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The Relationships Among Girls' Prosocial Video Gaming, Perspective-Taking, Sympathy, and Thoughts About Violence

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Abstract

This study, which was based on the General Learning Model, examined the effects of prosocial gaming on girls' thoughts about perceived justified and unjustified aggressive attitudes as operationalized by 4 scenarios. The process was mediated by participants' general perspective-taking and sympathy abilities, which relate to the cognitive and affective routes to learning. Structural equation modeling was used to examine the process. One hundred and forty-five girls between the ages of 7 and 15 completed the self-report online survey. Findings suggest that prosocial gaming is associated with greater perspective-taking and sympathizing abilities. These abilities positively correlated with thoughts about all types of violence as wrong whether or not "justified" and independent of severity. Error correlations suggest that younger girls' processing comprises an affective component that bypasses the cognitive or perspective-taking route. Findings also intimate that in the case of justified violence assessments, girls not only evaluated the aggressor's violent act but also assessed what precipitated the act thus suggesting more complex thought.

Keywords

prosocial video games, General Learning Model, perspective-taking, sympathy, violence

Introduction

Video games are ubiquitous among younger people. A recent Pew study (Kahne, Middaugh, & Evans, 2008) that examined teens video gaming habits in relation to civic involvement found that 97% of 12- to 17-year-olds played some type of computer game,

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and 50% of the respondents reported playing video games every day. Eight percent play five or more different game genres and 65% indicated that they play video games in the presence of others.

Much of the research on video gaming has focused on the deleterious influences of violent gaming on children (as noted by Gentile et al., 2009; Greitemeyer & Osswald, 2009, 2010; Power, 2009; Sestir & Batholow, 2010). Some researchers find this trend disquieting (Ferguson, 2007). In fact, the debate as to whether nurture or nature drives the relationship between video game play and behaviors has been complicated by what Ferguson (2008, 2010) calls moral panic. That is to say, often when a grave violent act is committed and reported in the media, journalists are quick to raise the issue of whether the perpetrator was a violent video gamer. Such news agenda setting often facilitates a flurry of op/ed pieces about the topic resulting in public panic calling for governmental investigations and regulation. Researchers are not immune to these influences, and caution is warranted to consider the contributions of different approaches to this topic.

Two major schools of thought have developed theories that explicate the relationship between violent media exposure and its link to aggressive cognitions and violent behaviors (Ferguson & Dyck, 2012). One focuses on environmental influences and the other is centered on genetic predispositions.

First, the General Aggression Model (GAM) and the broader General Learning Model (GLM) are informed by social-cognitive learning theory. According to this framework, individuals learn through observation and through direct experience or modeling of behaviors (Bandura, 2002). This can occur through video game play where gamers observe whether their behaviors are rewarded or punished. Rewarded behavior motivates people to continue the action and develop positive attitudes toward the behaviors, which become valued. Learning occurs at the cognitive, affective, and arousal levels. Various other mechanisms such as scripts serve as the basis for learned behaviors (Buckley & Anderson, 2006). In sum, according to the GLM, the effects of these processes not only influence factual learning, but also facilitate the learning of values, beliefs, and behaviors that can shape personality (Buckley & Anderson, 2006) by creating and/or altering prosocial or antisocial-related knowledge structures.

However, proponents of the Catalyst Model of Violence (Ferguson et al., 2008a; Ferguson et al., 2008b), which as the name implies focuses on violence behavior, posit that genetic predispositions and childhood family experiences act as catalysts and contribute to an aggressive personality where violent responses can be triggered by environmental stresses. Media exposure is postulated to be a stylistic catalyst that simply provides models (a "how to" guide) for specific violent behaviors but it is not the cause for such behaviors.

It is important to note that social-cognitive learning theory suggests that trait aggression interacts with aggressive or prosocial media content by moderating individual aggressive or prosocial thoughts and behaviors (Saleem, Anderson, & Gentile, 2012a, 2012b). The difference between the two schools of thought lies in the role ascribed to media exposure. According to the GLM, media serve as a mode of learning including and beyond style. Learning is reinforced through repeated media exposure. In this process, media content is posited to affect

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personality. However, the Catalyst Model holds that media exposure is a stylistic catalyst but not a cause of aggressive personality development and violent behavior.

This study is an attempt to explore prosocial video gaming as a learning mechanism relative to children's abilities to perspective-take and sympathize and their assessments about different violent scenarios. Cognitive and affective types of learning are presented as important to prosocial thoughts, feelings, and behaviors. For this reason, this research is informed by the GLM (Buckley and Anderson, 2006), which accommodates the cognitive, affective, and arousal[1] aspects of learning (Barlett & Anderson, 2010) through media exposure.

More specifically, the aim of this study is to explore thoughts about mild and severe, and justified and unjustified aggression and their relationship to the cognitive and affective routes of learning. The mechanism by which cognition and affect appear to operate in the context of aggression appears unclear in the literature (Gentile et al., 2009; Kahne et al., 2008; Koo & Seider, 2010; Mares, Palmer, & Sullivan, 2008; Narvaez, Mattan, MacMichael, & Squillace, 2008; Saleem et al., 2012a, 2012b; Sestir & Bartholow, 2010). The goal of this study is to explore the sensitizing role of the perspective-taking and sympathy mechanism in prosocial learning in light of exposure to prosocial video games.

Literature Review

According to social cognitive theory, individuals learn through observation and through direct experience or modeling of behaviors (Bandura, 2002). People learn by observing others in the same room, on television, or in video game play, which provides content for scripts or knowledge structures stored in memory. These scripts are the basis (including instructions) for behaviors (Barlett & Anderson, 2010; Buckley & Anderson, 2006). Subsequent behaviors that are consistent with existing structures provide further scripts for new and related behaviors. Rewarded behaviors are more likely to become scripts. They can be activated automatically or without much thought. People experience this process not only in person but also through media such as video games. It is suggested that the effects of these processes not only influence learning, but also can shape personality (Buckley & Anderson, 2006) by creating and/or altering prosocial or antisocial-related knowledge structures.

What is prosocial behavior? "Prosocial behavior represents a broad category of acts that are defined by some significant segment of society and/or one's social group as generally beneficial to other people" (Penner, Dovidio, Piliavin, & Schroeder, 2005, p. 366). It is a behavior that is conducted to do some perceived good directed at another party whether that party is a person, the environment, an ideal, and so forth.

It should be noted that scholars differ in their conceptualization of what constitutes prosocial behavior and what is antisocial behavior (Ferguson, Garza, Jerabeck, Ramos, & Galindo, 2012). For example, Ferguson and Dyck (2012) postulate that not all aggression is negative and indeed some forms of aggression are normative, adaptive, and linked to phylogenetical development. That is to say, a police officer protecting the public or soldiers defending their country engage in normative and adaptive behaviors even if violent in some cases. In short, according to these scholars activation of "violent" scripts is not necessarily

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maladaptive or viewed as such by the individual. In fact, Ferguson and Garza (2011) found no relationship between playing action games and civic engagement suggesting that prosocial and antisocial behaviors are not opposites or inversely related.

Individuals who are exposed to mediated content learn attitudes, beliefs, values, and behaviors from media whether it is prosocial or antisocial, or intentional or unintentional (Buckley & Anderson, 2006; Dodge et al., 2008; Lynch, Gentile, Olson, & van Brederode, 2001). There is a relationship between repeated media exposure and internal processes, behavior, as well as the development of long-term knowledge structures, and personality (Barlett & Anderson, 2010).

This study focuses on long-term effects through cognitive and affective processes (Buckley & Anderson, 2006), which correspond with learned sensitization: perspective-taking and sympathy, respectively. Each repeated exposure to a video game is like another learning trial. Over time, the activated scripts become more ingrained and more readily accessible with subsequent gaming exposure and similarly connected experiences in real life. In the case of prosocial learning, the creation of knowledge structures that encourage prosocial behaviors can change personality and allow more prosocial responses to environmental affordances (Anderson & Bushman, 2001; Buckley & Anderson, 2006). Thus, through these routes learning and moral reasoning about aggression can take place.[2]

There are a number of criticisms associated with the GLM's assumptions (Ferguson & Dyck, 2012) in addition to the points posited by the Catalyst Model proponents. Some scholars advocate that people can differentiate between fictional and real violence at a relatively early age and act accordingly. Second, some GLM critics do not see aggression as mainly cognitive, but see cognition occurring relevant to the prime in descriptive or awareness features, but not as an intention to act violently, which relates to the final point. A number of scholars view automatic construct accessibility as topic awareness of the prime rather than any aggressive intentionality.

Cognitive and Affective Routes to Prosocial Belief Systems and Behaviors

Perspective-taking is the ability to place oneself in the position of another person and then access knowledge structures to assist in understanding that individual in the context of that person's situation (Eisenberg, 2002). This suggests a cognitive process. Although perspective-taking includes the ability to empathize, it is more complex (Hoffman, 2000); it is the ability to perceive others in a cognitively abstract way or form a multidimensional perspective including the broader environment (Sakamoto, 1994). Sympathy is defined as feeling sorrow for another person or situation (Clark, 1987; Ruusuvuori, 2005) and is an affective process. Generally, one would have to place oneself in another person's position through perspective-taking in order to feel sorrow for that person. It is possible, however, that a young child may be prone to an affective or sympathetic response not having sufficiently developed cognitive structures. We would also anticipate that someone with developed perspective-taking abilities, would have an increased ability to sympathize. These abilities might be further developed owing to exposure to prosocial gaming. In other

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words, the ability to imagine the point of view of another and to access higher order social emotional knowledge structures will facilitate a more complex process of understanding involving cognitive and affective internal states (Vieira & Krcmar, 2011).

Learning behaviors occur through repeated exposure to stimuli resulting in chronic accessibility of thoughts and chronic affective reactions (Gentile et al., 2009). In video games, players can take on the role of a character. The character engages the gaming environment. Players engage in procedural rhetoric (Koo & Seider, 2010) where they learn about different perspectives. Through this activity, perspective-taking can be developed and reinforced by role playing where gamers take on different roles and learn to see the world from different points of view (Flanagan & Nussbaum, 2007, Nussbaum, 2002; Shaffer, 2007). Moreover, identifying with prosocial roles and groups can further facilitate prosocial attitudes, empathies, sympathies, and related behaviors (Penner et al., 2005). Thus, gaming develops a perspective-taking response as well as a sympathetic response that links the characters and story within the video game (Dodge et al., 2008). These cognitions and affects engage and motivate individuals to play games and adopt gaming behaviors (Greitemeyer & Osswald, 2010).

Some studies[3] have suggested a connection between prosocial video gaming and prosocial behaviors. For example, a Pew study (Kahne et al., 2008) found that civic gaming experiences were associated with civic or political activities, helping others, and debating ethical issues. Although the direction of the relationship was not established, it existed. In a series of experimental, correlational, and longitudinal studies across diverse populations, Gentile et al.[4] (2009), found that prosocial game play was associated with prosocial thoughts and behaviors such as sharing, helping, and greater social cooperation. The studies further suggested that prosocial gaming contributed to perspective-taking and sympathy traits (Greitemeyer, Osswald, & Brauer, 2010[5]).

Greitemeyer (2009a[6], 2009b[7]) discovered that exposure to prosocial songs was related to prosocial thoughts, empathy, and prosocial behaviors. In a meta-analysis of 34 studies, Mares and Woodard (2005) found that children who viewed televised prosocial content were associated with "friendly play," sharing, helping, donating, and offering comfort behaviors. These behaviors were stronger for younger children. Similar results were discovered by a number of other studies (Narvaez et al., 2008[8]).

More recently, Saleem et al. (2012a) conducted an experiment involving children between the ages of 9 and14 that examined the relationships among prosocial behaviors, helpful behavior, and hurtful behavior. They found a positive association among prosocial video gaming exposure and helpful behaviors and a negative relationship between prosocial gaming exposure and hurtful behaviors. These findings were consistent with Greitemeyer's (2009a, 2009b) work on playing prosocial video games and prosocial thoughts. In addition, in an experimental study of undergraduate university students who were exposed to violent, neutral, and prosocial video games, Saleem et al.[9] (2012b) found that those who played prosocial video games reported lower state hostility, aggravation, and mean feelings compared to the neutral or violent game conditions. They also reported positive affects for those exposed to the prosocial condition. Prosocial trait measures were found to moderate these relationships and trait aggression demonstrated a negative moderating effect. These studies

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suggest the importance of the content (Gentile et al., 2009; Greitemeyer & Osswald, 2010; Kahne et al., 2008). Therefore,

Hypothesis 1 (H1): Prosocial gaming exposure will positively relate to respondents' perspective-taking ability.

Hypothesis 2 (H2): Perspective-taking ability will positively correlate with respondents' level of sympathy and mediate between prosocial gaming exposure and sympathy.

Moral Reasoning and the Cognitive and Affective Routes

Moral reasoning is the ability to make and explain ethical choices (Eisenberg, 1986). It emerges from an individual's internal construction of the social world based on experience and personal values (Johnson, 1994; Reed, 1997). Kohlberg (1984) intimated that moral reasoning is primarily a cognitive process consisting of logical reasoning based on one's developmental stage and environmental experiences. However, Eisenberg and Morris (2001) suggest that moral reasoning also has an affective component, mainly via empathy. According to Neo-Kohlbergian theory (Rest, Narvaez, Bebeau, & Thoma, 1999), moral knowledge structures should become more complex over time as children develop and gain experience. As children learn about the perspectives of others, their moral structures expand to incorporate those influences and complexity. Interaction with broader social environmental factors also encourage the development of even more elaborate knowledge structures that reflect not only the needs and perspectives of those in a child's proximate environment, but also the more distal needs of society and those who the child does not necessarily know personally. Furthermore, the ability to imagine the point of view of another can be conceptualized as an individual personality difference variable that is influenced by a number of social factors. For instance, those individuals who learn that there are consequences to the victim from violent acts, are likely to demonstrate better perspective taking when attempting to understand such violent behavior (Stewart & Marvin, 1984). However, when affective responses such as sympathy are dampened, it is probable that less sympathy for the victim would lead children to see violence as less harmful, less problematic, and perhaps acceptable under certain conditions.

Past research has found a significant relationship between sympathy and perspective-taking where individuals who are better able to perspective-take are more likely to feel sympathy toward others (Batson, 1991). This ability to imagine the point of view of another and to access other higher order social emotional knowledge structures can influence children's moral reasoning about certain kinds of violence and aggression through a more complex process of understanding.

Research on children's reasoning about violence has found that children can distinguish between justified and unjustified violence (Carnagey & Anderson, 2004; Krcmar & Valkenburg, 1999; Vieira & Krcmar, 2011). They can evaluate both types of violence because they understand the situation and imagine what the situational characters are experiencing, thus providing opportunities to activate feelings of sympathy. It is also likely that

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individuals who view less severe violent acts as wrong would view severe violent acts as wrong.

Thus,

Hypothesis 3 (H3): Those respondents who sympathize more will view violence as wrong.

Hypothesis 4 (H4): Those who view the less severe violent behavior as wrong will also view the severe violent act as wrong.

Age of the Child

Research on perspective taking has found a clear, positive relationship between the age of the child and perspective-taking ability (Piaget, 1965). With age, children develop cognitively and become better equipped to think abstractly and thus learn to understand the perspective of others. Thus,

Hypothesis 5 (H5): There will be a positive relationship between respondent age and perspective taking ability.

Method

Sample and Procedures

The sample consisted of 145 girls between the ages of 7 and 15 from 12 countries including the United States, Canada, Australia, Ireland, and the United Kingdom. The mean age was 11.31 years ($SD = 2.04$) and median 11.00.

The participants were members of the horse-centered Club Pony Pals online game (clubponypals.com), which is based on the Pony Pals books. The game focuses on skills development but emphasizes care and affection for gamers' ponies and other players. The children were recruited to complete an online survey via e-mail invitation from the Club Pony Pals administrator over a 4-week period. After the initial e-mail invitation, two subsequent reminder e-mails were sent at 1-week intervals. The e-mail list was composed from the most active Club Pony Pal membership ages 7 to 15. The response rate was 7.5%. Recruitment and all data collection procedures were International Review Board compliant. In addition to questions about age, gender, and where the participants resided, the 24-item survey included scale and open-ended short answer questions. The complete instrument is located in the Appendix.

Measures

Prosocial play score. Gamers' exposure to prosocial video games was operationalized using a prosocial play score, which consisted of the cross-product of two components: prosocial content and amount of playtime. Prosocial content was measured by having children

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list their top five favorite video games. The game reported as most played was selected for the prosocial play score. The question was: I PLAY: : 1= *Very little*, 2 = *Little*, 3 = *In the middle*, 4 = *Often*, or 5 = *Very often*. In the case of an equal reported amount of playtime, the first game in the tie listed was selected. Two coders rated game content based on the following coding schema (Russell & Carroll, 1999):

2 = *Prosocial*, societal, caring, helping, and/or cooperative

1 = Competitive, self-interest, and/or skills development focus, as well as *limited prosocial* engagement

0 = *No prosocial* content

Cohen κ's intercoder reliability was assessed at 0.89. The most played games distribution was: prosocial (75.3%, $N = 113$), limited prosocial (9.3%, $N = 14$), and no prosocial (15.3%, $N = 23$).

Perspective-taking. Five hypothetical perspective-taking stories were adopted from Krcmar and Valkenburg (1999), which reported reliability from 0.72 to 0.87 (Krcmar & Vieira, 2005; Vieira and Krcmar, 2011). Children were asked 11 open-ended questions or two questions per scenario (one scenario had three questions) requiring short responses.

Sympathy. Sympathy was operationalized by a four-item instrument used in similar research (Vieira & Krcmar, 2011). Responses were anchored in a five=point scale ranging: 1= *Strongly disagree*, 2 = *Disagree*, 3 = *In the middle*, 4 = *Agree*, and 5 = *Strongly agree*. Reported reliability was 0.78.

Moral reasoning about justified and unjustified violence. The Moral Interpretation of Interpersonal Violence (MIIV) scale (Krcmar & Valkenburg, 1999) was used to measure moral reasoning about violence. Children read and responded to four stories (Krcmar & Vieira, 2005; Vieira & Krcmar, 2011).

In each story, a scenario was described where the main character used violence to rectify a problem. Of the stories, two were intended to show unjustified violence and two stories involved justified violence where violence was used to protect a person or as restitution for harm done. In each set of justified and unjustified violence scenarios, one situation involved relatively minor physical aggression and the other situation involved hospitalization of the victim. The participants answered 5-point scale questions concerning whether the violence was wrong or right. The anchor was: 5 = *Was very wrong*, 4 = *Somewhat wrong*, 3 = *In the middle*, 2 = *Somewhat right*, and 1 = *Very right*.

There were no nested data effects by country or state.

Analysis

The primary analyses were confirmatory factor analysis (CFA) and structural equation modeling.

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Measurement Model

Two coders rated 11 open-ended perspective-taking items, which were based on the following schema:

0 = The child did not have a response;

1 = The child gave a response that was not rational such as assuming to have knowledge that was not available in the scenario;

2 = The child demonstrated adequate perspective taking, yet did not fully consider the perspective of the other party; and

3 = The child demonstrated meta-perspective taking (i.e., the respondent considered the other party's perspective as well as his or her own perspective).

The Cohen κ as a measure of intercoder reliability was assessed at 0.83 to 0.92, which demonstrated desirable interrater agreement (Landis & Koch, 1977).

A CFA was then conducted on the prospective-taking and sympathy items using Analysis of Moment Structures (AMOS) 20.0. Three prospective-taking items and one sympathy item were dropped because of low loadings. In the subsequent CFA using maximum likelihood estimation without the three items, the loadings were 0.67 to 0.91, which demonstrated desirable convergent validity. Reliability was 0.92 for the perspective-taking items and 0.83 for the sympathy items. The fit indices were excellent, $\chi^2 = 38.24$, $df = 40$, $p = .55$, confirmatory factor index (CFI) = 0.99, root mean square error (RMSE) = 0.03; root mean square error approximate (RMSEA) < 0.01. Index scores of >0.90 are acceptable (Kline, 2011). RMSE scores of <0.10 and RMSEA scores of <0.05 are desirable (Cudeck & Browne, 1992). The sympathy and perspective-taking latent variables were constructed based on the factor items employing a simple average of the loadings. Table 1 represents the factor structures.

Next, the MIIV were single-item measures with the following properties: less severe justified violence ($M = 2.89$, $SD = 1.20$), severe justified ($M = 3.72$, $SD = 1.08$), less severe unjustified ($M = 4.89$, $SD = 0.41$), severe justified ($M = 4.92$, $SD = 0.44$). Other than the comparison of less severe unjustified violence and severe unjustified violence, all of the comparisons were significant at $p < .001$ ($F(1, 596) = 194.67$, $p < .001$). Finally, Table 2 represents the zero-order correlations of all study variables. Correlations ranged from 0.00 to 0.75, which demonstrated desirable discriminant validity.

Structural Model

The hypotheses were examined through structural equation modeling. Figure 1 represents the tested hypothesized model using maximum likelihood estimation. The model did not fit the data well: $\chi^2 = 90.77$; $df = 21$, $p < .01$; RMSE = 0.15, RMSEA = 0.12; and

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Table 1. Confirmatory Factor Analysis of Perspective-Taking and Sympathy

Abbreviated item	Perspective- taking	Sympathy
Visiting grandmother after school and not doing homework due the next day:		
What do you think?	0.91	
What does your teacher think?	0.71	
What do your parents think?	0.84	
Your friends gets the last apple pie in school; you love apple pie:		
What do you think?	0.73	
What does your friend Chris think?	0.72	
Letting your friend borrow your new bike:		
What do you think?	0.82	
What does your friend think?	0.77	
A bee attacks your friend and you swat it away appearing like you hit your friend and your teacher see it:		
What do you think?	0.67	
It makes me sad to see someone alone in a group.		0.71
Seeing someone else cry makes me sad.		0.91
I get upset when I see someone else get hurt.		0.71
χ^2	38.32	
df	40	
p-Value	0.55	
RMSE	0.03	
RMSEA	0.00	
Comparative fit index	0.99	
Cronbach's α	0.92	0.83

Maximum likelihood estimation was used. The reported factor loadings were used to construct the composite variables for both variables and were the basis of the Cronbach αs. The complete items are located in the Appendix.

Table 2. Zero-Order Correlation of Variables Related to Girl's Moral Reasoning About Violence

Variable	*M*	*SD*	1	2	3	4	5	6	7	8
1. Age	11.31	2.04	1.00							
2. Prosocial gaming exposure	9.99	9.49	0.03	1.00						
3. Ability to perspective- take	2.14	0.78	0.01	0.75*	1.00					
4. Ability to sympathize	4.20	0.85	0.23*	0.17*	0.25*	1.00				
5. Less severe justified violence	2.89	1.20	0.04	−0.07	0.02	0.19*	1.00			
6. Severe justified violence	3.72	1.08	−0.06	0.02	0.14	0.37*	0.58*	1.00		
7. Less severe unjustified violence	4.89	0.41	−0.03	0.00	0.07	0.12	0.03	0.03	1.00	
8. Severe unjustified violence	4.92	0.44	0.01	0.23*	0.28*	0.04	0.07	0.19*	0.17*	1.00

Note. *$p < .05$. Prosocial gaming exposure was operationalized as a cross-product of prosocial content (0 to 2 representing *no prosocial content* to *mostly prosocial content*) and amount of playtime (1 to 5 representing *very little* to *very often*). Perspective-taking was anchored in a 4-point scale ranging from *no response* (0) to *meta-perspective-taking* (3). Other than age, all other responses were anchored in a 5-point scale.

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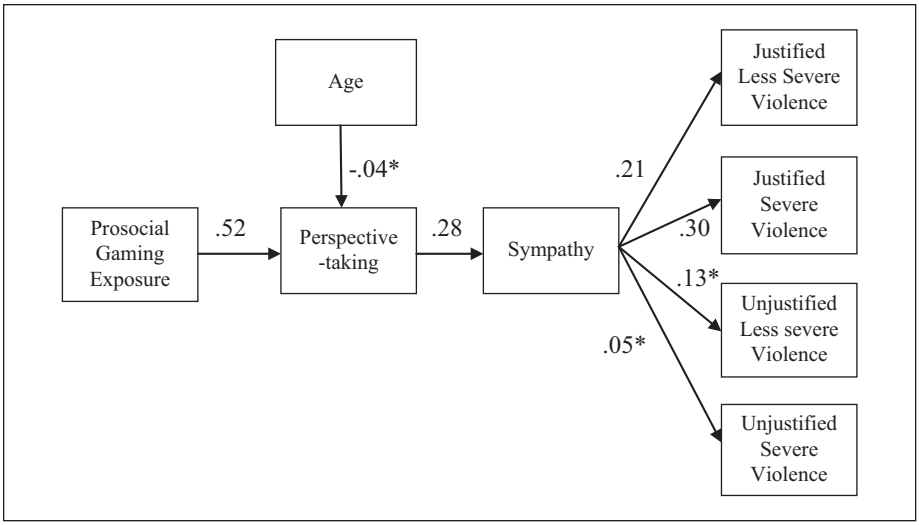

Figure 1. Tested hypothesized structural equation model for the prosocial effects of video gaming. Note: *PaVVVVth coefficients $p \geq .05$. Maximum likelihood estimation was used. $\chi^2 = 90.77$; $df = 21$, $p < .01$; RMSE = 0.12; RMSEA = 0.15; and CFI = 0.56. $N = 150$.

CFI = 0.56. Again, index scores of ≥ 0. 90 are acceptable (Kline, 2011). RMSE scores of <0.10 and RMSEA scores of ≤0.05 are desirable (Cudeck & Browne, 1992). Based on modification indexes that demonstrated face validity, a respecified model was developed which fit the data well ($\chi^2 = 19.28$; $df = 20$, $p = .50$; RMSE = 0.05, RMSEA = 0.00; and CFI = 0.99. Further analysis is based on this model (see Figure 2).

Results

H1: Prosocial gaming exposure will positively associate with respondents' perspective-taking ability. There was a strong relationship between prosocial gaming exposure and level of perspective-taking (β = 0.52, $p < .001$, 95% CI [0.43, 0.59, $p = .02$]).

H2: Perspective-taking ability will positively relate to respondents' level of sympathy and also mediate between prosocial gaming exposure and sympathy. Perspective-taking related to level of sympathy (β = 0.26, $p < .001$, 95% CI [0.07, 0.42, $p = .01$]). Moreover, these findings suggest that perspective-taking mediated the relationship between prosocial gaming exposure and sympathy as demonstrated by the Sobel Test ($p < .01$, $t = 2.97$, $SE = 0.00$).

H3: Those respondents who sympathize more will view violence as wrong. This was the case for two moral reasoning about violence conditions: less severe justified violence (β = 0.21, $p < .001$, 95% CI [0.02, 0.36, $p = .04$]) and severe justified

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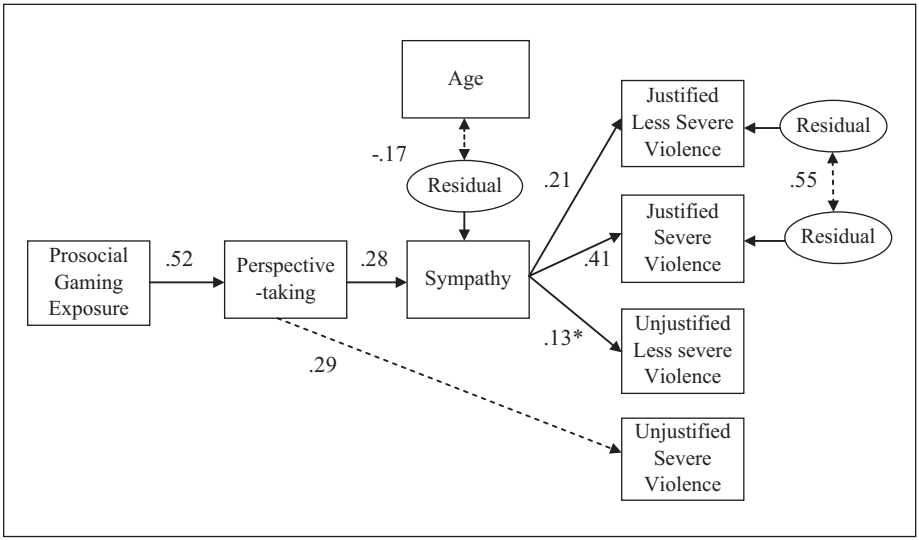

Figure 2. Tested respecified structural equation model for the prosocial effects of video gaming. Note: *Path coefficients $p \geq .05$. Dashed lines represent revisions from the hypothesized model. Maximum likelihood estimation was used. $\chi^2 = 19.28$; $df = 20$, $p = .50$; RMSE = 0.05; RMSEA < 0.01; and CFI = 0.99. $N = 150$.

violence (β = 0.41, $p < .001$, 95% CI [0.17, 0.56, $p = .01$]). Although not significant, there was a path between less severe unjustified violence and perspective-taking (β = 0.13, $p = .11$, 95% CI [−0.06, 0.29, $p = .19$]). There was a significant path from perspective-taking to severe unjustified scenario (β = 0.29, $p < .001$, 95% CI [0.13, 0.43, $p = .01$]).

H4: Those who view the less severe violent behavior scenarios as wrong will also view the severe violent acts as wrong. This hypothesis was not supported. Yet, in the revised model, the error terms of both types of justified violence were positively correlated ($r = 0.55$, $p < .001$, 95% CI [0.44, 0.68, $p = .01$]), suggesting that perhaps the error captures the respondents' evaluation or the "wrongness" of the original act that precipitated the assessed violence in the first place. In other words, the justification for the violence was considered.

H5: There will be a positive relationship between respondent age and perspective taking ability. This hypothesis was not supported. However, in the respecified model there was a small negative correlation between age and the sympathy error term ($r = -0.17$, $p = .03$, 95% CI [−0.24, −0.09, $p = .01$]). This might mean that a portion of this process in younger children is directly driven by their feeling sorry for others without imagining what those others were going through thus circumventing the empathizing process suggesting cognitive immaturity.

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Prosocial gaming exposure's total effect on sympathy was $\beta = 0.14$ and on severe unjustified was $\beta = 0.14$. Sympathy's total effect on severe justified violence was $\beta = 0.41$. The mediating effects of perspective-taking between prosocial social gaming exposure and assessments about unjustified severe violence was significant ($p < .01$, $t = 3.25$, $SE = 0.00$). The mediating effects of sympathy between perspective-taking and justified violence were significant: less severe violence as acceptable ($p = .03$, $t = 2.06$, $SE = 0.04$) and severe violence as acceptable ($p < .01$, $t = 2.86$, $SE = 0.05$). However, the sympathy mediator role was not significant for less severe unjustified violence as acceptable ($p = .14$, $t = 1.45$, $SE = 0.01$).

Discussion

This study examined the relationships among girls who played prosocial video games, their level of perspective-taking and sympathy abilities (or cognitive and affective processing, respectively), and moral reasoning about violence that was justified, unjustified, more severe, and less severe. As hypothesized, those girls who reported more prosocial gaming experience were associated with greater perspective-taking (or empathy) and more sympathy for others. Based on the structural equation model, prosocial gaming positively related to perspective-taking, which in turn positively related to the ability to sympathize so that perspective-taking mediated the relationship between prosocial gaming and sympathy. Compared to previous research on the negative relationship between violent video gaming and perspective-taking (Greitemeyer & Osswald, 2010; Hearold, 1986; Vieira & Krcmar, 2011), the positive relationship between prosocial gaming exposure and perspective-taking was stronger. This suggests that it is easier to convince someone to engage in prosocial behavior rather than to persuade someone to do something violent (Mares & Woodard, 2005). Both cases of justified violence were significantly mediated by sympathy. There was a significant and direct relationship between the severe unjustified violence scenario and perspective-taking. Thus, prosocial gaming exposures on moral reasoning about violence was significantly mediated by the cognitive and/or affective routes in three of the four violence scenarios.

The harshest scenario, severe unjustified violence, which was directly related to perspective-taking, suggests that an unjustified act of severe violence that requires hospitalization of the victim, does not leave any room for understanding the perpetrator's position because it is harsh and very wrong according to social norms (Sakamoto, 1994). However, the situation where a person grabs Paul's sister's purse perhaps elicits a degree of sympathy for Paul and his sister even though Paul was wrong. This dynamic may also apply to Phil defending his grandmother from a gang member. Both cases involve sympathy for the "victim" as part of the moral reasoning process. In other words, the justification for the violence was considered. The path between both justified violence error terms suggests this process, which demonstrates complex reasoning.

The younger girls also tended to display greater sympathy, which is suggested by the negative correlation between age and the sympathy error term. Younger children who are not cognitively developed to engage in abstract thought such as perspective-taking may automatically and emotionally respond to environmental stimuli.

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In sum, findings suggest that relationships exist among prosocial gaming exposure, perspective-taking, sympathy, and assessment about various violent scenarios that vary by severity and justification.

Practical Implications

This study suggests that the relationship between prosocial video gaming and assessments about different violent scenarios is mediated by differences in perspective-taking or sympathy. Dodge et al. (2008) point out that video games, and in particular, prosocial video games can be transformative to the gamer intimating that through participation and learning, which is reinforced by a community of likeminded players, a collective resonance develops where gamers share the gaming reality that they create. They identify with this resonance, which can influence personality development.

Video games that offer a forum for players to discuss various aspects of the game provide an opportunity for players to further identity with the game and group of players. This identification encourages greater involvement with the game, its content, and community of gamers. Therefore, the gaming experience individually and collectively can be transformative in a manner that would not be as readily available without technology.

Finally, the process of assessing violent scenarios can be complicated and influenced by context. Developmental dynamics can reduce sensitization to an affective process. However, for cognitively mature individuals, the process is more elaborative. Violence perceived as unjustified would likely prompt the individual to consider the rights of the victim where perceived justified violence might include reasons for the violent act and broader social norms. Parents and teachers might wish to consider these factors when teaching children.

Limitations and Future Research

This study has a number of limitations. First, participants were girls. A sample including boys would provide a representative dataset of children. Second, the response rate was 7.5%. A higher response rate was desirable and would have contributed to a representative sample of the population. Third, the study was cross-sectional and correlational. A longitudinal study would be more valid in order to establish long-term effects and predictability. Fourth, the sample size was relatively small and thus lends itself to Type II error. Fifth, the dominant prosocial video game reported was Club Pony Pals, which involved the caring for horses and people. A study involving different types of prosocial video games and content might reveal any potential game differences. Sixth, it is likely that a person can sympathize for another individual without understanding that person. This alternative process should be incorporated in future research. Seventh, it is important to note that prosocial and antisocial video game content cannot easily be separated into dichotomous categories. Antisocial behavior can consist of aggression, delinquent behaviors, and/or any behaviors harmful to others or detrimental to self and/or society.

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Thus, it is possible that some antisocial video games do not contain violence or would contain aggression that is not physical (Burt, Donnellan, & Tackett, 2012). Second, the nature of a video game may be such that its goals may involve justified violence in the service of a higher good such as righting a wrong or protecting others as is the case in some of the military action games (as opposed to gratuitous violence which is for its own sake and not a prosocial reason). Therefore, contextual factors play a role in this process (Bandura, 2002). Since there may be video games where prosocial behaviors incorporate aggression and other cases where antisocial behaviors do not include physical aggression, the description of what constitutes a prosocial game requires a clear definition that is exhaustive, but includes commonalities with the broader antisocial gaming category.

Future research should include experimental research designs that incorporate the arousal route along with cognitive and affective processes. Future study might also examine whether individuals assess the costs and benefits involved with prosocial behaviors. Penner et al. (2005) postulate that whether someone helps another involves the costs associated with the helping behavior (Piliavin, Dovidio, Gaertner, & Clark, 1981) and whether and how the person identifies with the behavior and group associated with the behavior (Dodge et al, 2008; Penner, 2002; Piliavin, 2004). Other areas of study may involve the micro or macro nature of the prosocial behavior and its relationship to perspective-taking and sympathy. For example, actions such as volunteerism or interpersonal acts of kindness may operate differently. Even within an interpersonal level there are differences. For instance, the nature of altruism can be influenced by whether the good deed is contingent upon reciprocity (Axelrod, 1984). Thus, the benefits of prosocial gaming are influenced by a number of moderating and mediating factors that should be explored as well as game play variables. Next, the MIIV questions were single-item measures. Perhaps more diverse violent and violent or antisocial behavior scenarios might reveal more nuances in the relationships among the study variables and various moral dilemmas. These scenarios might be framed in the second person where the participant is the perpetrator or victim. Finally, future research should include personality trait variables that capture prosocial predispositions in an effort to discover a more complete picture including the role of genetics in this process.

Conclusion

It is easier to convince someone to do something that is prosocial rather than to persuade someone to do something that is violent. Activities that are clearly unwarranted with no apparent "justification" are assessed as wrong. However, in those situations where there appears to be a reason for violent behavior, sympathy plays a role as well as perspective-taking demonstrating complex reasoning. Thus, it might be in the case of mitigating circumstances, the process of moral reasoning about violence changes; however, the moral assessment remains unchanged. In other words, what is wrong, is still wrong.

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Appendix

Online Questionnaire

1. I am_____years old.
2. I am a BOY or GIRL.
3. Please type in your country name: _____.
4. Please type in your state or province name: _____.

For the following questions, please type in the name of video games that you have played or play now. The video games can be on a computer, from a CD, and/or online. Also, click on the circle that is about how much you play the game. Type in all that you can think of up to five (5) starting with the one you play the most. You do not have to use all of the game spaces. When you finish, move down to Question #6.

5. I PLAY: (Responses: Very little, Little, In the middle, Often, Very much)

Game: _____

Please answer the following questions about different situations (Responses: Was very wrong, somewhat wrong, in the middle, somewhat right, or very right?)

6. Frank is a grocery store clerk. He has big muscles and exercises every day. One day, his pal Jeff asked Frank why he is lying to him. Frank gets very angry and kicks his pal many times.
7. Paul is walking home with his sister. A man grabs her purse, pushes her down, and runs away. Paul chases the man to get the purse back. When he gets hold of the thief, he kicks him several times and grabs the purse. Was Paul:
8. Barry is a tall guy. One day his neighbor accidentally parked his car too close to Barry's car. Barry became very angry and started to beat up his neighbor. His neighbor had to go to the hospital. Was Barry:
9. Phil's grandmother lives in a neighborhood where there are some young men from a gang. The gang members always ask for money from the older people. The older people usually refuse, but are afraid. One day Phil is staying over at his grandmother's home when the doorbell rings. At the door is one of the gang members and he demands a drink and some money. Phil sees this and beats the gang member, who ends up in the hospital. Was Phil:
10. You go to visit your grandmother after school. You don't get home until late, so you didn't get a chance to do your homework (Responses: short open-ended).

a. What do you think? [text box]
b. What does your teacher think? [text box]
c. What do your parents think? [text box]

11. Your favorite dessert is apple pie. You're in line at the school cafeteria and your

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friend Chris is in front of you. Chris loves apple pie too, but there is only one piece left.
a. What do you think? [text box]
b. What does your friend Chris think? [text box]
12. You get a brand new bike for your birthday. Your friend wants to borrow it.
a. What do you think?
b. What does your friend think?
13. You're at school and a bee lands on your friend, so you try to swat the bee away. Just then, your teacher turns around and sees you hitting your friend. The teacher is too far away to see the bee.
a. What do you think?
b. What does your teacher think?
14. Your friend Jamie and you both play soccer, but for different teams. When your team
plays Jamie's team, your team wins.
a. What do you think?
b. What does your friend Jamie think?

Please answer the following questions about yourself (Responses: Strongly disagree, Disagree, In the middle, Agree, Strongly agree).

15. It makes me sad to see someone alone in a group.
16. Seeing someone else cry makes me feel sad.
17. I get upset when I see someone else get hurt.
18. I get upset when I see an animal get hurt.

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Notes

1. This study does not account for the arousal route.
2. There has been debate over the operationalization of aggression. Some scholars posit that many violent video game studies operationalize violence by using fictional violence measures to draw real violence conclusions. See Ferguson and Dyck (2012).

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3. Adachi and Willoughby (2010, 2011) have pointed out that many video gaming experimental studies have not accurately operationalized theoretical constructs. For example, measures of aggression may also have measured competitiveness therefore threatening internal validity. Also, structural characteristics of games in studies may have varied thus introducing confounding variables such as pacing, level of difficulty, etc.
4. Study limitations included the nature of self-report designs, which lends itself to self-presentation bias, small path coefficients, and that the results were short term.
5. A limitation of this study was the usage of one video game for each experimental condition: prosocial, neutral, and violent.
6. This experimental study examined short-term results. Also, it did not include a severe negative consequences condition.
7. This research measured short-term relationships where participants listened to two songs, thus potentially allowing for single message effects. In addition, internal states and not actual behaviors were examined.
8. In this experimental study, there were helping, neutral, and violent gaming conditions that were followed up with a prosocial questionnaire. There was no relationship between the violent gaming condition and prosocial responses unlike the neutral and helping conditions, which demonstrated increased prosocial responses. This suggests that it may be less challenging to encourage positive behaviors than negative ones.
9. Results were short term. A longitudinal study would be necessary to provide repeated exposure and test for long-term effects.

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