



## Media and Aggression

Research over the past few decades has shown that viewing physical violence in the media can increase subsequent aggression in adults and children [e.g., Bushman & Anderson, 2001; Paik & Comstock, 1994]. However, physical aggression is not the only form of aggression portrayed on television. Recent content analyses [e.g., Coyne & Archer, 2004; Coyne et al., 2010; Linder & Gentile, 2009] indicate that relational aggression is also portrayed frequently on television and is likely to be portrayed as justified, rewarded, and used by attractive characters. Additionally, a growing body of research indicates that viewing relational aggression is associated with higher levels of relational aggression among viewers [Coyne & Archer, 2005; Coyne et al., 2004, 2008, 2011; Linder & Gentile, 2009].

There is also some evidence that viewing media aggression can lead to forms of aggression among viewers other than the form viewed, a phenomenon known as the “crossover” effect [see Coyne et al., 2008]. Specifically, several studies have demonstrated that televised physical aggression can lead to relational aggression in viewers. Huesmann et al. [2003] found that girls who viewed an excessive amount of physical violence on television as children engaged in more relational aggression as adults. Ostrov et al. [2006] also found that young children who viewed high amounts of physical violence on TV were more relationally aggressive. Moreover, Coyne et al. [2004] demonstrated in an experimental design that adolescents who had just viewed physical aggression were subsequently more relationally aggressive. Linder and Gentile [2009] additionally found that exposure to televised physical aggression was positively associated with teacher reports of relational aggression in a sample of fifth grade girls. Most recently, Gentile et al. [2011] found that children’s consumption of media violence early in a school year predicted higher verbal, relational, and physical aggression and less prosocial behavior later in the school year. Although this research has consistently demonstrated associations between viewing physical aggression and subsequent relational aggression, findings are mixed for the opposite effect—increased physical aggression following exposure to televised relational aggression. For example, Coyne et al. [2008] found that viewing relational aggression did lead to increased physical aggression; however, other research has failed to replicate this finding [see Coyne et al., 2011].

The General Aggression Model (GAM) [Anderson & Bushman, 2002] is a well-supported theoretical model that outlines the processes by which exposure

to violent media leads to physically aggressive behavior. Building on the theorizing of Bandura [1973] about observational learning, Berkowitz [1984] about cognitive neoassociationism, and Huesmann [1988, 1998] and Dodge [1980, Crick & Dodge, 1994] about cognitive information processing, scripts, and hostile attributional bias, the GAM states that after viewing violence on television, “aggressive” cognitions are activated, increasing the likelihood that the person will engage in subsequent aggressive behavior. Whether a person acts on these aggressive cognitions is also dependent on personal characteristics, such as past experiences, level of arousal, gender norms, and the situational context. In support of this theorizing, several studies have found that viewing violent movies or playing violent video games does indeed prime aggressive thoughts and make the accessibility of aggressive cognitions in memory more likely [Anderson & Dill, 2000; Bandura, 1973; Berkowitz, 1984; Bushman, 1998; Kirsh et al., 2005; Krahe et al., 2011].

Existing research shows that media exposure can increase aggressive cognitions; however, the research to date has only examined the effects of viewing *physical* aggression. Whether viewing relational aggression in the media can similarly increase aggressive thoughts is unknown. Therefore, the first goal of the current study was to examine whether viewing relationally aggressive media, in addition to viewing physically aggressive media, primes aggressive cognitions. It is also unknown whether cognitive activation resulting from viewing media aggression is limited to the specific stimulus observed (e.g., only physical aggression cognition activation following exposure to televised physical aggression) or whether the activation may be more generalized (e.g., activation of all aggressive cognitions, both relational and physical, following exposure to any type of televised aggression). This latter pattern of activation would explain the crossover effect, whereby exposure to physically aggressive media has been found to increase relational aggression. Therefore, the second goal was to examine what specific types of aggressive cognitions are activated after viewing different forms of aggressive behavior in the media.

To examine these questions, we showed college-aged women brief video clips of physically aggressive, relationally aggressive, or nonaggressive movies and then measured their reaction times in an emotional Stroop task, using relationally aggressive, physically aggressive, and nonaggressive words. Reaction times in this task were used to infer the accessibility of cognitions. We have decided to focus on women in the current study for a number of reasons. Since the novel

contribution of the study involves examining relational aggression, women may be of particular interest as relational aggression represents a gender normative type of aggression that may be particularly salient among this group [Werner & Nixon, 2005]. Furthermore, many media portrayals of relational aggression involve stereotypical portrayals of women [e.g., Coyne & Archer, 2004]. Based on previous research and the general premises set forth by the GAM, we hypothesized the following:

**Hypothesis 1:** Participants who view the physical aggression clip will show heightened accessibility of physical aggression cognitions than those viewing no aggression. This is consistent with both the GAM and past studies finding increased activation of aggressive cognitions after media violence exposure [e.g., Bushman, 1998].

**Hypothesis 2:** Participants who view the physical aggression clip will show heightened accessibility of relational aggression cognitions than those viewing no aggression. This would support a number of behavioral studies showing increased relational aggression after viewing televised physical aggression [e.g., Coyne et al., 2004; Huesmann, et al., 2003; Linder & Gentile, 2009; Ostrov, et al., 2006].

**Hypothesis 3:** Participants who view the relational aggression clip will show heightened accessibility of relational aggression cognitions than those viewing no aggression. This is consistent with the GAM, as well as several studies that have found that viewing relational aggression in the media can lead to subsequent relational aggression [e.g., Coyne & Archer, 2005; Coyne et al., 2004, 2008, 2011; Gentile et al., 2011; Linder & Gentile, 2009].

**Hypothesis 4:** Participants who view the relational aggression clip will show heightened accessibility of physical aggression cognitions than those viewing no aggression. This hypothesis is based on the limited empirical evidence for increased physical aggression after viewing relationally aggressive media [e.g., Coyne et al., 2008].

Importantly, we hypothesized that these priming effects after viewing televised aggression would remain even after controlling for individual differences in aggressive behavior, normative beliefs about aggression, and history of exposure to aggressive media, variables that can all influence responses to media aggression [e.g., Anderson et al., 2003; Coyne et al., 2008; Ostrov et al., 2006; Werner & Nixon, 2005].

## METHOD

### Participants

Participants were 250 undergraduate women (mean age = 19.47 years,  $SD = 4.66$  years) from either a small liberal arts college in the Northwest or a large university in the Midwest. Participants were recruited through announcements made in introductory psychology classes or general announcements across campus. Preliminary analyses showed that there were no significant differences on any variables in the study between participants at the two schools.

### Selection of Video Clips

Research has shown that high levels of physiological arousal increase the likelihood that respondents will subsequently behave aggressively [e.g., Zillman, 1971]. Therefore, we conducted a pilot study to ensure that video clips used as stimuli did not differ in excitement level produced. Twenty-two female participants viewed a total of 10 movie clips; three clips of physical violence, three of relational aggression, and four nonaggressive clips. The clips ranged from 9–15 min in length. All movies were required to have been produced in the previous 5 years, be realistic in nature, and have a female character as the protagonist and antagonist (if present). The presentation of the video clips was counterbalanced, so as to reduce any order effects.

Physiological measurements (blood pressure (BP), heart rate (HR), and galvanic skin response) were taken immediately before, during, and after each clip to assess current excitement levels. BP and HR were analyzed using a UA767+ Digital BP Monitor (Life-source, San Jose, CA, USA) and Galvanic Skin Response (GSR) (Autogenics, New York, NY, USA) was analyzed using an Autogenics skin conductance monitor. Participants also rated each clip on a variety of variables, using an 11-point Likert scale. Three items measured excitatory variables (exciting, boring, emotionally moving), two items measured aggressive content (physical violence, relational aggression), and five items measured other characteristics (enjoyable, entertaining, sad, interesting, and realistic).

A series of repeated measures Analysis of Variance (ANOVAs) were conducted to assess which films could be matched for use in the current study. As a result of the analyses, three film clips were selected. The physical aggression clip was from *Kill Bill* [Weinstein et al., 2004; rated R; approximately 9 min in length] and contained a graphic, violent fight between two women. The fight consists of punching, kicking, fighting with knives, and shooting guns. The fight ends with one woman killing the other by throwing

a knife into the other woman's chest. The relational aggression clip was from *Mean Girls* [Messick et al., 2004; rated PG-13; approximately 15 min in length] and portrayed relational aggression among a group of high-school girls. A new girl moves into school and is befriended by the most popular girls in the school. They sabotage each other by using relationally aggressive tactics, including stealing a boyfriend, making someone feel excluded, and turning someone's friends against them. The no-aggression clip was from *What Lies Beneath* [ZemECKIS & Gregg, 2000; rated PG-13; approximately 10 min in length]. This clip shows a woman who thinks there might be a ghost in her house. Although there is no aggression in the clip, it is quite suspenseful and ends with the woman and her friend having a séance to communicate with the ghost.

Analyses revealed that all three films produced similar levels of excitement, as shown by both the physiological ratings (BP, HR, and GSR) and the excitatory questionnaire items (all ANOVA results were non-significant). When violent content was analyzed, *Kill Bill* was rated as significantly more physically violent than the other two clips ( $F(2,42) = 3,581.90, P < .001$ ), whereas *Mean Girls* was rated as more relationally aggressive than the other two ( $F(2,42) = 42.28, P < .001$ ). In addition, all three clips were rated similarly on the other variables measured ( $P > .05$ ).

### Emotional Stroop Task

The emotional Stroop task assesses activation of cognition influenced by the individual's current state [see Stroop, 1935; Williams et al., 1997] and has been used in a number of media violence and aggression studies [see Kirsh et al., 2005; Smith & Waterman, 2006]. Participants are asked to name the color of words that appear on the screen, and the latencies of responses to target words (aggressive words in the current study) are compared to the latencies for positive and negative emotion words. Slower response times indicate cognitive interference, such that the individual has ascribed more meaning to the word and has therefore taken a longer time to process it. Aggression words evoke certain emotions (either positive or negative, depending upon the person); therefore, in order to better assess accessibility of cognition, it is important to compare activation of the target aggression words to other positive and negative emotion-provoking words. Accordingly, by comparing aggression words against emotion words, we can determine if aggressive cognitions are activated above and beyond activation of emotions that may be elicited by viewing aggression.

Words were chosen from the MRC psycholinguistic database [Coltheart, 1981]. Stimuli were selected from an initial list of 36 aggression words (18 physical, 18 relational). Ten pilot participants (60% female) were asked to label each word on the list as either physically or relationally aggressive. Any word that did not elicit complete agreement was removed. In the final list, target words consisted of 11 physical aggression words (e.g., bludgeon, stab, biting) and 11 relational aggression words (e.g., backbite, snub, betray). Emotion words consisted of 11 positive emotion words (e.g., blissful, silk, behave) and 11 negative emotion words (e.g., baldness, scud, barren). In addition, 11 neutral emotion words (e.g., browsing, sift, burrow) and 11 color words (green, yellow, blue, red) were used as filler words and were not used in subsequent analyses. Words were matched across categories as closely as possible for word length, number of syllables, beginning letter, word type, and frequency of occurrence in the English language.

To ensure the validity of the words used in each category, we had an additional group of 20 women rate each word on aggression, positivity, and negativity. A series of paired samples *t*-tests revealed that overall, physical ( $M = 5.62, SD = .53$ ) and relational aggression ( $M = 5.63, SD = .58$ ) words were rated as equally aggressive ( $t(12) = 0.08, P = .94$ ). We also conducted a series of repeated measures ANOVAs to assess further differences in how positive/negative each word was perceived to be. Individually, each aggressive word was also rated similarly for positive/negative ratings ( $P > .05$ ). In addition, all aggression words in the sample were rated as significantly more aggressive ( $P < .001$ ) than positive and negative emotion words and filler words. All aggression words were also rated as significantly more negative than positive emotion words and filler words ( $P < .001$ ), but not more than negative emotion words.

### Questionnaires

**Normative beliefs about aggression scale-revised [Werner & Nixon, 2005].** This measure included 10 items assessing beliefs about the acceptability of using relational and physical aggression. Participants were asked to read a statement and then indicate how "okay" it was to behave in that manner (on a scale of 1 = *it's really wrong* to 4 = *perfectly okay*). Items for physical aggression normative beliefs (four items) (e.g., "In general, it is \_\_\_\_\_ to hit other people") were averaged and showed adequate reliability ( $\alpha = 0.69$ ). The items for relational aggression normative beliefs (six items) (e.g., "In general, it is \_\_\_\_\_ to tell your friends not to be friends with someone you don't like") were also averaged to form

an overall score and showed adequate reliability ( $\alpha = 0.72$ ).

**Self-report of trait aggression.** We used the Peer and Romantic Relations Inventory – Self Report (PRRI-S; Nelson, 2005), which assesses a broad range of peer-group behaviors (e.g., subtypes of aggression and victimization, sociability, prosocial behavior, humor). In regard to the aggression and victimization items, this inventory is primarily comprised of items adopted from a number of existing measures, including the Self-Report of Aggression and Social Behavior Measure (SRASBM) [Morales & Crick, 1998] and the Romantic Relational Aggression Questionnaire [Linder, Crick, & Collins, 2002]. In addition, newly created items exist for each of the above behavioral dimensions. We elected to use a subset of 34 items that focused on participant's prior engagement in physical (10 items) and relational aggression (24 items). Participants were asked to read each statement and to indicate how true each statement was in describing their relationship with others using a five-point Likert scale (1 = *Never True* to 5 = *Almost Always True*). Scale scores for physical (e.g., "I have tried to get my own way by physically intimidating others") and relational aggression (e.g., "I spread rumors about a person just to be mean") were created. Both scales included aggressive behavior directed at both friends and romantic partners. Reliability for both scales was good (physical aggression,  $\alpha = 0.86$ ; relational aggression,  $\alpha = 0.87$ ).

**TV exposure questionnaire.** This questionnaire asked participants to list their three favorite television programs and to rate how frequently they viewed each program (on a scale of 1 = *less than once a month* to 7 = *six or more times per week*). After reading definitions of physical and relational aggression, participants were also asked to estimate how much physical and relational aggression were in each of their favorite programs (on a scale of 1 = *none at all* to 7 = *very high amounts*). Aggression scores for each program were then multiplied by the frequency viewed, and the mean of these products was used as the media aggression exposure score. This procedure gave programs viewed more frequently greater weight in the subsequent analyses. This was done for both physical aggression and relational aggression viewed in the media. This approach to measure media violence exposure has been used reliably with children and adults [e.g., Anderson & Dill, 2000; Gentile et al., 2004].

### Procedure

In order to disguise the purpose of the study, participants were informed that they would be participat-

ing in a study examining how viewing fast-paced action sequences on television influences reaction time. After giving consent, participants completed a short color blindness test, which would preclude their inclusion in the study (no participant showed evidence of color blindness). Next, participants were randomly assigned to view either the relational aggression clip ( $n = 78$ ), the physical aggression clip ( $n = 89$ ), or no-aggression clip ( $n = 83$ ).

Immediately after watching the video clip, participants completed the emotional Stroop task. They were instructed that they would view a number of words on the computer screen, appearing one at a time, and randomly presented in a different color (red, blue, yellow, or green). They were asked to push the corresponding color button on the response box as quickly as possible once each word appeared on the screen. Participants were instructed to try not to read the word but rather to focus on the color of the word. Participants first engaged in a practice task (involving 20 trials using a series of X's instead of words) to familiarize themselves with the equipment. Participants then completed the emotional Stroop task, which consisted of a total of 66 words. Each single trial consisted of a blank screen (shown for 1 sec) followed by a fixation cross that appeared on the center of the screen for 500 msec. This was immediately replaced by the word, which was displayed for an infinite amount of time so that a response was required before the next word appeared. The words were presented in a random order and a random color determined by the computer.

Upon completion of the Stroop task, participants completed the three questionnaires described earlier. Finally, participants were fully debriefed about the true purpose of the study.

## RESULTS

### Descriptive Statistics

Table I shows means and standard deviations for the control variables (normative beliefs, aggression, and aggressive television exposure). All variables showed

**TABLE I. Means and Standard Deviations for Control Variables**

	Relational aggression		Physical aggression	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Normative beliefs	1.86	0.51	1.15	0.31
Aggressive behavior	1.56	0.38	1.15	0.31
TV aggression exposure	14.30	6.53	10.46	6.56

evidence of normality except for physical aggression beliefs and behaviors, which were highly positively skewed. We attempted transformation of the data; however, this did not result in any meaningful improvement of the distribution. Accordingly, readers should view these variables with some caution. A series of *t*-tests found that participants reported more supportive normative beliefs,  $t(252) = 24.20$ ,  $P < .001$ , more aggressive behavior,  $t(248) = 17.68$ ,  $P < .001$ , and more television exposure,  $t(248) = 10.87$ ,  $P < .001$ , for relational as compared to physical aggression.

Additionally, as the control variables were assessed after exposure to the video clip, we conducted analyses on any differences in the control variables as a function of condition. A multivariate analysis of variance revealed a nonsignificant multivariate effect for all six control variables as examined by condition,  $F(12, 482) = 1.03$ ,  $P = .42$ . This suggests that participants did not vary on normative beliefs, prior aggression, and exposure to aggression on television as a function of experimental condition.

### Main Analyses

For the Stroop task, only correct responses were analyzed, and response times larger than three standard deviations from the mean were omitted. As described by Smith and Waterman [2006], interference scores were calculated by subtracting the reaction times for the emotion words (positive and negative) from the target words (relational and physical aggression). This resulted in four interference scores for each participant: physical-negative (**physneg**), physical-positive (**physpos**), relational-negative (**relneg**), and relational-positive (**relpos**). Table II shows all interference scores across condition. A positive score indicates a slower response latency for the aggressive word compared to the emotion word. Longer processing times result when an individual ascribes more meaning to a word. Therefore, positive interference scores indicate that more cognitive interference is occurring for that word type and is evidence of heightened accessibility of aggressive cognitions. Conversely, negative interference scores indicate increased activation of emotion words.

**Accessibility of relational aggression cognitions.** In order to assess the effects of type of video clip on reaction time for relational aggression words, a multivariate analysis of covariance (MANCOVA) was conducted with type of video clip (relational, physical, and no aggression) as the independent variable and relational aggression word interference scores as the dependent variables (**relpos**, **relneg**). Relational aggression normative beliefs, relationally aggressive behavior, and prior relational

aggression television exposure were used as control variables. The MANCOVA revealed a significant multivariate effect for condition,  $F(4, 454) = 5.15$ ,  $P < .001$ ,  $\eta^2 = .04$ , though not for any covariate. For condition, there were significant effects for both **relpos**,  $F(2, 227) = 3.22$ ,  $P < .05$ ,  $\eta^2 = .03$ , and **relneg**,  $F(2, 227) = 7.68$ ,  $P < .001$ ,  $\eta^2 = .06$  interference scores. Post hoc analyses (*t*-tests) revealed significantly more cognitive interference in processing of relational aggression words relative to positive emotion words (**relpos**) for participants who viewed the physical aggression clip as compared to those who viewed the no-aggression clip,  $t(168) = 2.30$ ,  $P < .05$ . There was also significantly more cognitive interference in processing of relational aggression words relative to negative emotion words (**relneg**) for participants who viewed the relational aggression clip compared to participants who viewed the no-aggression clip,  $t(153) = 4.14$ ,  $P < .001$ . In addition, there was also a trend for more interference in processing of relational aggression words relative to negative emotion words (**relneg**) for participants in the physical aggression condition compared to participants in the no-aggression condition,  $t(167) = 1.73$ ,  $P = .08$ .

**Accessibility of physical aggression cognitions.** In order to assess the effects of type of video clip on reaction time for physical aggression words, a MANCOVA was conducted with type of video clip as the independent variable and the physical aggression word interference scores as the dependent variables (**physpos**, **physneg**). Covariates were physical aggression normative beliefs, physically aggressive behavior, and prior physical aggression exposure on television. The MANCOVA again revealed a significant multivariate effect for condition,  $F(4, 462) = 3.87$ ,  $P < .005$ ,  $\eta^2 = .03$ , but not for any covariate. There was a significant main effect of condition for **physpos**,  $F(2, 232) = 3.60$ ,  $P < .05$ ,  $\eta^2 = .03$ , but not for **physneg**,  $F(2, 232) = 2.18$ ,  $P = .12$ ,  $\eta^2 = .02$ . Post hoc analyses (*t*-tests) revealed that participants who viewed the physical aggression clip showed significantly more cognitive interference in processing of physical aggression words relative to positive emotion words (**physpos**) than participants who watched the no-aggression video clip,  $t(167) = 1.96$ ,  $P < .05$ . However, there was no difference in **physpos** scores between participants who watched the relational and no aggression video clips  $t(158) = 0.64$ ,  $P = .53$ .

## DISCUSSION

The current study extended existing research on the effects of media violence on aggressive cognitions by examining the priming effects of viewing *relationally*

TABLE II. Interference Scores for Relational and Physical Aggression Words by Type of Video Clip

Interference score	Type of clip					
	Relational aggression		Physical aggression		No aggression	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Relpos	7.69	6.86	17.91 <sup>a</sup>	6.21	-6.78	6.44
Relneg	12.56 <sup>a</sup>	6.53	-7.23 <sup>b</sup>	5.92	-20.97	6.13
Physpos	1.08	6.53	17.62 <sup>a</sup>	5.91	-.36	6.13
Physneg	5.95	6.19	-7.52	5.61	-14.55	5.81

Note. "Relpos" refers to the comparison between relational aggression and positive emotion words; "Relneg" refers to comparisons between relational aggression and negative emotion words; "Physpos" refers to comparisons between physical aggression and positive emotion words; "Physneg" refers to comparisons between physical aggression and negative emotion words.

<sup>a</sup>Comparison with no-aggression clip is significant ( $P < .05$ ). <sup>b</sup>Comparison with no-aggression clip shows a trend ( $P < .10$ ).

aggressive media. Specifically, we examined the effects of viewing physically and relationally aggressive movie clips on cognitive interference in an emotional Stroop task in order to assess activation of aggressive cognitions in a sample of college women. Overall, the results provide evidence that both physical and relational aggression cognitions are activated after viewing media aggression. On the whole, effect sizes revealed a small effect of video viewed. Specifically, women who viewed a relational aggression clip showed activation of relational aggression cognitions, whereas women who viewed a physical aggression clip showed evidence of activation of both relational and physical aggression cognitions. These findings held even after controlling for a number of variables related to aggression, including normative beliefs regarding aggression, prior aggressive behavior, and prior exposure to media aggression. The results are consistent with the GAM, which predicts that viewing aggressive media activates aggressive cognitions in memory. Notably, these results also provide evidence of a cognitive mechanism that accounts for recent findings of associations between physical and relational aggression media exposure and relationally aggressive behaviors [e.g., Coyne et al., 2004].

It was hypothesized that participants who viewed the physically aggressive clip would show greater activation of physical aggression cognitions than those who viewed the no-aggression clip. Additionally, due to accumulating empirical evidence of a "cross-over" effect (e.g., exposure to physically aggressive media increases relational aggression), it was hypothesized that viewing a physically aggressive clip would also activate relational aggression cognitions. Both hypotheses were supported; women who viewed the physical aggression clip showed evidence of activation of both physical and relational aggression cognitions, as indicated by increased interference in processing of physical and relational aggression words (especially when compared to positive emotion words). These results

are consistent with the GAM [Anderson & Bushman, 2002]. The GAM posits that semantically associated cognitions are activated after viewing aggression in the media, which in turn increase the likelihood of aggressive behavior responses by viewers.

Although there is prior support for activation of aggressive cognitions after viewing physically aggressive media [e.g., Bushman, 1998], this is the first study we are aware of to demonstrate that physically aggressive media also primes *relationally* aggressive cognitions. There are at least two possible explanations for this latter finding. First, it may be that viewing physically aggressive media activates general aggressive cognitions or neural networks among viewers, which encompass both relational and physical aggression cognitions. Second, this finding may be gender dependent and emerged as a result of our exclusively female sample. Because physical aggression occurs less frequently among women than other forms of aggression [Archer & Coyne, 2004; Card et al., 2008], viewing physical aggression may activate cognitions related to more gender-normative forms of aggression (i.e., relational aggression). Future research that investigates specific types of aggressive cognition activation among males after viewing physical aggression would be useful for exploring these two possibilities.

Regarding effects of viewing *relational* aggression in the media, there were two hypotheses. First, it was hypothesized that participants who viewed the relational aggression clip would show greater activation of relational aggression cognitions than those viewing the no-aggression clip. This hypothesis was supported; women who viewed the relational aggression clip showed activation of relational aggression cognitions, as indicated by interference in processing of relational aggression words relative to negative emotion words. This finding is of significance because it suggests the existence of a cognitive mechanism triggered by viewing relational aggression that parallels previously documented media violence effects.

Specifically, priming of aggressive cognitions is one process by which relationally aggressive media exposure may increase relationally aggressive behavior. This finding is also consistent with a number of studies that show that exposure to relational aggression in the media is associated with heightened relational aggression among females [see Coyne et al., 2004, 2010, 2011; Linder & Gentile, 2009].

Second, it was hypothesized that viewing relational aggression would also activate physical aggression cognitions. This hypothesis was not supported; women who viewed the relational aggression clip did not show increased interference in processing physically aggressive words compared to participants who viewed the no-aggression clips. Again, this finding may be attributable to the gender of the participants; because relational aggression is the most normative form of aggression for women, even if viewing relational aggression activates general aggression cognitions, these may not be closely semantically linked to physical aggression cognitions for women.

It should be noted that we did not find evidence of interference in processing aggressive words compared to every word category used as stimuli in the emotional Stroop task. For example, participants who viewed the physical aggression clip had similar response latencies for aggression words and negative words. It may be that for women, the physical aggression clip elicited high levels of negative emotion, and therefore, they experienced as much interference in processing negative emotion words as in processing aggression words. This suggestion is further supported by the fact that participants had negative views about physical aggression, as indicated by their low physical aggression normative belief scores. Similarly, we also found that participants that had viewed the no-aggression clip showed high interference in processing negative words. It may be that the fear induced by this clip (which included a séance scene) may have triggered negative emotions for some participants, despite the absence of aggression in the clip. Finally, and perhaps most surprising, women who viewed the relational aggression clip did not have greater interference in processing relational aggression words compared to processing positive emotion words. It may be that the humor featured in the relational aggression clip used in the study resulted in elevated levels of positive emotion among participants in this condition. Alternatively, or in addition, it may be women have generally accepting normative beliefs about relational aggression, and as a result some may even experience positive emotions when witnessing these behaviors in the media.

There were several strengths of the current study. First, the use of popular movie clips as stimuli increases the ecological validity of the study. Second, the use of several control variables in the analyses strengthened the internal validity of the study. Indeed, the findings held even after controlling for a number of variables related to aggression-related attitudes and behavior; namely normative beliefs regarding aggression, prior aggressive behavior, and prior exposure to media aggression.

There were also several limitations of the current study that should be addressed in future research. Firstly, all control variables (normative beliefs, prior aggression, and TV aggression exposure) were measured after the experimental manipulation. Accordingly, exposure to the video clips may have primed responses on these measures. However, analyses revealed that participants did not vary on any of these variables as a function of condition, therefore, any priming results are likely to be small in nature. Furthermore, the results of the current study cannot be generalized to populations beyond young adult women. For example, given the sex differences in aggressive behavior and normative beliefs surrounding that behavior, it is likely that the experience of viewing media aggression may be substantially different for men compared to women. Future research should also investigate accessibility of aggressive cognitions in children and adolescents after viewing media aggression. There is evidence that these age groups may be more vulnerable than adults to the effects of aggressive media exposure [see Anderson et al., 2003], and therefore, these populations may demonstrate even greater priming effects after viewing relational or physical media depictions. Future research may also wish to examine aggressive cognitions in greater detail, perhaps by using other methodologies such as reading time or a word completion task.

In summary, this study is the first to provide evidence of heightened accessibility of aggressive cognitions after viewing relational aggression in the media. These findings complement the growing body of research linking aggressive media exposure with relationally aggressive behavior. Additionally, the results of this study highlight a cognitive mechanism underlying previously documented media effects.

## ACKNOWLEDGMENTS

We thank the Women's Research Institute, the School of Family Life, and the College of Family Home and Social Science at BYU who provided financial support for this project.

## REFERENCES

- Anderson CA, Berkowitz L, Donnerstein E, Huesmann LR, Johnson JD, Linz D., Malamuth NM, Wartella E. 2003. The influence of media violence on youth. *Psychol Sci Public Interest* 4:81–110.
- Anderson CA, Bushman BJ. 2002. Human aggression. *Annu Rev Psychol* 53:27–51.
- Anderson CA, Dill KE. 2000. Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *J Pers Soc Psychol* 78:772–790.
- Archer J, Coyne SM. 2004. An integrated review of indirect, relational, and social aggression. *Pers Soc Psychol Rev* 9:212–230.
- Bandura A. 1973. *Aggression: A Social Learning Theory Analysis*. Englewood Cliffs, NJ: Prentice-Hall.
- Berkowitz L. 1984. Some effects of thoughts on anti- and prosocial influences of media events: A cognitive–neosociationistic analysis. *Psychol Bull* 95(3):410–427.
- Bushman BJ. 1998. Priming effects of violent media on the accessibility of aggressive constructs in memory. *Pers Soc Psychol Bull* 24:537–545.
- Bushman BJ, Anderson C. 2001. Media violence and the American public. *Am Psychol* 56:477–489.
- Card NA, Stucky BD, Sawalani GM, Little TD. 2008. Direct and indirect aggression during childhood and adolescence: A meta-analytic review of gender differences, intercorrelations, and relations to maladjustment. *Child Dev* 79:1185–1229.
- Coltheart M. 1981. The MRC psycholinguistic database. *Q J Exp Psychol* 33A:497–505. Retrieved on January 23, 2007, from [http://www.psy.uwa.edu.au/mrcdatabase/uwa\\_mrc.htm](http://www.psy.uwa.edu.au/mrcdatabase/uwa_mrc.htm)
- Coyne SM, Archer J. 2004. Indirect aggression in the media: A content analysis of British television programs. *Aggress Behav* 30:254–271.
- Coyne SM, Archer J. 2005. The relationship between indirect and physical aggression on television and in real life. *Soc Dev* 14(2):324–338.
- Coyne SM, Archer J, Eslea M. 2004. Cruel intentions on television and in real life: Can viewing indirect aggression increase viewers' subsequent indirect aggression? *J Exp Child Psychol* 88:234–253.
- Coyne SM, Nelson DA, Graham-Kevan N, Keister E, Grant DM. 2010. Mean on the screen: Psychopathy, relationship aggression, and aggression in the media. *Pers Individ Dif* 48:288–293.
- Coyne SM, Nelson DA, Graham-Kevan N, Keister E, Meng KN, Olsen JA. 2011. Media depictions of physical and relational aggression: Connections with aggression in young adults' romantic relationships. *Aggress Behav* 37:56–62.
- Coyne SM, Nelson DA, Lawton F, Haslam S, Rooney L, Titterington L, Trainor H, Remnant J, Ogunlaja L. 2008. The effects of viewing physical and relational aggression in the media: Evidence for a cross-over effect. *J Exp Soc Psychol* 44:1551–1554.
- Coyne SM, Robinson SL, Nelson DA. 2010. Does reality backbite?: Physical, verbal, and relational aggression in reality television programs. *J Broadcast Electronic Media* 54:282–298.
- Crick NR, Bigbee MA, Howes C. 1996. Gender differences in children's normative beliefs about aggression: How do I hurt thee? Let me count the ways. *Child Dev* 67:1003–1014.
- Crick NR, Dodge KA. 1994. A review and reformulation of social information processing mechanisms in children's adjustment. *Psychol Bull* 115:74–101.
- Dodge KA. 1980. Social cognition and children's aggressive behavior. *Child Dev* 51:162–170.
- Gentile DA, Coyne SM, Walsh DA. 2011. Media violence, physical aggression and relational aggression in school age children: A short-term longitudinal study. *Aggress Behav* 37:193–206.
- Gentile DA, Lynch PJ, Linder JR, Walsh DA. 2004. The effects of violent video game habits on adolescent aggressive attitudes and behaviors. *J Adolesc* 27:5–22.
- Huesmann LR. 1988. An information processing model for the development of aggression. *Aggress Behav* 14:13–24.
- Huesmann LR. 1998. The role of social information processing and cognitive schemas in the acquisition and maintenance of habitual aggressive behavior. In: Geen RG, Donnerstein E (eds.), *Human Aggression: Theories, Research, and Implications for Policy*. New York: Academic Press, 73–109.
- Huesmann LR, Moise J, Podolski C, Eron L. 2003. Longitudinal relations between children's exposure to television violence and their later aggressive and violent behavior in young adulthood: 1977–1992. *Dev Psychol* 39:201–221.
- Krahe B, Moller I, Huesmann LR, Kirwil L, Felber J, Berger A. 2011. Desensitization to media violence: Links with habitual media violence exposure, aggressive cognitions, and aggressive behavior. *J Pers Soc Psychol* 100:630–646.
- Kirsh SJ, Olczak PV, Mounts JRW. 2005. Violent video games induce an affect processing bias. *Media Psychol* 7:239–250.
- Linder JR, Crick NR, Collins WA. 2002. Relational aggression and victimization in young adults' romantic relationships: Associations with perceptions of parent, peer, and romantic relationship quality. *Soc Dev* 11:69–86.
- Linder JR, Gentile DA. 2009. Is the television rating system valid? Indirect, verbal, and physical aggression in programs viewed by fifth grade girls and associations with behavior. *J Appl Dev Psychol* 30:286–297.
- Messick J, Michaels L (Producers), Waters M (Director), & Fey T. (Writer). 2004. *Mean Girls* [Motion picture]. United States: Paramount Pictures.
- Morales JR, Crick NR. 1998. Self-report of Aggression and Social Behavior Measure (SRASBM). Unpublished Measure. Twin-Cities, Minneapolis, MN: University of Minnesota.
- Murray-Close D, Ostrov JM, Crick NR. 2007. A short-term longitudinal study of growth of relational aggression during middle childhood: Associations with gender, friendship intimacy, and internalizing problems. *Dev Psychopathol* 19:187–203.
- Nelson DA. 2005. Peer and Romantic Relations Inventory—Self Report (PRRI-S). Unpublished Measure. Provo, UT: Brigham Young University.
- Ostrov JM, Gentile DA, Crick NR. 2006. Media exposure, aggression, and prosocial behavior during early childhood: A longitudinal study. *Soc Dev* 15:612–627.
- Paik H, Comstock G. 1994. The effects of television violence on antisocial behavior: A meta-analysis. *Commun Res* 21:516–546.
- Smith P, Waterman M. 2006. Sex differences in processing aggression words using the Emotional Stroop task. *Aggress Behav* 31:271–282.
- Stroop JR. 1935. Studies of interference in serial verbal reactions. *J Exp Psychol* 18:643–662.
- Weinstein B, Weinstein H, Bender L (Producers), Tarantino Q (Director/Writer). 2004. *Kill Bill: Vol. 2*. [Motion picture]. United States: Miramax Films.
- Werner NE, Nixon CL. 2005. Normative beliefs and relational aggression: An investigation of the cognitive bases of adolescent aggressive behavior. *J Youth Adolesc* 34:229–243.
- Williams JMG, Watts FN, MacLeod C, Mathews A. 1997. *Cognitive Psychology and the Emotional Disorders*, 2nd edition. Chichester, UK: Wiley.
- Zemecis R (Producer/Director), Gregg C. (Writer). 2000. *What Lies Beneath*. [Motion picture]. United States: DreamWorks SKG/Twentieth Century Fox.
- Zillman D. 1971. Excitation transfer in communication-mediated aggressive behavior. *J Exp Soc Psychol* 7:419–434.

Copyright of Aggressive Behavior is the property of John Wiley & Sons, Inc. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.