Violent Video Games,
Empathy and
Indirect Aggression
In Primary School
Children;
Is there an
Association?

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Abstract

Violent video gaming has received considerable attention in news headlines recently describing the negative associations with increased aggression and negative social consequences. In consideration of the bias in reporting the negative consequences of violent video gaming, and the understanding that children are engaging in playing violent games at an earlier age than appropriate, this study examines the associations between video game violence, empathy and indirect aggression in primary school children aged 9 to 12 years. Results of analysis from quantitative self-report measures (N=90), found that playing violent video games is negatively associated with lower levels of empathy and higher levels of indirect aggression. Gender differences were found, with males playing more violent video games and spending more time playing than females.
Introduction

Gaming technology has developed rapidly in the past decade and its related problems have received increasing attention. The most heavily marketed and consumed games are violent ones with cutting edge graphics in which the main task is to maim, wound or kill (Anderson & Bushman, 2001). Over the last decade, graphics and special effects have become increasingly more realistic. Violent video games depict intentional attempts by individuals to inflict harm on others. An ‘individual’ can be a cartoon character, a real person, or anything in between. A recent study by Anderson & Bushman (2009) revealed that 90% of parents never check the ratings of video games before purchase and 89% of parents never limit their children’s time spent gaming. The interactive quality of video games differs from passively watching violence on television because it allows players to become active participants in the game. In addition, players identify and role-play with their favourite characters, as discussed by King, Delfabbro & Griffiths (2010). Players are able to make decisions affecting the actions of the character they are imitating.

Albert Bandura’s Social Learning Theory (1977) identified three basic models of observational learning. Firstly, people can learn through observation; he identified three basic models of observation. One was through a live model that involves an individual demonstrating or acting out a specific behaviour. In 1965, Bandura’s famous ‘Bobo doll’ experiment demonstrated how children who watched a model attack a ‘bobo doll’ later imitated that behaviour. He concluded that aggressive models can increase viewers’ tendency to act aggressively and habituate viewers to the sight of violence; this is supported in later studies by Huesmann & Anderson (2003). Secondly, a verbal model that describes and explains behaviour and thirdly, a symbolic model which involves real or fictional characters displaying behaviours in books, television or online media/video games. These perspectives
paved the way for understanding the learning and development processes involved in shaping aggressive behaviour and desensitizing individuals to violence.

**Literature review**

A mounting body of researchers argue that aggression and empathy are affected by violent video gaming where others dispute this. In a meta-analysis by Greitemeyer & Mugge (2013), data from 98 independent studies revealed that for both violent video games and pro-social video games, there was a significant association with social outcomes; with violent video gaming negatively associated with aggression. Gentile & Anderson (2003), state that playing violent video games may increase aggressive behaviour because violent acts are repeated throughout the game. This method of repetition has always been considered an effective teaching method in reinforcing learning patterns. After a limited amount of time playing a violent video game, a player can “automatically prime aggressive thoughts” (Bushman & Anderson, 2002).

Context is an important factor when considering in particular, what other factors may also be having an effect on behavioural development. Ferguson, San Miguel, Garza & Jerabeck (2012), looked at the behavioural development of 165 teenagers over the course of 3 years and found that when pre-existing emotional, family and social problems were accounted for, any aggression-increasing effects of playing violent video games disappeared. In addition, Tear & Nielson (2013) asked a group of 64 college students to play one of four different video games for 20 minutes; two of the games were violent and two were not. After playing, participants filled out questionnaires about their experience with the game, but what the scientists really wanted to know was whether the games influenced the participants’ tendency to help others. It turned out that they did not. When the researchers pretended to spill their pens in their rush to leave the room, both groups of gamers were equally likely to
help them pick up their pens. “This suggests that the effect of violent video games on behaviour might be small and that public concern ought to be minimal,” says Tear. According to Tear, other factors hold more weight. Not surprisingly, things such as whether someone is a friend, a stranger or potential academic advisor is likely to play a bigger role in whether one goes out of their way to help than the nature of a game they might have just played.

Not taking such contextual factors into account could produce misleading results in investigating the influence of violence in video games. In the study, if the researcher dropped the pens at a point in the experiment when the participants thought the scientist might return, 75% helped him pick up, but if they thought the study was over and they would never see him again, just 31% gave aid. However, in both of these studies the participants were teenagers. Perhaps younger children who are frequently exposed to violent video games during an important developmental stage may be influenced to behave differently.

Conflicting evidence by researchers Gabbiadini, Riva, Andrighetto & Bushman (2013) found that when people play violent video games, they show less self-restraint. “They eat more and they cheat more,” they said. “It isn’t just about aggression, although that also increases when people play games like Grand Theft Auto.” According to study author Brad Bushman, the results of the research show far-reaching impacts of playing violent video games. Based in Italy, the study experiment began with more than 170 teenagers playing a violent video game, such as Grand Theft Auto III, or a non-violent game like Mini Golf 3D, for a total of 45 minutes. As the teens played, a bowl containing candy was placed next to the gaming console. The participants were told they could eat the candy, but warned eating too much in a short time span was unhealthy. The researchers watched as those who played the violent games ate over three times as much candy as the other teens. “They simply showed less restraint in their eating,” Bushman said.
After their gaming session, the teens were given a 10-item logic test in which they would get one ticket for a prize raffle for each question they got correct. After finding out how many answers they got right, the teens were told to take the appropriate number of tickets out of an envelope while not being watched. Knowing exactly how many tickets were in the envelope, the researchers could later determine if a participant took more than they had earned. They found violent game players cheated about eight times more often than did those who played a non-violent game. The researchers also tested participants’ level of aggression by having them play a game with an unseen fictional “partner” for the chance to blast the loser with a loud noise through headphones. They found violent game players chose to blast their fictitious partners with louder noises that lasted longer than those who played non-violent games.

Participants also completed a Moral Disengagement Scale, which quantifies how loosely a person holds themselves to high moral standards in all situations. The researchers found violent game players who scored higher on the scale, and were therefore more disengaged, were more likely to take extra tickets, eat more candy and act more aggressively compared to those who played the non-violent games. Bushman said. “Those who are most morally disengaged are likely to be the ones who show less self-restraint after playing.” He added that the effects were seen among both male and female participants. “But even girls were more likely to eat extra chocolate and to cheat and to act aggressively when they played Grand Theft Auto versus the mini golf or pinball game. They didn’t reach the level of the boys in the study, but their behaviour did change.” Although these behaviours were not directly causing harm to another, it does seem to indicate a negative association with moral decision making in teenagers.

The problem with trying to compare different studies in this area is that researchers approach everything differently. It's not necessarily the case that one study will control for
the same potentially confounding factors that the next study controls for, and even the measures of aggressive behaviour that are used can vary. In a 2009 meta-analysis, Ferguson & Kilburn argued that many studies use poorly validated or unreliable aggression measures, and that there was a bias in the research literature towards publishing studies only showing a significant link between violent video games and aggressive behaviour. That study was itself called into question a year later, when Anderson and colleagues (2010) published a meta-analysis arguing that playing violent video games poses a causal risk for aggressive behaviour. They also suggested that the Ferguson and Kilburn paper used flawed methods and didn't do a particularly comprehensive job of citing the relevant literature. Ferguson and Kilburn next published a comment claiming that the Anderson paper was also flawed. Whether violent video game playing is a threat to pro-social behaviour is still a topic for debate. There are many studies, like those mentioned above, that have found negative associations between aggression and violent video games and other studies that dispute this.

The researcher Brad Bushman has studied violent media for 25 years and published more than 150 papers. That research has been cited so many times that Google Scholar lists him as the second most-cited communications scholar in America according to a recent newspaper report (Walch, 2014). In February 2014, Bushman laid out his scholarly review of 381 studies with more than 130,000 participants that looked at violent video game effects. Based on that science, he said, "Playing violent video games increases aggressive thoughts, angry feelings, emotional arousal and aggression." They also make people "numb to the pain and suffering of others". All these effects are massive and statistically significant," Bushman added. He said the largest effects found in the science are in the areas that prove violent video games lead to increased aggressive behaviour. There are 140 studies with more than 68,000 participants that establish that correlation according to Bushman (Walch, 2014).
Bajovic (2014) suggests that teenagers who play lots of violent video games may have poorer moral judgement. She set out to investigate if playing violent video games affected teenagers’ moral reasoning; their ability to clearly see right from wrong. She studied a group of 13 and 14 year olds and asked them about their game playing habits. She used a scale of 1 to 4 to determine their level of moral reasoning. She found a significant difference between those who played for 1 hour and those who played for at least 3 hours. The more hours they spent playing violent video games the lower their levels of moral maturity. She believes that this was due to the length of time playing and the games’ content. Spending too much time may prevent gamers from developing a positive sense of what is right and wrong according to Bajovic. She also found that moral judgement did not appear to be affected if the teenagers’ played non-violent video games.

Kohlberg’s theory on moral reasoning (1963; 1984) is based on understanding the reasons why individuals make their moral judgements. He believed that factors such as compassion, caring and other interpersonal feelings may play a part in moral reasoning. If moral reasoning development is based on the ability to understand a perspective outside of oneself and violent video games do not provide the perspective of the victim of a violent act, then repeated exposure to them may hinder perspective development during a crucial development period in a child’s life.

Children of primary school age and younger are increasingly gaining access to the internet (EU kids Online, 2013). The rise in the number of children inhabiting virtual worlds requires a better understanding of the developmental risks, including social, cognitive and intellectual capacities. Children play violent video games online in groups or ‘clans’ using microphones for verbal communication. Violence is rewarded with extra points, new levels and above all higher status among the group. There are vast amounts of research into violent video games and their links to aggression but none that explicitly observe the extent of the
relationships between empathy and levels of indirect aggression among primary school children who play violent video games.

**Indirect Aggression & Empathy**

Indirect aggression is a type of behaviour in which an individual attempts to inflict pain in such a manner that he or she makes it seem that there was no intention to hurt at all. Questionnaires on aggression tend to include, almost exclusively, items on direct (verbal and physical) aggression. Direct aggression is more strongly related to externalizing problems, poor peer relations, and low pro-social behaviour and indirect aggression is related to internalizing problems and higher pro-social behaviour (Card, Stucky, Sawalani & Little, 2008). If one uses indirect means, it is easy not to admit or even recognize that one’s own actions are actually aggressive (Bjorkqvist, Lagerspetz & Kaukiainen, 1992). Indirect aggression has largely been neglected in research. It may be an important sub-type of aggression and may provide an insight into children’s moral reasoning.

Most findings indicate that viewing violence influences children to become more aggressive in either their attitudes or behaviour. Attempts to harm and manipulate others by plotting and scheming behind their backs are major themes in violent video games today. Psychologists call this covert form ‘indirect aggression’, which includes spreading rumours, gossiping and excluding others from social groups (Lagerspetz, Bjorkqvist & Peltonen, 1988). Unlike in research on physical aggression, the causes and consequences of indirect aggression have only recently begun to be examined. Researchers have not yet discovered the long-term effects of indirect aggression. It is important to establish if there is a relationship between indirect aggression and violent video games. The possibility remains that the cumulative result of playing violent video games may increase an individual’s use of indirect aggression in real life. The frequency and portrayal of indirect aggression may be giving
individuals an unrealistic and distorted view of what forms of behaviour are acceptable to use in their own lives.

Studies suggest that the use of indirect aggression is dependent on maturation and the existence of a social network that facilitates the use of such means for inflicting pain on another (Bjorkqvist et al. 1992). Coyne, Archer & Elsea (2006) studied the frequency and harmfulness of indirect, relational, and social aggression among 11 to 15 year olds in North West England. The purpose of their study was to determine if a relationship existed between the frequency of these types of aggression in a school setting with adolescents and the frequency of aggression on television. The results of their study found that even though students are exposed to the three types of aggression in school, television has a much higher frequency of aggression. Girls perceived indirect and verbal aggression as more harmful than did boys. Limited evidence was found for a distinction between indirect, relational, and social aggression, although it was clear that they were more similar than different. In conclusion, Coyne et al. (2006), suggest that researchers stop debating the definitions of relational aggression and instead focus their efforts on trying to solve this harmful problem.

According to Holloway, Green & Livingstone (2013) younger children seem less resilient to the problems they encounter in the virtual world of violent video games. They are upset when things go wrong: when they are socially excluded from games by known friends; when friends and siblings misuse their online profiles; and when they encounter virtual losses. The most recent meta-analysis on violent video gaming revealed that exposure led to increases, although small, in aggressive behaviour, cognition, and negative affect, while decreasing pro-social behaviour and empathy (Anderson, Shibuya, Ihori, Swing, Bushman, Sakamoto et al., 2010). Violent video gaming was significantly related to lower levels of pro-social behaviour across multiple studies. In one study by Bushman & Anderson (2009), subjects were given a violent video game to play in a laboratory setting and others were given
a neutral video game. A fake fight was staged outside the lab door and those who played the violent game took over 450% longer to help the stranger, were less likely to even notice the fight occurred and rated the fight as less serious that those who played the neutral game. One interpretation of this study’s results may be because of a decrease in empathic concern.

A group of researchers looked at reactions to faces in pain for gamers, while they lay in fMRI machines (Weber, Ritterfeld & Mathiak, 2006). An fMRI machine works by detecting the movement of blood around the brain, and thus what areas are being used at what times. What the researchers wanted to know was how the processing of emotions was affected by a lot of video gaming, so they watched the action happening in the frontal lobes of the brains as their subjects looked at the pictures. They found that the gamers, who all play Counter-Strike, a Call of Duty-type war game, responded less to images of real violence than non-gamers. Images of accidents and disfigured faces did not trigger the same neuro-chemical reactions as for other people. The researchers concluded by saying players of violent games have better top-down control of their emotions. Put more plainly, they lack empathy.

Empathy towards others can be described as an emotional reaction elicited by and parallel to another’s’ emotional state (Eisenberg, 1991) which is manifested as a sympathetic response that leads to feeling bad for another’s situation and acting on those feelings. Sympathy and empathic concern are terms that are often used interchangeably, but this current study will primarily use the term empathy to refer to an understanding of another’s feelings; an insight into the feeling state of another. Empathy is an important component of social cognition that contributes to an individual’s ability to understand and respond to another’s emotions while promoting pro-social behaviour. Generally it refers to the consequences of perceiving the feelings of another.
Evidence from neuroimaging and monkey research suggests that cognitive and affective empathy may be mediated in different domains but are represented by the same underlying processes in viscera-motor neurons, neurons which fire in response to both executing and observing a goal-directed action or emotional experience of another (Gallese, 2003; Gallese, Keysers & Rizzolatti, 2004). In a study published by Silani, Lamm, Ruff & Singer (2013) researchers identified that the tendency to be egocentric is innate for human beings but that a part of the brain recognizes a lack of empathy and autocorrects. This specific part of the brain is called the right supramarginal gyrus. When this brain region doesn't function properly or when an individual has to make particularly quick decisions the researchers found one’s ability for empathy is dramatically reduced. This area of the brain helps to distinguish one’s own emotional state from that of other people and is responsible for empathy and compassion. Because the brain’s neural circuitry is malleable and can be rewired through neuroplasticity, one’s tendency for empathy and compassion is never fixed according to Silani et al., (2013). Children need to practice putting themselves in someone else’s shoes to reinforce the neural networks that allow them to ‘love thy neighbour as thyself’.

In a recent meta-analysis, violent video gaming was found to be significantly related to lower levels of empathic concern regardless of the research design or age group. Funk, Buchman, Jenks & Bechtoldt, (2003) found that children with both a high preference for violent video games and high time commitment to playing, demonstrated significantly lower empathy. Although the long term impact of violent video games on empathic concern is unclear, if violent video gaming is negatively associated with empathic concern, then children may miss out on opportunities to develop the mature other-oriented identity that is often associated with pro-social behaviour.
Playing violent video games increased dehumanization, which in turn evoked aggressive behaviour according to a study by Greitemeyer & McLatchie, (2011). Thus, it appears that video game induced aggressive behaviour is triggered when gamers perceive the victim to be less human. Although research suggests that video gaming is not altogether negative, the findings by Fraser, Padilla-Walker, Coyne, Nelson & Stockdale (2012) that non-violent or pro-social video gaming may increase empathic concern is important to note.

Pro-social behaviour is found to be influenced by empathy and other personality dispositions that are based in part on genetics and in part on childhood experiences. With respect to all types of pro-social behaviour, moral issues arise in making a choice as to whether to act or not, and the individual must balance self-interest with moral integrity. It appears that one way in which individuals self-regulate their behaviour in order to avoid aggression involves thinking pro-social thoughts, thinking about helping others and caring for them (Baron, Branscombe & Byrne, 2009). The more readily individuals can bring such thoughts to mind when provoked by conditions that normally trigger aggression, the less likely they are to behave aggressively. Moral integrity usually operates to control such behaviour. Children that are exposed to violent video games may be at risk of decreased moral integrity and lower empathic concern which in turn may negatively influence their tendency towards pro-social behaviour.

A mounting body of evidence suggests that playing a pro-social (relative to a neutral) video game increased interpersonal empathy and decreased reported pleasure at another’s misfortune. Greitemeyer, Oswald & Brauer (2010) decided to see if videogames could turn schadenfreude (joy at another’s misfortune) into empathy. Building on the knowledge that violent video games reinforce violence and can induce aggressiveness, the games they used in their study rewarded the opposite behaviours. Participants, students in their late 20s, played a version of Lemmings; a videogame in which the player helps otherwise doomed creatures
find ways to escape their fate. Participants in another condition played Tetris; a neutral game. The participants spent 10 minutes playing the game in the assigned condition. Then they read a brief article about the misfortunes of a billionaire heiress and actress in which she was sent to jail after one of her many parole violations. Greitemeyer and his colleagues then tested participants to see how much schadenfreude they experienced.

Even the brief exposure to the cute and cuddly Lemmings game led participants to feel lower levels of schadenfreude after reading the story. However, the participants weren't just less likely to experience antisocial reactions. When the same group read other stories about regular people who suffered from misfortunes, they scored higher on an empathy scale assessing how compassionate, sympathetic, and soft-hearted they felt.

In summary, the ability to empathize is important for promoting positive behaviours toward others and facilitating social interactions and relationships. Empathy is involved in the internalization of rules that can play a part in protecting others, and, significantly, it may be the mechanism that motivates the desire to help others, even at a cost to oneself. In addition, empathy plays an important role in becoming a socially competent person with meaningful social relationships. Empathy is a pro-social reaction (McDonald & Messinger, 2010).

Fraser et al. (2012) found that negative relationships between overall video game use and low empathic concern was significantly stronger for males. Males may seek out and play more violent video games than females according to Gentile, Anderson, Yukawa, Saleen, Lim & Shibuya (2009). Further research in the area by Vieira (2011), found that boys spend twice as much time playing violent video games than girls. His research suggests that children, particularly boys, who are frequently exposed to violent video games, are absorbing a sanitized message of ‘no consequences’ for violence from this play behaviour. Similar research by Ran Wei (2007) found differences between males and females in effects of
exposure to violent video games. Males were more aggressive and had lower levels of empathy. Interestingly females enact more indirect aggression than males according to prior research in the area (e.g. Bjorkqvist et al. 1992).

In 2011, Vieira studied the influence of video gaming on US children’s moral reasoning and empathy. He suggests that frequent exposure to violent video games impact children’s perception that some types of violence are acceptable or ‘right’. Those that spent a lot of time gaming had an increased likelihood of accepting all types of violence. This can hinder a child’s moral development and their ability to put themselves in someone else’s shoes. This study was the first of its kind to examine how violent video games impact the development of moral reasoning among children aged 7 to 15 years, based on such variables as age, gender, perspective-taking and the ability to sympathize.

This current study investigates associations between violent video games, empathy and indirect aggression among primary school children in Ireland assessing game playing habits and gender. No such study has explicitly examined these variables. On completing a literature review, a research gap appears to show that further work is needed to study the developmental trajectories of indirect aggression and empathy during childhood and their relationship with later development. To date, researchers have concentrated mainly on aggressive behaviours that are socially undesirable. It is predicted that children who play violent video games will show lower levels of empathy and higher levels of indirect aggression. This may be developmentally significant. The results from this study should contribute to the literature within the fields of social and developmental psychology and may yield useful information for caregivers, educators and policy makers involved in children’s welfare and development.
The following hypotheses were formulated. (H1) It is hypothesized that children who play violent video games will show significantly higher levels of indirect aggression than those children who play non-violent video games. (H2) It is hypothesized that children who play violent video games will show significantly lower levels of empathy than those children who play non-violent video games. (H3) It is hypothesized that there will be significant gender differences in levels of empathy; with males having lower levels. (H4) It is hypothesized that there will be significant gender differences in levels of indirect aggression; with females having higher levels. (H5) It is hypothesized that there will be a significant association between gender and violent video game playing; with males playing more violent video games than females. (H6) It is hypothesized that there will be a significant association between gender and time spent video gaming; with males playing longer hours per day than females.
Method

Participants

Ninety mainstream primary school children between the ages of 9 and 12 were randomly chosen to participate. Cluster sampling was used. Permission was granted from the Principal of the school and the Board of Management. Inclusion criteria were specified as those who play video games. The questionnaires were administered during normal school hours. There were 53 males and 37 females from a mixed primary school in Dublin. All the children in the school were invited to participate provided they met the criteria. The mean age was 10.56 and the standard deviation of age was 1.02.

Design

This was a non-experimental, quantitative, survey design, correlational study, descriptive in nature. The predictor variables used were; time spent gaming, gender, type of games played and age. The criterion variables used were; levels of empathy and levels of indirect aggression. This was a within-participants design.

Materials

All instruments were self-administered, paper and pencil questionnaires. Three questionnaires were used. Two previously developed questionnaires were selected for use in this study. The Multi-Dimensional Emotional Empathy Scale (Caruso & Mayer, 1998) and Indirect Aggression (Tapper & Boulton, 2000). Both questionnaires show good construct validity, internal reliability and test-retest reliability. The researchers own questionnaire was developed for demographics and gaming habits.

The empathy measure uses 30 items to assess levels of emotional empathy using questions such as; I feel like crying when watching a sad movie and it hurts to see another
person in pain. Answers are on a scale from 1 to 5 (strongly disagree...to strongly agree). The mean of sub-scales for Suffering, Positive Sharing, Responsive Crying, Emotional Attention, Feel for Others and Emotional Contagion were used to compute a General Empathy Scale.

The indirect aggression measure uses 12 items to assess social representations of indirect aggression among children using questions such as; If I said nasty things about someone behind their back it would probably be because...and if someone said nasty things about me behind my back I would be more likely to.... There are only two possible answers. A score of 0 indicates an instrumental response while a score of 1 indicates an expressive response.

Procedure

Each class was given a brief on the purpose of the study by the researcher and the questionnaires were explained. The class teacher was present at all times. Students were told that the researcher was interested in discovering if there was a relationship between playing violent video games, indirect aggression and empathy. Indirect aggression and empathy were explained as simply as possible to the students and examples were given. An A3 poster was pinned to the whiteboard at the top of the class explaining how to fill out the questionnaires. The children were asked if they wanted to participate and advised that it was anonymous. It was explained that once they handed up the questionnaires there was no way of identifying their contribution. They were advised that they could withdraw at any time before collection of their questionnaires. Students were advised that this was not a test and asked to be as honest as they could be in filling out the questionnaires.

A box was placed at the top of the classroom for the students to put their completed questionnaires into. The researcher was present during completion of the questionnaires in order to answer any questions. There was no time limit imposed and each class was given the
questionnaires on the same day at different times to facilitate the researcher being present to answer any questions.

When all the students had finished and put their questionnaires into the box the researcher thanked them and the class teacher for their time and advised them that a copy of the results would be available to all and that the researcher would be available to explain the results when the study was complete.
Results

Despite the small sample size, this research revealed some fascinating results. While these results present interesting perspectives, they may not generalize to other age groups. However, these results may be helpful in future violent video gaming research. Like previous studies, the findings from this research and the current literature on violent video gaming, make for some interesting implications for children’s development.

Among the 90 respondents 55 children (61.1%) played violent video games and 35 children (38.9%) played non-violent video games. 49 children (54.4%) played for under 2 hours per day, 29 children (32.2%) played for between 2 and 4 hours per day and only 12 children (13.3%) played for over 4 hours per day. The mean age was 10.56 (SD=1.02) and the average time spent gaming was 1.59 hours (SD=.72) per day.

Figure 1 shows the normal distribution of the General Empathy Scale. 

Figure 1.
Figure 2 shows the distribution of hours spent gaming.

Table 1 shows the mean and standard deviation of Empathy and Indirect Aggression. Table 2 shows the summary statistics for males and females.

Table 1: *Descriptive Statistics of Psychological Measures*

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<td>Indirect Aggression</td>
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Table 2: *Summary Statistics for study variables*

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<td></td>
<td>N</td>
<td>MEAN</td>
</tr>
<tr>
<td>Indirect Aggression</td>
<td>37</td>
<td>8.24</td>
</tr>
<tr>
<td>Empathy</td>
<td>37</td>
<td>3.58</td>
</tr>
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The analysis chosen were a series of Independent samples t-tests and Chi-square tests.

- H1 predicted that children who play non-violent video games will show significantly lower levels of indirect aggression than those who play violent video games. This hypothesis was supported. Those children who play non-violent video games (mean = 8.40, SD = 2.78) were found to have lower levels of indirect aggression than those who play violent video games (mean = 7.09, SD = 2.89). An independent samples t-test found that there was a statistically significant difference between levels of indirect aggression ($t(88) = -2.12$, $p = .036$). CI (95%) -2.53 and -.084. Therefore the null hypothesis can be rejected.

Similar studies found that aggression (verbal and physical) was negatively associated with playing violent video games. The findings in this study confirm that indirect aggression is also negatively associated with playing violent video games.

- H2 predicted that children who played violent video games will show significantly lower levels of empathy than those children who play non-violent video games. This hypothesis was supported. Those children who play non-violent video games (mean = 3.58, SD = .435) were found to have higher levels of empathy than those children who play violent video games (mean = 3.35, SD = .412) An independent samples t-test found that there was a statistically significant difference in levels of empathy ($t(88) = -2.55$, $p = .012$). CI (95%) -.414 and .052. Therefore the null hypothesis can be rejected.

Previous studies show that playing violent video games is negatively associated with lower levels of empathy. As expected this study confirms those findings.
• H3 predicted that there will be significant gender differences in levels of empathy; with males having lower levels. This hypothesis was supported. Males (mean = 3.34, SD = .421) were found to have lower levels of empathy than females (mean = 3.58, SD = .418). An independent samples t-test found that there was a statistically significant difference in levels of empathy (t(88) = -2.67, p = .009). CI (95%) -0.419 and -.062. Therefore the null hypothesis can be rejected.

In support of recent research, this study found that males who play violent video games show lower levels of empathy.

• H4 predicted that there will be significant gender differences in levels of indirect aggression; with females having higher levels. This hypothesis was not supported. The results of an Independent Samples T-test shows that there was no statistically significant gender difference in levels of indirect aggression (t(88) = -1.78, p = .079). CI (95%) -2.31 and .130. Therefore the null hypothesis can be accepted.

Current and previous research on indirect aggression found that females show higher levels. However when this study measured indirect aggression it found no significant gender difference in levels of indirect aggression.

• H5 predicted that there is a significant relationship between gender and violent video games; with males playing more violent video games than females. This hypothesis was supported. A Chi-square test for association found that there was a moderate positive statistically significant relationship between the variable gender and violent video gaming. (X² (1, N=90) = 21.744, p < .001). Therefore the null hypothesis can be rejected.
This study found that 81.1% of males played violent video games while only 32.4% of females played violent video games. The results from previous research that males seek out more violent video games than females are supported by this study.

- H6 predicted that there is a significant relationship between gender and time spent gaming; with males spending more hours playing video games than females. This hypothesis was supported. A Chi-square test for association found that there was a moderate positive statistically significant relationship between the variable gender and time spent gaming. ($X^2 (2, N=90) = 8.742, p = .013$). Therefore the null hypothesis can be rejected.

The results of this study found that 20.8% of males played video games for over 4 hours per day while only 2.7% of females played video games for over 4 hours per day. This outcome supports previous studies in this area.
Discussion

The aim of this study is to investigate associations between violent video gaming, empathy and indirect aggression in primary school children. The findings from this research revealed several different themes. There was a significant negative association between violent video gaming and indirect aggression. Similarly, there was a significant negative association between violent video gaming and empathy. Gender differences were found in levels of empathy but none were found in levels of indirect aggression. Males played for longer and also played more violent video games than females. All of the hypotheses are supported by analysis. Although the causal connection cannot be established from a correlational design, this research may provide interesting considerations for future research into violent video gaming among primary school children.

Implications of this research

Empathy is an important prosocial response and lack of empathy for others may have implications for the moral development of children. Childhood is now known to be a critical time for the development of empathy. Exposure to violent video games may cause priming, a situation that occurs when stimuli increase the availability in memory or consciousness of specific types of information. These memories are then expressed in thought or behaviour. Violent video game playing may exert strong effects on current thinking among children and distort their understanding of the social world. Finding that empathy is on the decline indicates that social context can exert a profound effect, changing the most basic emotional responses. The type of information children consume can drive empathy down.

From infancy, humans learn how to perceive, interpret, judge, and respond to events in the physical and social environment. They learn by observing the world around them and by acting on that world. They learn rules for how the social world works. They learn
behavioural scripts and use them to interpret events and actions of others and to guide their own behavioural responses to those events. These various knowledge structures develop over time. They are based on the day-to-day observations of and interactions with other people, real (as in the family) and imagined (as in video games). Children who are exposed to a lot of violent media learn a number of lessons that may change them into more aggressive people. They learn that there are lots of bad people out there who will hurt them. They come to expect others to be mean and nasty. They learn to interpret negative events that occur to them as intentional harm, rather than as an accidental mistake. They learn that the proper way to deal with such harm is to retaliate. Perhaps as importantly, they do not learn non-violent solutions to interpersonal conflicts.

It is important to teach children how to look beyond themselves and identify the ways in which their actions affect others. By teaching a child what it means to be empathetic (or putting themselves in another’s shoes), alongside teaching the value of honesty in relationships, the child is already learning higher-order thinking. The most vital part of instilling this type of thinking is that it enables a skill that can be used in situations other than which the skill was learned, meaning the child will hopefully make future decisions that positively impact others and themselves. Long term exposure to online violent video games during a child’s development is not consistent with this teaching. They are behaviourally reinforced as they play violent video games and thus they are being taught. This study certainly supports the hypothesis that violent video gaming is negatively associated with lower levels of empathy.

Limiting on screen time in children’s lives is one key to teaching empathy, particularly if their screen time is spent consuming violent content. Emphasizing face-to-face interactions is another. Skills like compassion and direct communication may be falling by the wayside. Children and young people have fewer opportunities to make eye contact, read
facial expressions, and interpret body language and tone of voice. Such simple actions and interactions really do build empathy and the fact that violent video games decrease empathy is a reminder that empathy is a skill to be fostered and practiced. Despite violent video game ratings, over 60% of respondents, aged 12 and under, played violent video games for at least 1.5 hours per day. Ultimately, parental influence will outweigh the negative effects of technology as long as parents are willing to keep communicating with their children.

In previous research on indirect aggression, females have generally shown higher levels (e.g. Bjokqvist et al., 1992) but in this study, using indirect aggression as a measure, there was no significant difference between genders. Boys tend to show more direct aggression than girls but there is little gender difference in indirect aggression. This may reflect changes in sex role attitudes within our society. It may also be based on the fact that suitable instruments for the study of indirect aggression were not developed until recently. Furthermore, indirect aggression may not be conceptualized as social manipulation or as an intention to harm a person in a deceitful manner. The support for negligible gender differences in indirect aggression seems conclusive and this challenges common portrayals of indirect aggression being more commonly enacted by females than males.

The notion that indirect aggression is related to higher prosocial behaviour (Card et. al., 2008) is also challenged by the results of this study. The respondents who rated highest in indirect aggression also rated lower in levels of empathy. The consequences of this could have a serious effect on children’s future behaviour. Empathy has been accepted as a crucial factor in the development of prosocial thought and behaviour. Violent games directly reward violent behaviour, such as awarding points or by allowing players to advance to the next game level. In some games, players are also rewarded through verbal praise after killing an enemy. It is well known that rewarding behaviour increases its frequency. This research also sheds light on why violent video games increase indirect aggression. Someone who is
exposed to violent thoughts, feelings, decreased empathy for others, and is highly aroused, should be more likely to behave aggressively. In summary, although violent video games are not the only factors that increase aggression, they do appear to have a significant negative association with indirect aggression in children. Exposure can elevate aggressive thoughts and feelings and these effects may be long term. This research approach cannot determine causal relationships; however finding negative associations suggests that a strong preference for violent games may at least be an indicator of adjustment issues for some children.

It is important also to note the limitations of this study. Data was collected in a one-shot survey and no baseline levels of empathy or indirect aggression were measured. Future researchers should consider a larger sample size and longitudinal studies may help to eliminate any confounding factors. An equal balance of males and females may change the outcome of negligible gender differences in indirect aggression. The children may not have answered all of the questions honestly as they may feel that the researcher expects them to answer in a certain way.

Despite these limitations, the greater value of this work is in pointing directions for future research. Clearly, more research is needed on indirect aggression and empathy in children who play violent video games, taking into consideration gender and age. Researchers need to discover the extent of the risk to children and the long term effects of exposure to violent video games from an early age. There are research techniques that can determine causal relationships but they require large groups of children and long-term follow up. Such research requires a major funding commitment.

Conclusion

This research illuminated some fascinating trends. This study, supplemented by the current and emerging literature on the subject, seems to indicate that violent video games are
negatively associated with low levels of empathy and high levels of indirect aggression in children. Effects occur in both genders. Children are playing these violent games at an early age and spending a lot of time doing so. It seems it would be wise for caregivers, social and developmental psychologists, educators and policy makers to start considering its impact. By doing so, they can hopefully discover the potential reasons why children are displaying these behaviours and more importantly, how to prevent these behaviours becoming a problem for the future.

Technology is often used with the best intentions. Children are using social technology more and more because they can connect with more people that they could ever hope to meet in their lifetime. Gaming online allows children to interact with many friends, new and old. The use of video games doesn’t need to stop and it isn’t necessarily a bad thing but it is something to consider managing better. Young children are exposed to aggression and decreased empathic concern while playing violent video games and this could have implications for their social and emotional development. Like so many other things in life, they should be played in moderation, with appropriate age restrictions adhered to.
References


Appendix: A

VIOLENT VIDEO GAMING, EMPATHY AND INDIRECT AGGRESSION IN PRIMARY SCHOOL CHILDREN: IS THERE AN ASSOCIATION?

My name is Amanda Doyle and I am conducting research in the Department of Psychology that explores violent video games and their relationship to indirect aggression and empathy. This research is being conducted as part of my studies and will be submitted for examination.

You are invited to take part in this study and participation involves completing and returning the attached anonymous survey. While the survey asks some questions that might cause some minor negative feelings, it has been used widely in research. If any of the questions do raise difficult feelings for you, contact information for support services are included at the bottom of the page.

Participation is completely voluntary and so you are not obliged to take part.

Participation is anonymous and confidential. Thus responses cannot be attributed to any one participant. For this reason, it will not be possible to withdraw from participation after the questionnaire has been collected.

The questionnaires will be securely stored and data from the questionnaires will be transferred from the paper record to electronic format and stored on a password protected computer.

It is important that you understand that by completing and submitting the questionnaire that you are consenting to participate in the study.

Should you require any further information about the research, please contact Amanda Doyle,. My supervisor can be contacted at

Thank you for taking the time to complete this survey.

Childline 1800 666 666
Samaritans 1850 609 090
Barnardos 1850 222 300
Appendix: B

Demographic Data

Are you male or female?  
Male  
Female  

Do you play video games?  
Yes  
No  

How old are you?  
9  
10  
11  
12  

How many hours a day do you spend playing video games?  
Under 2 hours a day  
2 to 4 hours a day  
Over 4 hours a day  

What type of video games do you play?  
Violent (games that include  
guns, bombs, knives, shooting, killing,  
stabbing, fighting, causing harm to another)  
Non-violent
## Multi-Dimensional Emotional Empathy Scale (Caruso & Mayer, 1998)

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I feel like crying when watching a sad movie.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Certain pieces of music can really move me.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Seeing a hurt animal by the side of the road is very upsetting.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I don't give others' feelings much thought.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>It makes me happy when I see people being nice to each other.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>The suffering of others deeply disturbs me.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I always try to tune in to the feelings of those around me.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I get very upset when I see a young child who is being treated meanly.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Too much is made of the suffering of pets or animals.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>If someone is upset I get upset, too.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>When I'm with other people who are laughing I join in.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>It makes me mad to see someone treated unjustly.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>I rarely take notice when people treat each other warmly.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I feel happy when I see people laughing and enjoying themselves.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>It's easy for me to get carried away by other people's emotions.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>My feelings are my own and don't reflect how others feel.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>If a crowd gets excited about something so do I.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>I feel good when I help someone out or do something nice for someone.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>I feel deeply for others.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>I don't cry easily.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>I feel other people's pain.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Seeing other people smile makes me smile.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Statement</td>
<td></td>
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<td>---------------------------------------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>23.</td>
<td>Being around happy people makes me feel happy, too.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>TV or news stories about injured or sick children greatly upset me.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>I cry at sad parts of the books I read.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Being around people who are depressed brings my mood down.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>I find it annoying when people cry in public.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>It hurts to see another person in pain.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>I get a warm feeling for someone if I see them helping another person.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>I feel other people's joy.</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
Appendix: D

1. If I said nasty things about someone behind their back it would probably be because.....
   - the other person made me so mad I couldn't help it
   - the other person deserved it

2. If I was about to say something really nasty about someone behind their back I would probably.....
   - feel really upset and shaky
   - feel like I was really going to teach them a lesson

3. If I was saying nasty things about someone behind their back I would probably.....
   - not know what I was saying
   - know exactly what I was saying

4. If there were lots of people around.....
   - I’d be more likely to say nasty things about someone behind their back
   - I’d be less likely to say nasty things about someone behind their back

5. If someone said nasty things about me behind my back I would be more likely to .....
   - cry
   - say something nasty about them behind their back

6. If I said something nasty about someone behind their back and hurt them I would probably feel.....
   - that they were asking for it
   - bad about myself

7. If I said something nasty about someone behind their back I would like them to.....
   - realise how upset they’d made me feel and how unhappy I was
   - make sure they never annoy me again

8. If I said some nasty things about someone behind their back, afterwards I would probably.....
   - remember everything I’d said
   - not remember exactly what I’d said
9. After saying nasty things about someone behind their back I would probably feel.....
   - upset and bad about myself
   - happy or unhappy depending on whether people had believed me

10. If I was to tell my friends about some nasty things I'd said behind someone's back I would probably.....
    - try to make them see why I'd said the things
    - make it sound more exciting than it was

11. I think that saying nasty things about someone behind their back is.....
    - always wrong
    - needed to make people know what I want

12. If I said nasty things about someone behind their back I would feel.....
    - that I had a right to hurt the other person
    - upset and bad about myself