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The Role of Attention Problems and Impulsiveness in Media Violence Effects on Aggression

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Previous research has established media violence as a causal risk factor for aggressive behavior. Several theoretical mechanisms have been identified to explain this effect. The present study assessed 422 undergraduate students to test the possibility that individual differences in attention problems and impulsiveness can help explain the link between violent media and aggression. Attention problems and impulsiveness proved to be a distinct construct from other processes believed to mediate aggression (aggressive beliefs, aggression related schemata, trait anger, and trait hostility). Attention problems and impulsiveness were uniquely related to both media exposure (total weekly hours and violent content) and aggression. Attention problems and impulsiveness were particularly related to impulsive (as opposed to premeditated) aggression. These results suggest that attention problems and impulsiveness may play an important role in violent media effects on aggression. Aggr. Behav. 40:197–203, 2014.

Keywords: aggression; media violence; attention problems; impulsiveness

INTRODUCTION

Society is confronted on a daily basis with acts of aggression, from extreme acts such as terrorist attacks or spree shooters to more commonplace acts such as school bullying or parental abuse. Researchers have identified a number of risk factors for such aggressive acts, such as neighborhood violence, delinquent peers, and media violence (Satcher, 2001). These risk factors are not guaranteed to lead to aggressive acts, but instead probabilistically increase the likelihood that aggressive behavior will occur. This raises the question of what psychological processes (e.g., changes in aggressive beliefs and schemata) underlie the risk factor effects on aggression.

One risk factor for aggression to receive considerable research attention is media violence exposure. Meta-analyses have reviewed hundreds of studies on the effects of violent television, violent films, and violent video games on aggression (Anderson et al., 2003, 2010; Bushman & Huesmann, 2006; Paik & Comstock, 1994). The research collectively supports causal, probabilistic effects of violent media on aggression. Indeed, a consensus was reached years ago by all major professional health associations in the U.S. (AAP, 2009; APA, 2005; Joint Statement, 2000).

Previous research has linked attention problems to aggression. For example, a meta-analysis by Waschbusch (2002) found that inattention, hyperactivity, and impulsiveness were significantly associated with higher levels of conduct problems, which frequently include aggression. Similarly, Seguin, Nagin, Assaad, and Tremblay (2004) found individuals with attention disorders to be more physically aggressive. Furthermore, major theories of criminality stress the role of impulsivity and lack of control (e.g., Gottfredson & Hirschi, 1993).

Recent research has explored the potential for screen media (television, video games) to increase the sort of attention problems associated with Attention Deficit Disorder (ADD) or Attention Deficit/Hyperactivity Disorder (ADHD). Several cross-sectional and longitudinal studies have found that greater exposure to television or video games in childhood and adolescence is associated with greater subsequent attention problems (e.g., Christakis, Zimmerman, DiGiuseppe, & McCarty, 2004; Swing, Gentile, Anderson, & Walsh, 2010). There is also evidence that violent television exposure is more strongly associated with attention problems than other types of

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television (i.e., educational), further implicating the media violence and aggression link (Zimmermann & Christakis, 2007). Other work has linked violent video game exposure to executive control deficits using both behavioral (e.g., Stroop) and brain activity (e.g., fMRI, ERP) measures (Bailey, West, & Anderson, 2010; Hummer et al., 2010; Kronenberger et al., 2005). In sum, high exposure to certain types of screen media is associated with both aggression and attention problems.

The major theoretical explanations that have been offered recently to explain aggressive behavior have hypothesized a role of attention and attention problems that is related to but different from the social cognitive and emotional processes (Anderson and Bushman, 2002, 2003; Berkowitz, 1993; Crick & Dodge, 1994; DeWall, Anderson, & Bushman, 2011; Huesmann, 1988, 1998). Specifically, while repeated aggressive episodes have been hypothesized to lead to changes in a number of aggression related knowledge structures (e.g., aggressive scripts, aggressive beliefs, perceptual and expectation schemata, and desensitization to violence) that collectively constitute aggressive personality, attention problems have been viewed as a relatively independent risk factor that affect both long-term learning of social cognitions and emotional responses and the decisions made episodically when aggressive behavior occurs. Specifically, attention problems or related traits such as impulsiveness[1] might predispose an individual to make rapid and inappropriate attributions (e.g., hostile attributions) and not to reappraise a potential conflict situation in light of mitigating information or possible consequences of aggression, and therefore might increase the likelihood of aggressive behavior (Barlett & Anderson, 2011), especially impulsive aggression. It follows that both the long term learning effects and short term stimulating effects of media violence on aggression might be partially mediated by their effects on attention and impulsivity.

PRESENT STUDY

The present study tested several hypotheses by assessing attention problems, impulsiveness, media violence, impulsive and premeditated aggression, and several other variables in a cross-sectional sample. We expected attention problems and impulsiveness[2] to be distinct from other factors (e.g., aggressive cognitions or anger) linked to aggression. Further, we predicted that attention problems will be more specifically associated with impulsive aggression, whereas other potential aggression-related mechanisms will relate to both premeditated and impulsive aggression. Finally, we tested three specific path models, expecting the best fit from a mediation model in which attention problems mediate the effects of total screen time and violent media on impulsive aggression and aggressive cognition and affect mediate violent media effects on both impulsive premeditated aggression.

METHOD

Participants

Four hundred twenty-two undergraduate students (61% female) were recruited from introductory psychology courses at a large Midwestern university. Participants received partial course credit for their participation. The mean age of this sample was 19.30 years ($SD = 1.75$).

Materials

Media habits. Participants completed the Brief Media Habits Questionnaire, a series of questions assessing typical media use. This is a shortened form of the General Media Habits Questionnaire (Gentile, Lynch, Linder, & Walsh, 2004). Participants indicated how many hours they watched television on a typical weekday during each of four time periods (6 AM to noon, noon to 6 PM, 6 PM to midnight, midnight to 6 AM) as well as on a typical weekend day during the same four time periods. The same questions were repeated for video game playing. Weekly television and video game use were summed to create an overall media exposure score.

Participants also reported their three favorite television shows, three favorite films, and three favorite video games. Participants reported how frequently they watched or played each exemplar on a seven-point scale (1 = Almost Never, 7 = Often) as well as how violent it is (1 = No violence, 7 = Extremely violent). The frequency was multiplied by the violence rating for each exemplar and these scores were summed to produce a violent media exposure score (Anderson & Dill, 2000).

Attention problems. Attention problems were assessed through the Adult ADHD Self-Report Scale (ASRS), an 18-item screening tool for ADHD in adults (Kessler et al., 2005). It includes items such as "How often do you make careless mistakes when you have to work on a difficult or boring project?" and "How often do you feel restless and fidgety?" Participants indicate which response is most accurate for them in the past 6 months ("Never," "Rarely," "Sometimes," "Often," and "Very Often"). Nine of these items form the attention subscale ($\alpha = .77$); the other nine form the hyperactivity subscale ($\alpha = .77$, full scale: $\alpha = .85$).

Scores on this scale correlated with self-reported past diagnosis of an attention disorder (ADD or ADHD) in the

[1] Previous research has found impulsiveness to be strongly correlated with attention problems (Swing et al., 2010).

[2] The two constructs are also conceptually related, as attention disorders are viewed by some as primarily deficits of impulse control (Barkley, 1997).

present sample, $r(412) = .176$, $P < .001$. This correlation likely underestimates the link between scores on this scale and attention disorder diagnoses, as most of those diagnosed with an attention disorder (65%) were taking medication for their attention disorder at the time of the study, presumably decreasing the severity of their symptoms. As would be expected, none of the participants who were not diagnosed with an attention disorder were taking medication for an attention disorder.

Barratt impulsiveness scale. Participants completed the Barratt Impulsiveness Scale-11 (BIS-11), a 30 item self-report measure of trait impulsiveness (Patton, Stanford, & Barratt, 1995). This scale includes items such as "I do things without thinking" and "I act on the spur of the moment". Participants indicated how often each statement applied to them on a four-point scale ("Rarely/Never," "Occasionally," "Often," and "Almost Always/Always"). This measure showed good reliability in the present sample ($\alpha = .82$).

Attitudes toward violence. The Revised Attitudes Toward Violence Scale (RATVS; Anderson, Benjamin, Wood, & Bonacci, 2006) was used. This scale consists of 39 items, with subscales assessing attitudes toward war ($\alpha = .89$), corporal punishment of children ($\alpha = .89$), penal code violence ($\alpha = .82$), and intimate violence ($\alpha = .94$). Items from this scale include statements such as: "War is often necessary" (war), "Children should be spanked for temper tantrums" (corporal punishment of children), "Any prisoner deserves to be mistreated by other prisoners in jail" (penal code violence), and "It is all right for a partner to slap the other's face if insulted or ridiculed" (intimate violence). Participants rated their agreement or disagreement with each statement on a five-point scale (Strongly disagree, disagree, neither agree nor disagree, agree, strongly agree).

Control aggression schema. The extent to which an individual associates aggressive behavior with having control or reasserting control when it is lost has been described as an individual's control aggression schema (Warburton, 2007). Control aggression schemata were assessed in the present study using the Control Aggression Schema Scale-Revised (CASS-R, Warburton, 2007). This 35-item scale ($\alpha = .89$ in the present sample) includes items such as "When I feel powerless I also feel angry" and "The aggressor has more choices than their target". Each statement was rated on a six-point scale (Completely Untrue, Mostly Untrue, Slightly Untrue, Slightly True, Mostly True, Completely True).

Aggressive personality. Buss and Perry's (1992) Aggression Questionnaire (AQ) is a 29-item self-report measure of aggressive personality/behavior. This measure includes four subscales: physical aggression ($\alpha = .87$), verbal aggression ($\alpha = .82$), anger ($\alpha = .83$), and hostility ($\alpha = .87$). For the present study, the anger and hostility subscales were included as potential mediators between media use and aggression. These include items such as "I have trouble controlling my temper" (anger) and "I am suspicious of overly friendly strangers" (hostility).

Impulsive and premeditated aggression. The Impulsive/Premeditated Aggression Scale (IPAS) has 20 items assessing the extent to which a person's aggression in the past 6 months has been impulsive and premeditated (Stanford et al., 2003). It includes an impulsive aggression subscale ($\alpha = .82$) and a premeditated aggression subscale ($\alpha = .88$). Items include "When angry, I reacted without thinking" (impulsive) and "Sometimes I purposely delayed the acts until a later time" (premeditated).

Demographics. Participants also completed a brief series of questions measuring various demographic characteristics (age, sex) as well as other relevant variables including past diagnosis of an attention disorder (ADD or ADHD) and current medication for an attention disorder.

Procedure

Participants completed the study on a computer over the internet through the psychology department's research sign-up system. After reading the informed consent document, participants completed the questionnaires on their computer. Aggression and aggression related questionnaires were presented first to reduce suspicion of the hypotheses, followed by media questionnaires. After completing questionnaires, participants were informed of the purpose of the study and thanked for their participation.

RESULTS

Response Score Calculations

Missing item values on questionnaire items (due to lack of a response) were replaced with the sample mean, provided the participant had answered at least 80% of the questions for the relevant scale or subscale. This procedure is a conservative method of reducing the missing data. Item scores were then summed for each relevant scale or subscale and these scores were standardized to reduce multicollinearity problems.

Main Analyses

To clarify the conceptual distinctiveness and overlap of attention problems, impulsiveness, and other potential explanatory variables for aggression (scales and subscales), an exploratory factor analysis using a Varimax rotation was computed (see Table I). This factor analysis generated a three factor structure. The RATVS subscales of war, corporal punishment of children, penal code violence, and intimate violence, as well as the Control Aggression Schema Scale-Revised scores loaded

TABLE I. Rotated Factor Pattern (Varimax) of Potential Mediators

	Factor 1	Factor 2	Factor 3
RATVS-Corporal Punishment of Children	.817	.201	.015
RATVS-Penal Code Violence	.772	−.128	.131
RATVS-War	.727	−.213	.253
RATVS-Intimate Partner Violence	.631	.288	.054
Control Aggression Schema Scale-Revised	.607	.064	.591
Adult ADHD Self-Report Scale-Attention	−.010	.833	.135
Barratt Impulsiveness Scale-11	.001	.827	.170
Adult ADHD Self-Report Scale-Hyperactivity	.109	.786	.195
Aggression Questionnaire-Hostility	.102	.190	.863
Aggression Questionnaire-Anger	.142	.296	.751

significantly on Factor 1 (aggressive cognitions). Factor 2 (attention problems and impulsiveness) includes the ASRS attention and hyperactivity subscales, as well as Barratt Impulsiveness Scale-11 scores. The AQ anger and hostility subscales as well as the Control Aggression Schema Scale-Revised scores loaded significantly on Factor 3 (anger & hostility). Because the CASS-R scale loaded significantly on both Factor 1 (.607) and Factor 3 (.591), factor scores of the potential mediators were used for the subsequent path analysis in order to properly weight CASS-R scores on both Factors 1 and 3.

Three path analysis models were conducted to examine the fit of different presumed causal paths: (a) media exposure predicting attention problems/impulsiveness and other aggression related variables, which in turn predict aggression (the mediation model, see Fig. 1); (b) aggression predicting attention problems and media exposure (the aggressive predisposition model, see Fig. 2); and (c) attention problems/impulsiveness predicting both media exposure and aggression (the inattentive predisposition model, see Fig. 3).

The media exposure to attention problems to aggression mediation model fit the data very well, CMIN: 5.06, $df = 8$, $P = .751$, GFI: 1.00, AGFI: 0.99, CFI: 1.00, AIC: 61.06, RMSEA: 0.000 (90% CI: 0.000, 0.042). Several paths in this model are of particular relevance. Both overall media exposure ($b = .10$) and violent media exposure ($b = .25$) uniquely predicted attention problems. However, only violent media exposure (not overall media exposure) predicted aggressive cognitions ($b = .14$) and anger/hostility ($b = .27$). Additionally, whereas aggressive cognitions ($b = .29$ and $b = .33$) and anger/hostility ($b = .32$ and $b = .36$) were equally strong predictors of impulsive and premeditated aggression, respectively, attention was a strong predictor only of impulsive aggression ($b = .29$); attention was a weak (but statistically significant) predictor of premeditated aggression ($b = .09$). Based on multiple mediation tests using the same model, the indirect effect of media violence on impulsive aggression through attention problems was significant, *indirect* $b = .42$, $SE = .12$, $t = 3.55$, $P < .001$. The indirect effect of media violence on premeditated aggression through attention problems was not significant, *indirect* $b = .20$, $SE = .11$, $t = 1.84$, $P = .066$.

The aggressive predisposition model (see Fig. 2), in which impulsive aggression and premeditated aggression predict overall media exposure and total media violence, mediated by attention problems, aggressive cognition,

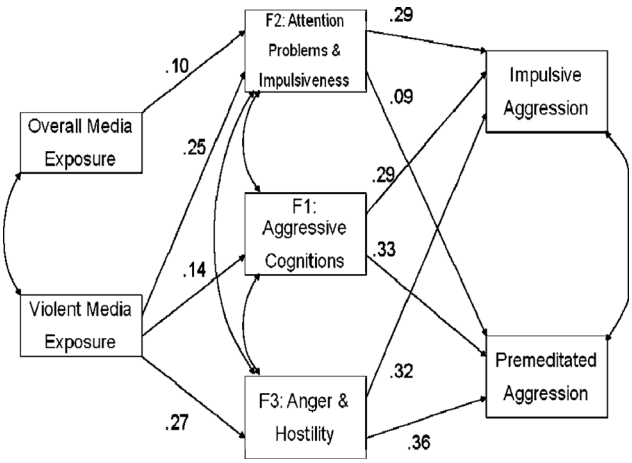

Fig. 1. Path model of media effects on impulsive and premeditated aggression, as mediated by attention problems, aggressive cognitions, and anger/hostility. All paths are significant. Sex was included as a covariate, though the paths and coefficients are not displayed. Standardized path coefficients are reported. Variables with variances allowed to correlate are represented by double headed arrows. CMIN: 5.06, $df = 8$, $P = .751$, GFI: 1.00, AGFI: .99, CFI: 1.00, AIC: 61.06, RMSEA: .000 (90% CI: 0.000, 0.042).

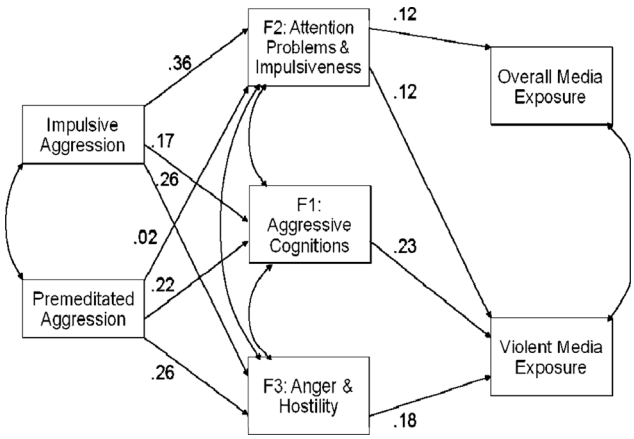

Fig. 2. Path model of impulsive and premeditated aggression on media use as mediated by attention problems, aggressive cognitions, and anger/hostility. All paths (except Premeditated Aggression to Attention Problems & Impulsiveness) are significant. Sex was included as a covariate, though the paths and coefficients are not displayed. Standardized path coefficients are reported. Variables with variances allowed to correlate are represented by double headed arrows. CMIN: 17.27, $df = 10$, $P = .069$, GFI: .99, AGFI: .96, CFI: .99, AIC: 69.27, RMSEA: .043 (90% CI: 0.000, 0.077).

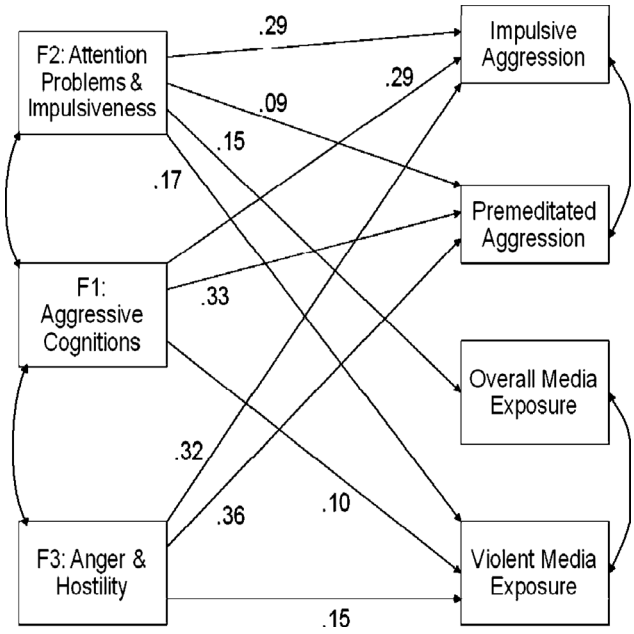

Fig. 3. Path model of attention problems, aggressive cognitions, and anger/hostility as predictors of media use, impulsive and premeditated aggression. All paths are significant. Sex was included as a covariate, though the paths and coefficients are not displayed. Standardized path coefficients are reported. Variables with variances allowed to correlate are represented by double headed arrows. CMIN: 12.24, $df = 10$, $P = .27$, GFI: .99, AGFI: .97, CFI: 1.00, AIC: 64.24, RMSEA: .024 (90% CI: 0.000, 0.063).

and anger/hostility, yielded a worse fit for the data, CMIN: 17.27, $df = 10$, $P = .069$, GFI: .99, AGFI: .96, CFI: .99, AIC: 69.27, RMSEA: .043 (90% CI: 0.000, 0.077). Similarly, the inattentive predisposition model (see Fig. 3), in which attention problems, aggressive cognitions, and anger/hostility predict impulsive aggression, premeditated aggression, overall media exposure, and media violence, yielded a slightly worse fit for the data, CMIN: 12.24, $df = 10$, $P = .27$, GFI: .99, AGFI: .97, CFI: 1.00, AIC: 64.24, RMSEA: .024 (90% CI: 0.000, 0.063).

Thus, the model with the theoretically hypothesized mediation by attention problems of media violence exposure's effect on impulsive aggression showed the best fit to the data, though the aggressive predisposition and inattentive predisposition models also fit to some degree.

DISCUSSION

The present study revealed five important new findings. First, as hypothesized, attention problems and impulsiveness comprised a relatively unique explanatory variable for aggression. Measures of attention problems and impulsiveness loaded onto a single factor that did not include various types of aggressive beliefs, aggression schemata, trait anger, or trait hostility. Second, whereas the aggressive cognition and anger/hostility mediators were associated only with violent media content, attention problems were uniquely associated with both overall amount of electronic media consumption and amount of violent media consumption. Thus, violent media content appears to only partially explain the observed media-attention link. Third, this study suggests that attention problems and impulsiveness relate to media violence and aggression, possibly as a mediational pathway. Fourth, attention problems and impulsiveness were more strongly associated with impulsive aggression than premeditated aggression, as expected. Interestingly, the weak positive link between attention problems and premeditated aggression suggests that attention problems and impulsiveness do not simply imply the same amount of total aggression occurring with relatively more being of the impulsive type. If that were the case, there should be a negative relation between attention problems and premeditated aggression. Instead, the inattention/impulsive factor is associated with a pronounced elevation in impulsive aggression, *and* with a slight increase in premeditated aggression. Finally, the specificity of the patterns illustrated in Figure 1 fits well with social-cognitive models of aggression and more specific models of media effects on aggression (e.g., Anderson et al., 2003).

Though the results of the present study are informative, some limitations should be noted. The present data are based on cross-sectional correlations. Though the observed paths in Figure 1 are consistent with attention problems as a mediator of the media violence aggression link, other causal patterns (illustrated in Figs. 2 and 3) could also explain these results. Further research using longitudinal or experimental designs would be needed to directly demonstrate causality and mediation. Nonetheless, our results contradict some alternative explanations of the links between media exposure, attention problems, and aggression. For example, any alternative explanation that relies on sex differences is ruled out. A second limitation concerns the sample, undergraduate students, who were mostly adolescents or young adults. It is possible that the associations found in the present study would not be replicated with other ages or populations. Of course, the restriction of range inherent in a college student sample tends to reduce effect sizes, rather than amplify them. Third, all measures used in the study were self-report. These findings also need to be extended to include behavioral or performance measures of attention problems and aggression. Individuals with attention problems may differ in their ratings of media violence (e.g., rating the same film as less violent than those without attention

problems). This possibility should also be tested to rule out an alternative explanation of the media violence to attention problems link, for example by comparing self ratings to expert ratings of the violence in their favorite media.

Future research should also examine attention problems as a potential mediating cause of aggression in other contexts, not strictly limited to media violence. For example, certain negative family environments are considered risk factors for attention problems (Pheula, Rohde, & Schmitz, 2011). Some family environment variables are also risk factors for aggression (Satcher, 2001). Attention problems may similarly mediate the link between some maladaptive family environment variables and aggression. In addition, laboratory research may be helpful in illuminating specifically how and when attention problems and impulsiveness lead to greater aggression. In sum, the present research integrates distinct research lines on attention, electronic media use, and aggression, and provides an excellent starting point for future studies of risk factors for attention problems and aggression.

REFERENCES

AAP. (2009). Policy statement—Media violence. *Pediatrics*, *124*, 1495–1503. Downloaded on 3/4/11 from: www.pediatrics.org/cgi/doi/10.1542/peds.2009-2146. doi: 10.1542/peds.2009-2146.

Anderson, C. A., Benjamin, A. J., Wood, P. K., & Bonacci, A. M. (2006). Development and testing of the Velicer attitudes toward violence scale: Evidence for a four-factor model. *Aggressive Behavior*, *32*, 122–136.

Anderson, C. A., Berkowitz, L., Donnerstein, E., Huesmann, L. R., Johnson, J., Linz, D., … Wartella, E. (2003). The influence of media violence on youth. *Psychological Science in the Public Interest*, *4*, 81–110.

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, *53*, 27–51.

Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology*, *78*, 772–790.

Anderson, C. A., & Huesmann, L. R. (2003). Human aggression: A social-cognitive view. In: M. A. Hogg & J. Cooper (Eds.), *The Sage Handbook of Social Psychology* (pp. 296–323). London: Sage Publications.

Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A. … Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries. *Psychological Bulletin*, *136*, 151–173.

APA. (2005). *APA Calls for Reduction of Violence in Interactive Media Used by Children and Adolescents*. Washington, DC: American Psychological Association. Press Release downloaded 3/4/11 from. http://www.apa.org/news/press/releases/2005/08/video-violence.aspx. Resolution downloaded 3/4/11. from: http://www.apa.org/pubs/journals/releases/resolutiononvideoviolence.pdf.

Bailey, K., West, R., & Anderson, C. A. (2010). A negative association between video game experience and proactive cognitive control. *Psychophysiology*, *47*, 34–42.

Barlett, C. P., & Anderson, C. A. (2011). Re-appraising the situation and its impact on aggressive behavior. *Personality and Social Psychology Bulletin*, *37*, 1564–1573.

Barkley, R. A. (1997). Behavioral inhibition, sustained attention, and executive functions: Constructing a unifying theory of ADHD. *Psychological Bulletin*, *121*, 65–94.

Berkowitz, L. (1993). *Aggression: Its causes, consequences, and control*. New York: McGraw-Hill.

Bushman, B. J., & Huesmann, L. R. (2006). Short-term and long-term effects of violent media on aggression in children and adults. *Archives of Pediatric and Adolescent Medicine*, *160*, 348–352.

Buss, A. H., & Perry, M. (1992). The Aggression Questionnaire. *Journal of Personality and Social Psychology*, *63*, 452–459.

Christakis, D. A., Zimmerman, F. J., DiGiuseppe, D. L., & McCarty, C. A. (2004). Early television exposure and subsequent attentional problems in children. *Pediatrics*, *113*, 708–713.

Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information processing mechanisms in children's adjustment. *Psychological Bulletin*, *115*, 74–101.

DeWall, C. N., Anderson, C. A., & Bushman, B. J. (2011). The General Aggression Model: Theoretical extensions to violence. *Psychology of Violence*, *1*, 245–258.

Gentile, D. A., Lynch, P. J., Linder, J. R., & Walsh, D. A. (2004). The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance. *Journal of Adolescence*, *27*, 5–22.

Gottfredson, M. R., & Hirschi, T. (1993). A control theory interpretation of psychological research on aggression. In: R. B. Felson & J. T. Tedeschi (Eds.), *Aggression and violence: Social interactionist perspectives* (pp. 47–68). Washington, DC: American Psychological Association.

Huesmann, L. R. (1988). An information processing model for the development of aggression. *Aggressive Behavior*, *14*, 13–24.

Huesmann, L. R. (1998). The role of social information processing and cognitive schemas in the acquisition and maintenance of habitual aggressive behavior. In: R. G. Geen & E. Donnerstein (Eds.), *Human aggression: Theories, research, and implications for policy* (73–109). New York: Academic Press.

Hummer, T. A., Wang, Y., Kronenberger, W. G., Mosier, K. M., Kalnin, A. J., Dunn, D. W., & Mathews, V. P. (2010). Short-term violent video game play by adolescents alters prefrontal activity during cognitive inhibition. *Media Psychology*, *13*, 136–154.

Joint statement on the impact of entertainment violence on children: Congressional Public Health Summit (2000, July 26). Retrieved on December 4, 2000, from the World Wide Web: http://www.senate.gov/brownback/violence1.pdf.

Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., … Walters, E. E. (2005). The World Health Organization adult ADHD self-report scale (ASRS): A short screening scale for use in the general population. *Psychological Medicine*, *35*, 245–256.

Kronenberger, W. G., Matthews, V. P., Dunn, D. W., Wang, Y., Wood, E. A., Giauque, A. L., … Li, T. (2005). Media violence exposure and executive functioning in aggressive and control adolescents. *Journal of Clinical Psychology*, *61*, 725–737.

Paik, H., & Comstock, G. (1994). The effects of television violence on antisocial behavior: A meta-analysis. *Communication Research*, *21*, 516–546.

Patton, J. H., Stanford, M. S., & Barratt, E. S. (1995). Factor structure of the Barratt Impulsiveness Scale. *Journal of Clinical Psychology*, *51*, 768–774.

Pheula, G. F., Rohde, L. A., & Schmitz, M. (2011). Are family variables associated with ADHD, inattentive type? A case–control study in schools. *European Child & Adolescent Psychiatry*, *20*, 137–145.

Satcher, D. (2001). *Youth violence: A report of the Surgeon General*. Retrieved September 21, 2011 from http://www.surgeongeneral.gov/library/youthviolence/report.html#message.

Seguin, J. R., Nagin, D., Assaad, J. M., & Tremblay, R. E. (2004). Cognitive-neuropsychological function in chronic physical aggression and hyperactivity. *Journal of Abnormal Psychology*, *113*, 603–613.

Stanford, M. S., Houston, R. J., Mathias, C. W., Villemarette-Pittman, N. R., Helfritz, L. E., & Conklin, S. M. (2003). Characterizing aggressive behavior. *Assessment*, *10*, 183–190.

Swing, E. L., Gentile, D. A., Anderson, C. A., & Walsh, D. A. (2010). Television and video game exposure and the development of attention problems. *Pediatrics*, *126*, 214–221.

Warburton, W. A. (2007). *Control-related aggression: Evidence for a mechanism, its origins, and personality correlates*. Doctoral Dissertation.

Waschbusch, D. A. (2002). A meta-analytic examination of comorbid hyperactive-impulsive-attention problems and conduct problems. *Psychological Bulletin*, *128*, 118–150.

Zimmermann, F. J., & Christakis, D. A. (2007). Associations between content types of early media exposure and subsequent attentional problems. *Pediatrics*, *120*, 986–992.