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Digital Games, Motivation, Bullying and Civic Behavior amongst Children

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Abstract

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.

Key words: Video games; Violence; Bullying; Civic Behavior; Motivation

Introduction

The relationship between violent digital games and the well-being of children and adolescents has been debated hotly in the academic literature (e.g. Bushman & Huesmann, 2014; Kutner & Olson, 2008; Sherry, 2007; Williams, 2013). To date little consensus has emerged among scholars regarding the impact of digital games (Quandr et al., in press). Professional groups such as the American Psychological Association (APA, 2015)[1] have released policy statements claiming that violent games can be harmful to children, yet recently a group of 230 scholars wrote an open letter to the APA asking them to retire these 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 (e.g. Greitemeyer, Traut-Mattausch, & Osswald, 2012; Tear & Nielson, 2013; Velez & Ewoldsen, 2013), and the applicability of such studies to public health issues influencing children or the general population has been questioned (Kutner & Olson, 2008) including by the Supreme Court of the United States (Brown v EMA, 2011) and the government of Australia (Australian Government, Attorney General's Department, 2010). Considerable debate continues among scholars as well (e.g. the recent special section on video games and children in Perspectives on Psychological Science, Ferguson, 2015a; 2015b; Boxer et al., 2015; Gentile, 2015 Markey, 2015; Rothstein & Bushman, 2015; Valkenburg, 2015) The current paper attempts to address questions regarding the relationship between violent digital games and children's attitudes and behavior.

Violent Video Game Research

As noted above, a large number of studies, particularly experimental studies, of video game influences have been conducted with college students, but comparatively fewer with adolescents or children. Those studies that have been conducted with youth are often

correlational or longitudinal studies, and results have been mixed. Perhaps the largest such study

was a national study from the United Kingdom (Parkes, Sweeting, Wight, & Henderson, 2013)

which found that the relationship between digital game use and children's mental health

including externalizing behavior disorders was minimal.

Longitudinal studies have generally been mixed. Some early studies (e.g. Hopf, W. H.,

Huber, G. L., & Weiß, 2008; Möller, I., & Krahé, 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 behavior (e.g.

Anderson et al, 2010) although not all meta-analyses agreed (e.g. Sherry, 2001). These early

studies were subsequently improved upon with better designed studies controlling for

personality, family environment and socioeconomic status (e.g. Hull, Brunelle, Prescott &

Sargent, in press; 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

approximately .06-.07 with other factors controlled, see Ferguson, 2015a). 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 et al., 2011). Some studies suggest

that youth who are more aggressive may be inclined to play more violent video games (e.g.

Breuer et al., 2015; von Salisch, et al., 2015) 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 et al., 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 on recent study (Coyne, 2016), used relaxed standards of evidence (i.e. greater than $p = .05$) in some analyses to claim links between television violence and aggression, despite overall trivial effect sizes (β 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 (e.g. Greitemeyer et al., 2012) although this research has not always replicated (Tear &

Nielson, 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 prosocial 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 et al., 2014) might be associated 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 et al., 2012). Specifically, playing

competitively appears to often increase aggression, whereas playing cooperatively appears too

often reduced 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 online gaming could be associated with increased civic awareness (Williams, 2006)

and that social bonding in games can increase civic involvement (Molyneux, L., Vasudevan, K.,

& 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 (e.g. Ferguson & Garza, 2011; Wallenius & Punamaki, 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 (see Katz and Lazarsfeld, 1955) in that no consumers are "immune" to the effects of violent digital games (e.g. 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 (e.g. Boleik, 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 (Sherry, Lucas, Greenberg, & Holmstrom, 2013, Przybylski et al., 2010). 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 context 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 (e.g. 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. By contrast 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 (see Breuer, Vogelgesang 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 BBC, 2015 for updated discussion of this study[2]), 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 (e.g. 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 non-significant 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 (e.g. Bushman et al., 2015).

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).

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 UK, 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 8

respondents (2.6%) who did not report gender..

Measures

> **Videogame play**: Respondents were asked to name their three favourite 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, 6

items 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**: 16 items Likert 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 (eg 'it's just fun'), catharsis (eg 'it helps me get my anger out'), social (eg 'it helps me make new friends'), and bored 9 (eg '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 behaviour 7 Likert items were used to measure bullying (Olweus, 1996). The Olweus bullying scale has been in widespread usage for decades. A second set of 7 scales measured the extent to which the student had been bullied. Coefficient alpha for the present sample was .82 for bullying behaviour and .80 for bullying victimization.

Civic Attitudes: To assess civic attitudes, 3 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 behaviour, consistent with the Catalyst Model.

Civic Behaviour: To measure civic behaviour 3 behavioural 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 (for example: by tutoring, mentoring, doing environmental work, working with the elderly.' Scores on the scale were summed to produce a score for civic behaviour.

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 analysed 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 behaviour and negatively with civic attitudes, but did not relate significantly to civic behaviour. However civic attitudes did correlate significantly with civic behaviour, and negatively with bullying behaviour. Civic behaviour and bullying behaviour 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.

[Insert Table 1 about here]

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.

[Insert Table 2 about here]

Predicting anti-social attitudes (H1)

A 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 analysed 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 predictor 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.

[Insert Table 3 about here]

Predicting civic attitudes (H2)

A 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 analysed using Bayesian analyses. Without the video game violence variable, the Bayes factor proved to be indeterminate, 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 non-inclusion of the video game violence variable in the model.

[Insert Table 4 about here]

Predicting bullying behaviour (H3)

A OLS multiple regression analysis was conducted with independent variables gender, age, parental involvement, violent game play, and antisocial behaviour. 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 behaviour as were those with higher antisocial attitudes. The bullying measure included one item 'hit or beat another kid', which arguably is the clearest measure of aggressive behaviour. The multiple regression analysis was repeated with this measure as the 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 behaviour ($p = .97$). Null results were further analysed 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 non-inclusion of the video game violence

variable in the model.

[Insert Table 5 about here]

Predicting civic behaviour (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

behaviour. A similar pattern of results was obtained for players only, but the effect did not reach

significance. Bayesian analyses conducted with all 5 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).

[Insert Table 6 about here]

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 reanalysed 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.

[Insert Table 7 about here]

Discussion

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

interesting, particularly given it is in the opposite direction expected. It is important to note that

this data is 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 behavioural

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 co-playing 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 slight

minorities 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 non-violent 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 television violence stating 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, Ritterfeld, & Mathiak, 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 (e.g. 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 (e.g. 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.

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.

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Table 1: Zero order correlations between antisocial attitudes, civic attitudes, bullying, civic

action, and violent video games (VVG). Players only are shown in brackets.

	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)

 *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 behaviour, controlling for gender.

		Antisocial Attitudes	Civic Attitudes	Bullying	Civic Action
VVG	whole sample	.05	.02	- .02	.17**
	players	.01	- .03	- .05	.18*

*p< .05   **p< .01   ***p<.001

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Table 3 Multiple regression summary table with gender, age, parental involvement, and violent games play as predictor variables and antisocial attitudes as criterion variable

Whole Sample   *Players*

predictor	beta	t	sig		beta	t	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.	

$R = .22$ $R^2 = .04$ $R = .19$ $R^2 = .01$

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Table 4: Multiple regression summary table with gender, age, parental involvement, and violent games play as predictor variables and civic attitudes as criterion variable.

Whole Sample   *Players*

predictor	beta	t	sig		beta	t	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.

$R = .19$ $R^2 = .04$ $R = .22$ $R^2 = .03$

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Table 5: Multiple regression summary table with gender, age, parental involvement, violent games play, and antisocial attitudes as predictor variables and bullying behaviour as criterion variable.

	Whole Sample			*Players*		
predictor	beta	t	sig	beta	t	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

$R = .55$ $R^2 = .29$ $R = .56$ $R^2 = ..30$

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Table 6: Multiple regression summary table with gender, age, parental involvement, violent

games play, and civic attitudes as predictor variables and civic behaviour as criterion variable.

Whole Sample				*Players*		
predictor	beta	t	sig	beta	t	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.

$R = .22$ $R^2 = .05$ $R = .22$ $R^2 = .03$

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Table 7: Motivational Factors Predicting Video Game Play

	Hours of play			violent game play			violent game play (players only)		
predictor	beta	t	sig	beta	t	sig	beta	t	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	0.09	n.s.	.09	0.84	n.s.
bored	.04	-.69	n.s.	.04	.4	n.s.	.06	0.76	n.s.

$R = .25$ $R^2 = .06$ $R = .57$ $R^2 = .32$ $R = .58$ $R^2 = .34$

Footnotes

1) This policy statement quickly proved very controversial which numerous scholars
expressing concerns that the composition of the task force comprised of numerous
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 non-transparent and appeared to be "stacked" with
scholars who had taken anti-game positions publically in the past, over 230 scholars
wrote to the APA 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.)**

2) Perhaps as a 'sign of the times' the original paper and others similar appears to have been
interpreted originally in accordance with hypodermic needle models. However, during
BBC 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

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the brain disregarding an emotional reaction to fictional media, not desensitization to

violence.