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A longitudinal test of video game violence influences on dating and aggression: A 3-year longitudinal study of adolescents

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ABSTRACT

Background: In 2011 the field of video game violence experienced serious reversals with repudiations of the current research by the US Supreme Court and the Australian Government as non-compelling and fundamentally flawed. Scholars too have been calling for higher quality research on this issue. The current study seeks to answer this call by providing longitudinal data on youth aggression and dating violence as potential consequences of violent video game exposure using well-validated clinical outcome measures and controlling for other relevant predictors of youth aggression.
Method: A sample of 165, mainly Hispanic youth, were tested at 3 intervals, an initial interview, and 1-year and 3-year intervals.
Results: Results indicated that exposure to video game violence was not related to any of the negative outcomes. Depression, antisocial personality traits, exposure to family violence and peer influences were the best predictors of aggression-related outcomes.
Interpretation: The current study supports a growing body of evidence pointing away from video game violence use as a predictor of youth aggression. Public policy efforts, including funding, would best be served by redirecting them toward other prevention programs for youth violence.

Since their inception, video games, particularly those with violent content, have been an issue of considerable controversy. Various advocates and politicians have referred to violent video games in polemic terms such as “murder simulators” (Grossman, 1996), “killerspiele” (killer games, a term used in Germany, see Bramwell, 2009), or “digital poison” (Senator Lieberman, as quoted in CNN, 1997). Some scholars, likewise, claimed that video game and other media violence might account for as much as 30% of societal violence (e.g. Strasburger, 2007). However, over the past year, this ostensibly “harm-producing” claim has suffered a number of reversals with repudiations by the US Supreme Court in the Brown v Entertainment Merchants Association (EMA, 2011) case and by the Australian Government (2010) who conducted an extensive review of experimental, correlational, longitudinal, and meta-analytic data. Specifically, both of these independent reviews to date (i.e., the only studies/reviews independent of scholars on either side of the debates in this field and thus presumably having no stake in the outcome of such debates) summarized in legal decisions from the high court as well as in government documents from the Australian Government, found the research on video games to be inconsistent, unconvincing, and riddled with methodological flaws. The U.S. Supreme Court (Brown v EMA, 2011, p. 2), for example, stated, “Studies purporting to show a connection between exposure to violent video games and harmful effects on children do not prove that such exposure causes minors to act aggressively.” As such, there are considerable reasons to seek out newer, empirically-sound research, particularly with well-validated clinical outcome measures. The current study seeks to address this gap in the literature.

1. The turn in video game violence research during and after Brown v EMA

Although research on video game violence has always been inconsistent (Sherry, 2007), by the early 21st century, many scholars had begun making highly conclusive statements of impending harm to minors. These are exemplified by policy statements such as those of the American Psychological Association (2005) and American Academy of Pediatrics (2009); neither of which noted the significant controversies in this field but made claims regarding the ill-effects of video game violence

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on young players. However, even as these statements were being made, issues both within the research field and data compiled by governmental and independent agencies, became apparent. First, rather than seeing an increase during the video game epoch, as might have been expected particularly in light of comments by scholars linking media violence with high rates of societal violence (e.g. Strasburger, 2007), youth violence declined precipitously to 40-year lows whether measured by victimology data (Childstats.gov, 2011) or via youth arrests data (Federal Bureau of Investigations, 2010). In the past year, violent crimes have dropped a further 12% despite continued high video games sales (Bureau of Justice Statistics, 2011). In essence, the forecast wave of "harm" to minors has simply not materialized. This has led some scholars to conclude that claims of harm to youth were greatly exaggerated (Ferguson, 2010; Olson, 2004).

Second, increasing concerns have been expressed within the research community about serious errors in much of the past research. For instance, concerns have been expressed about systematic confounds in experimental research, due to poor matching of video games in experimental conditions (e.g., variables other than violent content were introduced). When properly controlled, the effects of violent content appear to vanish (Adachi and Willoughby, 2011; Przybylski et al., 2010). Many such studies involve imprecise simulations which often related poorly to real life violence (Ferguson and Rueda, 2009; Sercombe, 2010). Similarly, scholars have expressed concerns with the use of poorly validated outcome measures in correlational and longitudinal research (Ferguson and Kilburn, 2009; Kutner and Olson, 2008; Savage, 2004). Thus, scholars have recently suggested that the effects of violence in video games may be more complex and less pronounced than previously indicated (Bösche, 2010; Ceranoglu, 2010; Devilly et al., in press). Prior to the *Brown v EMA* case, Hall et al. (2011) expressed the concern that the scholarly community is expending credibility by vastly overstating the potential effects of violent video games despite considerable evidence to the contrary. In light of the decision in *Brown v EMA*, the concerns of Hall et al. (2011) have proven prescient. As Ivory and Kalyanaraman (2009) discover, much of the fear of violent video games is prompted by unfamiliarity with the medium, as is expected by Moral Panic Theory (see Ferguson, 2010). As such, in the wake of *Brown v EMA*, there is considerable room for high-quality research which may provide new roads for understanding video game violence effects on youth.

1.1. The current study

As noted above, the U.S. Supreme Court, after weighing independent evidence, said of the current crop of video game studies (Brown v EMA, 2011, p.12), "These studies have been rejected by every court to consider them, and with good reason." Several scholars (Freedman, 2002; Kutner and Olson, 2008; Savage, 2004) have identified methodological approaches that would serve as a "gold standard" in longitudinal or correlational research with media violence-related issues. These include careful use of well-validated outcome measures and careful control of other variables such as family environment, peer effects and mental health, which might likely explain any small correlations between video game violence and aggression-related outcomes. The current study aims to meet that standard by using well-validated outcome measures for aggression and by carefully controlling variables related to family, peers, and mental health. Of course, no one study can consider every risk and preventative factor and we do not mean to imply there are no additional risk/resilience factors of interest. However, we believe that taking this general risk/resilience approach will be particularly illuminating regarding which factors best relate to youth aggression as an outcome.

2. Methods

2.1. Participants

Participants in the current study were drawn from a past project, the Laredo Youth Outcomes Project (Ferguson et al., 2009). Up-to-date contact information was available for 193 children and their families. Of these, 165 (85%) families agreed to participate in this longitudinal study. Analysis of pre-test measures indicated that this group did not differ on pre-test scores for any of the outcome measures, indicating an absence of sampling bias. The sample consisted of equal gender participants (50.3% female), with an age range of 10–14 at Time 1 ($M = 12.3$). All but one participant was of Hispanic ethnicity, which is a reflection of the border city from which the sample was drawn. Both the initial T2 and the T3 follow ups were conducted by phone interviews.

2.2. Predictor materials

With exceptions noted below, all materials used Likert-scale items and demonstrate psychometric properties suitable for use in multiple regression and path analyses. All Cronbach alphas reported below are reported for the current sample for all measures. All measures were included in the T1 assessment. For the T2 and T3 follow ups, only the video game exposure, depression, and aggression-related outcome variables were reassessed. Dating violence was added as an outcome in T3 as participants had by then entered potential dating age (mean age 15.3).

2.2.1. Video-game violence questionnaire

Child participants were asked to list their 3 favorite video games and rate how often they play the game. Entertainment Software Ratings Board (ESRB) ratings were obtained for each game reported by the respondent, and ordinally coded (a maximal score of 6 for "Adults Only," 5 for "Mature," 4 for "Teen," etc.). ESRB ratings represent a voluntary rating system for age-appropriate content similar in function to the Motional Picture Association of America ratings for movies (i.e. G, PG, PG-13, R, NC-17). The ESRB system has been supported by the Federal Trade Commission (2009) and the Parent Teacher Association (2008) as effective and reliable. This general approach has been used with success in the past and has been found to be highly reliable and valid (Ferguson, 2011; Olson et al., 2009). ESRB ratings were multiplied by frequency of play for each game and then summed to produce an overall estimate of violent game exposure.

2.2.2. Negative life events

The Negative Life Events instrument is a commonly used and well-validated measure of youth behaviors in criminological research (NLE; Paternoster and Mazerolle, 1994) and includes the following scales used in this study as control variables:

1) Antisocial personality (e.g., "It's important to be honest with your parents, even if they become upset or you get punished;" "To stay out of trouble, it is sometimes necessary to lie to teachers," etc.; alpha = .70)
2) Family attachment (e.g., "On average, how many afternoons during the school week, from the end of school or work to dinner, have you spent talking, working, or playing with your family?" etc.; alpha = .86)
3) Delinquent peers (e.g., "How many of your close friends purposely damaged or destroyed property that did not belong to them?" etc.; alpha = .84).

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2.2.3. Family violence

The child's primary guardian was asked to fill out the Conflict Tactics Scale (CTS; Straus et al., 2003), a measure of positive and negative behaviors occurring in marital or dating relationships. It is used here to assess conflict and aggression occurring between the primary caregiver and their spouse or romantic partners; consequently, obtaining a sense of the child's exposure to domestic violence. Subscales related to physical assaults (alpha = .88) and psychological aggression (alpha = .81) were used in the current study. The physical assaults subscale was found to have a significantly skewed distribution and a square-root transformation was conducted to produce a normalized distribution.

2.2.4. Depression

The withdrawal/depression scale of the *Child Behavior Checklist Youth Self-Report* (YSR; Achenbach and Rescorla, 2001) indicated child depression. This scale has no item overlaps with the aggression/rule breaking scales described below. Depression was reassessed at T2 and T3 and this variable, current depression, is used in the regression equations described below. Coefficient alpha of the scale with the current sample was .74.

2.3. Outcome materials

2.3.1. Serious aggression

Regarding mental health, youth and their primary caregivers filled out the *Child Behavior Checklist* (CBCL; Achenbach and Rescorla, 2001). The CBCL consists of a youth self-report and parent report on problematic behaviors which may represent psychopathology. The CBCL is a well researched and validated tool for measuring behavioral problems in children and adolescents. Caregivers filled out the parental version of the CBCL, whereas children filled out the YSR on themselves. These indices were used to indicate outcomes related to delinquency and aggressiveness. All alphas with the current sample were above .70.

2.3.2. Dating violence

The physical assaults subscale for the CTS described above was administered to youth who reported having been in a dating relationship in the past six months at T3. Coefficient alpha for this measure in youth was .75.

2.4. Statistical analyses

The main analyses consisted of hierarchical multiple regression equations. Separate hierarchical multiple regressions were run for each of the outcome measures related to pathological aggression (parent and child versions of the combined CBCL aggression and rule-breaking scales, and dating violence). In each case, gender, depression level, and T1 pre-test aggression were scored in the first step; NLE variables (i.e., antisocial personality, family attachment and delinquent peers) were entered on the second step; CTS psychological aggression and physical assault (i.e. family violence exposure) were entered on the third step; and video game violence exposure entered on the fourth step. An interaction term between antisocial traits and video game violence exposure was added on a final step. These variables were centered prior to creating the interaction term. This hierarchy was designed theoretically to extend from most proximal variables outward (e.g. Bronfenbrenner, 1979). Multicollinearity was examined using tolerance and VIF statistics and was found to be acceptable in all cases. Highest VIF values were 2.3, and lowest tolerance values were .43. Secondary analyses involved the use of path analysis to test alternate causal models regarding the development of pathological youth aggression as well as temporal relationships between video game violence exposure and youth violence outcomes.

3. Results

3.1. Aggression scores

For T3, CBCL data ranged from 0 to 30 ($M = 5.83$, SD = 5.26). YSR data ranged from 0 to 21 ($M = 7.01$, SD = 4.05). CTS dating violence ranged from 1 to 13 ($M = 1.83$, SD = 2.22). These scores indicate that some level of aggression was near uniform across youth (only 2 (1.2%) youth reported no aggression, and only 22 (13.3%) parents reported no aggression in their children), although in most cases the level of aggressiveness was mild.

3.2. Bivariate correlations

As a first step in our analysis, bivariate correlations were examined between video game violence and the main outcome measures. Male gender was consistently correlated with exposure to video game violence (.62 at T1, .46 at both T2 and T3. $p < .01$ for all). None of the periods of video game violence exposure (i.e., T1, T2, or T3) were significantly correlated with parent or child related aggressiveness as rated by the CBCL. However, all three video game violence exposure periods were significantly correlated with *reduced* dating violence at T3 (−.22, −.25 and −.27 for T1, T2 and T3 respectively, $p < .05$ for all). Video game exposure also remained reasonably consistent across the three time periods (T1−T2 = .42, T2−T3 = .47, T1−T3 = .45, $p < .01$ for all). Aggression, as rated by the child on the CBCL, was consistent across the three time periods (T1−T2 = .19, T2−T3 = .25, T1−T3 = .55, $p < .05$ for all), as was aggression rated by the parents (T1−T2 = .44, T2−T3 = .63, T1−T3 = .47, $p < .01$ for all). Lastly, at T3, dating violence correlated with both parent rated aggression ($r = .25$, $p < .05$) and child rated aggression ($r = .52$, $p < .05$).

3.3. Multiple regressions

Results from the multiple regression equations are presented in Table 1. In the case of dating violence, as this was not assessed at T1,

Table 1
Multiple regression results for multiple measures of pathological youth aggression at T2.

Predictor variable	YSR	CBCL	Dating violence
Male gender	.10	−.09	.24
T3 Depressive symptoms	.32 (.18, .44)*	.09	.08
T1 Aggression score	.42 (.29, .54)*	.49 (.37, .60)*	.04
ΔR^2	.41*	.30*	.10
Antisocial personality	−.02	−.01	.22
Family attachment	.01	.04	−.09
Delinquent peers	.07	.07	−.11
ΔR^2	.01	.01	.04
CTS psychological agg.	−.07	−.09	.03
CTS physical abuse	.25 (.10, .39)*	.14	.38 (.24, .50)*
ΔR^2	.04*	.01	.12*
T1 video game violence	.03	−.03	−.05
ΔR^2	.00	.00	.00
Antisocial/VVG int.	−.07	−.08	−.05
ΔR^2	.00	.01	.00

*Denotes statistical significance

Note: Numbers in parentheses represent 95% confidence interval for standardized regression coefficients. Confidence intervals included only for significant results. T1 Aggression Score = T1 score for the specific outcome measure. Double lines on the table represent steps in the regression model. Adjusted R^2 is reported for each step in the hierarchical models. YSR = Youth Self Report; CBCL = Child Behavior Checklist.

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parent reported aggression was used as the pre-test control. All final models were statistically significant. As noted in Table 1, child reported pathological aggressiveness was predicted by current depressive symptoms, T1 aggression score and historical exposure to physical violence in the family (measured T1). Parent-related aggression was predicted only by T1 aggression. Regarding dating violence, only 60 participants (36%) reported being in a recent dating relationship, which reduced power somewhat for this analysis. Historical exposure to violence in the family was the only statistical significant predictor of dating violence. In no case was video game violence predictive of T3 aggression-related outcomes when other factors were controlled.

3.4. Path analyses

Standard time-lag path-analyses were used to examine longitudinal trends for the relationship between video game violence exposure and later aggression. Given the correlation between aggression measures, a composite measure was used (alpha = .91) as the outcome. The hypothesis that video games contribute to long-term aggression would be supported if T1 or T2 video game violence exposure were to predict T3 aggression, with T1 aggression controlled. This model proved to be a poor fit to the data. As such, little evidence emerged from path analysis in support of the long-term impact of video game violence exposure on aggression.

4. Discussion

The issue of video game violence influencing aggression continues to be an area hotly contested. In the past few years, an increasing number of scholars as well as reviews by the U.S. Supreme Court and the Australian Government have concluded that past claims regarding the harmfulness of video game violence to minors is erroneous. The current study employed highly validated clinical outcome measures and used "gold standard" regression designs (Savage, 2004) in order to examine this issue more closely. Results from this study provided further evidence against the harmfulness of video game violence. Video game violence was not related to child or parent reported pathological aggression. In bivariate correlations, video game violence use was related to *reduced* dating violence; however, this relationship did not hold once other variables were controlled. These results confirm expectations by other scholars that any links between video games and aggression are merely the byproduct of other processes occurring in the life of the child. It may increasingly be time to abandon social modeling and social cognitive models of aggression, rigid insistence upon which may have done damage to the credibility of this scientific field (Grimes et al., 2008; Hall et al., 2011). By contrast, greater value may be found in diathesis-stress or gene x environment models of aggressiveness, which deemphasize distal variables such as video game violence (Beaver et al., 2011). The Catalyst Model proposed by Ferguson et al. (2008) may be a better fit to youth aggression data than social cognitive models.

4.1. Understanding fears over video games in light of Moral Panic Theory

As societal and scholarly fears over video game violence appear to be ebbing, it may be important to understand past claims over the harmfulness of video games in light of Moral Panic Theory (Ferguson, 2010; Gauntlett, 2005). Put briefly, Moral Panic Theory observes that societies tend to construct "folk devils" upon which to shift blame for purported problems in society. It has been observed that various forms of new media become the target of moral panics, oftentimes including claims of impending harm to minors (Gauntlett, 2005; Kutner and Olson, 2008). For instance, Batman and Robin comic books were once thought to cause not only delinquency but homosexuality (Kutner and Olson, 2008). Other moral panics over media as diverse as jazz, waltzes, rock and roll and rap, dime novels, Dungeons and Dragons, Harry Potter and, during the Classical Greek age, even Greek plays have been documented (Ferguson, 2010). In light of Hall et al. (2011)'s excellent essay documenting, and accurately predicting, the potential harm to the scientific community caused by the indulgence of science in societal moral panics, we believe it incumbent upon the scientific community to become more familiar with Moral Panic Theory. We believe it will be of value to the scientific community to become more sophisticated in identifying moral panics in the future, particularly where they may otherwise influence the scientific process. Failure to do so risks the potential that the field will become what Feynman (1974) has called a *cargo cult science*; that is, a field which has the trappings of a science but which, in fact, resists the process of falsification. In light of this we identify the following potential indicators of a moral panic within the scholarly community:

1) A particular theory is claimed to be conclusively and consistently demonstrated beyond any further doubt or debate.
2) Theoretical inputs or outputs rely on measurements which are imprecise, unstandardized, unreliable or poorly validated.
3) Proponents of the theory construct arguments that reverse falsifiability. These may include arguments that any effect size, no matter how small, may have practical significance; that samples sizes must be large enough to detect effects, no matter how small those effects are (thus, implying only statistically significant results are desired); that null are always Type II error; that null studies are invariably of poorer quality than statistically significant studies; that publication bias does not occur or is unimportant; etc.
4) Proponents of a particular theory engage in *citation bias*, that is, failing to recognize contradictory work or alternate theoretical views.
5) Publication bias has been documented in the field (e.g. Ferguson and Kilburn, 2009).
6) Scholars have begun to regularly affiliate with or accept research funding from activist or lobbying groups dedicated to a particular cause.
7) Proponents of a theoretical view begin to compare it favorably with well-documented scientific findings such as smoking/lung cancer, global warming, evolution, etc.
8) Proponents of a theoretical view employ ad hominem attacks against critics.
9) Proponents of a theoretical view employ logical fallacies such as arguments to authority or arguments to consensus.
10) A theoretical view is over-reliant on confirmation rather than refutation, thus reversing the process of science. Sometimes also called a reversed burden of proof.

We believe that video game violence research and the field of media violence research more broadly has, too often slipped into a *cargo cult science* mode. Although we hypothesize that serious flaws in previous research has related to spurious findings, we also note (as did the Supreme Court in Brown v EMA) that findings in this realm often diverge according to the "stake" particularly research groups have taken on this controversial issue. Scholars who have raised alarms about dire effects tend to consistently report finding evidence to support those warnings, where as skeptics tend to consistently find null effects. For us, this raises the concern that too much methodological flexibility is hampering the scientific process (Simmons et al., 2011). We hope that our

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suggestions above will contribute to the prevention of such events in the future.

4.2. Limitations and future directions

As with all studies, the current study has limitations which reduce the generalizability of our findings. First, with a Hispanic majority sample, generalization to other ethnic groups may not be warranted. Second, not all possible risk and resilience factors for youth aggression could be considered in the current model. For instance future models may wish to control for SES, or school performance. Third, the relatively few participants recently involved in dating relationships reduced the power of the dating violence regression. In this case, the video game violence coefficient was negative, so there is no risk of a Type II error for that variable (at least in the "harm" direction). However, it is possible that other predictors of dating violence may have been significant with a larger sample. We note that it is possible that some youth may play more than three games, and that their ratings of violence exposure may thus have been truncated. In our experience few gamers play more than three games at a time, thus we suspect this possibility is reasonably remote, but do acknowledge the possibility as a limitation. Lastly, despite that a longitudinal design represents an advance over cross-sectional designs, the data remains correlational and causal inferences cannot be drawn. As with any single study unidentified limitations related to the sample or measures make replication important.

As for future directions, it is likely that new media such as social networking may take the place of video games as the next "folk devil" now that video game fears are subsiding. We recommend that experimenters seeking to examine the influence of social media and other new media take care to employ gold standard approaches to research in order to avoid a pattern of spurious results such as sometimes occurred in video game research. We hope that our article is a positive contributor to discussions about the influence of media on youth.

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Contributors

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Conflicts of interest

The authors have no conflicts of interest to declare.

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References

Achenbach TM, Rescorla LA. Manual for ASEBA school-age forms & profiles. Burlington, VT: University of Vermont; 2001.
Adachi P, Willoughby T. The effect of video game competition and violence on aggressive behavior: which characteristic has the greatest influence? Psychology of Violence; 2011.
American Academy of Pediatrics. Media violence policy statement. Pediatrics 2009; 124(5):1495–503.
American Psychological Association. Resolution on violence in video games and interactive media. Retrieved 7/3/11 from: http://www.apa.org/about/governance/council/policy/interactive-media.pdf; 2005.
Australian Government, Attorney General's Department. Literature on the impact of playing violent video games on aggression. Commonwealth of Australia; 2010. not sure if this is missing something.
Beaver KM, Rowland MW, Schwartz JA, Nedelec JL. The genetic origins of psychopathic personality traits in adult males and females: results from an adoption-based study. Journal of Criminal Justice; 2011. doi:10.1016/j.jcrimjus.2011.07.002.
Bösche W. Violent video games prime both aggressive and positive cognitions. Journal of Media Psychology: Theories, Methods, and Applications 2010;22(4): 139–46. doi:10.1027/1864-1105/a000019.
Bramwell T. German ministers attack 'killerspiele'. Eurogamer. Retrieved 10/7/11 from: http://www.eurogamer.net/articles/german-ministers-attack-killerspiele; 2009.
Bronfenbrenner U. The ecology of human development: experiments by nature and design. Cambridge, MA: Harvard University Press; 1979.
Brown v EMA. Retrieved 7/1/11 from: http://www.supremecourt.gov/opinions/10pdf/08-1448.pdf; 2011.
Bureau of Justice Statistics. Criminal victimization, 2010. Retrieved 10/2/11 from: http://www.bjs.gov/index.cfm?ty=pbdetail&iid=2224; 2011.
Ceranoglu T. Video games in psychotherapy. Review of General Psychology 2010; 14(2):141–6. doi:10.1037/a0019439.
Childstats.gov. America's children: key national indicators of well-being, 2010. Retrieved 7/1/11 from: http://www.childstats.gov/; 2011.
CNN. Senator decries violent video games. CNN. Retrieved 7/5/11 from: http://edition.cnn.com/ALLPOLITICS/1997/11/25/email/videos/; 1997.
Devilly G, Callahan P, Armitage G. (in press). The effect of violent videogame playtime on anger. Australian Psychologist, DOI: 10.1111/j.1742-9544.2010.00008.x.
Federal Bureau of Investigations. Crime in the United States. Retrieved 10/25/11 from: http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2010/crime-in-the-u.s.-2010/violent-crime/violent-crime; 2010.
Federal Trade Commission. Marketing violent entertainment to children. Retrieved 3/14/10 from: http://www.ftc.gov/os/2009/12/P994511violententertainment.pdf; 2009.
Ferguson CJ. Video games and youth violence: a prospective analysis in adolescents. Journal of Youth and Adolescence 2011;40(4):377–91.
Ferguson CJ. Blazing angels or resident evil? Can violent video games be a force for good? Review of General Psychology 2010;14(2):68–81.
Ferguson CJ, Kilburn J. The public health risks of media violence: a meta-analytic review. Journal of Pediatrics 2009;154(5):759–63.
Ferguson CJ, Rueda SM. Examining the validity of the modified Taylor competitive reaction time test of aggression. Journal of Experimental Criminology 2009; 5(2):121–37.
Ferguson CJ, Rueda S, Cruz A, Ferguson D, Fritz S, Smith S. Violent video games and aggression: causal relationship or byproduct of family violence and intrinsic violence motivation? Criminal Justice and Behavior 2008;35:311–32.
Ferguson CJ, San Miguel C, Hartley RD. A multivariate analysis of youth violence and aggression: the influence of family, peers, depression and media violence. Journal of Pediatrics 2009;155(6):904–8.
Feynman R. Cargo cult science. Engineering and Science 1974;37:10–3.
Freedman JL. Media violence and its effect on aggression: assessing the scientific evidence. Toronto: University of Toronto Press; 2002.
Gauntlett D. Moving experiences: understanding television's influences and effects. Luton: John Libbey; 2005.
Grimes T, Anderson J, Bergen L. Media violence and aggression: science and ideology. Thousand Oaks, CA: Sage; 2008.
Grossman D. On killing: the psychological cost of learning to kill in war and society. Boston: Back Bay Books; 1996.
Hall R, Day T, Hall R. A plea for caution: violent video games, the supreme court, and the role of science. Mayo Clinic Proceedings 2011;86(4):315–21.
Ivory J, Kalyanaraman S. 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 2009;22(1): 1–12. doi:10.1080/08934210902798536.
Kutner L, Olson C. Grand theft childhood: the surprising truth about violent video games and what parents can do. New York: Simon & Schuster; 2008.
Olson C. Media violence research and youth violence data: why do they conflict? Academic Psychiatry 2004;28:144–50.
Olson C, Kutner L, Baer L, Beresin E, Warner D, Nicholi A. M-rated video games and aggressive of problem behavior among young adolescents. Applied Developmental Science 2009;13(4):1–11.
Parent Teacher Association. ESRB and PTA launch new national campaign to educate parents about game ratings, parental controls and online video game safety. Retrieved 3/14/10 from: http://www.pta.org/2787.htm; 2008.
Paternoster R, Mazerolle P. General strain theory and delinquency: a replication and extension. Journal of Research in Crime and Delinquency 1994;31(3): 235–63.
Przybylski AK, Rigby CS, Ryan RM. A motivational model of video game engagement. Review of General Psychology 2010;14(2):154–66.
Savage J. Does viewing violent media really cause criminal violence? A methodological review. Aggression and Violent Behavior 2004;10:99–128.
Sercombe H. The 'teen brain' research: critical perspectives. Youth & Policy 2010; 105:71–80.

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Sherry J. Violent video games and aggression: why can't we find links? In: Preiss R, Gayle B, Burrell N, Allen M, Bryant J, editors. Mass media effects research: advances through meta-analysis. Mahwah, NJ: L. Erlbaum; 2007. p. 231–48.

Simmons J, Nelson L, Simonsohn U. False-positive psychology: undisclosed flexibility in data collection and analysis allows presenting anything as significant. Psychological Science. Retrieved 10/25/11 from: http://pss.sagepub.com/content/early/2011/10/17/0956797611417632; 2011.

Strasburger V. Go ahead punk, make my day: it's time for pediatricians to take action against media violence. Pediatrics 2007;119:e1398–9.

Straus M, Hamby S, Warren W. The conflict tactics scales handbook. Los Angeles, CA: WPS; 2003.

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