BRIEF REPORT

Violent Comic Books and Judgments of Relational Aggression

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This study investigated the effects of reading extremely violent versus mildly violent comic books on the interpretation of relational provocation situations. One hundred and seventeen introductory psychology students read either an extremely violent comic book or a mildly violent comic book. After reading the comic books, participants read five hypothetical stories in which a child, caused a relationally aggressive event to occur to another child, but the intent of the provocateur was ambiguous. After each story, participants were asked a series of questions about the provocateur's intent; potential retaliation toward the provocateur; and the provocateur's emotional state. Responses were coded in terms of amount of negative and violent content. Results indicated that participants reading the extremely violent comic books ascribed more hostile intent to the provocateur, suggested more retaliation toward the provocateur, and attributed a more negative emotional state to the provocateur than participants reading the mildly violent comic book. These data suggest that social information processing of relationally aggressive situations is influenced by violent comic books, even if the comic books do not contain themes of relational aggression.

In the 1950s, concern that violence in comic books might increase aggression in children (Wertham, 1954) led to the development of a Comics Code Authority, a self-censoring agency for comic book content developed and enforced by the producers of comic books (Savage, 1990). However, the top-selling comic books today are laden with aggressive acts, many displaying graphic gore and sexual themes. Despite the current high level of aggression in comic books, little recent research has assessed the impact of violence in comics on aggressive behavior and thoughts (Potenza, Verhoeff, & Weiss, 1996). The research that has been conducted, however, suggests that exposure to violent themes in comic books may have a negative impact on individuals' social information processing. For instance, Kirsh and Olczak (2000) induced a hostile attributional bias (HAB) in adult males, but not females, by having them read violent comic books. Individuals with a HAB infer hostile intent to the actions of another, even though the intent of that individual is unclear (Dill, Anderson, Anderson, & Deuser, 1997; Dodge, 1980). Importantly, one explanation for the link between reading violent comic books and aggression comes from

the literature on social information processing in aggressive children. Dodge (1980) contends that aggressive children act aggressively, in part, due to a HAB. Thus, when frustrated in social situations (e.g., being pushed into a puddle), a HAB may lead aggressive individuals to interpret the situation as resulting from hostile intent and thus respond aggressively (Dodge & Frame, 1982).

Although Kirsh and Olczak's (2000) research suggests that violent comic books may have a bigger negative impact on social information processing for males than for females, it is also possible that the nature or type of HAB assessed influenced participants' responding. Across childhood and adolescence, boys are more likely than girls to engage in acts of overt aggression (Parke & Slaby, 1983). Thus, initial research on HAB primarily focused on boys who engaged in frequent acts of overt aggression, such as hitting, pushing, and physical threats (Dodge, 1980; Dodge & Frame, 1982). As such, the dependent variable in early assessments of HAB bias involved provocation situations likely to result in a retaliatory act of overt aggression. For instance, a typical ambiguous provocation scenario described a child being pushed into the mud or being hit in the back with a ball. Crick (1995) describes this type of provocation scenario as "emphasizing conflicts of an instrumental nature" (p. 315). Although instrumental provocation scenarios assess a HAB involving overt aggression, these types of scenarios may be unlikely to elicit a HAB associated with relational aggression (Crick, 1995). Relational aggression involves social exclusion (e.g., not inviting someone to a party) or social manipulation (e.g., spreading rumors, threatening not to be a friend) in order to control another's behavior (Crick, 1995). In contrast to overt aggression, research has shown that relational aggression appears to be more characteristic of girls than boys (Crick & Grotpeter, 1995; McNeilly-Choque, Hart, Robinson, Nelson, & Olsen, 1996).

To date, research assessing media-related HAB has primarily utilized instrumental provocation situations in order to assess overt aggression. For instance, Kirsh (1998) and Kirsh and Olczak (2000) used ambiguous provocation scenarios based on Dodge's (1980) original scenarios, all of which involve acts of instrumental aggression. Furthermore, as Werner and Crick (1999) point out, little is known about relational aggression in early adulthood. Given that overt and relational forms of aggression represent different types of aggression (Crick & Grotpeter, 1995), and thus have potentially different antecedents and consequences, a purpose of the present research is to assess the impact of reading violent comic books on HAB using relationally aggressive scenarios. To test the proposition that reading violent comic books leads to a relational HAB, participants read either an extremely violent comic book or a relatively nonviolent comic book. It should be noted that the present experimental stimuli (i.e., comic books) do not contain instances of relational aggression. Why then, should we expect to see violent comic books that do not contain relational aggression inducing a relational HAB?

According to Bushman (1998), exposure to media violence can prime an individual's aggressive network. An aggressive network contains associations among aggressive thoughts, aggressive memories, provocational stimuli, potential responses to provocations, and concomitant emotions. In addition, an accessible network is believed to aid in the processing and interpretation of social information (Bushman, 1998). An aggressive network becomes accessible through frequent use or through a temporary increase (i.e., priming) due to exposure to aggressive stimuli (e.g., violent media). Importantly, the content of the aggressive stimuli (e.g., hitting, kicking) involved in priming the aggressive network does not have to be related to the observed aggressive behavior (e.g., threat, gossiping) or thoughts resulting from an accessible aggressive network (Bushman, 1998).

For the present study, the violent comic books should prime participants' aggressive networks, potentially influencing participants' responses to the relational provocation scenarios. Thus, it is hypothesized that individuals exposed to the extremely violent comic books will show evidence of a HAB and ascribe more hostile intent to the provocateur than adults exposed to the relatively nonviolent comic books. Furthermore, it is hypothesized that participants reading the extremely violent comic books will suggest more retaliation and ascribe a more negative emotional state to the harmdoer than other participants.

Since repeated activation of an aggressive network should make it chronically accessible (Bushman, 1998), individuals with high trait hostility are believed to process social information with an aggressive network. In support of this contention, Epps and Kendall (1995), found a significant relationship between trait hostility and HAB. Thus, based on previous research, we expect to find that as trait hostility increases, participants will ascribe more hostile intent, suggest more retaliation, and attribute a more negative emotional state to the provocateur.

Due to the expected link between trait hostility and social information processing, participants' trait tendency to respond with hostility and anger will be measured prior to the experimental condition. In order to assess a comic book-induced relational HAB, independent of trait hostility, we will then statistically remove the influence of trait hostility on the dependent variable. In summary, the primary purpose of the present research is to investigate the influence of comic books on social information processing related to relational aggression. We expect the violent comic books to bias social information processing toward aggressive responding and we expect to find these effects independent of trait hostility.

METHOD

Participants

The participants were 117 introductory psychology students (68% female) at a mid-sized college in Western New York state. The distribution of males and females in this study approximated the gender distribution at the college.

Procedure

At the beginning of the semester, participants filled out the Buss-Durkee Hostility Inventory (BDHI; Buss & Durkee, 1957) to assess their trait level of hostility. Approximately 6-10 weeks later, these participants were recruited to participate in the comic book study. Research assistants, blind to the participant's trait hostility scores, randomly assigned participants to one of two conditions: Extremely Violent and Mildly Violent. Participants in the extremely violent condition read comic books with a high degree of violence and aggressive themes. Participants in the Mildly violent condition read a relatively nonviolent comic book.

To help reduce the demand characteristics of the study, participants were told that the researchers were developing measures for two separate studies on children and that we need their input to help develop appropriate measures. First, participants read their assigned comic book and completed the Comic Book Rating task. Then, as a separate assessment, participants read and answered questions about a series of relational provocation stories. For this task, participants were asked to respond to the questions as they thought a 10-year-old would respond. The Relational Provocation Stories task is a type of projective test. Thus, participants' responses should reflect their current state of mind,

with regard to hostile/non-hostile perceptions. Whereas some participants will respond negatively, others will respond neutrally or positively. The affect/positivity-negativity associated with participants' "child-like" responses are in fact projections of the participants' current cognitive/emotional state. At the same time, this line of questioning should maintain the pretense that the researchers were developing experimental measures for children. Finally, participants were asked a series of questions about their own experience with comics books using a Comic Book History Form.

Materials

Comic Books. The extremely violent comic books shown to participants were *Cremator, Curse of the Spawn, Dark Realm, Evil Ernie, Homicide, Purgatory,* and *Witchblade.* Approximately 85% of the panels in the violent comic books contain violent acts and/or aggressive themes: examples include amputations, blood letting, fighting, gore, killing, threatening words, property destruction, and forcible restraint. The mildly violent comics shown to participants were *Archie, Cherry Blossom, Dexter's Laboratory, Pocohontas, Rugrats,* and *Sabrina.* Less than 10% of the panels in these comic books contain mildly violent acts and/or aggressive themes: examples include, pushing, name calling, and tripping. Both the extremely violent and mildly violent comic books were examined by two independent coders for instances of relational aggression; none were found. There were no disagreements between coders.

To help equate the two experimental conditions on reading, related boredom, and fatigue, participants in the extremely violent condition read two full extremely violent comics whereas participants in the mildly violent condition read approximately one and one-quarter in the mildly violent comic books. Both conditions involved approximately 20 minutes of reading.

Comic Book History Form. Participants were asked to provide a list of comic books they have read in the last 6 months and how often they read comic books.

Comic Book Rating Form. Participants rated the violence (Aggression), humor (Humor), interest level (Interest), and overall likeability (Like) of their assigned comic book. All questions involved 7-point Likert-type scales.

Predispositional Anger. Participants' propensity to respond to a variety of situations with anger was assessed using the BDHI. The BDHI consists of 75 true-false questions made up of seven subscales and a total hostility score. For the present study, the variable Trait Hostility was created by computing a median split on the total BDHI hostility score and dividing participants into low and high hostility groups.

Relational Provocation Stories Task. For this assessment, participants read five hypothetical stories in which a relationally aggressive event occurs to a child, but the intent of the provocateur is unclear. For instance, in one story, when a child sits down at the lunch table, the peers at the table stop talking and do not say anything to the child. For each scenario, the gender of both the provocateur and of the child protagonist was not stated. The dependent variables (i.e., relational provocation stories), were adapted from a program of research by Crick and associates (e.g., Crick, 1995; Crick & Grotpeter, 1995). After each story, participants were asked six questions: two questions about the provocateur's intent; two questions about potential retaliation and punishment toward the provocateur; and two questions about the provocateur's emotional state. Responses were written down by participants and then coded in terms of amount of negative and aggressive content. Specifically, responses that indicated a high degree of aggression and negative content (e.g., "I'd hit them"; "I'd make them suffer" were coded as a "2"). Responses indicating

a moderate amount of negative content or aggression (e.g., "They didn't like me"; "I'd spread a rumor about them") were coded as a "1." Neutral or positive responses were coded as a "0." Examples of this type of response include, "They didn't know I sat down" and "They haven't invited me yet." One coder, blind to experimental condition, coded the transcripts. A second coder, also blind, coded a randomly selected 25% of the transcripts. Inter-rater reliability (Cohen's kappa) was .90.

Composite variables were formed by combining like questions. Specifically, the two intent-related questions were combined to form an Intent variable; the two punishment-related questions were combined to form a Retaliation variable; and the two emotion-related questions were combined to form an Emotion variable. For each composite variable (Intent, Retaliation, Emotion), responses were summed across all five stories (possible range: 0-20). Cronbach's alpha scores for the 10 responses within each composite variable ranged from .62 to .75.

RESULTS

Preliminary Analyses

Comic Book History. Few participants in this study had recently read a comic book. In fact, only 7% had read a comic book (violent or nonviolent) in the last 6 months. Thus, prior exposure to comic books does not appear to be a factor in this study.

Trait Hostility. Analyses were conducted to assess the relation between trait hostility and scores on the composite variables. Results indicated significant Pearson product-moment correlations between trait hostility and Intent ($r = .25$, $p < .01$) and Retaliation ($r = .32$, $p < .01$). The correlation between trait hostility and Emotion was not significant ($r = .09$).

Comic Book Ratings. To verify that the extremely violent and mildly violent comic books were categorized correctly, an analysis of variance (ANOVA) was conducted to test for differences in perceived aggression of the mildly violent and extremely violent comic books. Results indicated a significant main effect for comic book, $F (1,114) = 657.6$, $p < .001$, with the extremely violent comic books being rated as significantly more violent than the mildly violent comic books.

In addition, to test for differences in participants' perceptions of the comic books, a series of ANOVAs was conducted. For Like, there was a significant main effect for Comic Book, $F (1,114) = 58.6$, $p < .001$. Participants liked the mildly violent comic books significantly more than the extremely violent comic books. For Humor, there was a significant main effect for Comic Book, $F (1,114) = 82.6$, $p < .001$, in which the mildly violent comic books were rated as significantly more humorous than extremely violent comic books. For Interest, the ANOVA was nonsignificant. Given that participants' perceptions of the comic books may influence their responses to the ambiguous stories, Like and Humor were entered as covariates in subsequent analyses. Table 1 presents means and standard deviations for the comic book ratings.

Main Analyses

In order to test the contention that violent comic books influence the processing of social information, a 2 (Comic Book) × 2 (Gender) multivariate analysis of covariance was conducted, with Trait Hostility, Like, and Humor as the covariates. Results indicated a significant multivariate main effect for Comic Book, $F (3, 108) = 6.64$, $p < .01$ and for the covariate, Trait Hostility, $F (3, 108) = 5.87$, $p < .01$. Follow-up univariate analyses of

covariance (ANCOVAs) were then conducted for each composite variable. For Intent, the univariate main effect for Comic Book was significant, F (1, 108) = 11.8, $p < .001$. Results indicated that participants reading the extremely violent comic books ascribed more hostile intent to the provocateur than participants reading the mildly violent comic books. The univariate follow-up test for Retaliation yielded a significant main effect for Comic Book, F (1, 108) = 11.45, $p < .001$. Participants reading the extremely violent comic book suggested more retaliation than participants reading the mildly violent comic books. Results for Emotion indicated a significant Comic Book univariate main effect, F (1, 108) = 23.9, $p < .001$. Participants reading the extremely violent comic books inferred a more negative emotional state to the provocateur than did the participants reading the mildly violent comic books. No other significant differences were evident. Table 2 presents the estimated means and standard errors for the composite variables.

DISCUSSION

Consistent with previous research using overt provocation situations (Kirsh & Olczak, 2000), the current findings support Bushman's (1998) contention that an individual with a chronically aggressive network (e.g., a person high in trait hostility) will demonstrate biased social information processing. Furthermore, reading violent comic books appears to influence judgments related to intention, retaliation, and emotion in ambiguous provocation scenarios. These findings are consistent with research showing a link between aggressive themes in comic books and aggressive feelings (Brand, 1969) and perceptions of social situations (Kirsh & Olczak, 2000). Thus, comic books may have the same influence on the cognitive processing of social information as other investigators have found to be the case for movies, television, and even weapons (Geen, 1998). ,

TABLE 1. Mean and Standard Deviations (in Parentheses) for Comic Book Ratings

Comic Book Type Question	Mildly Violent	Extremely Violent
How much did you like your comic book?	3.9 (1.3)	2.5 (1.7)*
How interesting did you find your comic book?	3.7 (1.4)	3.4 (1.7)
How humorous did you find your comic book?	3.5 (1.3)	1.8 (1.1)*
How aggressive did you find your comic book?	2.0 (1.2)	6.8 (0.7)*

Note. Significant differences between comic books: *$p < .01$

TABLE 2. Estimated Means and Standard Errors (in Parentheses) of Intent, Retaliation, and Emotion as a Function of Gender and Comic Book Type

	Composite Variables		
	Intent	Retaliation	Emotion
Comic Book			
Mildly-Violent ($n = 59$)	6.3 (0.3)	4.7 (0.5)	8.0 (0.3)
Extremely-Violent ($n = 58$)	7.8 (0.3)	7.1 (0.5)	10.1 (0.3)
Gender			
Male ($n = 37$) 7.0 (0.3)	6.1 (0.5)	9.4 (0.3)	
Female ($n = 80$)	7.1 (0.2)	5.8 (0.3)	8.8 (0.2)

Gender differences in the perception of relational provocation situations were not evident. The relatively small sample of males limited the power of our analyses, thus making it more difficult to find gender differences. However, it is also possible that for females and males, violent comic books influence perceptions of *relational* aggression similarly. In contrast, previous research has shown that for ambiguous provocation scenarios emphasizing *overt* aggression, violent comic books appeared to have less of an effect on the processing of social information for females than for males (Kirsh & Olczak, 2000). Thus, when assessing the impact of violent media on social information processing, researchers may need to more carefully consider the nature of the dependent variable (e.g., perception of overt vs. relational aggression). However, given the small number of males in this study, the contention that perceptions of overt and relational aggression differ requires replication with a larger sample size.

Bushman (1998) contends that in response to experiences with aggression individuals develop an aggressive network. Our data support the contention that violent media temporarily increases the accessibility of an aggressive network. Independent of trait hostility, which indicates an individual's chronic level of accessibility, we found that extremely violent comic books also influenced the perception of relational provocation situations. Given that highly active aggressive networks increase the likelihood of aggressive behavior (Bushman, 1998), frequent exposure to violent comic books may increase the likelihood of aggressive behavior by contributing to the activation of an individual's aggressive network. However, the present results were found using a relatively small sample of comic books (i.e., 6-7 comic books per condition), thus potentially limiting the generalizability of the findings (Wells & Windschitl, 1999). In addition, the possibility exists that the methodological procedure of having participants "think like a 10-year-old" led participants to respond to the ambiguous provocation situations with speculation about the effects of comic books on children, rather than projecting their own interpretation of the scenarios. However, given the primacy of affect in influencing cognitive judgments (Zajonc, 1998) participants' interpretations of ambiguous stimuli, regardless if done for the self or for how another might think, should primarily reflect the participant's current emotional state. Furthermore, additional research is necessary to determine how long after reading violent comic books the priming effect lasts. It may be reasonable to conclude that the effects of violent comic books may last longer or perhaps be stronger in individuals who are dispositionally hostile than in those who are not. These are areas for future research.

In conclusion, the processing of relationally aggressive ambiguous provocation situations appears to be affected by both personality-based variables, such as trait hostility, and environmental factors, such as extremely violent comic books. Previous research has found that violent media effects are more difficult to demonstrate in adults than in children (Dubow & Miller, 1996). As such, the significant findings of the present study suggest that a similar assessment using children and adolescents is warranted.

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