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2012

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Two sides to the same coin: relational and physical aggression in the media

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Abstract

Purpose – *This review aims to examine how aggression is portrayed in the media and how it can influence behavior and attitudes regarding aggression.*

Design/methodology/approach – *The authors reviewed the relevant literature and examined both physical and relational forms of aggression in multiple media forms (television, film, video games, music, books).*

Findings – *Across media types, evidence is found that both physical and relational aggression are portrayed frequently and in ways that may contribute to subsequent aggression. Furthermore, though there are studies finding no effect of exposure to media aggression, evidence is found that watching physical and relational aggression in the media can contribute to aggressive behavior. Prominent media aggression theories are reviewed and some of these theories are applied to relational aggression media effects.*

Research limitations/implications – *Researchers should no longer ignore relational aggression in terms of the media, in terms of content and associations with aggressive behavior. Researchers should also focus on understudied media forms, such as music and books.*

Practical implications – *Policy makers should take careful note of the research on media and aggression when deciding on public policy and clinicians should inquire about media habits when clients show problematic aggressive behavior (physical or relational).*

Originality/value – *This paper is a valuable source of information regarding current research on media and aggression. Unlike other reviews, it focuses on multiple types of aggression (physical and relational) and multiple media types (TV, movies, video games, music, and books).*

Keywords *Physical aggression, Relational aggression, Media, Media violence, Violence, Influence, Individual behaviour*

Paper type *General review*

Decades of research into media violence and subsequent aggressive behavior have explored whether there is a link between physical aggression in the media and aggressive behavior. This association between content and behavior has been found in television (Bandura *et al.*, 1963), movies (Thomas *et al.*, 1977), video games (Anderson *et al.*, 2010), music (Anderson *et al.*, 2003), and literature (Bushman *et al.*, 2007). While television and movies have received the most research attention, results are similar across many forms of media. Likewise, a number of experimental (Coyne *et al.*, 2004), correlational (Huesmann and Eron, 1986), and meta-analytical studies (Bushman and Anderson, 2001) have been conducted to explore these associations. However, there is evidence that increased aggression is not the only effect of violent and aggressive media exposure. Exposure to violent media may also lead to a decrease in prosocial behavior (Bushman and Anderson, 2009), increased attitudes in support of aggression (Krahé and Möller, 2003), and increased hostility (Bushman and Anderson, 2002).

Several factors influence the strength of these relationships including identification with the physically aggressive character (Konijin *et al.*, 2007), repetition and rehearsal of the aggressive content (Gentile and Gentile, 2008), perceived realism of the aggressive media (Sherry, 2001), justification (Berkowitz, 1962), and whether or not the aggression is rewarded or punished (Simmons *et al.*, 1999). Similarly, several theories have been developed and applied to the media violence and aggression field to help explain these associations. Nonetheless, much work still needs to be done. Though some scholars have even claimed that we have “nailed the coffin shut” on whether exposure to media violence influences aggression (Huesmann, 2010), several recent studies suggest that aggression in the media does not have a negative effect on viewers; rather, it can have a positive effect in some contexts (Ferguson *et al.*, 2009). Indeed, this topic was recently reviewed the US Supreme Court as we will describe later. Accordingly, we will present research where possible, that show both sides of the issue.

Additionally, while physical aggression in the media has received vast research attention, research on relational aggression in the media is greatly underdeveloped by comparison. Likewise, as noted earlier, television and movies have received the bulk of research attention. Accordingly, more research is needed to investigate the associations between exposure to physically and relationally aggressive content in other forms of media such as video games, music, books, and newer forms of social media. Finally, it is also important to understand how aggression is portrayed in all media types, and whether there are characteristics of depiction, possibly unique to media type, which may increase the likelihood for subsequent imitation (Donnerstein *et al.*, 1994). Accordingly, the current paper will provide an in-depth review of media aggression studies, with a focus on subtypes of aggressive behavior as they are depicted in several media forms. This review substantially expands upon previous reviews by the inclusion of relational aggression studies as well as a focus on content analyses and forms of media generally ignored in larger reviews (e.g. music and books). This paper will first introduce the reader to several different forms of aggressive behavior, and then will examine media aggression studies (content analyses and effects analyses) for all major media forms.

Aggression

Aggression in children, adolescents, and adults has repeatedly been linked to negative psychological and developmental outcomes (Ostrov *et al.*, 2004). The link between aggression and antisocial behavior is so strong that most delinquency measures include aggressive behavior (Brotman *et al.*, 2008). With the clear association between aggression and negative developmental outcomes, scholars have turned their attention to understanding and to preventing both physical and relational aggression.

Physical aggression has been defined as “the intent to hurt another individual using physical force or the threat of physical harm” (Ostrov *et al.*, 2008, p. 664). Examples of physical aggression include hitting, kicking, biting, shoving, pushing, or threatening to do any of these behaviors. Historically, most research has focused on physical aggression, however, recent research has begun to examine non-physical forms. Relational aggression, in particular, has been defined as attempting to harm others through openly or covertly damaging relationships or threatening to damage relationships (Nelson *et al.*, 2008). Examples of relational aggression include gossiping, spreading false rumors, love withdrawal, and social exclusion. Both physical and relational aggression appear early in childhood (Nelson *et al.*, 2005; Tremblay *et al.*, 2004) and show negative psychosocial effects for perpetrators (Crick *et al.*, 2006; Barker *et al.*, 2008; Houbre *et al.*, 2006; Juliano *et al.*, 2006) and victims (Ellis *et al.*, 2009; Houbre *et al.*, 2006; Reed *et al.*, 2008). Accordingly, both deserve recognition in the literature.

Media and aggression theories

Several theoretical approaches have been employed to help explain the associations between media content and behavior. There are two lines of thinking: one in which the viewer

selects aggressive media to fill a need, while one in which viewing aggressive media influences viewer attitudes and behavior. These theoretical perspectives were developed from a variety of backgrounds and are not mutually exclusive in regards to their application and justification in the media violence literature. While prior reviews on media violence have covered popular theories, these have been selectively applied to physical aggression. The current paper, in contrast, will extend the application of these theories of media violence to relational aggression. For the purposes of this review, theories will be dichotomized into media selection theories and media effects theories regarding aggression.

Selection theories

Several theories have been developed to help explain why individuals would select violent and aggressive media. These theories include Uses and Gratification Theory (Katz *et al.*, 1973), Social Comparison Theory (Goethals, 1986), Catharsis (Bohart, 1980), and the Downward Spiral Model (Slater *et al.*, 2003). On the whole, these theories generally assume that the viewer drives the relationship between media and aggression, where the viewer seeks out aggressive media for a particular purpose (e.g. to satiate feelings of aggression), rather than the media itself driving the effect. All of these theories are helpful in understanding why individuals choose to consume violent and aggressive media, regardless of form. Nonetheless, in regards to relational aggression, several theories seem particularly relevant. Social Comparison Theory (Goethals, 1986), for example, suggests that individuals may select relationally aggressive media to help counter balance their own guilt about using socially undesirable behavior, such as relational aggression. Accordingly, these aggressive individuals aim to make themselves look and feel socially better in comparison to the relationally aggressive characters they view. This perspective may be particularly helpful in explaining why relationally aggressive individuals select relationally aggressive media. Specifically, relationally aggressive individuals are likely to place high importance on social capital and social desirability (Grotzinger and Crick, 1996), which intuitively drives comparison with relationally aggressive characters in the media viewed. However, as relational aggression becomes more socially acceptable, this theory may become less relevant (Garbarino, 2007).

Building on Social Comparison Theory, the Downward Spiral Model (Slater *et al.*, 2003) suggests that relationally aggressive individuals select more relationally aggressive media and, as they partake of such media, cognitive schemas and scripts, which are already biased toward relationally aggression, are reinforced and enacted. This reinforcement process leads to greater aggressive priming in the brain and more pro-relational aggression beliefs. This cyclical process of reinforcement continues until the individual is consistently selecting relationally aggressive media. This theory seems particularly relevant in explaining the bi-directional associations between relational aggression in the media and the use of relational aggression in the peer group. Given that this theory contains aspects relating to both selection and effects theories, it may provide a strong theoretical explanation for future research in the media effects on the subsequent use of relational aggression.

Effects theories

In contrast to the above theories, several theories have been developed to help explain why media depictions of aggression might be associated with increases in the use of aggression. Effects theories purport that the media influences levels of aggressive behavior (as opposed to existing tendencies of the viewer). Examples of such theories include Priming (Josephson, 1987), Excitation Transfer (Bryant and Miron, 2003), Cultivation (Gerbner and Gross, 1976), Desensitization (Griffiths and Shuckford, 1989), Social Learning (Bandura *et al.*, 1963), and the General Aggression Model (Anderson and Bushman, 2002). While all of the above theories have been applied to the associations between physical violence in the media and the use of physical aggression in the peer group, relational aggression has received less theoretical and research attention. Again, several theories seem the most pertinent when examining the association between relational aggression in the media and subsequent relationally aggressive behavior.

The majority of media effects theories relate to Social Learning theory to explain the association between media violence and aggression (Bandura *et al.*, 1963). Social Learning theory suggests that as individuals are exposed to aggressive behavior in the media, they vicariously learn about the appropriateness and usefulness of aggressive behavior through aggressive characters. In this respect, individuals may learn that aggressive behavior is socially acceptable and a way to gain power in the peer group (as the use of relational aggression is portrayed in such manner). Similarly, as individuals repeatedly engage with violent media, this vicarious learning is strengthened and becomes more easily accessible. Thus, Social Learning theory would suggest that individuals who partake of relationally aggressive media would be more likely to behave in a relationally aggressive manner.

Finally, the General Aggression Model (Anderson and Bushman, 2002) incorporates many elements of the above theories (including Social Learning, Priming, Excitation Transfer, and Desensitization). The General Aggression Model suggests that as individuals are exposed to relationally aggressive media, they activate aggressive scripts and schemas within the brain and increase their internal affective state such as emotionality and arousal. These activated scripts and schemas in support of aggression may lead individuals to make more aggressive interpretations in ambiguous situations and behave more aggressively. In the long-term, as individuals repeatedly partake of media depictions of relational aggression, these aggressive scripts and constructs become solidified and individuals have the ability to become "chronically primed" towards aggression. Therefore, in ambiguous situations these individuals are more likely to behave using relational aggression.

In sum, several theories have been used to understand the relationship between exposure to media violence and aggressive behavior. These theories have broadly focused on explaining whether or not more aggressive individuals simply choose to be exposed to more aggressive media, or if aggressive media consumption somehow causes an increase in aggressive behavior. It is also important to note that, in this description of the theories, we have applied each one to media effects of viewing relational aggression. However, most research has not specifically tested these effects according to each theory; accordingly, this represents a very useful avenue for future research.

Media aggression

Television and movies

Content. Television and movies are both saturated with violence and aggression. According to *The National Television Violence Study* (1998), 60 percent of television programs contain violence. Indeed, before the average American child graduates elementary school, they will be exposed to over 8,000 murders and more than 100,000 other acts of violence on television (Bushman and Anderson, 2001). Notably, beyond the sheer amount of physical aggression depicted in television programming, it is also concerning that most children's television programs contain more violence than programs aimed at adults (Linder and Gentile, 2009).

Movies seem to be following the same trends as television programs in regards to physical aggression. Longitudinal studies have found that G-rated (for all ages) films have become increasingly violent over time (Yokota and Thompson, 2000) and that PG (parental guidance suggested) and PG-13 (parental guidance for children under age 13) movies appear to contain as much physical aggression as many R-rated (restricted; need parental consent to view movie if under age 17) movies, suggesting that ratings may no longer be a reliable way to estimate the amount of aggression in films (Jenkins *et al.*, 2005). Browne *et al.* (2002) found that action, drama, and comedy films contain the most physical aggression and that the majority of physical aggression is portrayed with little or no consequences. Importantly, most studies find that media violence is portrayed in ways that may increase subsequent aggression by viewers (Donnerstein *et al.*, 1993). For example, violence is often glamorized and is portrayed as being justified (Coyne and Archer, 2004; NTVS, 1998).

While physical aggression in movies and film has received a great deal of research attention, less attention has been paid to relational aggression in films and television. One study by

Coyne and Archer (2004) found that relational aggression was more common in television than physical aggression, with approximately 93 percent of television shows popular among adolescents containing relational aggression. Likewise, during prime-time television, the average viewer is exposed to approximately 20 acts of relational aggression per hour and most of these acts are initiated by female characters (Glascock, 2008). Additionally, the genre of television programs that contained the most relational aggression was reality TV shows, such as *Big Brother*, *Survivor*, *American Idol*, and *The Apprentice* (Coyne *et al.*, 2010a). Similar to physical aggression in television, relational aggression is also likely to be shown as justified and rewarded. Movies also contain relational aggression. For example, Coyne and Whitehead (2008) found that the average Disney animated film contained approximately ten acts of relational aggression per hour and that most of these actions were initiated by characters from high socioeconomic standing. Other content analyses have found that relational aggression is common in movies aimed at adolescents (Behm-Morawitz and Mastro, 2008; Cecil, 2008).

Effects and selection. As early as the 1960s, researchers began to study the effects of watching violence in television and films and subsequent aggressive behavior (Bandura *et al.*, 1963). Fifty years after these pivotal studies, there have now been over 1,000 different studies on this topic (Strasburger, 2009). Importantly, a number of longitudinal studies have revealed that an affinity for violent television during middle childhood predicts aggressive behavior several decades later (Eron *et al.*, 1972; Huesmann and Eron, 1986; Huesmann *et al.*, 2003). This is evidence of both selection and effects theories in that selection of media violence influenced aggressive behavior well into the future, even after controlling for aggressive behavior in childhood. Similarly, several meta-analyses have shown that the effects of viewing media violence are both strong and consistent (e.g. correlations ranging from 0.30 to 0.40 across time, Bushman and Anderson, 2001). For example, Bushman and Anderson (2001) found that the correlation between exposure to media violence and subsequent aggressive behavior is just as strong as the effect that smoking has on lung cancer. Furthermore, Bushman and Huesmann (2006) found that, although exposure to violent media increases aggressive behavior in all age groups, children are particularly vulnerable to long-term effects. Notably, though these meta-analyses include many experimental studies which can speak to causation, they also include correlational studies where the direction of effects may be unclear.

Other studies have shown that exposure to media violence can influence other types of behaviors. For example, exposure to film and television violence can lead to decreased empathy for those in "real life" pain (Thomas *et al.*, 1977), decreased helping behavior (Bushman and Anderson, 2009), devaluing others (Anastasio, 2004), more access to aggressive thoughts and constructs (Bushman, 1998), increased hostility (Kuntsche, 2004), hyper masculinity in males (Scharer, 2005), and increased pro-violence beliefs (Krahé *et al.*, 2011).

However, other studies have found the opposite: that exposure to media violence on television and in movies does not encourage aggressive behavior. For example, a recent meta-analysis on media violence (including in TV and movies) found that publication bias was a problem for studies on media aggression (Ferguson and Kilburn, 2009). Indeed, after controlling for publication bias, media violence effects fell to very small levels. This study highlighted other important issues regarding media violence research. For example, many studies of media violence are correlational, which do not provide evidence of causation. Experimental studies do show evidence of causation, and are the "gold standard" of media violence research (Bushman and Anderson, 2009), however, most measures of aggressive behavior are unstandardized, and do not actually approximate "real" violence or crime (Ritter and Eslea, 2005). Additionally, many studies do not control for important "third variable" processes, such as gender, personality, family background, etc. Accordingly, some scholars do not feel that media violence represents quite the public health threat that others have made it out to be (Ferguson and Kilburn, 2009).

On the flip side, viewing relational aggression in television and movies have been shown to influence attitudes and behaviors. For example, a number of studies have found that girls who watched more relationally aggressive television programs were rated as more relationally

aggressive by their peers (Coyne and Archer, 2005; Linder and Gentile, 2009) and were more likely to be relationally aggressive in their romantic relationships (Coyne *et al.*, 2010b). However, it should be noted that these studies are correlational and do not show evidence of causation. Experimental studies also support the relationship between watching relationally aggressive television and movies and subsequent relationally aggressive behavior to a confederate of the experiment (Coyne *et al.*, 2004). Of particular interest, researchers found that viewing relational aggression led to an increased use of relational and physical aggression, suggesting a cross-over effect between type of aggression watched and type of aggression displayed (Coyne *et al.*, 2008). This suggests that viewing one type of aggression (e.g. physical) might generalize to other forms (e.g. relational, verbal).

Video games

Content. While the content of television and films has received a great deal of media attention, less is known about the content of video games. However, recent analyses found that 64 percent of E-rated video games (for “everyone”) contained intentional physical aggression (Thompson and Haninger, 2001) and 98 percent of T-rated video games (appropriate for “teens”) included intentional and rewarded physical aggression (Haninger and Thompson, 2004). Furthermore, 60 percent of the top grossing video games from 1999 had violence as a major theme and objective (Dill *et al.*, 2005). Aggression in video games is so prevalent that children as young as fourth grade are claiming that the majority of their favorite video games are violent (Buchman and Funk, 1996).

Even less is known about the amount of relational aggression in video games, with virtually no studies reporting on this dimension of video games. Accordingly, this represents a particularly promising area of future research. With several games emphasizing interplay within relationships (e.g. *The Sims*, *Desperate Housewives: The Game*, *Bully*) it is likely that relational aggression is prevalent in at least some video games. As with research on TV and movies, understanding the content of video games is important for predicting any media effects.

Effects and selection. Several studies have found a direct link between playing violence in video games and subsequent aggressive behavior (see Anderson (2004) for a review). Indeed, Anderson and Bushman (2001) found that the correlation between playing violent video games and subsequent aggressive behavior is stronger than the correlation between condom use and the risk of HIV infection. Even more surprising is that this correlation seems to be increasing in strength as games become more graphic and realistic (Sherry, 2001). A recent meta-analysis of 381 studies and over 130,000 participants found consistent correlations between playing violent video games and aggression, leading the authors to claim that he had “nailed the coffin shut on doubts that violent video games stimulate aggression” (Anderson *et al.*, 2010, p. 151, effect sizes ranging from 0.20 to 0.35). Not only do violent video games increase subsequent aggression, but they can also lead players to identify themselves as more aggressive (Uhlmann and Swanson, 2004). Again, the combination of these experimental and correlational studies show evidence of both selection and effects, where selecting violent video games is associated with increased aggression.

Similar to TV and movies, heightened aggressive behavior is not the only effect of playing violent video games. Bushman and Anderson (2002) found that playing violent video games led participants to show greater hostile attribution bias, meaning that participants who played violent video games were more likely to assume neutral or ambiguous situations to be more hostile, aggressive, and intentional. Playing violent video games was also associated with beliefs about aggression than were more pro-violence (Krahé and Möller, 2003). Furthermore, individuals who played violent video games for as little as 20 minutes took significantly longer to help someone in pain and physical need (Bushman and Anderson, 2009) and had less emotional responses to images of real violence (Bartholow *et al.*, 2006). In fact, meta-analytic studies suggest that the association between playing violent video games and decreased empathy and prosocial behavior is just as strong as the association between media violence and aggression ($r = 0.30$, Anderson *et al.*, 2010). Such emotional suppression may have a neural link. For example, Weber *et al.* (2006) found that playing violent first-person shooter video games leads to suppression of the part of the brain that

controls positive emotions such as empathy and helping behaviors and decreased activity in the part of the brain associated with emotion regulation and control (Wang *et al.*, 2009).

However, critics have argued that this association between playing violent video games and aggressive behavior does not explain “real-world violence,” with no research supporting the link between playing violent video games and violent crimes (Ferguson *et al.*, 2008). Indeed, some recent longitudinal studies show no long-term effect of playing violent video games (Ferguson, 2011; von Salisch *et al.*, 2011), and some scholars suggest that violent video games are actually good for adolescents, perhaps increasing visuospatial skills, and could be used for social networking, and as educational tools (Ferguson, 2010). Indeed, a recent US Supreme Court case recently examined the topic whether it should be illegal to sell violent video games to children and adolescents. Interestingly, two amicus briefs representing both sides of the research on violent video games were presented to the court. Pollard Sacks *et al.* (2011) analyzed over 100 “experts” represented by these briefs and found that those supporting the sanction on violent video games were more than three times as likely to actually have published an article on media violence, had three times as many publications, and were 48 times more likely to publish in top tier journals (as suggested by impact factors) than those were against the sanction. Despite this, much of the argument focused on first amendment rights, and the verdict came down in favor of protecting first amendment rights, and not making violent video games illegal for minors. This shows that despite some scholars’ hopes that “we’ve nailed the coffin shut”, the debate on violent video games is still “alive and kicking”.

As with research on television, video games and relational aggression have received less attention. Some researchers would suggest that playing violent video games can increase relational aggression among adolescents (Möller and Ingrid, 2009), though no experimental studies have examined this. Whether playing video games with heightened levels of relational aggression has an effect on subsequent aggression is unknown.

Music

Content. The content of popular music is less well known than the content of television, films, and video games, perhaps due to the ever-changing styles of music and the plethora of music genres. One content analysis of the top selling songs in the 1960s found that few songs contained violent themes (Cole, 1971). Unfortunately, this does not appear to be true today. Rubin *et al.* (2001) found that 22 percent of rap songs contained violence as their major theme. Furthermore, of the songs that contained violent themes, 51 percent contained descriptions or blatant references to murder (Rubin *et al.*, 2001). Several studies have found that rap music (and particularly gangsta rap) has become increasingly violent from the 1980s to the 1990s (Armstrong, 2001; Herd, 2009) with more references to assault, rape, and murder as time progressed. While aggression in music has only been analyzed in the context of physical aggression, no research has analyzed the prevalence of relationally aggressive themes in popular music with virtually no studies systematically analyzing this type of aggression in music. Therefore, future researchers should address this understudied area of research. However, there are several popular genres and songs emphasizing the importance of relationships (e.g. love songs, songs about breakups or ending of relationships; e.g. *Leave, Get Out, Irreplaceable, Cry Me a River*) and it is likely that these types of songs contain relational aggression in some format. Understanding this content is vital for predicting any media effects.

Effects and selection. While the content of music may not be completely clear, the effect of listening to different types of music has received comparatively more research attention. Affinity for the hip hop music genre has been associated with increased aggression in boys and girls and affinity for the heavy metal genre was associated with increased aggression in boys (Selfhout *et al.*, 2008). Additionally, a few studies have found that exposure to violent lyrics and themes are responsible for an increase in aggression (Barogan and Nagayama, 1995; Fischer and Greitemeyer, 2006; Mast and McAndrew, 2011). For example, Anderson *et al.* (2003) found that individuals who listen to songs with violent lyrics and themes have higher state hostility, more aggressive thoughts, and greater accessibility to

violent words and thoughts. However, others state that exposure to violent lyrics may have little effect on actual aggression. For example, Garofalo (2009) cites the increasing violence in rap music in the 1980s and 1990s, but makes the point that violent crimes actual fell during that same time period. Others suggest that violent rap music simply represents a way of life and is representative of specific inner-city street cultures. As opposed to creating violence, violent rap lyrics may be a way of establishing social identity and social control (Kubrin, 2005). The vast majority of research in music does not specifically examine or control for this potential selection effect and this should be examined in future research. Additionally, to date, no researchers have addressed the potential relationship between aggressive music and subsequent relationally aggressive behavior.

Books

Content. To date, only one known study has systematically examined the content of novels in terms of aggressive behavior. Coyne *et al.* (2011) analyzed 40 best-selling novels aimed at adolescents and found that all novels in their sample contained aggression in some form. Furthermore, the average reader was estimated to be exposed to approximately 30 acts of aggression for each hour of reading. Additionally, relational aggression was significantly more common in novels than physical aggression. Finally, males were portrayed using more physical aggression whereas females used more relational aggression. This gives us a glimpse regarding aggressive content in novels; namely that it is frequent, and is often portrayed in ways similar to other forms of media, such as television, film, or video games (though notably, most aggression was portrayed as unjustified in books).

Effects and selection. The effects of reading aggressive content in books are scant. Bushman *et al.* (2007) found that reading scriptural violence increased aggression regardless of the reader's faith or religious affiliation. Also, an experimental study found that reading relationally and physically aggressive short stories increased individuals' physical and relational aggression in the short term (Coyne *et al.*, 2012). Likewise, individuals who read violent comic books used more retaliation (Kirsh and Olczak, 2002) and had more hostile attribution and intent than those who read a nonviolent comic book (Kirsh and Olczak, 2000). Though these experimental studies show that reading aggression in books can influence aggressive behavior, research has not yet examined the effect of self-selecting violent books to read. Conversely, others have found that number of hours spent reading each week is associated with the use of less physical aggression (Wittman *et al.*, 2008). Furthermore, Reganick (1991) found that implementing the reading of classic literature with highly aggressive boys in an institution resulted in fewer attacks and outbursts towards the institutions staff. These few studies show that reading novels can have an effect on behavior, but the research is mixed. Clearly, more information is needed on the effects of reading aggressive material and subsequent aggressive behavior.

In summary, though there are conflicting views and some mixed results, most evidence shows that regardless of the type of media studied, there is an association between engaging with media aggression and aggressive behavior. This association has been found in television, movies, video games, music, and novels. Similarly, this association has been found in experimental and correlational designs and with regards to physical and relational aggression.

Directions for future research

Although the area of media aggression has received much research attention, there is much that can be done to strengthen the field. First, in regards to relational aggression, the associations between exposure to relationally aggressive material in the media and the use of relational aggression in relationships needs to be further investigated. While some research has shown an association in several different media forms, these relationships need to be further investigated in multiple forms of media. The majority of research assessing the relationship between relational aggression in the media and relationally aggressive behavior has focused on television and movies. Future researchers should begin to investigate these associations with regards to video games, music, and novels. Perhaps this lack of attention to these forms of

media is due to the ambiguity regarding the prevalence of relational aggression in these forms of media. Future research also needs to pay attention to the content of video games, music, and novels in regards to relational aggression before clear associations can be drawn between exposure to relationally aggressive content in these forms of media and relationally aggressive behavior. Other research could examine any media effects concerning exposure to romantic relational aggression (Linder *et al.*, 2002). Perhaps aggression portrayed in a romantic context has a particular influence on behavior in romantic relationships.

However, relational aggression is not the only type of aggression that needs further research. Exposure to verbal aggression in the media has only been examined in a handful of studies (Coyne and Archer, 2004; Wotring and Greenberg, 1973); accordingly, it is unclear whether viewing verbal aggression in the media has any effect on subsequent aggression. Future media research could also examine the function of aggressive behavior (Murray-Close and Ostrov, 2009). For example, research could examine whether most aggression portrayed in the media is reactive as compared to proactive and whether there are any differential effects of viewing these forms of aggression on subsequent attitudes and behavior.

Our review has also highlighted several media forms where research on aggression is lacking, most notably in music and in books. For music, most research has focused on misogynistic lyrics and attitudes towards women. Future research should continue to examine associations between aggressive lyrics and aggressive behavior. Furthermore, much research on aggression in music has ignored the formal features of the music itself, such as beat or tempo. It may be that certain styles of music combined with aggressive lyrics have a particular effect on aggressive behavior. Our review also revealed only a few studies on violence and books. Most research on this topic has been focused to either scriptural violence (Bushman *et al.*, 2007), comic books (Kirsh and Olczak, 2002) or novels aimed at adolescents (Coyne *et al.*, 2011). Future research could examine how aggression is portrayed in children's or adult's mainstream novels and whether there are any effects of reading aggression content.

Similar to music and books, newer forms of media such as the social networking sites, blogs, web cams, and the internet have received less research attention in regards to media effects. Typically, aggression in these new forms of media have been referred to as "cyber aggression" or "cyberbullying". While there is research that new forms of media are being used to display aggressive behavior (Pornari and Wood, 2010), researchers have not investigated what the effect is of reading aggression in newer forms of media. Perhaps it is not only cyberbullies and cybervictims that are influenced. It may be that those who simply read or come across these aggressive interactions on the internet are more likely to behave aggressively themselves. Future research should begin to examine these possibilities involving newer forms of technology.

Regarding methodology, new brain imaging studies have vast potential for the field of media aggression effects. While some research has been conducted examining brain functions and images of the human brain when exposed to violent or aggressive media (Wang *et al.*, 2009) much work is still needed in this area. In particular, functional magnetic resonance imaging and brain imaging studies could investigate the differences between the brain responses of those with a heavy diet of media aggression versus those with a lower diet. These brain imaging methodologies may provide a powerful and insightful approach to media violence research that has been relatively untapped by current researchers and experts.

Additionally, more experimental research is needed. Though good experimental research on media aggression certainly exists, much research is correlational, and does not control for confounding variables or selection effects. Additional, more longitudinal research across the lifespan is needed before we truly understand the sum impact of media aggression exposure on attitudes and behaviors.

In regards to theory and application, several researchers have uncovered the potential associations between partaking of one type of aggression (whether relational or physical) and the potential use of a different type of aggression in the peer group. This has been deemed "the cross-over effect" of media violence in the current literature (Coyne *et al.*, 2008).

However, this cross-over effect has only been studied briefly and needs further investigation. While this cross-over effect corresponds well with theoretical assumptions about priming and activation of aggressive-related scripts and constructs, more research is needed to prove the validity of this hypothesis. Future researchers should begin to examine both relational and physical aggression in their studies to help understand and uncover the potential cross-over effects of exposure to violent and aggressive media.

Finally, more research is needed on effects of exposure to media aggression on behavior in a family system. Most research has focused on aggression in peers or amongst strangers. It is possible that exposure to media violence could increase aggressive communication and behaviors within family systems (Coyne *et al.*, 2011). However, it is also possible that family systems and groups may somehow behave differently and will thus display different effects after exposure to violent and aggressive media. Much more research, both experimental and correlational, is needed to examine these potential associations.

Conclusions

Though some research shows no or mixed effects (Ferguson, 2011), the majority of research focusing on media aggression have found an association between violent media and aggressive behavior (see Bushman and Anderson (2001) for a review). These associations have been found regardless of the type of media being studied including television (Bandura *et al.*, 1963), movies (Thomas *et al.*, 1977), video games (Anderson *et al.*, 2010), music (Anderson *et al.*, 2003), and novels (Bushman *et al.*, 2007). Likewise, the association between media violence and aggression has been found in regards to both physical (Bushman and Anderson, 2001) and relational aggression (Coyne *et al.*, 2004). While both experimental and correlational studies have been conducted to examine these associations, much work is still needed. Future researchers should continue to examine these relationships paying particular attention to relational aggression, less traditional forms of media, new methodologies, and the potential impact of close relationships on these associations.

Implications for practice

This review paper has several implications for researchers, policy makers, parents, and clinicians. We hope that researchers will continue to examine understudied forms of aggression in the media, especially in forms of media rarely studied (e.g. music, books, and newer media forms). We would encourage the following:

- For policy makers to carefully review all the literature on media aggression when deciding on public policy.
- For parents to be aware of the research on media aggression, so they feel they can make informed decisions regarding media content for their children and themselves.
- For clinicians to ask questions regarding media aggression for their clients with a history of aggressive behavior.
- In addition, it is important to note that, media is clearly not the only influence on aggression. Rather, it represents one important risk factor, but one that might be a topic that is more easily approached by therapists than other risk factors, such as family history, genetics, personality, etc. Encouraging a holistic view of considering the problem is of value.

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