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Violent, Nonviolent, and Prosocial Gaming Effects on Teens' Civic Engagement

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Abstract

Data from the Pew Internet & American Life Project (Lenhart et al., 2008) on teens' gaming habits, civic engagement attitudes and behaviors, and family characteristics tested two general hypotheses: (1) that gaming effects on civic engagement and behavior would vary as a function of amount of exposure to different game types (violent vs. nonviolent) and (2) that such effects would be moderated by parental involvement. Relevant data were provided by 821 youths (12 to 17 years of age) and their parents. Path analyses showed that violent gaming was negatively associated with attitudes toward civic engagement and civic engagement behavior even after controlling for participant gender, age, social connectedness, internet use, parent education, parent involvement in the gaming decision, and parent civic engagement. Prosocial and nonviolent gaming were positively associated with civic attitudes and behavior. Youth civic engagement was also predicted by social connectedness and parent civic engagement. Parent involvement moderated the violent gaming effects.

Keywords: civic engagement, video games, civic participation, attitudes

Thomas Jefferson noted that “the qualifications for self-government in society are not innate. They are the result of habit and long training” (Bergh, 1905, p. 22). Indeed, one of the main reasons behind public funding of education was recognition of the need for citizens in a democracy to be able to intelligently engage in public debate on policy issues and to vote intelligently. A number of scholars have expressed concerns about the current level of civic engagement by U.S. citizens and have documented declines in such activity, especially among youth (e.g., Galston, 2001; Lopez et al., 2006; Macedo, 2005; Putnam, 1995).

Civic engagement (sometimes referred to as civic participation or social action) has been defined and measured in several different ways. For adults, a commonly used (and clearly oversimplified) metric is voting record. Poor voter turnout is sometimes seen as an indicator of low civic engagement. The American Psychological Association (2010) defines civic engagement as “individual and collective actions designed to identify and address issues of public concern.” Components include volunteerism (e.g., soup kitchens, Habitat for Humanity), involvement in election processes, serving as a member of a neighborhood association, and writing letters to agencies or elected officials (Snyder & Omoto, 2007). Thus one can view civic engagement as a set of social behaviors directed at understanding and influencing social issues ranging from purely local affairs to national and international policies. Furthermore, one can study civic engagement attitudes and behaviors from a social psychological standpoint, looking for life experiences and circumstances that promote or detract from such behavior (Snyder, 2009).

A number of variables have been examined by scholars outside of psychology as predictors of civic engagement. For example, Swartz, Blackstone, Uggen, and McLaughlin (2009) showed that having previously been the recipient of government means-tested welfare

assistance predicted lower voter participation even after controlling for a host of demographic and social psychological variables. However, having previously been the recipient of other non-means-tested assistance was unrelated to voter participation. These findings were interpreted as resulting from the stigmatizing effects of accepting means-tested welfare, which includes caseworker discretion and surveillance. The authors reasoned that the institutional structure and cultural meanings of this form of government assistance “teach young adult recipients that they lack power and influence in their interactions with government” (p. 653). Interestingly, education level was independently and positively associated with voting.

Recent research has examined the link between participation in small support groups (religious, secular, or mixed) and engagement in broader civic activities. For example, Marcello and Perrucci (2009) found that different types of small-group membership were associated with different levels of civic engagement. Specifically, members of religious small groups scored significantly lower on civic engagement than members of either secular or mixed groups. Once again, education was positively associated with civic engagement.

Still other studies have examined the longitudinal effects of specific life experiences on civic engagement. For example, Frumkin et al. (2009) found that participation in one of the AmeriCorps programs led to increases in civic engagement and also had other positive effects on participants. |

1. Media Use and Civic Engagement

1.1 Overview

Several studies have examined the relations between electronic media and civic engagement. For example, Valenzuela, Park, and Kee (2009) examined the relation between intensity of Facebook use and civic participation in a sample of Texas college students. They found a small but

significant positive effect of Facebook use on civic participation even after controlling for age, gender, and several other variables. Interestingly, parent education was positively associated with youth civic participation.

Hoffman and Appiah (2008) used a national sample of over 20,000 U.S. adults to examine the effects of a host of social and demographic variables—including newspaper, television, and internet use—on civic engagement. They found positive associations for newspaper and internet use and a negative association for television use.

Of most relevance to the present study are findings from the Pew Internet & American Life Project (Kahne, Middaugh, & Evans, 2009; Lenhart et al., 2008). These reports summarize many fascinating results from a national telephone survey sample of over 1,000 youth between the ages of 12 and 17, focusing on their use of video games and their civic engagement activities and attitudes. The study included a number of demographic and social variables, such as parent education and parental level of civic engagement. Although these two reports include too many findings to be summarized here, several are of particular interest. Almost all teens play video games; they play a wide range of types of games with widely varying content; parental involvement in their gaming choices and activities varies widely; and overall quantity of games played is not related to interest or engagement in civic and political activity. However, certain types of game activities (e.g., helping others) are positively associated with civic engagement.

There are numerous additional studies of the relations between electronic media usage and civic engagement. At the broadest level, the results appear somewhat mixed. Some studies report a positive relationship between electronic media usage and civic engagement, whereas others report negative relations.

1.2 Video Game Content and Effects

One potential reason for the disparate results of media effects studies of civic engagement concerns the wide range of content available within a given medium. For example, the finding that video game playing activity is largely unrelated to civic engagement may result from two very different types of effects of different types of games essentially negating each other. Playing games that model or enable prosocial, nonviolent, and/or information-seeking behavior may encourage the development of positive attitudes toward and actual engagement in civic behaviors in the real world, whereas playing games that model or enable violent and antisocial behavior may have the opposite effects. Indeed, long-standing findings in the media violence domain have shown similar content-based differences in effects. Television, film, and video game effects on aggression, violence, and aggression-related outcomes depend very heavily on both the content (i.e., violent versus nonviolent) and the amount of time spent on the medium (Anderson et al., 2003, 2010; Huesmann, Moise-Titus, Podolski, & Eron, 2003; Kirsh, 2006). Indeed, one of the most highly cited early research articles on violent video game effects notes the importance of distinguishing between time spent playing violent games and overall time on any type of video game (Anderson & Dill, 2000). More generally, the positive and negative effects of various types of media have been found to depend upon both content and time (Comstock & Scharrer, 2007; Singer & Singer, 2012; Strasburger, Wilson, & Jordan, 2009).

Interestingly, pundits and critics often characterize mainstream media violence researchers as being anti-entertainment media when in fact such researchers frequently note the positive effects of prosocial media. For example, the first set of studies to demonstrate that video games with prosocial content can increase prosocial behavior was published by scholars better known for their work on violent media effects (Gentile et al., 2009).

The reason for this symmetry in findings—that the same electronic medium can yield both positive and negative effects depending on the content—is that the same social-cognitive processes underlie all social behavior. The most successful models of aggressive behavior all rely on the same basic set of social-cognitive models of learning, script formation, knowledge structure development, and personality development that underlie theories of prosocial and other nonviolent forms of social behavior—for example, Berkowitz’s (1993) cognitive neoassociation model, Huesmann’s (1998) information processing model, Bandura’s (2001) social cognitive theory, and Crick and Dodge’s (1994) social cognition model. Indeed, the general aggression model (Anderson & Bushman, 2002) has itself been generalized to nonaggressive social behaviors (Barlett & Anderson, 2013; Buckley & Anderson, 2006; Gentile et al., 2009; Swing, Gentile, & Anderson, 2008).

In terms of civic engagement, however, there are no studies that separate the effects of violent versus nonviolent game content. There are very good theoretical reasons to expect that playing certain types of video games will enhance positive attitudes toward civic engagement and increase such social behavior, whereas playing other types of video games will detract from civic engagement attitudes and behaviors. A review article by Bers (2010) describes a number of games that should, theoretically, have positive effects on civic engagement beliefs, knowledge, self-identities, and action tendencies. Some of these games have been around for years (e.g., *Civilization*), whereas others are recent creations (e.g., *Zora*) (see Bers & Chau, 2010).

2. The Present Study

The present study was based on the Pew dataset (Lenhart et al., 2008). The primary advances made by the present study result from the creation of new measures of gaming activities from the existing data. Specifically, four new gaming exposure variables were created to assess exposure

to violent games, exposure to nonviolent games, an in-game focus on social issues, and an in-game focus on game-related actions. In addition, a host of existing variables were used for both theoretical and control reasons. The main hypothesis was that after controlling for age, sex, social connectedness, internet use, parent education, parent engagement in civic activity, and parent involvement in youth gaming decisions and activities, exposure to violent video games would be negatively associated with civic engagement attitudes and activities, whereas exposure to nonviolent video games and a prosocial in-game focus would be positively related to civic engagement attitudes and activities. A second hypothesis, based on prior findings (e.g., Anderson, Gentile, & Buckley, 2007), was that parent involvement would moderate the negative effects of violent game exposure.

Three additional hypotheses derived from general social-cognitive models were also tested. Civic engagement attitude was expected to be positively related to civic engagement activities. Parent civic engagement was expected to be positively related to youth civic engagement attitudes and activities. The extent to which youth are socially connected to others was expected to be positively related to civic engagement.

3. Methods

3.1 Participants

Relevant variables were selected from the Pew dataset cited earlier (Lenhart et al., 2008). For details on sampling and survey methods, see the original report. Complete data were available from 821 youth and parent pairs. Demographic variables included age of the youth (range 12 to 17, $M = 14.6$, $SD = 1.7$), gender (1 = male, 2 = female, 43% female), and parent education (1 = less than ninth grade, 7 = postgrad, $M = 4.9$, $SD = 1.5$. The mean on this variable corresponds to some education beyond high school but not a four-year degree).²

3.2 Measures

3.2.1 Parent Civic Engagement

Parents reported the extent to which they were civically engaged on four items. The parent indicated whether he or she had never performed the behavior (assigned a score of 0), had performed the behavior but not in the last 12 months (assigned a score of 1), or had performed the behavior in the last 12 months (assigned a score of 2). The four civic engagement behaviors were volunteered in my community; done something to help raise money for a charitable cause; taken part in a peaceful protest, march, or demonstration; and stay informed on current events and politics (alpha = 0.47).³

3.2.2 Parent Involvement in Youth Gaming

Eight items assessed the parent's involvement in their youth's gaming activities; four were answered by the parent and four were answered by the youth. Parents were asked, "When your child plays video games, how often do you" know which games your child is playing; play the games with him or her; check the ratings before he or she is allowed to play the game; and stop him or her from playing a game. Youth were asked, "When you play computer and console games, do your parents" know which games you are playing; play the games with you; talk to you about why you are allowed to play or not allowed to play certain games; stop you from playing certain games. The parent and youth reports of parent involvement were modestly correlated, $r = .34$, a fairly common finding. There is neither a theoretical nor an empirical reason to believe that one source is more accurate than the other. Therefore these two variables were converted to z-scores and averaged to create the measure of parent involvement in youth gaming (PIYG) (alpha for the 8 items = 0.64).⁴

3.2.3 Internet Use

Internet use was assessed with two items. One asked if the youth used the internet at least occasionally. The other asked how often the youth used the internet. Response options (and assigned scores) were as follows: several times a day (6), about once a day (5), three to five days a week (4), one to two days a week (3), every few weeks (2), less often (1), no use (0).

3.2.4 Social Connectedness

Youths reported on the frequency with which they socialized or communicated with friends in each of seven different ways: in person, talk on a land line, send text messages, talk on a cell phone, send instant messages, send email, send messages using a social networking site. Possible answers (and assigned scores) were as follows: never (0), less than once a week (1), at least once a week (2), several times a week (3), everyday (4). Scores were averaged across the seven items ($\alpha = 0.51$).

3.2.5 Violent and Nonviolent Gaming

Youths reported how often they played video games. Responses (and scores) were as follows: several times a day (6), about once a day (5), three to five days a week (4), one to two days a week (3), every few weeks (2), less often (1), and never (0). Those who reported that they played video games were further asked to indicate whether they played each of 12 game types. Four of the game types contain mostly or only violent games (fighting, action, first-person shooters, and survival horror). Each youth was assigned a score that ranged from 0 to 4, indicating how many of these violent game types he or she played. This score was then multiplied by the frequency with which the youth reported playing video games to create a measure of video game violence exposure.

Five of the game types were largely nonviolent games (puzzle, simulation, sports, racing, and rhythm). The number of these types of games that the youth reported playing was multiplied by the gaming frequency score to create a measure of nonviolent video game exposure.

3.2.6 In-Game Focus

Youths often indicated that they did certain behaviors while playing computer or console games. Responses (and scores) were as follows: often (2), sometimes (1), never or doesn't apply (0). Four of the behaviors have a clearly prosocial focus. They involved playing a game where you learn about a problem in society; that explores a social issue you care about; where you have to think about moral or ethical issues; where you help make decisions about how a community, city or nation should be run. Scores on these four items were averaged to create a measure of in-game prosocial focus ($\alpha = 0.69$). Four additional items indicated a focus on the game itself: help or guide other players, organize or manage game groups or guilds, use cheats or hack a game, and use "mods" or some other player-generated code that changes something in the game. Scores on these four items were averaged to create a measure of other in-game behavior ($\alpha = 0.52$).

3.3 Dependent Variables

3.3.1 Civic Attitudes

Youths' attitudes towards civic activity were assessed with a five-item Likert type scale. Response options were as follows: strongly agree (2), agree (1), neither agree nor disagree (0), disagree (-1), strongly disagree (-2). These items concerned working with community organizations and local government; getting involved in improving the community; being actively involved in national, state and local issues; interest in political issues; and learning from

people with backgrounds and experiences that are different from one's own. Scores were averaged across the five items ($\alpha = 0.60$).

3.3.2 Civic Engagement

Five civic behaviors were assessed. Each youth indicated whether he or she had never performed the behavior (assigned a score of 0), had performed the behavior but not in the last 12 months (assigned a score of 1), or had performed the behavior in the last 12 months (assigned a score of 2). The civic engagement behaviors were as follows: volunteered in my community; done something to help raise money for a charitable cause; taken part in a peaceful protest, march, or demonstration; stay informed on current events and politics; when there is an election taking place, I talk to people and try to show them why they should vote for or against one or the parties or candidates. Scores were averaged ($\alpha = 0.50$).

3.4 Analysis Strategy and Main Hypotheses

The CALIS procedure of SAS (Statistical Analysis System) was used to test various models of the relations among these variables using the maximum likelihood option. All predictor variables were standardized.

Modern social-cognitive models of attitudes and behavior make a number of predictions in this domain. The first is that amount of violent video gaming will be negatively associated with civic attitudes and civic engagement after other demographic and parent variables have been statistically controlled. Second, amount of nonviolent gaming and in-game prosocial focus will be positively associated with civic attitudes and engagement. Third, parent civic engagement will be positively associated with youth civic attitudes and engagement. It is not clear whether these hypothesized effects of gaming and parent engagement on youth civic engagement will be direct, indirect (through civic attitudes), or a combination of both.

Parent involvement in youth gaming, as measured in this study, was expected to be positively associated with in-game prosocial focus and with nonviolent gaming. Furthermore, as has been found in past studies of violent gaming effects on aggressive behavior (e.g., Anderson et al., 2007), parent involvement in youth gaming (PIYG) might serve a protective or moderating function on the effect of violent gaming on civic attitudes and engagement. Therefore an appropriate interaction term was created and included in the statistical model.

There are number of less interesting predictions. For example, if the four measures of video game activity are valid indicators of gaming activity, we should find strong gender effects on them, because males play video games more frequently than females, and this is especially true of violent games.

Ultimately, numerous models were tested, and adjustments were made based on the CALIS modification indices. Nonsignificant paths were dropped from the model except for one involving a main effect variable that was part of an interaction term and another that was needed to help the overall model meet the requirements of the CALIS procedure (see the dashed paths in [Figure 1](#)).

4. Results and Discussion

4.1 Main Findings

[Figure 1](#) displays all directional paths of the final model. [Table 1](#) displays the path weights and associated statistics. Note that, for the sake of brevity and readability, correlated error terms are not shown in the figure or table. [Figure 2](#) highlights the most important results by displaying only the key paths between the gaming variables and the two outcome variables. The final model fit the data well: $N = 821$, $GFI = 0.99$, $CFI = 0.99$, $AGFI = 0.97$, $NFI = 0.97$, $\text{Chi-square}(38) = 63.71$ ($P < 0.01$), $RMSEA = 0.03$.

Insert Table 1 and Figures 1 & 2 about here

4.1.1 Gaming Effects

The main hypotheses concerning the effects of video game exposure all were confirmed. After controlling for age, sex, parent education, parent involvement in youth gaming, internet use, social connectedness, and parent civic engagement, violent gaming was negatively associated with youth civic attitudes and behavior, nonviolent gaming was positively associated with youth civic attitudes and behavior, and prosocial in-game focus was positively associated with youth civic attitudes and behavior. Furthermore, these gaming effects on youth civic engagement were partially mediated by youth civic attitudes.

In sum, just as in the gaming and aggression domain, the effects of gaming on civic engagement and attitudes toward civic engagement are complex but theoretically consistent. The effects depend upon the content of the game as well as time spent gaming. Violent gaming was associated with outcomes that can be considered harmful to the individual and to society. However, other types of games and an in-game focus on prosocial ideas were positively associated with both civic attitudes and engagement. Again, this parallels nicely the empirical results of prosocial games (e.g., Gentile et al., 2009; Greitemeyer, & Osswald, 2009, 2010) and the social-cognitive models of the development of social behavior. Thus, blanket statements that games are good for youth, bad for youth, or have no effect on youth are overly simplistic. In addition, conclusions drawn from data that do not distinguish between violent, nonviolent, and prosocial aspects of games are incomplete at best and misleading at worst.

4.1.2 Parent Involvement as Moderator

Figures 3 and 4 display the significant interaction effects of parent involvement in youth gaming (PIYG) and violent gaming on civic attitudes and civic engagement, respectively. In both

cases, parent involvement in youth gaming activities (which includes talking about game content and limiting games) significantly moderated the harmful effects of playing violent video games. That is, a high level of parent involvement reduced (but did not eliminate) the negative effects of violent gaming on youth civic attitudes and engagement. This type of moderation effect also replicates findings in the aggression/violence domain.

[Insert Figures 3 & 4 about here]

4.1.3 Additional Findings

A number of additional theoretically consistent findings emerged, independent of the gaming effects. As shown in [Table 1](#) and [Figure 1](#), attitude toward civic engagement was positively associated with actual civic engagement at about the same level of magnitude commonly found in attitude/behavior studies. Parent civic engagement was positively associated with both youth attitudes toward and engagement in civic activity. These latter two findings can be seen as a type of positive role-modeling effect. The sex effects on the gaming and internet variable also fit well with prior data on differences between male and female youth in use of electronic entertainment media.

4.2 Caveats and Limitations

There are several limitations to these data that should be kept in mind. First, because of the cross-sectional correlation design, strong causal statements cannot be made purely based on these data. Given the lack of experimental or longitudinal studies of video game effects on civic attitudes and civic engagement, as well as the paucity of cross-sectional studies, it would be premature to conclude that nonviolent or prosocial games *cause* an increase in the likelihood of positive attitudes towards or actual engagement in civic activity; it is similarly premature to conclude that violent gaming *causes* a decrease.

Nonetheless, such cross-sectional data allow tests of causal hypotheses by providing a testable opportunity for the hypothesis to fail. The causal model hypotheses did not fail. Furthermore, cross-sectional data often allow tests of plausible alternative hypotheses. For example, one alternative explanation for a negative relation between amount of violent gaming and civic engagement might be that the time taken to play games of any type reduces the amount of time available for civic activities, and therefore reduces civic engagement. Another alternative explanation might rely on sex differences in violent gaming and in civic engagement. The present findings contradicted both of these alternative explanations. If time available for civic activities underlies the violent gaming effect, the same should be true for nonviolent gaming, which in fact was positively associated with civic engagement. Similarly, the effects of sex and other demographic variables were controlled, thus ruling them out as viable alternative explanations for either the violent or the nonviolent gaming effects.

A second limitation concerns the modest internal reliabilities of many of the scales. This is likely at least partially the result of using relatively few items, which in itself often is a necessary consequence of conducting telephone interviews. Of course, the major problem with modest (relative to high) internal reliability measures is that they exert a downward bias on the estimated effect sizes, essentially decreasing the power of the study to detect small effect sizes. The large sample size helps deal with the consequent lowering of effect sizes, from a power and hypothesis testing standpoint. Furthermore, the fact that theoretically consistent patterns emerged in the data also increases confidence that the modest reliabilities did not create major problems. In fact, all major hypotheses were supported by the path model. Nonetheless, the reported effects likely underestimate the true effect sizes.

5. Summary and Future Research

The present study extends research on the effects of playing various types of video games to another social domain, that of civic engagement. The results support three main observations. First, playing games that encourage violent, immediate solutions to conflicts of interest is likely to teach attitudes and encourage behaviors that are incongruent with civic engagement. Second, playing games with a prosocial, nonviolent, or problem-solving theme or focus is likely to teach attitudes and encourage behaviors that are congruent with civic engagement. Third, parents who truly become involved in their youth's gaming activities (including monitoring, discussing, and saying no to some content) may be able to reduce (but not eliminate) the harmful effects of the violent games that they do allow their teens to play.

Additional research is needed to further explore the effects of many types of games on the players. Experimental and longitudinal studies of gaming effects on civic engagement are especially needed. Also needed are studies that examine more closely the particular contents of various game genres, and that examine the multifaceted short term effects likely to emerge as the game is played and the long term effects likely to appear only after repeated exposure. Examples of game genres that are especially in need of additional research are MMORPGs (Massively multiplayer online role playing games), team-based online games, puzzle games, and cognitive skill training games. In addition, research is needed on the effects of playing games that are intended to increase civic engagement related variables, to see if such games have their intended effects, as well as to further refine the structural and content aspects needed to produce optimal effects (Bers, 2010). A host of cognitive and social variables are likely to be influenced by the massive amount of time youth (and increasingly, adults) spend on games. Variables such as racial and ethnic stereotypes (e.g., Saleem & Anderson, 2013); impulsivity, executive control, attention deficits (e.g., Swing, Gentile, Anderson, & Walsh, 2010); problem-solving skills, and

emotional desensitization (e.g., Bailey, West, & Anderson, 2011a & b) are just a few of the variables likely to be influenced by gaming activities (Barlett, Anderson, & Swing, 2009). Given the widespread adoption and the high amount of time spent on gaming, it is important to understand both the positive and negative effects that can accrue.

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Table 1. Parameter Estimates for the Final Path Model

Parameter	Estimate	Standard Error	<i>t</i> -Value	Standardized Estimate
Age->youth civic attitudes	0.152	0.037	4.12	0.152
Age->internet use	0.238	0.034	7.10	0.238
Age->social connectedness	0.354	0.032	11.03	0.354
Youth civic attitudes->youth civic engagement	0.291	0.031	9.36	0.292
Parent education->youth civic engagement	0.130	0.032	4.01	0.130
Parent education->internet use	0.120	0.032	3.80	0.120
Youth gender->in-game other	-0.284	0.033	-8.56	-0.284
Youth gender->in-game prosocial	-0.085	0.035	-2.44	-0.085
Youth gender->internet use	0.075	0.034	2.23	0.075
Youth gender->social connectedness	0.172	0.032	5.33	0.172
Youth gender->nonviolent gaming	-0.143	0.034	-4.22	-0.142
Youth gender->violent gaming	-0.560	0.029	-19.35	-0.560
In-game prosocial->youth civic attitudes	0.207	0.035	5.97	0.207
In-game prosocial->youth civic engagement	0.134	0.032	4.20	0.134
Parent involvement youth gaming-> youth civic attitudes	0.109	0.037	2.90	0.109
Parent involvement youth gaming-> youth civic engagement	0.042	0.031	1.33	0.042
Parent involvement youth gaming->in-game other	0.120	0.031	3.84	0.121
Parent involvement youth gaming->in-game prosocial	0.110	0.034	3.21	0.110
Parent involvement youth gaming-> nonviolent gaming	0.166	0.029	5.82	0.165
Parent civic engagement->youth civic attitudes	0.131	0.034	3.91	0.131
Parent civic engagement->youth civic engagement	0.144	0.033	4.34	0.144
Parent civic engagement->nonviolent gaming	0.123	0.028	4.44	0.123
Internet use->youth civic attitudes	0.052	0.034	1.54	0.052
Social connectedness->youth civic engagement	0.205	0.030	6.78	0.206
Nonviolent gaming->youth civic attitudes	0.093	0.041	2.29	0.093
Nonviolent gaming->youth civic engagement	0.091	0.037	2.47	0.092
Violent gaming->youth civic attitudes	-0.144	0.039	-3.70	-0.144
Violent gaming->youth civic engagement	-0.086	0.036	-2.44	-0.087
VG x PIYG->youth civic attitudes	0.075	0.033	2.24	0.075
VG x PIYG->youth civic engagement	0.063	0.030	2.08	0.063

N = 821. Absolute *t*-values > 1.97 are significant at *P* < 0.05. VG = violent gaming; PIYG = parent involvement in youth gaming.

Figure 1.

Full final path analysis model with all directional paths.

Notes: Solid paths are significant at $P < 0.05$. Sex is coded 1 for males, 2 for females. Red paths have negative beta weights. Black paths have positive beta weights. $N = 821$, $GFI = 0.99$, $CFI = 0.99$, $AGFI = 0.97$, $NFI = 0.97$. Chi-square (38) = 63.71, $RMSEA = 0.03$. Correlated error paths are not shown.

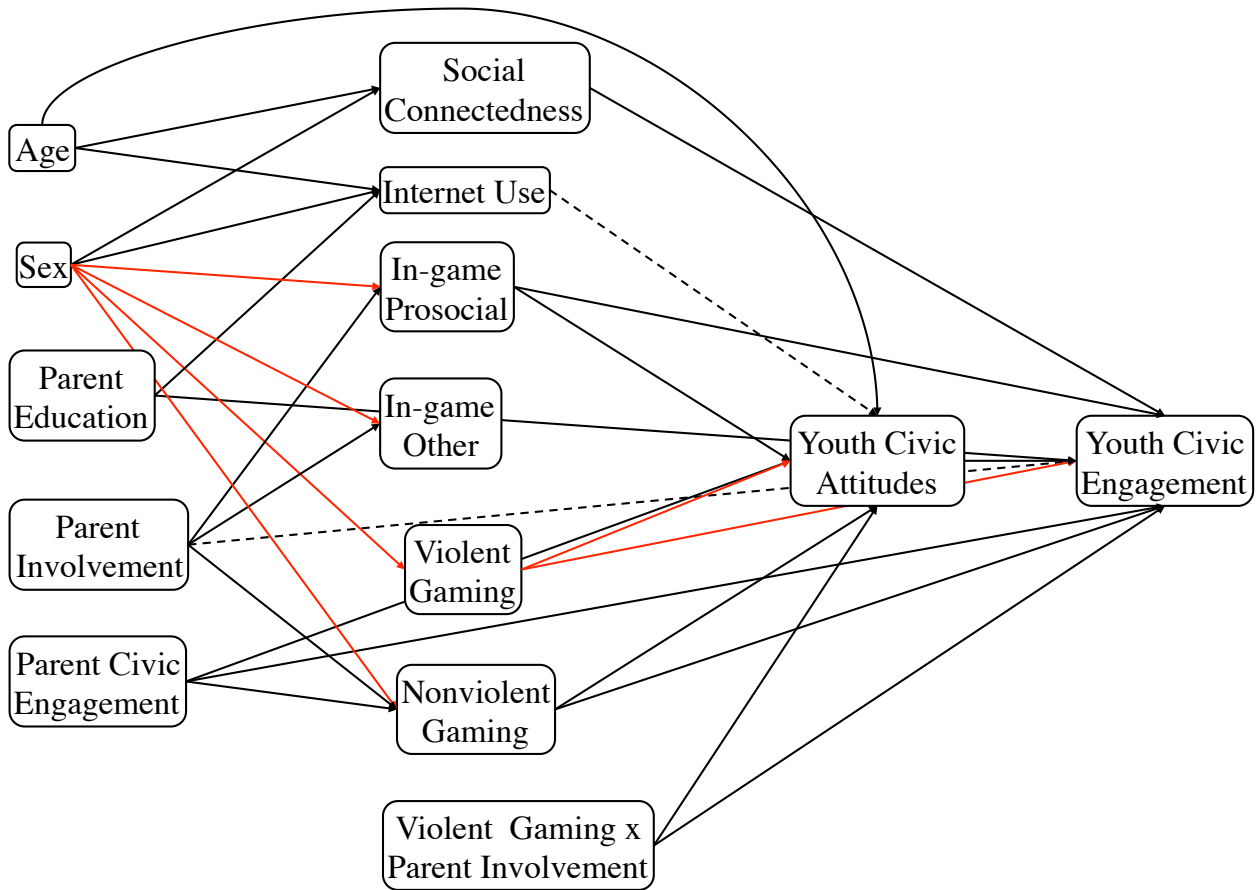


Figure 2.

Full final path analysis model showing only the key gaming variables and directional paths.

Notes: All paths are significant at $P < 0.05$. Standardized betas are shown.

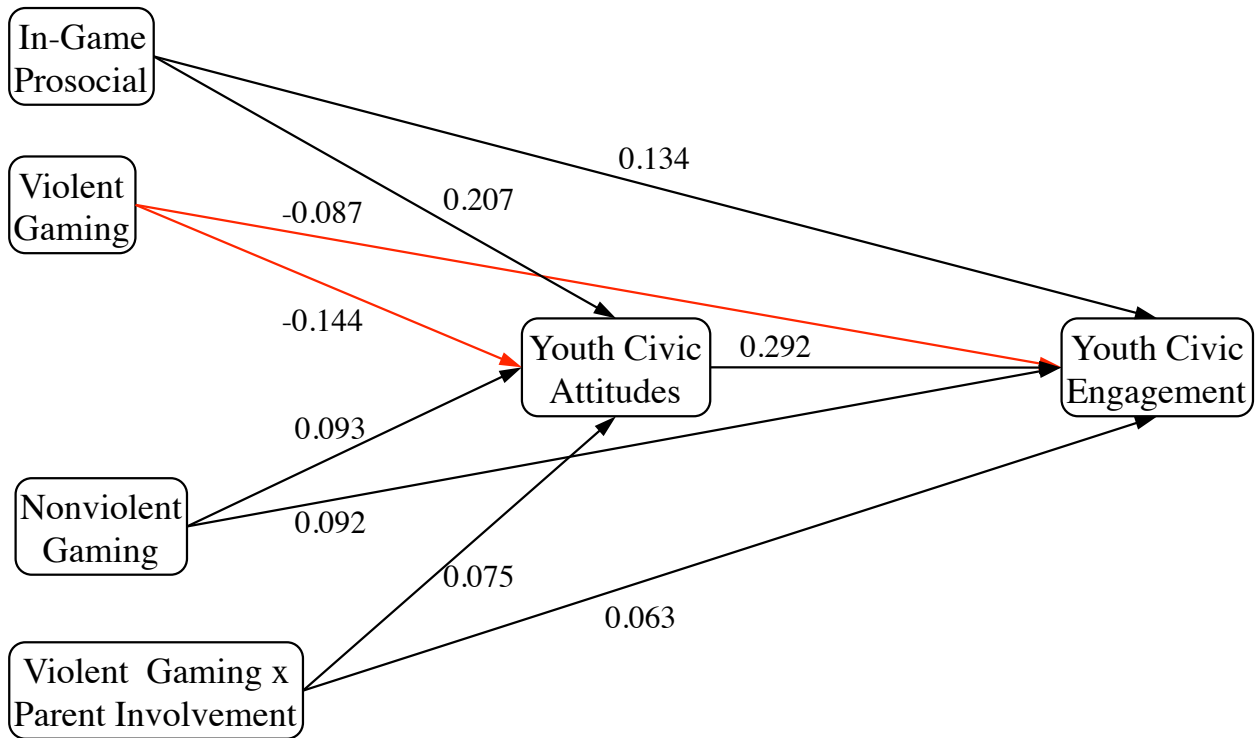


Figure 3.

Interactive effects of parent involvement in youth's gaming and violent gaming on attitude toward civic engagement. Notes: Plotted points are at ± 1 standard deviation of parent involvement and violent gaming.

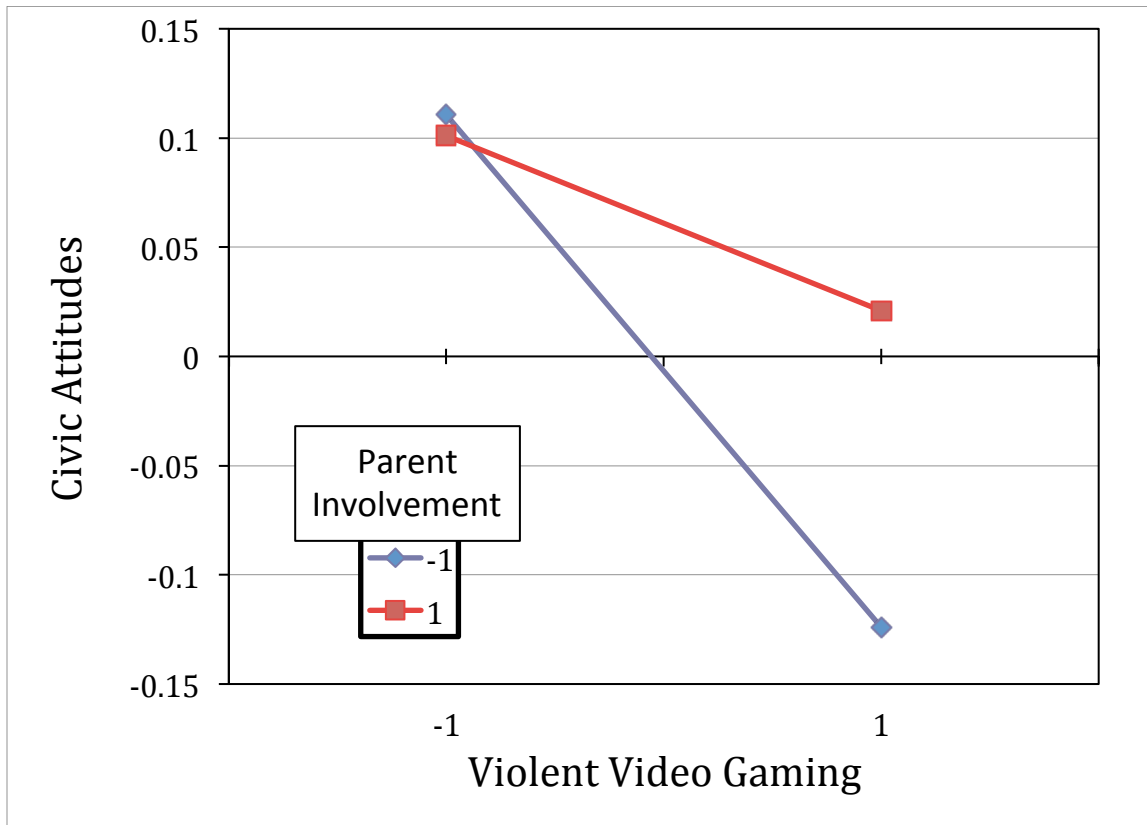
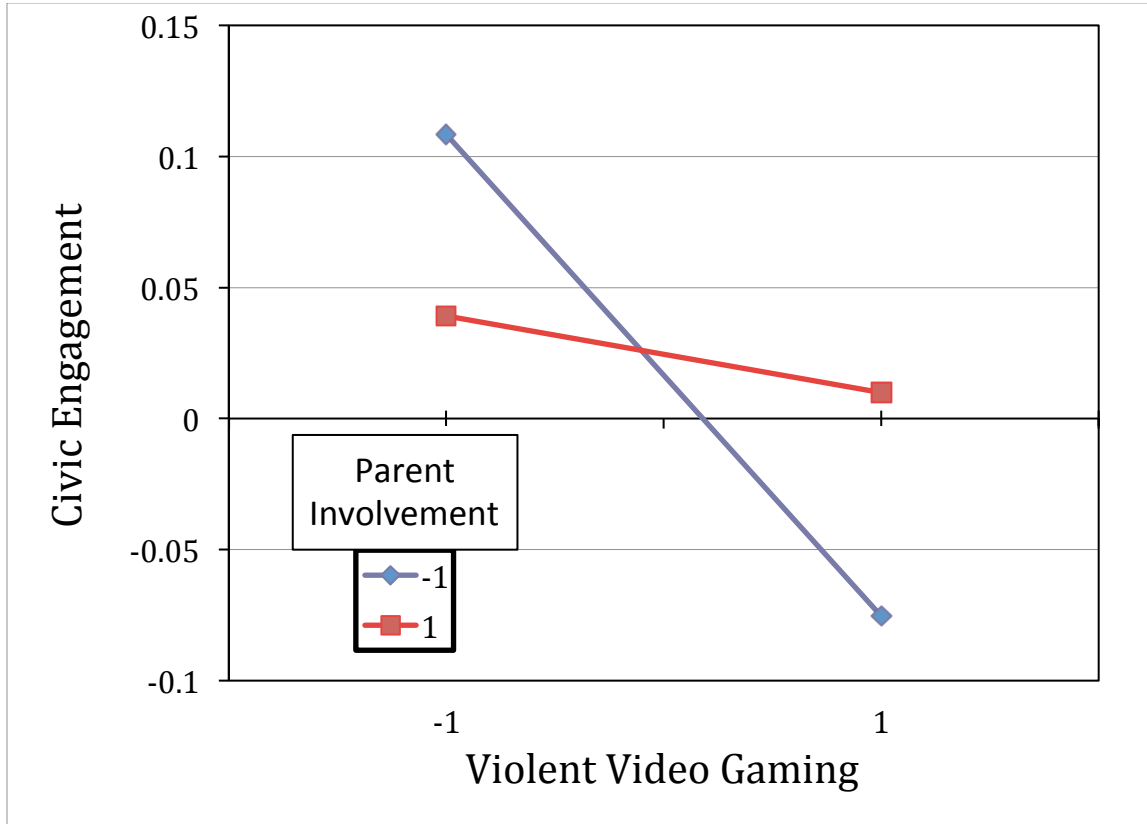


Figure 4.

Interactive effects of parent involvement in youth's gaming and violent gaming on youth civic engagement. Notes: Plotted points are at ± 1 standard deviation of parent involvement and violent gaming.



Footnotes

¹ AmeriCorps is a national program that provides grants to public and nonprofit organizations to support community service. In exchange for a year of full-time or sustained part-time service, AmeriCorps participants receive an education award that can be used for higher education, vocational training, or to repay qualified student loans. They also receive a subsistence stipend while they serve.

² Family income was also included in preliminary analyses. It did not yield any significant effects once education was accounted for, and because there were many missing values for income, it was dropped from the reported analyses to increase sample size.

³ Dropping the protest item increased alpha to 0.49, but doing so did not change the results in any significant or meaningful way.

⁴ By including this variable in the dataset, youths who did not answer parent involvement items or whose parent did not answer the parent version of the items were deleted. Youths who never played video games are therefore excluded from this sample. However, in the overall sample only nine youths reported having never played video games and only one additional participant would be added to the present “complete data” sample if parent involvement were recoded to include such youths. Doing so did not alter the results in any important way, although it slightly improved the fit.