*, 13, 188–198. <http://dx.doi.org/10.1080/10888690903288748>
- Olweus, D. (1996). *The Revised Olweus Bully/Victim Questionnaire*. Mimeo. Bergen, Norway: Research Center for Health Promotion (HEMIL Center), University of Bergen.
- Oswald, C. A., Prorock, C., & Murphy, S. M. (2014). The perceived meaning of the video game experience: An exploratory study. *Psychology of Popular Media Culture*, 3, 110–126. <http://dx.doi.org/10.1037/a0033828>
- Parkes, A., Sweeting, H., Wight, D., & Henderson, M. (2013). Do television and electronic games predict children's psychosocial adjustment? Longitudinal research using the UK Millennium Cohort Study. *Archives of Disease in Childhood*, 98, 341–348. <http://dx.doi.org/10.1136/archdischild-2011-301508>
- Paternoster, R., & Mazerolle, P. (1994). General strain theory and delinquency: A replication and extension. *Journal of Research in Crime and Delinquency*, 31, 235–263. <http://dx.doi.org/10.1177/0022427894031003001>
- Pew Research Center. (2015). *Gaming and gamers*. Retrieved from <http://www.pewinternet.org/2015/12/15/gaming-and-gamers/>
- Przybylski, A. K. (2014). Who believes electronic games cause real-world aggression? *Cyberpsychology, Behavior, and Social Networking*, 17, 228–234. <http://dx.doi.org/10.1089/cyber.2013.0245>
- Przybylski, A. K., Deci, E. L., Rigby, C. S., & Ryan, R. M. (2014). Competence-impeding electronic games and players' aggressive feelings, thoughts, and behaviors. *Journal of Personality and Social Psychology*, 106, 441–457. <http://dx.doi.org/10.1037/a0034820>
- Przybylski, A. K., Rigby, C., & Ryan, R. M. (2010). A motivational model of video game engagement. *Review of General Psychology*, 14, 154–166. <http://dx.doi.org/10.1037/a0019440>
- Przybylski, A. K., Weinstein, N., Murayama, K., Lynch, M. F., & Ryan, R. M. (2012). The ideal self at play: The appeal of video games that let you be all you can be. *Psychological Science*, 23, 69–76. <http://dx.doi.org/10.1177/0956797611418676>
- Quintero-Johnson, J., Banks, J., Bowman, N., Carveth, R., & Lachlan, K. (2014, April). Four respond to 228, responding to the APA: Dissent within the academy regarding media violence. Symposium presented at the Eastern Communication Association, Providence, RI.
- Rouder, J. (2015). Bayes factor for regression. Retrieved from <http://pcl.missouri.edu/bf-reg>
- Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion*, 30, 344–363. <http://dx.doi.org/10.1007/s11031-006-9051-8>
- Saleem, M., & Anderson, C. A. (2012). The good, the bad, and the ugly of electronic media. In J. Dvoskin, J. L. Skeem, R. W. Novaco, & K. S. Douglas (Eds.), *Using social science to reduce violent offending* (pp. 83–101). New York, NY: Oxford University Press. Retrieved from <https://public.psych.iastate.edu/caa/abstracts/2010-2014/12SA.pdf>
- Savage, J. (2004). Does viewing violent media really cause criminal violence? A methodological review. *Aggression and Violent Behavior*, 10, 99–128. <http://dx.doi.org/10.1016/j.avb.2003.10.001>
- Scharkow, M., Festl, R., Vogelgesang, J., & Quandt, T. (2015). Beyond the 'core-gamer': Genre preferences and gratifications in computer games. *Computers in Human Behavior*, 44, 44293–44298.
- Sherry, J. L. (2001). The effects of violent video games on aggression: A meta-analysis. *Human Communication Research*, 27, 409–431.
- Sherry, J. (2007). Violent video games and aggression: Why can't we find links? In R. Preiss, B. Gayle, N. Burrell, M. Allen, & J. Bryant (Eds.), *Mass media effects research: advances through meta-analysis* (pp. 231–248). Mahwah, NJ: L. Erlbaum.
- Sherry, J. L., Lucas, K., Greenberg, B. S., & Holmstrom, A. (2013). Child development and genre preference: Research for educational game design. *Cyberpsychology, Behavior, and Social Networking*, 16, 335–339. <http://dx.doi.org/10.1089/cyber.2012.0242>
- Surette, R. (2013). Cause or catalyst: The interaction of real world and media crime models. *American Journal of Criminal Justice*, 38, 392–409. <http://dx.doi.org/10.1007/s12103-012-9177-z>
- Surette, R., & Maze, A. (2015). Video game play and copycat crime: An exploratory analysis of an inmate population. *Psychology of Popular Media Culture*, 4, 360–374. <http://dx.doi.org/10.1037/ppm0000050>
- Tear, M. J., & Nielsen, M. (2013). Failure to demonstrate that playing violent video games diminishes prosocial behavior. *PLoS One*, 8, e68382.
- US Surgeon General. (1972). *Television and growing up: The Impact of televised violence*. Retrieved from <https://profiles.nlm.nih.gov/ps/access/NNBCGX.pdf>
- Velez, J. A., & Ewoldsen, D. R. (2013). Helping behaviors during video game play. *Journal of Media Psychology: Theories, Methods, and Applications*, 25, 190–200. <http://dx.doi.org/10.1027/1864-1105/a000102>
- von Salisch, M., Vogelgesang, J., Kristen, A., & Oppl, C. (2011). Preference for violent electronic games and aggressive behavior among children: The beginning of the downward spiral? *Media*

- Psychology*, 14, 233–258. <http://dx.doi.org/10.1080/15213269.2011.596468>
- Wallenius, M., & Punamäki, R. (2008). Digital game violence and direct aggression in adolescence: A longitudinal study of the roles of sex, age, and parent-child communication. *Journal of Applied Developmental Psychology*, 29, 286–294. <http://dx.doi.org/10.1016/j.appdev.2008.04.010>
- Weber, R., Ritterfeld, U., & Mathiak, K. (2006). Does playing violent video games induce aggression? Empirical evidence of a functional magnetic resonance imaging study. *Media Psychology*, 8, 39–60. [http://dx.doi.org/10.1207/S1532785XMEP0801\\_4](http://dx.doi.org/10.1207/S1532785XMEP0801_4)
- Williams, D. (2006). Groups and goblins: The social and civic impact of an online game. *Journal of Broadcasting and Electronic Media*, 50, 651–670. [http://dx.doi.org/10.1207/s15506878jobem5004\\_5](http://dx.doi.org/10.1207/s15506878jobem5004_5)
- Williams, K. D. (2013). The effects of video game controls on hostility, identification, and presence. *Mass Communication and Society*, 16, 26–48. <http://dx.doi.org/10.1080/15205436.2012.661113>
- Willoughby, T., Adachi, P. J., & Good, M. (2012). A longitudinal study of the association between violent video game play and aggression among adolescents. *Developmental Psychology*, 48, 1044–1057. <http://dx.doi.org/10.1037/a0026046>
- Wofford, T. (2015, August). APA says video games make you violent, but Critics Cry bias. Retrieved from <http://www.newsweek.com/apa-video-games-violence-364394>
- Woolley, J. D., & Van Reet, J. (2006). Effects of context on judgments concerning the reality status of novel entities. *Child Development*, 77, 1778–1793. <http://dx.doi.org/10.1111/j.1467-8624.2006.00973.x>

Received November 27, 2015

Revision received April 14, 2016

Accepted April 14, 2016 ■