

ORIGINAL ARTICLE

A Content Analysis of Print News Coverage of Media Violence and Aggression ResearchNicole Martins¹, Andrew J. Weaver¹, Daphna Yeshua-Katz¹,
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We conducted a content analysis of news articles (N=540) to examine whether news coverage of media violence accurately reflects scientific knowledge about exposure to media violence and its effects on viewer aggression. The analysis revealed that over the past 30 years, news articles generally suggested that a link between media violence and aggression exists. However, the tone shifted sharply back toward a neutral conclusion since 2000. This shift may be attributable to the type of medium discussed (e.g., television vs. video games), the number of unaffiliated sources that are cited in the news article, and the sex of the journalist. Implications for how this news coverage may influence news readers are discussed.

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Media violence has been a public concern ever since the 1920s when researchers sought to understand the effects of motion pictures on children (Blumer & Hauser, 1933; Charters, 1933). With the growth of television in the 1950s, interest in the effects of media violence increased (Liebert & Sprafkin, 1988). In the decades that followed, social scientists have examined the relationship between television violence and juvenile delinquency (e.g., Schramm, Lyle, & Parker, 1961), desensitization (e.g., Drabman & Thomas, 1974), and fear (e.g., Hoekstra, Harris, & Helmick, 1999). But perhaps no topic has received more empirical or public attention than that of the relationship between media violence and aggression. To date, there are over 400 published studies devoted exclusively to unpacking the relationship between exposure to media violence and subsequent aggression (Bushman & Huesmann, 2006). In the short-term, laboratory studies show that viewing televised aggressive models led children to imitate aggressive behavior immediately after exposure (for review, see Huesmann, 2007). In the long-run, longitudinal studies have found that exposure to television violence in childhood is associated with subsequent increases in adult aggression (Huesmann, 1986; Huesmann, Moise-Titus, Podolski, & Eron, 2003).

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Despite this large body of literature which suggests a causal link between heavy exposure to media violence and aggression, there is still much to learn about the factors that might amplify or attenuate this linkage and about the magnitude of its contribution to violence in society (e.g., Ferguson, 2013; Slater, Henry, Swaim, & Cardador, 2004). Indeed, interest in media violence research has been reinvigorated by questions about the link between aggression and violent behavior and highly publicized tragedies (e.g., school shootings). All of which has led media effects researchers to reconsider available data as well as the long-term trajectory of media violence research.

The focus of this article is on the influence that media violence research has, through the news media, on public views. Concern about media violence has been labeled by Ferguson (2013) as a “moral panic” in which societal views toward media violence are driven by preexisting moral values, and result in exaggerated and unfounded public fears. Importantly, sensationalistic news reporting could be the fan that flames these moral panics (Ferguson, 2013). However, recent policy debates aside, the American public as a whole seems unconvinced that there is a relationship between media violence and aggression. According to a 2006 Gallup Poll, for example, 72% of the parents surveyed were “not too worried” or “not worried at all” about the types of programs that their children watch (Carroll, 2006). This lack of concern is reflected in the few limits parents place on their children’s media use. A recent study conducted by the Kaiser Family Foundation (2010) found that the majority of 8- to 18-year-olds do not have any rules about the type of media content they can use or the amount of time they can spend with television, video games, or music. Given this lack of restriction, it perhaps comes as no surprise that children spend over 4 hours per day with the television alone; significantly more than the 2-hour maximum recommended by the American Academy of Pediatrics (2001).

Are news media creating a moral panic, or are they consistently underselling available research? Both arguments seem plausible at the moment as scholars lack sufficient information about how news media cover media violence research over time. Such research is important as print news has a substantial impact on many areas of public opinion including social issues (Franiuk, Seefelt, Cepress, & Vandello, 2008), politics (Hoffman, 2006), and environmental concerns (Sampei & Aoyagi-Usui, 2009). Moreover, the way in which an issue is framed plays a significant role in the resulting opinion (Price, Tewksbury, & Powers, 1997). In the case of scientific research, the news value of objectivity may encourage a neutral or inconclusive public opinion even when there is a general scientific consensus (Jensen & Hurley, 2012). In the media violence arena, past content analytic work has suggested that while evidence supporting the link between media violence and subsequent aggression has increased, print news stories have become more likely to dismiss this research (Bushman & Anderson, 2001). Expanding upon the existing work in news representations of media violence effects, the goal of this study is to examine the extent to which news coverage of media violence accurately reflects scientific evidence about exposure to media violence and its effects on viewer aggression. In a larger sense, the study investigates

how news media manage scientific uncertainty and whether news norms facilitate or hinder public dissemination of science (Jensen, 2008).

Research examining exposure to media violence and aggression

Some of the earliest evidence linking media violence to aggression comes from laboratory studies of children in controlled settings. In a series of classic experiments, Albert Bandura and his colleagues (Bandura, Ross, & Ross, 1961, 1963a, b) randomly assigned groups of young children to watch a violent or nonviolent film on TV. The treatment film featured a scene with adult models who behaved aggressively toward a large, inflated Bobo doll. The control film did not contain any violence. After viewing the film, the children were put in a situation similar to that which was shown on the aggressive videotape. Typically, the children were given access to toys during playtime that included the Bobo doll that was in the video they had seen earlier. The children who had seen the adult on the video punch the Bobo doll were significantly more likely to play aggressively with the doll themselves than were children who did not see the aggressive version of the film.

These early studies in the social learning paradigm have been replicated in several settings (e.g., Bushman, 1995; Slater, Henry, Swaim, & Anderson, 2003) and have given way to additional experiments designed to uncover the mechanisms that could explain how media violence might lead to aggression. For example, experimental research has demonstrated how exposure to violence could increase hostile attribution bias (e.g., Martins, 2013) and could lead to disinhibition (e.g., Wang *et al.*, 2009), both of which are contributing factors to aggressive behavior in humans. Moreover, experimental work outside the realm of television has found a significant, positive relationship between exposure to media violence and aggression. Such findings have been observed with violent movies (Coyne *et al.*, 2008), aggressive music lyrics (Anderson, Carnagey, & Eubanks, 2003), and most recently, video games (Gentile, Lynch, Linder, & Walsh, 2004).

Laboratory experiments, however, have been criticized for being too artificial. For example, one critique of Bandura's Bobo doll studies is that the doll was designed to be hit (e.g., it had a sand bottom so it bounced back up when punched down). Thus, the Bobo doll may be testing play behavior rather than aggression. Another critique of laboratory studies in general is that they utilize artificial viewing situations which take the viewing experience and "turn it inside out so that the viewer is no longer in charge" (Fowles, 1999, p. 27). A final criticism of laboratory experiments is that they are only able to assess the short-term effects of exposure.

To address some of these limitations, researchers have conducted longitudinal studies that follow a single sample of participants over time. Because of the time and expense involved in collecting longitudinal research, however, only a handful of studies that have examined the impact of media violence on physical aggression over time exist. One of the most recent is a 15-year longitudinal study conducted by Huesmann and colleagues (Huesmann, Moise-Titus, Podolski, & Eron, 2003). The researchers assessed the relationship between exposure to television violence

in childhood and subsequent adult physical aggression (e.g., hitting, kicking). The results showed that viewing television violence in childhood significantly correlated with physical aggression 15 years later for males and females. These findings remained stable even when other variables known to contribute to aggressive behavior (e.g., scholastic achievement, childhood aggressive behavior, parents' education, adult television violence viewing) were statistically controlled.

A longitudinal study assessing the impact of video game violence found similar results. Anderson *et al.* (2008) examined whether high exposure to violent video games increases physical aggression over time in both high-(United States) and low-(Japan) violence cultures. The results revealed that violent video game exposure early in the school year predicted physical aggression later in the school year, even after controlling for gender and previous aggression. Moreover, the results revealed that effects were similar in magnitude in the United States and Japan for similar-aged youth.

Collectively, this body of work shows a consistent pattern: Exposure to media violence increases the risk of subsequent aggression. Meta-analyses of the research generally have supported this conclusion. Meta-analysis provides a statistical method to combine the results of several studies across one research area or hypothesis and provide a numerical correlation of all the research taken together. In one of the largest meta-analyses of this literature to date, Paik and Comstock (1994) examined the results of 217 studies on media violence. Paik and Comstock found a moderate aggregate correlation (.31) indicating that watching violent television causes aggressive behavior. This effect was significant regardless of the research design or characteristics of the programs used in the study. The effect was also significant for both sexes and all ages.

Although the quantity of published studies showing a link between media violence consumption and aggression is much higher than those showing no effect, the research has not universally shown such a relationship. There are studies with null findings (e.g., Ferguson, San Miguel, & Harvey, 2009) and two recent meta-analyses of video game research have come to different conclusions (Anderson *et al.*, 2010; Ferguson & Kilburn, 2009). As a result, some researchers have recently challenged whether the media violence–aggression link exists and if increased violence in the media world equates to more violent behavior in the real world (see Ferguson, 2013). These critiques, combined with increased public interest in the effects of media violence following several school shootings, has given rise to a new era of scientific inquiry into the link between exposure and violent behavior. Thus, there are renewed questions about existence, size, and amplitude of the effect. Our goal in this study is not to resolve the debate about the quality of the research described above. Rather, we wanted to determine how this body of research is framed for the public by the news media. Put differently, one might expect news coverage to mirror the trajectory of media violence research (e.g., early period of uncertainty, middle period of consensus, third period of renewed critiquing). But that expectation is grounded in the belief that news media are capable of accurately conveying scientific discovery/debate over

time. Unfortunately, available research suggests news media often struggle with this task and that coverage reflects news norms more than scientific reality (Jensen, 2008).

Journalist skepticism

Despite concerns about a sensationalistic media (Ferguson, 2013), there is reason to believe that the press is actually adding ambiguity to the scientific research rather than polarizing it. In support of this idea, Bushman and Anderson (2001) examined print news and magazine reports of the violent-media research on aggression. The researchers analyzed any report on the media violence topic across six major databases from the year each database began through 2000. The sample consisted of over 600 articles. The newspaper and magazine articles were coded using a 21-point scale that ranged from -10 to 10 . The article was given a score of -10 if it stated that viewing violent media decreased aggression, a 0 if it said there was no relationship between violent media exposure and aggression, and a 10 if it said that violent media exposure causes an increase in aggression and violence in society (p. 482). The results revealed that on average, the mass media acknowledge that media violence is positively related to aggression, but they tend to claim that this link is not very strong (e.g., the average rating was 4.15). The researchers examined whether there was any correspondence between the scientific knowledge on media violence effects on aggression and the media coverage about this link. Bushman and Anderson found that as the scientific community demonstrated that the effects of media violence on aggression were clear and significant, news reports about this link became weaker over time. In fact, the researchers found a strong negative relationship ($r = -.68$) between the average correlation and the average news report rating for six data points between 1975 and 2000. The authors concluded that whatever is driving the tendency for news media to report that this link is weak is clearly not the empirical data (p. 486).

Need for new content analysis

Although the Bushman and Anderson (2001) analysis is an important first step in documenting news media skepticism about the violent-media effect on aggression, this study is limited in two important ways. First, this study only considered the overall tone of the article in assessing whether the research on media violence was valid. There are several contextual features, such as whether other sources are identified, whether the additional sources agree with the primary scientist, and whether the research institution affiliated with the research is mentioned, which have been identified as factors that influence the credibility and persuasiveness. Therefore, it is important that we pay attention to these additional variables when examining the news reports on the violent-media effects on aggression. A second limitation is that this study examined news reports on research up to the year 2000. In the last 12 years, several important events concerning public policy about the media were given considerable attention in the press. Most notably was the Supreme Court's decision to extend First Amendment protection to video games, which invalidated a California law intended to regulate the sale of violent video

games to children. In the weeks leading up to the decision, we observed that the popular press interviewed several media researchers as well as professionals within the video game industry for their perspective on the media violence–aggression link. Given these circumstances, it is conceivable that the attention and tone given to the media violence research may have changed since Bushman and Anderson's seminal analysis.

The present study

This study addressed these limitations. First we coded news articles about media violence research for a host of variables known to influence readers' perceptions of credibility and persuasiveness. Second, we analyzed every news story we could find across the Lexis-Nexis database up until the year 2012 so that we could (a) provide an update to Bushman and Anderson's (2001) study, and (b) examine whether Bushman and Anderson's observed trend has shifted or remain the same in the past decade.

One of the first issues we examined was the tone of each newspaper article. Bushman and Anderson (2001) examined the tone in their study and found that news reports about the link between media violence and aggression have grown weaker over time. We wanted to examine whether this trend has continued since their study was published, or if it has changed so that the tone now matches the existing research. Thus, the first two research questions asked were, does the tone of news articles on media violence research suggest that a link does or does not exist (RQ1)? And, has the tone of the news coverage changed over time (RQ2)?

Wartella and Jennings (2001) argued that as new technologies diffuse into American households, concern about technologies follow a predictable pattern: debates about the promise of educational benefits as well as the danger of exposure to antisocial and harmful content fuels scientific research. In an attempt to answer these questions, researchers point to new questions and areas of concern that need to be addressed in future research, which further alarms parents. Social scientists keep responding to public concerns until a new technology is introduced and the research cycle starts again. Thus, we predicted that the tone of article about newer technologies (e.g., video games) would be less certain than the tone of articles about media that are more understood (e.g., television). In accord, we predicted that article tone will show a stronger link between media violence and aggression for older media technologies (movies, television) than newer media technologies (video games, Internet) (H1).

The tone of the article is likely to be influenced by the context in which the research is discussed. There is a growing body of research that suggests that certain article features are more likely to influence reader perceptions than others. Consider, for example, a news article about a study that found a relationship between exposure to violent television and subsequent aggressive behavior. In the article, a secondary source is quoted as saying that she agrees with the research. Having a secondary source that supports the study findings conveys a different message than utilizing a secondary source that critiques the existing study. Thus, the impact of these two news stories on the reader is likely to differ.

Thus, one contextual feature to consider is the additional sources the journalists cite. We know that journalists are dependent upon their sources (Bennett, 2001; Tanner, 2004), which can help influence the content of news reporting (Tanner, 2004). In an attempt to maintain objectivity (or at least communicate objectivity to their audience), journalists will typically seek out sources that represent both sides of a particular issue. One of the ways science writers can exercise “clinical judgment” in the stories they cover is to include comments from other scientists that are unaffiliated with the reported research (Jensen, 2008). However, Bushman and Anderson (2001) argue that reporting competing perspectives may lead to a final story that puts too little emphasis on the research findings and too much emphasis on the opinions of the few dissidents who can be found on almost any scientific issue. For example, Kennedy and Bero (1999) content analyzed print media coverage of research on passive smoking between 1981 and 1994. The analysis revealed that despite mounting evidence over time that passive smoking was dangerous, press coverage continued to portray the issue as controversial. The authors concluded that this disparity existed because of the sources used; that is, secondary sources were often the tobacco companies or other endorsers of tobacco. Given this body of research, we predicted that the use of secondary sources unaffiliated with the research will lead to less conclusive article tone (H2).

A second contextual feature to consider is whether journalists mention the scientist and his/her affiliated research institution when reporting the study findings. In a recent study, Moriarty, Jensen, and Stryker (2010) content analyzed over 3,000 articles on cancer research for the type of sources used. The results revealed that research institutions such as John Hopkins University were the most frequently cited source in cancer news coverage. Moreover, articles that cited research institutions were more conclusive in tone because they were reporting on significant research results. Applied here, it is reasonable to expect that journalists who cite research institutions are more likely to write an article that concludes there is a link between media violence and aggression. In contrast, an article that uses a source from the media industry should be less conclusive in tone, because it is not in the industry’s financial interest to acknowledge a potentially harmful impact of their product. Thus, we predicted the tone of research articles on the media violence and aggression link will be more conclusive when the study is attributed to a research institution than when it is attributed to an unknown person or study conducted by someone in the industry (H3).

A final contextual feature to consider is the sex of the journalist. Research has found few differences in the way male and female journalists approach news. For example, Rodgers and Thorson (2003) found that women in smaller news organizations stereotyped less, were more likely to use both men and women as story sources, and wrote more positive stories than men did. In political coverage, women are more likely to fill the watchdog position, criticizing and scrutinizing sources, perhaps in an attempt to conform to stereotypically masculine forms of reporting which value toughness (Grabe, Samson, Zelenkauskiate, & Yeghyan, 2011). In contrast, research on women employed in large news organizations reveals that women produce stories

nearly identical to their male counterparts in terms of story tone and gender variance in story sourcing (Liebler & Smith, 1997; Rodgers & Thorson, 2003). Chambers, Steiner, and Fleming (2004) have argued that women have professional reasons for distancing themselves from the idea that women practice their craft differently than men; in a profession where objectivity is paramount, doing so is considered unprofessional. In fact women who have been interviewed on this subject deny such an influence, except for a tendency to report on issues that are pertinent to women (Chambers et al., 2004). Still, the research above indicates that reporter gender may shape news content in at least some contexts. We examined that relationship here in the context of stories about media violence, and asked if there was a relationship between journalist gender and story tone (RQ3).

Method

Sample

To quantify and analyze mass media reports of the effect of violent media on aggression, we searched the 25 highest-circulating U.S. newspapers that provided full-text continuous coverage within the Lexis-Nexis database. Lexis-Nexis was searched from the year full-text continuous coverage began (1982) until 2012. Using search term validation procedures described by Stryker et al. (2006), the following search terms were entered into the database: *violen** or *aggress** and *media violence*. The asterisk option retrieves words containing the letter string with all possible endings. The search yielded 723 total articles, 540 of which were specifically about media violence effects on aggression.

Measures

Stories were coded for several different variables. The first variable coded was *story type*. Coders had to determine if the article was a news piece about media violence, an opinion piece about media violence, or not a story about media violence. Coders were instructed to code the article as an opinion piece if the article appeared in an op-ed section, or if the article editorialized the topic of media violence in such a way as to persuade the reader one way or the other. Coders then determined whether the article contained information about the state of media violence research generally (e.g., “. . . studies indicating that children who are exposed to graphic images of violence display more aggressive behavior,” Hernandez, 2005) or about a specific media violence study (e.g., “The Case Western study found ‘disturbingly high’ levels of violence among youngsters,” Briggs, 1999). Next, coders had to judge the *sex of the journalist* (i.e., male, female, can’t tell). In most cases, the name of the journalist clearly identified the journalist as male or female. Coders then had to determine the *media type* (television movies, video games, movies, computers/Internet, music lyrics, music video, or multimedia). Coders also judged *aggression type*. Coders determine whether the stories were about physical aggression, social/relational/indirect aggression, or a combination of physical and social aggressive behaviors. Finally, coders had to determine

the overall *tone* of the article. Coders could judge the article as suggesting no link exists, neutral as to whether a link exists or not, or suggests that a definitive link exists.

In stories where a specific study was reported, several additional variables were also coded. First, coders assessed story *source*. Coders had to determine whether the journal in which the study appeared was specifically mentioned (yes or no) and if yes, the name of the journal. Then coders had to determine if the lead *scientist* was mentioned in the story (yes or no) and whether the *research institution* of the scientist was mentioned (yes or no). Coders also assessed the *claim of the study* and determined whether the study claimed no link exists between media violence and aggression, a link exists, or that such a link could not be determined. Finally, coders considered *unaffiliated sources*. Coders judged whether the unaffiliated source was another scientist in the field, someone in the media industry, someone from an advocacy group (i.e., Parents Television Council), a parent, or other. After making this judgment, coders assessed whether the *unaffiliated source agreed* with the study findings (i.e., agree, disagree, neutral stance).

Coding and reliability

Five coders were extensively trained during a 3-month period to become familiar with all of the definitions in the codebook and to practice coding news stories. Following initial training, coders began the coding process, with reliability checked every month on a subset of articles that all five coders rated. Overall, 200 articles (28% of the sample) were coded by all five coders and were used for the reliability analyses. Reliability for each of the individual variables was calculated using Krippendorff's Alpha. The final coefficients were *story type* ($\alpha = .87$), *research type* ($\alpha = .87$), *sex of journalist* ($\alpha = 1.00$), *media type* ($\alpha = .90$), *aggression type* ($\alpha = .93$), *article tone* ($\alpha = .85$), *source mentioned* ($\alpha = 1.00$), *scientist mentioned* ($\alpha = .84$), *institution mentioned* ($\alpha = .76$), *study claim* ($\alpha = .84$), *unaffiliated source* (range for first three unaffiliated sources observed, $\alpha = .82-1.00$), *unaffiliated agreed* (range for first three unaffiliated sources observed, $\alpha = .90-1.00$).

Results

The total newspaper dataset included 368 news stories about media violence research, 172 opinion pieces about media violence research, and 183 stories not about research which were thus not included in the subsequent analyses. Of news stories about media violence research, 156 (42.4%) were about a specific study and 212 (57.6%) were about research in general. Of the opinion pieces, 45 (26.2%) were about a specific study and 127 (73.8%) were about research in general.

To answer RQ1, overall, 52.7% ($n = 284$) of the articles suggested that media violence can increase aggressive behavior, 37.7% ($n = 203$) were neutral on whether or not an effect exists, 9.3% ($n = 50$) concluded that there's no link between media violence and aggression, and 0.01% ($n = 2$) suggested a cathartic effect in which exposure to media violence could decrease aggression. Article tone did not differ

significantly by research type (reporting a specific study or the research generally), $\chi^2(2) = 2.14$, $p = .34$. However, of the specific studies covered in the news, 79.6% ($n = 160$) provided evidence that there was a positive relationship between media violence and aggression, 20.4% ($n = 30$) contained neutral findings, and 5.5% ($n = 11$) found no evidence for a correlation. Thus, the research reported within these news stories was much more definitive about the relationship between media violence and aggressive behavior than the stories themselves were.

Article tone did differ depending on whether the story was a news piece or opinion piece, $\chi^2(2) = 46.06$, $p < .01$. Opinion articles had higher percentages of tone suggesting both no link exists and an effect exists, while news articles had a higher percentage of neutral tone (see Table 1).

When looking at the sample over time, the overall number of news stories about the effect of media violence peaked around the turn of the century and have since tapered off (see Figure 1). To answer RQ2 about trends over time, we broke the dates into 5-year periods starting in 1982. Article tone changed over time, $\chi^2(2) = 27.69$, $p < .01$ (see Table 1). Specifically, the articles generally increased in tone suggesting

Table 1 Percentage of Stories With Each Article Tone by Row

	Suggests No Link Exists	Neutral	Suggests Link Exists	<i>n</i>
Story type				
News piece	4.9%	45.2	49.9	367
Opinion piece	19.8	21.5	58.7	172
Media type				
Television	7.0	39.0	53.9	228
Video games	7.8	48.7	43.5	115
Multimedia	14.2	28.4	57.4	169
Sex of author				
Male	14.9	39.9	45.3	276
Female	2.3	41.8	55.9	177
Cannot determine	8.1	22.1	69.8	86
Number of unaffiliated sources				
0	14.8	24.3	60.9	115
1	2.9	34.3	62.9	35
2	0.0	56.0	44.0	25
3+	3.8	53.8	42.3	26
5-Year period				
1982–1986	0.0	60.0	40.0	20
1987–1991	5.6	38.9	55.6	18
1992–1996	9.7	39.8	50.5	93
1997–2001	11.5	27.9	60.6	226
2002–2006	11.8	38.2	50.0	102
2007–2011	5.0	56.2	38.8	80

an effect exists through the 1990s, but since 2000 the tone has shifted sharply back toward a neutral conclusion.

One possible explanation for this decrease in news stories suggesting a possible link is the increase in stories about video games. To address H1, looking at differences by medium, we found that the media type addressed in the study was significantly related to article tone, $\chi^2(4) = 16.00, p < .01$ (see Table 1). There are fewer stories about video games that suggest a link exists and more that take a neutral tone relative to stories about television. Thus, H1 was supported.

Regarding stories that report the findings of specific studies, H2 suggested that the use of unaffiliated sources could lead to a more neutral tone as reporters seek sources to “balance” a story. In support of this hypothesis, we found that the more unaffiliated sources were cited in a story reporting a scientific finding, the more likely that story’s tone was to be neutral, $\chi^2(2) = 8.85, p = .01$ (see Table 1).

H3 proposed that whether or not the research institution was mentioned would influence the tone of the story. This hypothesis was not supported, as there was no difference in article tone based on whether or not the institution was mentioned, $\chi^2(2) = .04, p = .98$. It also did not matter whether or not the scientific journal was mentioned in the story, $\chi^2(2) = 2.68, p = .26$.

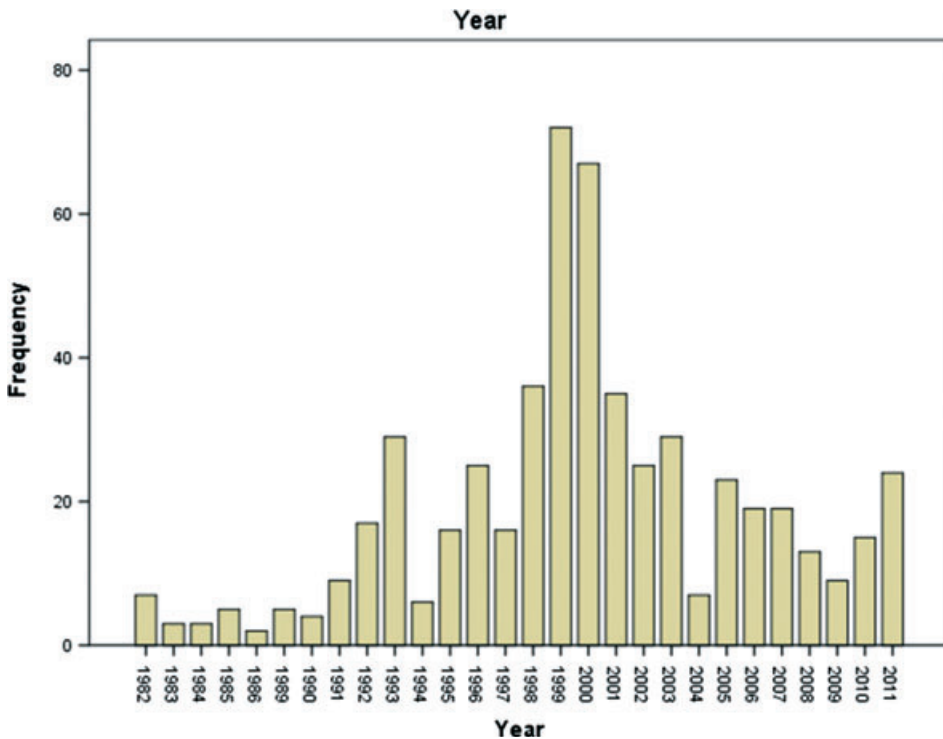


Figure 1 Number of news articles about media violence research by year.

RQ3 asked whether the sex of the reporter would influence the tone of the article. This hypothesis was supported, $\chi^2(4) = 32.65$, $p < .01$. Male reporters were more likely than females to suggest that no link exists, while females were more likely to suggest that media violence does influence aggression (see Table 1).

Discussion

Our study explored how media violence research is covered in the popular press. In particular, we examined the use of secondary sources, source citation, and sex of the journalist, along with an examination of trends in article tone over the past 30 years. This analysis revealed that not only do these variables impact the tone of the news article, but also the overall trend in reporting suggests a largely inconclusive body of research on the link between exposure to media violence and subsequent aggression. Rather than sensationalizing a moral panic about media violence, the news media are suggesting significant ambiguity exists within the research. To be fair, a small number of researchers have recently started to question media violence effects (e.g., Ferguson, 2013); however, the tendency to depict media violence research linkages as uncertain predates this shift in the academic conversation (Bushman & Anderson, 2001). We now briefly discuss the influence of each variable on article tone and their implications of these findings for the news reader.

The journalistic value of objectivity and balance specifically, clearly has played a role in the reporting of research on media violence. Journalists want to be perceived as objective, and presenting opposing viewpoints allows the journalist to do that. We found that the more unaffiliated sources were cited in a story reporting a scientific finding, the more likely that story's tone was to be neutral. Hence, the efforts of the journalists to balance their story by citing multiple sources, as Tuchman (1972) found, produce a relatively predictable narrative that does not provide the reader with realistic context or an accurate sense of the research. Reporters seem to favor conflict in the form of balance norms rather than content that would flesh out uncertainty or clarify the nature of the research literature (Jensen, 2008). Moreover, as Bushman and Anderson (2001) point out, journalists typically rely on unaffiliated sources that do not match the experience and expertise of the lead researcher. Therefore, the journalistic norm in providing balanced coverage does not necessarily benefit the audience, as it does not appear in this case to provide an accurate accounting of the overall body of research.

In fact, the overall trend in article tone appears to be toward even less conclusiveness, with articles from the last 5 years presenting a less convincing stance than any 5-year period since the early 1980s. We argue that a possible explanation for the shift in tone is the coverage of video games. We found fewer stories about video games that suggest a link exists and more that take a neutral tone relative to stories about television. There are a few explanations for this shift in tone. The first explanation could be that the influence of video games on player aggression is not as conclusive as the television violence research. A recent meta-analysis of over 130

research reports involving over 130,000 participants found that violent video games increase aggression in both males and females, of all ages, regardless of where they live in the world (Anderson *et al.*, 2010). The effects obtained in this meta-analysis were at least as large as those found in meta-analyses of violent television and films. However, other researchers have disputed these findings with a meta-analysis that shows smaller effects (Ferguson & Kilburn, 2009). Thus, a second explanation is that the significance of video games research is a debated issue, with those on both sides of the debate claiming that the scientific literature supports their opinions. A recent example of this debate occurred after the Anderson *et al.* (2010) meta-analysis was published. Ferguson and Kilburn (2010) published a critique of the study, claiming that several methodological issues, such as the inclusion of unpublished studies and the use of an unreliable “best practices” analysis, limited the interpretability of the research. There clearly are expert sources readily accessible for reporters on both sides of the debate. Thus, when a reporter is writing a story about a study which provides evidence that a relationship exists, “con” sources are readily available (and vice versa), making it easy to represent the news value of objectivity no matter what the scientific evidence actually suggests.

A final explanation for the finding that press coverage is less conclusive than the scientific research may be that news organizations are attending to the preferences and desires of their audience. Research shows that people prefer good news rather than bad news (Klein, 2003). The failure to acknowledge the link between media violence exposure and aggression may be attributable to a news audience’s desire for positive or good news. Given that the majority of adults aged 18 and older (53%) play video games and one in five adults play video games every day (Lenhart, Jones, & Macgill, 2008), it could be that journalists are reluctant to report the negative effects of something that so many people enjoy. Future studies could explore the relationship between the framing of these stories and audience interest in them.

Finally, this study explored whether sex of the journalist would influence article tone. The results of this study revealed a significant sex difference in the reporting styles of males and females. Indeed, female reporters were more likely than male reporters to suggest that a link exists between exposure to media violence and subsequent aggression. This finding aligns with existing research that has examined gender differences in news reporting. When covering presidential election campaigns, male reporters were associated with a masculine approach that emphasized competition. Women, however, employed a more feminine and gender-neutral news frame such that they focused on character and public opinion stories (Grabe, Samson, Zelenkauskaitė, & Yegiyani, 2011). It seems that female reporters are more likely to assume the ‘caretaker’ role when reporting on media violence research so as to inform the public of the potential dangers of media violence and demonstrate care and concern for others. Male reporters, on the other hand, project a more masculine reporting style, making it more likely that they will disregard the effects of media violence and reinforce notions that aggressive behavior should not be a major concern among the public.

Further explanation of these differences lies in the alpha-bias, a traditional gender model that identifies men as assertive, independent, and competitive and women to be people-oriented, nurturing, and open to collaboration (Cook, 1993). As this relates to news reporting, previous research has indicated that men more often employ the conflict news value whereas women more often pursue a frame of peace and equality (Tong, 1989). This bias emerges in the findings of this study as well; suggesting that if women employ the traditional “nurturer” role, they may focus on the care of others and be more likely to indicate a link between media violence and aggression. In addition, most of the articles in this sample focused on media violence’s effects on children, possibly initiating the caretaker role of female reporters. Future research should tease out these gender differences in news reporting, especially as they relate to stories concerning families, children, and aggression. The findings from this study serve as a jumping off point for further examination of how this bias emerges, how it is reinforced, and how it shapes public opinion on the issues reported.

Limitations and future directions

Our study is limited in two ways. The first limitation concerns the nature of the sample. Because the sample was comprised of news stories published in American newspapers, results cannot be generalized to other countries or other forms of news media. However, our sample contains stories from top newspapers over the past 30 years; we are confident that the results reported here are not atypical of media violence and aggression news coverage. Moreover, our analysis of newspapers started with the year that full-text coverage in the Lexis-Nexis data base began (1982). However, there were many important news reports published prior to 1982. In particular, the 1972 Surgeon General’s report, which stated that there was an “indication of a causal relation between viewing violence on television and aggressive behavior” (Surgeon General’s Scientific Advisory Committee on Television and Social Behavior, 1972, pp. 18–19), was widely covered by the popular press (Bogart, 1972). Thus, this study is not an exact replication of the Bushman and Anderson (2001) content analysis. Nonetheless, this study does provide an update to Bushman and Anderson’s (2001) study, and extends the research in other important ways. We have updated the research by examining news reports over the last 12 years, which suggests that news reports even more likely now than they were in previous decades to downplay the strength of the link between media violence and aggression. Furthermore, our analysis of additional contextual features, such as media type, use of unaffiliated sources, and journalist sex, has provided us with greater insight into why recent articles are more neutral in tone than they were at the turn of the century. A second limitation concerns our measure of article tone. Article tone was measured on a 3-point scale. Compared to Bushman and Anderson’s (2001) 20-point scale, this measure provides a less nuanced analysis, although it does provide for greater reliability.

Future research should apply the findings of this content analysis in experimental settings to examine the influence of article tone of audience perceptions. Print news

has been shown to influence the ways readers think about issues, ideas, and people (Cappella & Jamieson, 1997; Iyengar & Kinder, 1987; Iyengar & Simon, 1993). This study clearly shows that there is some disconnect between the science and the public discourse. Assuming that the public is getting most of their information about the scientific research from the news media, it is important to understand if their perceptions are being biased by conventions of news framing.

The purpose of this study was to understand how contextual factors shape the tone of news articles on media violence research. Six major health organizations, including the American Medical Association (AMA) and the American Academy of Pediatrics (AAP), issued a joint statement to the U.S. Congress (AAP, 2000) supporting the scientific fact that exposure to media violence is a significant health risk. If these recommendations are to be taken seriously, the news media are the first step in ensuring that the public understand what the media violence research says. By demonstrating that the use of sources, type of medium, and sex of the journalist impact article tone, and subsequently the overall message communicated to readers, this analysis adds to our understanding of how news stories are shaped, thereby influencing public perceptions and ultimately, public health.

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