

Exposure to Violent Media: The Effects of Songs With Violent Lyrics on Aggressive Thoughts and Feelings

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Five experiments examined effects of songs with violent lyrics on aggressive thoughts and hostile feelings. Experiments 1, 3, 4 and 5 demonstrated that college students who heard a violent song felt more hostile than those who heard a similar but nonviolent song. Experiments 2–5 demonstrated a similar increase in aggressive thoughts. These effects replicated across songs and song types (e.g., rock, humorous, nonhumorous). Experiments 3–5 also demonstrated that trait hostility was positively related to state hostility but did not moderate the song lyric effects. Discussion centers on the potential role of lyric content on aggression in short-term settings, relation to catharsis and other media violence domains, development of aggressive personality, differences between long-term and short-term effects, and possible mitigating factors.

Someone told me once that there's a right and wrong. Punishment was cure for those who dare cross the line. But it must not be true for jerk-offs just like you. And maybe it's just bullshit. I should play god and shoot you myself.

—Tool, “Jerk-Off” (1992)

As evidenced by the creation of the Parents' Music Resource Center and the policy of labeling music products containing violent lyrics, many people are concerned with potential deleterious effects of listening to songs with violent lyrics. An accumulating body of scientific research spanning 4 decades supports the hypothesis that exposure to violent media is causally related to subsequent expression of aggression in both short- and long-term time frames (e.g., Anderson & Bushman, 2002a; Berkowitz, 1993; Bushman & Anderson, 2001). The vast majority of this research has focused on violent television and movies (Huesmann & Miller, 1994). Recently, a small but relatively consistent research literature has shown that short-term exposure to violent video games causes increases in aggression and aggression-related variables (Anderson & Bushman, 2001).

Nonetheless, there remains among the general population and many practitioners a very strong belief in the age-old *catharsis hypothesis*—the belief that experiencing and expressing aggressive emotions and thoughts will decrease subsequent aggressive thoughts, feelings, and emotions (Bushman, 2002; Bushman, Baumeister, & Stack, 1999). This ancient Greek idea, later popularized by Breuer and Freud (1893–1895/1955) and now usually labeled *venting*, states that aggressive impulses can be reduced by watching, reading, or singing about anger and aggression as well

as by behaving in symbolically aggressive ways. Though the aggression catharsis hypothesis has been thoroughly explored and debunked in several entertainment media domains, there has been relatively little work on the effects of songs with violent lyrics on aggression-related variables such as aggressive thoughts and feelings.

Media Differences

There are numerous differences between watching violent television, playing violent video games, and listening to popular music. One is the lack of a video component to audio-only music. Another is that aggressive lyrical content of popular music is often discernible only to the most attentive of listeners, whereas video-based media (including music videos) make their violent content abundantly and graphically clear. Some rock music songs have such garbled lyrics that they have given rise to debates about what the lyrics are (e.g., “Louie, Louie”; “Inna-Godda-Da-Vida”; see Marsh, 1993). A third difference concerns attention. A large proportion of time spent listening to music involves paying attention to the music (not the lyrics) or to other tasks. Thus, effects of violent lyrics may generally be attenuated (relative to video-based media violence) simply because the lyrics are not processed by the listeners.

Nonetheless, there are valid reasons to worry about potentially harmful effects of violent music lyrics. Numerous studies have shown that aggressive words can prime aggressive thoughts, perceptions, and behavior (e.g., Anderson, Benjamin, & Bartholow, 1998; Bargh, Chen, & Barrows, 1996; Bargh & Pietromonaco, 1982). Indeed, such effects can occur even when the stimulus has not been consciously recognized (e.g., Bargh et al., 1996, Experiment 3). Furthermore, listeners are capable of recognizing themes of music (i.e., violence, sex, suicide, and Satanism) even when it is difficult to comprehend specific lyric content (Hansen & Hansen, 1991). Additionally, music stimuli are played repeatedly, both by radio stations as well as by listeners themselves.

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Another difference between video-based entertainment and music concerns the amount of imagination needed or allowed to fill in details of the story being told. The lack of visual images in music both allows and requires listeners to imagine details. Concrete images probably play a major role in transfer of ideas from the video world to one's own real-world situations. When one's video antagonists are similar to one's real antagonists, violent solutions modeled in the video world are more likely to be attempted in the real world than when the video antagonists are dissimilar (Bandura, 1986; Berkowitz, 1993; Geen, 1990). The lack of concrete images in violent music may well allow listeners to imagine audio antagonists similar to real-world antagonists.

Thus, there are reasons to expect violent-lyric songs to be either more or less influential than violent video materials. The present article reports five experiments testing the hypothesis that brief exposure to songs with violent lyrics can increase two variables that are key mediators of situational influences on aggression: aggressive cognitions and aggressive affect. In the next section, we briefly review the existing research literature. Then we show why the general aggression model (GAM; Anderson & Bushman, 2001; Anderson & Huesmann, in press) suggests a focus on aggressive cognitions and affect.

Past Music Research

Experimental Studies of Music Videos

Several field and laboratory experiments have examined effects of aggressive music videos. Waite, Hillbrand, and Foster (1992) observed a significant decrease in aggressive behavior on a forensic inpatient ward after removal of Music Television (MTV). Peterson and Pfof (1989) found that exposing males to nonerotic violent music videos led to a significant increase in adversarial sexual beliefs and negative affect. Johnson, Jackson, and Gatto (1995) found that males who had been randomly assigned to view violent rap music videos became more accepting of the use of violence in dealing with interpersonal problems. Related research found that males and females exposed to violent rap music videos became more accepting of teen dating violence (Johnson, Adams, Ashburn, & Reed, 1995). College students exposed to rock music videos with antisocial themes produced a greater acceptance of antisocial behavior (Hansen & Hansen, 1990). Students were also more likely to accept stereotypic sex-role behavior after being exposed to music videos that displayed similar behavior (Hansen, 1989; Hansen & Hansen, 1988).

Music video studies are valuable in their own right, but they do not provide information about the effects of exposure to violent lyrics without video. Music videos are much more like other video media (TV, movies) in that they can tell a story with graphically violent images; the finding that they produce similar effects is not surprising.

Correlational Studies of Music Preference and Behavior

Correlational studies have suggested a connection between the kind of music youth listen to and various maladaptive behaviors and attitudes, though the direction of causality is not clear. Rubin, West, and Mitchell (2001) found that college students who preferred rap and heavy metal music reported more hostile attitudes

than students who preferred other genres of music, such as alternative, adult contemporary, dance-soul, or country. Listeners to heavy metal music held more negative attitudes toward women. Rap music fans were more distrustful. Similarly, Took and Weiss (1994) found a correlation between preference for rap and heavy metal music and below-average academic performance, school behavior problems, drug use, arrests, and sexual activity. Still other studies have found correlations between music type preferences and a variety of maladaptive behaviors but have not specifically linked lyric preferences to those behaviors. (For a recent review, see Roberts, Christenson, & Gentile, in press.)

Experimental Studies of Music Without Video

Music Without Lyrics

McFarland (1984) looked at the effects of exposure to tense, calm, or no-background music (without lyrics) on the emotional content of stories written for the Thematic Apperception Test. Participants who heard tense music wrote the most unpleasant stories. Like the music video studies, these results tell us little about lyric effects. However, they indicate that research on lyrics must control for effects of type of music.

Music With Lyrics

Only a few studies have specifically examined the influence of violent songs on aggression-related variables. Interestingly, most have found no effects of lyrical content (e.g., Ballard & Coates, 1995; St. Lawrence & Joyner, 1991; Wanamaker & Reznikoff, 1989). For example, participants in Ballard and Coates's (1995) study heard one of six songs varying in genre (rap vs. heavy metal) and lyric (homicidal, suicidal, neutral). Lyric content had no impact on mood measures, including anger. In other studies showing no effect, the genre of the songs (heavy metal) made the lyrics nearly incomprehensible, a problem noted by the researchers themselves.

Barongan and Hall (1995) reported a study suggesting that antisocial lyrics can affect behavior, but the target behavior was not clearly aggressive; thus, its relevance to our work is unclear. Male college students listened to misogynous or neutral rap music, viewed three vignettes (neutral, sexual-violent, assaultive), and then chose one of the three vignettes to be shown to a female confederate. Those who had listened to the misogynous music were significantly more likely to choose the assaultive vignette.

Wester, Crown, Quatman, and Heesacker (1997) reported mixed results. Male undergraduates were exposed to either (a) sexually violent music and lyrics, (b) the same music without lyrics, (c) sexually violent lyrics without music, or (d) no music or lyrics. Results yielded no differences in negative attitudes toward women among the four groups. However, participants exposed to violent lyrics viewed their relationships with women as more adversarial.

Overall, the few published studies on the effects of exposure to songs with violent lyrics have produced mixed results, perhaps because of methodological problems involving confounds with arousal or lyrics that were indecipherable. We build on prior work by using a social-cognitive theoretical perspective that has emerged from aggression research in several different domains, including media violence.

Theoretical Perspective

The theoretical basis for the present experiments comes from our earlier work on GAM (Anderson, 1997; Anderson, Anderson, & Deuser, 1996; Anderson & Bushman, 2002b; Anderson, Deuser, & DeNeve, 1995; Anderson & Dill, 2000; Anderson & Huesmann, in press). This model draws on empirical and theoretical contributions from several research groups, most notably the social-cognitive work of Bandura (1986), Berkowitz (1993), Crick and Dodge (1994), Geen (1990), Huesmann (1988), and Mischel (1973). Figure 1 presents the single-episode portion of this model. Effects of situational (e.g., violent media) and personality (e.g., trait hostility) input variables combine (sometimes interactively) to influence aggressive behavior by influencing the present internal state (cognition, affect, and arousal) and subsequent appraisal and decision processes. These main pathways are linked in Figure 1 by the bold lines with arrows. The dashed lines within the Present Internal State box indicate that these components affect each other. Because of potential arousal effects on other variables, it is important to control induced arousal when examining effects on cognition and affect. The focus of this article is lyric effects on current cognition and affect, so we do not discuss appraisal and action aspects of GAM.

According to GAM, long-term effects accrue via the development of highly accessible knowledge structures and emotional desensitization to violence by well-established social-cognitive learning and systematic desensitization processes. In brief, each media violence episode constitutes a learning trial in which one rehearses aggressive thoughts and primes aggression-related affects, creating and making chronically accessible hostile attitudes, beliefs, expectations, and scripts (Anderson & Bushman, 2002b; Anderson & Huesmann, in press.)

Overview

The present studies investigated effects of violent songs on aggressive thought and affect, controlling for arousal effects by song selection and by measuring perceived arousal. We also investigated potential moderating effects of two variables: trait hostility and humorous content. Trait hostility was included for both

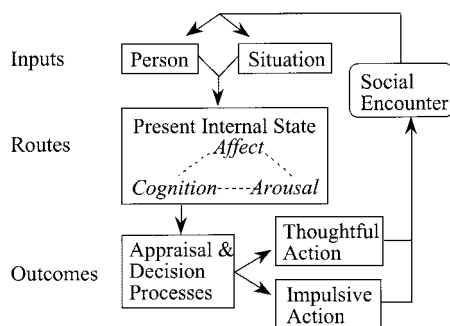


Figure 1. The general aggression model. Main pathways are linked by bold lines with arrows. Dashed lines within the Present Internal State box indicate that these components affect each other. From "Human Aggression," by C. A. Anderson & B. J. Bushman, 2002, *Annual Review of Psychology*, 53, p. 34. Copyright 2002 by Annual Reviews. Reprinted with permission.

theoretical and empirical reasons. GAM explicitly incorporates individual differences as factors important in each individual life episode and as something that develops from life experiences. Past research has demonstrated the importance of trait hostility in a variety of aggression contexts. For instance, the effects of exposure to violent movies sometimes (but not always) differ for people who score low versus high on measures of trait aggressiveness (Anderson, 1997; Bushman, 1995; Bushman & Geen, 1990). Similarly, aggressive personality has been linked to two aggression-related biases. Dill, Anderson, Anderson, and Deuser (1997) found that aggressive people are more likely to expect others to solve problems by use of aggressive behaviors (*hostile expectation bias*) and are more likely to see interpersonal interactions as aggressive encounters (*hostile perception bias*).

Humorous content was included both to test the generalizability of violent song effects and because past research suggests that humor might mitigate effects of aggression-stimulating variables (Baron, 1978; Berkowitz, 1970; Mueller & Donnerstein, 1977). Humorous (vs. nonhumorous) content may combine additively or interactively with violent (vs. nonviolent) content in their effects on subsequent aggressive thoughts and feelings. If they combine additively, then violent humorous songs should yield higher levels of aggressive affect and thought than nonviolent humorous songs but should be fairly comparable with no-song control conditions. If they combine interactively, then humorous songs should yield relatively low levels of aggressive thought and affect regardless of whether they are also violent or nonviolent.

Experiments 1 and 2 assessed effects of violent lyrics on state hostility and aggressive cognitions, respectively. Experiment 3 assessed effects of violent lyrics and trait hostility on state hostility and aggressive cognitions using a broader set of songs and a different measure of aggressive cognition. Experiments 4 and 5 examined the combined effects of violent humorous song lyrics on aggressive thought and affect and included trait hostility.

Experiment 1

Method

Participants

Twenty-nine female and 30 male students from a large Midwestern university participated. About half were recruited by members of a senior psychology class as part of a class project. The rest were from the psychology participant pool in a later semester, and participated for extra credit. This experiment used a 2 (song) \times 2 (sex) \times 2 (participant pool) factorial design. The participant pool factor was included in the statistical analysis but had no reliable effects.

Songs

We solicited suggestions from students from the same undergraduate population for pairs of contemporary rock songs that had the following characteristics. One song had to have clearly violent content, whereas the other had to have no (or minimal) violent content. Both had to be understandable, the same type (e.g., both hard rock or both soft rock), and about the same length. Finally, we wanted both songs to be by the same group. We used two songs, each about 5 min long, by the group Tool: "Jerk-Off" (violent; Tool, 1992, from the album *Opiate*) and "Four Degrees" (nonviolent; Tool, 1993, from the album *Undertow*).

Procedure

After reading and signing a consent form, participants learned that the experiment involved how different songs affect performance on various tasks. They were to listen to a contemporary song, complete a couple of psychological tasks, and then answer a few questions about the song. Participants then listened to the assigned song, completed the State Hostility Scale (SHS; Anderson et al., 1995), completed a longer unrelated task, and were debriefed.

The SHS contains 35 sentences describing current feelings (either hostile or friendly). For example, two hostile items read, "I feel like yelling at somebody" and "I feel furious." Respondents rate each sentence on a 5-point Likert-type scale (1 = *strongly disagree*, 3 = *neither agree nor disagree*, 5 = *strongly agree*). The friendly items are reverse scored. The scale typically produces internal reliability estimates in the .90–.95 range, but three items ("I feel willful," "I feel tender," "I feel vexed") often show poor item–total correlations. "Willful" displayed a low item–total correlation in the present study, so we dropped it. Coefficient alpha was .96.

Results and Discussion

Sex was included in the analyses as a covariate rather than as another two-level factor.¹ The 2 (song: violent vs. nonviolent) \times 2 (participant pool: volunteer vs. psychology) ANCOVA yielded two statistically reliable effects. As predicted, the violent song produced higher levels of state hostility than did the nonviolent song ($M_s = 2.60$ and 2.19 , respectively), $F(1, 54) = 5.97$, $MSE = 0.426$, $p < .02$. In addition, females reported higher levels of state hostility than males ($M_s = 2.62$ and 2.17 , respectively), $F(1, 54) = 6.71$, $MSE = 0.426$, $p < .02$.² This somewhat unusual finding is probably due to the fact that in our participant pool, females typically do not like hard rock music to the same extent as males.

These results indicate that the violent content of rock songs can increase feelings of hostility when compared with similar but nonviolent rock music. It is important to note that this violent-lyrics effect occurred in the absence of any provocation. The low absolute level of the SHS means reflect this lack of provocation.

Experiment 2

Method

Experiment 2 was identical to Experiment 1 in all respects except that the dependent variable was a measure of aggressive cognition. Sixty-one undergraduates (30 females, 31 males) participated either as volunteers or as a part of their introductory psychology class.

The dependent variable was based on participants' ratings of a large number of word pairs from Bushman (1996). Bushman identified 10 words as clearly aggressive in meaning (*blood, butcher, choke, fight, gun, hatchet, hurt, kill, knife, and wound*) and 10 words as ambiguous in meaning, having both aggressive and nonaggressive meanings (*alley, animal, bottle, drugs, movie, night, police, red, rock, and stick*). Bushman showed that people who score high on trait hostility tended to perceive relatively greater similarity of meaning between pairs of aggressive and ambiguous words (from these two lists) than do people who score low on trait hostility.

We adapted Bushman's (1996) task in the following way. All possible pairs of these 20 words were presented to participants with instructions to rate each pair on how "similar, associated, or related" the paired words seemed to be. Ratings were made on 7-point scales anchored at 1 (*not at all similar, associated, or related*) and 7 (*extreme-*

ly similar, associated, or related). We calculated three average similarity scores for each participant: aggressive–aggressive word pairs (45), aggressive–ambiguous word pairs (100), and ambiguous–ambiguous word pairs (45). Our reasoning and predictions were quite simple. If listening to violent lyrics increases the accessibility of aggressive thoughts in semantic memory, then ambiguous words will tend to be interpreted in a relatively more aggressive way, leading to relatively higher similarity ratings of aggressive–ambiguous pairs. This same semantic priming process might also increase the perceived similarity of aggressive–aggressive pairs and of ambiguous–ambiguous pairs, but these increases should be small relative to the violent song effect on aggressive–ambiguous pairs. We used the other two word-pair types as within-subject controls. Thus, we predicted violent (vs. non-violent) song participants to give larger similarity ratings of aggressive–ambiguous word pairs relative to their ratings of ambiguous–ambiguous and aggressive–aggressive word pairs.

Results and Discussion

We computed a contrast score reflecting the main prediction. We averaged each participant's aggressive–aggressive and ambiguous–ambiguous scores. From this control rating we then subtracted each person's aggressive–ambiguous score. On this contrast score, smaller scores indicate that the aggressive–ambiguous pairs were seen as relatively more similar (or less dissimilar) than the control-word pairs. We predicted that participants who heard the violent song would have significantly smaller contrast scores. An ANCOVA was conducted on this contrast.³

The 2 (song: violent vs. nonviolent) \times 2 (subject pool: volunteer vs. introductory psychology) ANCOVA yielded only one reliable effect, the predicted main effect of music lyric content, $F(1, 56) = 4.24$, $MSE = 0.113$, $p < .05$. Table 1 presents the mean similarity ratings as a function of song and word-pair type.

As can be seen in Table 1, the violent song led to higher similarity ratings for aggressive–ambiguous word pairs than did the nonviolent song; the mean similarity score increased by almost half of a scale point (0.45) on a 7-point scale. The corresponding song effect on the control pairs (aggressive–aggressive and ambiguous–ambiguous) was much smaller; the mean similarity increase was just slightly more than a quarter of a scale point (0.27). As predicted, violent song participants had significantly smaller contrast scores. Figure 2 presents these results in a different way, clearly illustrating the violent-lyrics effect on aggressive cognition. In sum, hearing a violent rock song led participants to interpret the meaning of ambiguous words such as *rock* and *stick* in an aggressive way.

¹ Nonetheless, for all studies, preliminary analyses explored the possibility of sex interactions. There were none, thereby satisfying the homogeneity of slopes assumption of analysis of covariance (ANCOVA).

² Unless otherwise indicated, reported means for all experiments are the appropriate least squares adjusted means, adjusted for other factors in the model such as sex and trait hostility. Significance levels are based on two-tailed tests.

³ The astute reader will realize that each effect in this between-subjects analysis of variance is identical to the interaction of that effect with the repeated-measures factor control versus aggressive–ambiguous.

Experiment 3

Overview and Design

Broadening Aspects

Experiment 3 was designed to broaden our tests in three ways. First, on the basis of a pilot study, we used a larger set of 4 violent and 4 nonviolent songs. Twenty-six female and 24 male college students listened to 10 rock songs and rated how violent each was on a unidimensional scale anchored at 0 (*not at all*) and 10 (*extremely*). Two songs (with means of about 5.00), were dropped. The 4 selected nonviolent song means ranged from 2.19 to 4.11. The 4 selected violent song means ranged from 7.45 to 8.25. Each of the violent songs was rated as significantly more violent than each of the nonviolent songs, all *ps* < .0001. Participants in Experiment 3 listened to 1 of these 8 songs before completing the SHS and an aggressive thoughts accessibility measure.

Second, we examined potential moderating effects of trait hostility by including a modified version of the Caprara Irritability Scale (Anderson, 1997; Dill et al., 1997; Caprara et al., 1985). Third, we used a different procedure to measure accessibility of aggressive thoughts: Participants were timed as they read aggressive and nonaggressive words. An advantage of this reaction time task is that suspiciousness about the true purpose of the study is unlikely to influence responses (Anderson, 1997). The clear demand to read all words as quickly as possible effectively overrides any suspicion or hypothesis-related demands. One cannot intentionally speed up responses that are already given as quickly as possible. Attempts to selectively delay responses to one class of stimuli are easily detected by examining response time distributions.

Additional Controls

Two other changes controlled for possible interpretational difficulties. We measured perceived arousal to check on our assumption that the violent and nonviolent songs did not differ in arousal properties. We also added a no-song control condition to assess whether the violent songs, the nonviolent songs, or both influenced state hostility and aggressive cognition. We expected this control condition to most closely resemble the nonviolent song condition.⁴

Table 1
Effects of Violent Versus Nonviolent Song on Perceived Similarity of Aggressive–Aggressive (AgAg), Aggressive–Ambiguous (AgAm), and Ambiguous–Ambiguous (AmAm) Word Pairs

Song	Word-pair type				
	AgAg	AmAm	Control average: AgAg and AmAm	AgAm	Contrast: Control–AgAm
V	4.86	2.94	3.90	3.37	0.53
NV	4.60	2.66	3.63	2.92	0.71
V–NV diff.	0.26	0.28	0.27	0.45	0.28

Note. V = violent; NV = nonviolent; diff. = difference.

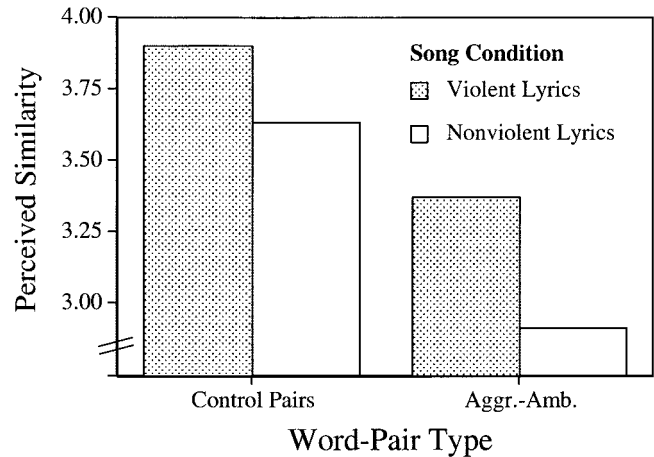


Figure 2. Perceived similarity differences between violent and nonviolent song conditions as a function of word-pair type. Aggr. = aggressive; Amb. = ambiguous.

Finally, we counterbalanced the order in which the two dependent variables were assessed on the basis of other findings that measuring one aggression-related variable frequently changes the outcome of subsequently measured variables, a sort of *psychological uncertainty principle* (Lindsay & Anderson, 2000). Thus, the experiment used a 3 (song type) × 2 (order) × 2 (sex) factorial design with trait hostility as a continuous independent variable.

Method

Participants

Eighty-three female and 79 male undergraduates at a large Midwestern university participated for class credit. Seven participants (4 females, 3 males) were dropped because they could not understand the lyrics. One additional female and 4 additional males were dropped because of procedural difficulties with the word pronunciation (WP) task. Three females and 2 males were dropped because of suspicion. There was no apparent sex or song pattern to these difficulties. The final sample had 75 female and 70 male participants.

Procedure

Preselection. Because it was known that the sample size would be limited and that the power to detect a noncrossover interaction (between song condition and trait hostility) would be low, participants were preselected on trait hostility (cf. McClelland & Judd, 1993). Participants completed the Caprara Irritability Scale as part of a larger mass-testing questionnaire. Those who scored in the upper and lower quartiles were then called and signed up for participation. These pretest scores were used only to generate the list of names and phone numbers to be called and were discarded after the calling lists were generated. Thus, the experimenter was unaware of the participants' scores on this scale while calling and running experimental sessions.

⁴ Participants in the no-song control group actually heard a nonviolent song after they had completed all dependent variables except for the Music Questionnaire. This was done so that all groups would have the same cover story and the same debriefing.

General instructions. After reading and signing consent forms, participants learned that they would be filling out several questionnaires, listening to a song, and doing some computer tasks. They were also told that “toward the end of the experiment you will fill out a questionnaire that will ask questions mainly about the song you listened to previously.” This instruction was included to ensure that participants listened to the lyrics.

Trait hostility. Next, participants completed an adaptation of the Caprara Irritability Scale (Caprara et al., 1985). The adaptation (Anderson, 1997; Dill et al., 1997) involved reverse scoring and using the 10 “friendly” filler items, along with the original 20 “irritable” items.

Songs. After completing the trait hostility scale (THS), participants in the violent and nonviolent song conditions listened to one of eight songs. The four violent songs were “Shoot ‘Em Up” by Cypress Hill (1991); “I Wouldn’t Mind” by Suicidal Tendencies (1994); “Hit ‘Em Hard” by Run DMC (Simmons, McDaniels, Coward, Criss, & Gist, 1993); and “Jerk-Off” by Tool (1992). The four nonviolent songs were “Live at PJ’s” by the Beastie Boys (1992); “Love vs. Loneliness” by Suicidal Tendencies (1994); “In the House” by Run DMC (Simmons, McDaniels, & Phillips, 1993); and “Finger Lickin’ Good” by the Beastie Boys (1992). Participants then completed the dependent variables. Participants in the no-song condition went directly from the THS to the dependent variables.

State hostility. The SHS was the same one described earlier. Preliminary analyses revealed that two items did not correlate well with the remaining 33 (*willful, tender*); they were dropped from subsequent analyses. Coefficient alpha was .96.

Word pronunciation. This task involves reading words out loud as they appear on a computer screen, one per trial. A sound-activated voice key measures the latency between the word presentation and the point in time that participants name the word. The task was created in HyperCard 2.1 (Apple Computer, 1987–1999); the timer was triggered by a MacRecorder on a Macintosh computer. Ninety-six words were presented twice, a total of 192 trials. A different random order was used for each participant. The word list consisted of 24 aggressive words (e.g., *assault, choke*), 24 escape words (e.g., *abandon, desert*), 24 anxiety words (e.g., *insecure, foolish*), and 24 control words (e.g., *behold, listen*). The anxiety and escape words were also considered control words on the basis of previous studies (e.g., Anderson, 1997).

Other questionnaires. After completing the second dependent variable, participants in the song conditions filled out two questionnaires designed to measure perceptions of how aroused or energized they were and their reactions to the song. Participants in the control condition, who had not yet heard any song, listened to a randomly selected nonviolent song before completing these two questionnaires.

The Perceived Arousal Scale (PAS; Anderson et al., 1995, 1996) contains 31 adjectives describing feelings of arousal (e.g., *energetic*) or lack of arousal (e.g., *listless*). Participants’ ratings were based on how they felt “at the present moment” using 5-point Likert-type scales (1 = *very slightly or not at all*, 3 = *moderately*, 5 = *extremely*). The lack-of-arousal items are reverse scored. One item (*agitated*) displayed a low item–total correlation and was dropped. Coefficient alpha was .95.

On the Music Questionnaire participants rated how understandable and familiar the lyrics were using 11-point scales (0 = *not at all*, 5 = *moderately*, 10 = *perfectly*). They also indicated how much they thought about the purpose of the study as opposed to the tasks themselves (0 = *thought mostly about the purpose*, 3 = *thought equally about the purpose and the tasks*, 5 = *thought mostly about the tasks themselves*). The Music Questionnaire concluded with items designed to assess suspicion, focus of attention, and perceptions regarding effects of the song on later responses.

Results and Discussion

As in Experiments 1 and 2, sex was included as a covariate in all analyses. Task order was included as a factor because prior work has suggested that the priming effects tend to wear off fairly

quickly, especially on state hostility. None of the task order effects were significant, but the state hostility results appeared somewhat different depending on task order, as is shown in a subsequent section.

Preliminary Analyses

We first examined results from the PAS to see if the selected violent and nonviolent rock songs had similar arousal properties. The main effect of type of song did not approach significance, $F(1, 140) = 1.31, p > .25$. Thus, violent-lyric effects on other variables cannot be attributed to arousal differences. The only reliable effect on PAS was a negative relation to trait hostility, $F(1, 140) = 16.65, MSE = 0.512, p < .001$.

We next examined the Music Questionnaire ratings (understandability, familiarity, purpose, accuracy of suspicions, and estimated song influence on PAS, SHS, and WP). The two song conditions (violent vs. nonviolent) did not differ reliably on any of these variables ($ps > .20$).

Interestingly, there was one reliable sex effect and three reliable trait hostility effects on these Music Questionnaire items. Males ($M = 5.80$) rated the lyrics as more understandable than did females ($M = 4.90$), $F(1, 140) = 6.77, MSE = 4.900, p < .02$. Trait hostility was positively related to beliefs that the song influenced performance on PAS and on SHS, $F_s(1, 140) = 4.36$ and $4.34, MSEs = 0.900$ and $0.987, ps < .05$. Also, trait hostility was positively related to familiarity, $F(1, 140) = 4.78, p < .04$.

Trait hostility did not interact with the song manipulation in any of the analyses, so this interaction term was dropped from the statistical model. We then compared the control (no-song) and the nonviolent song conditions on WP and SHS. As expected, there were no reliable differences between these two conditions ($ps > .25$), so these conditions were combined into one larger nonviolent condition for all subsequent analyses.⁵

Main Analyses

State hostility. Analyses ignoring task order yielded only a significant effect of trait hostility ($b = .21$), $F(1, 141) = 11.15, MSE = 0.411, p < .005$. Individuals who scored high on trait hostility tended to score high on state hostility. The violent song effect was in the predicted direction, with those who heard a violent song reporting higher levels of SHS ($M_s = 2.14$ and 1.98), but was not significant, $F(1, 141) = 2.02, p < .16$.

The lack of a reliable effect of song content on state hostility might appear to conflict with the results of Experiment 1. However, in Experiment 1 the SHS was administered immediately after the song. We therefore reanalyzed Experiment 3 SHS scores using only the 71 participants who completed the SHS first, even though

⁵ For SHS, means for the control, nonviolent, and violent song conditions were 1.98, 1.98, and 2.14, respectively. For word pronunciation, corresponding means were 1.35, 5.93, and 11.08. Reported analyses simply treated all participants who heard a nonviolent song and those who completed the main dependent variables prior to hearing a song as if they were in one larger group. An alternative procedure for combining different conditions is to use equal contrast weights. Results were stronger with the contrast procedure for both dependent variables. Nonetheless, we report the simpler (and somewhat more conservative) procedure in the text.

the Task Order \times Song Content interaction was not statistically reliable, $F(1, 139) = 2.20, p < .15$. Those who heard a violent song had significantly higher SHS scores ($M = 2.23$) than those who did not hear a violent song ($M = 1.92$), $F(1, 67) = 4.49, MSE = 0.378, p < .04$. Thus, it appears that the effect of listening to violent songs on state hostility is reliable, but it can be disrupted fairly easily by other intervening activities. SHS scores of participants who did the WP task first did not differ as a function of song condition, $F(1, 70) = 0, ns$ ($M_s = 2.01$ and 2.06), in the violent song and nonviolent conditions.

Word pronunciation. Preliminary analyses compared average reaction times to the three nonaggressive word types—*anxiety*, *escape*, and *control* words. As anticipated, there were no effects of sex, song, or trait hostility on these three word types (all $p_s > .10$). Thus, they were averaged to form a nonaggressive word type. For the main analyses we subtracted average reaction time to aggressive words from the average reaction time to nonaggressive words. This WP measure is positive when aggressive words are more accessible than nonaggressive words; negative scores indicate the opposite.

As predicted, violent songs increased the relative accessibility of aggressive words. Those who listened to a violent song had larger WP scores ($M = 11.1$ ms) than those who had not listened to a violent song ($M = 4.3$ ms), $F(1, 141) = 3.91, MSE = 0.399, p = .05$. In addition, males produced higher WP scores than females ($M_s = 13.6$ and 1.7 ms, respectively), $F(1, 141) = 12.91, MSE = 0.399, p < .001$. Trait hostility was not systematically related to WP ($F < 1$).

Experiment 4

Overview and Design

Experiment 4 further tested the generality of the violent song effect on aggressive thoughts and feelings by using humorous songs and including trait hostility. A humorous violent song is likely to have two competing processes at work. The violent content may well prime aggressive thoughts and negative feelings. At the same time, the humorous content may produce positive feelings. If so, participants who hear the violent humorous song may well respond very much like no-song control participants, because these competing processes cancel each other out, especially for affective measures. A humorous nonviolent song does not have this competition problem. Only the positive aspects of the humorous content are at work. In other words, if humor and violent content combine additively, nonviolent humorous songs will yield levels of aggressive affect and thought that are significantly lower than levels obtained from violent humorous and no-song control conditions.

The experiment used a 3 (song) \times 2 (order) \times 2 (sex) factorial design, with trait hostility as a continuous variable. Participants were randomly assigned to hear either the violent humorous song, the nonviolent humorous song, or no song.⁶ Half of the participants completed the SHS first, whereas the other half completed it after a cognitive task. A different measure of aggressive thought accessibility was used in this study, a word completion (WC) task. Finally, participants completed the PAS and the Music Questionnaire, as in Experiment 3.

Method

Participants

Sixty-five female and 74 male students from a large Midwestern university successfully completed all portions of the experiment.

Dependent Variables

The SHS, PAS, and Music Questionnaire were the same as in Experiment 3. Accessibility of aggressive thoughts was based on a WC task consisting of a list of 98 word fragments (Anderson, Flanagan, Carnagey, Benjamin, Eubanks, & Valentine, 2002). The respondent's task is to fill in the missing letters in order to form a word. Half of the fragments can be completed to form either aggressive or nonaggressive words (e.g., "h_t" can become *hit* or *hat*). Tasks similar to this have often been used as measures of implicit memory (e.g., Roediger, Weldon, Stadler, & Reigler, 1992). Accessibility of aggressive thoughts was the proportion of word completions that were aggressive.

Procedure

After reading and signing a consent form, participants learned that the experiment was designed to see how songs affect thoughts and emotions. They then completed the measure of trait hostility. Next, participants either listened to one of the humorous songs (violent or nonviolent) or they continued directly to the dependent measures (no-song control). The songs were "A Boy Named Sue" (violent) by Johnny Cash (Silverstein, 1994) and "Hello Mudduh, Hello Fadduh!" (nonviolent) by Allan Sherman (1991). Next, participants completed the SHS and the WC task. Participants in the two song conditions then completed the Music Questionnaire. Those in the control condition listened to the nonviolent song and then completed the Music Questionnaire.

Results and Discussion

Preliminary Analyses

Once again, sex and trait hostility were treated as covariates. One item was dropped from the PAS because of a low item-total correlation, leaving 30 items for the final scale. Coefficient alpha was .94. Final analyses on perceived arousal yielded only a main effect of sex, $F(1, 134) = 6.48, MSE = 0.452, p < .02$. Males scored higher than females on this measure ($M_s = 3.35$ and 3.05 , respectively). The main effects of song, $F(2, 134) < 1.0$, and trait hostility, $F(1, 134) = 1.92, p > .15$, were both nonsignificant. Thus, any song or trait hostility effects on SHS or WC cannot be attributed to differences in arousal.

State Hostility

One item was dropped from SHS because of low item-total correlations. Coefficient alpha was .94. The final analysis yielded significant main effects of trait hostility, ($b = .27$), $F(1, 134) = 34.24, MSE = 0.209, p < .0001$, and song, $F(2,$

⁶ Because it was known that sample size would be limited, participants were preselected on trait hostility using a 10-item version of Caprara's Irritability Scale. Students who scored in the upper and lower quartiles were called and signed up for participation. This was done to ensure that there would be an adequate number of participants scoring either high or low on trait hostility to allow for adequate analysis to be done on this independent variable.

134) = 3.58, $p < .05$. As predicted by an additive model of humor and violent content effects, the no-song control group ($M = 1.97$) and the humorous violent song group ($M = 1.90$), had essentially the same levels of SHS, $F(1, 134) = 0.55$. The violent ($M = 1.90$) and nonviolent ($M = 1.72$) song conditions were marginally different, $F(1, 134) = 3.52$, $p < .07$. Most important, as predicted by the additive model, the humorous nonviolent song group had significantly lower SHS scores than the average of humorous violent song and control groups, $F(1, 134) = 6.55$, $p < .02$.

The Song \times Task Order interaction was not significant ($F < 1$). Nonetheless, as before, we separately examined the SHS scores of the 70 participants who completed that scale first. The results were essentially the same as with the whole sample, except that the control mean was slightly smaller (instead of larger) than the humorous violent mean ($M_s = 1.96$ and 1.98 , respectively). Once again there was a significant effect of trait hostility ($b = .26$), $F(1, 65) = 20.85$, $MSE = 0.205$, $p < .0001$. The violent ($M = 1.98$) and nonviolent ($M = 1.75$) song conditions were marginally different, $F(1, 65) = 3.44$, $p < .07$. The humorous nonviolent song condition produced a lower level of SHS than the average of the other two conditions, $F(1, 65) = 3.86$, $p < .06$.

Word Completions

The final analysis yielded main effects of trait hostility and song condition. Trait hostility was positively related to WC ($b = .011$), $F(1, 134) = 4.21$, $MSE = 0.0029$, $p < .05$. The highest mean for proportions of aggressive WCs was in the humorous violent song condition ($M = .229$) and the lowest in the humorous nonviolent song condition ($M = .200$); the control group mean fell in between ($M = .218$), $F(2, 134) = 3.26$, $p < .05$. The humorous violent song yielded significantly higher WC scores than the humorous nonviolent song, $F(1, 134) = 6.46$, $p < .02$.

In summary, these results suggest that humorous and violent content essentially canceled each other out in terms of effects on state hostility but did not entirely do so for aggressive cognitions. Another way of summarizing these results is that the effects of violent lyrics on aggressive affect and cognition appear to apply to humorous songs as well as to more standard forms of popular music.

Experiment 5

Overview and Design

Experiment 5 further replicated Experiments 1–4. It tested the effects of violent lyrics and trait hostility on state hostility and aggressive cognition with both humorous and nonhumorous songs. The design was a 2 (violent or nonviolent music lyrics) \times 2 (humorous or nonhumorous lyrics) factorial, with a no-song condition and trait hostility as a continuous independent variable. Different songs were used in Experiment 5 to further test generality.

Method

Participants

Eighty-two female and 69 male students at a large Midwestern university participated for partial course credit. One participant was dropped from

all analyses because he failed to comply with experimental instructions. Aggressive cognition data from 1 male and 1 female were dropped because of procedural problems.

Procedure

After reading and signing consent forms, participants learned that the experiment was investigating effects of music on mood. They were told that they would respond to a questionnaire (trait hostility), listen to a song, and then respond to two more questionnaires. To ensure that participants listened to the lyrics of the song, they were told that they would be asked questions about the song later in the experiment.

The trait hostility and SHS measures from Experiments 1–4 were used again. Coefficient alpha for trait hostility was .85. One SHS item, "I feel willful," had a low correlation with the other items and was dropped. Coefficient alpha was .96. The WC task from Experiment 4 assessed accessibility of aggressive thoughts.

The two humorous songs were "The Night Santa Went Crazy" (violent; Yankovic, 1996), and "Gump" (nonviolent; Yankovic, 1996) by Weird Al Yankovic. The two nonhumorous songs were "Country Death Song" (violent; Violent Femmes, 2000) and "I Held Her in My Arms" (nonviolent; Violent Femmes, 1986) by the Violent Femmes.

Participants in the no-song control condition went directly from the THS to the dependent variables. Half of the participants completed SHS first, whereas the other half first performed the WC task.

Results and Discussion

Analysis Strategy

Sex and trait hostility were again treated as covariates. Preliminary analyses revealed no reliable effects of task order.

State Hostility

For the total sample, there were significant main effects on SHS of music condition, $F(4, 143) = 2.96$, $MSE = 0.361$, $p < .03$, and trait hostility ($b = .279$), $F(1, 143) = 15.45$, $p < .0001$. The sex effect did not approach significance ($F < 1.0$). The two violent song conditions yielded significantly higher SHS scores than did the two nonviolent song conditions ($M_s = 2.95$ and 2.72 respectively), $F(1, 143) = 4.88$, $p < .03$.

However, as in Experiment 3, the SHS effects were clearer for participants who completed that scale first. Figure 3 displays the means for the five conditions. For these 83 participants, contrasts examining the 2 (violent vs. nonviolent lyrics) \times 2 (humorous vs. nonhumorous lyrics) conditions yielded a significant main effect of violent content, $F(1, 76) = 4.28$, $MSE = 0.387$, $p < .05$, and a marginally significant main effect of humorous content, $F(1, 76) = 2.97$, $p < .09$. Participants in the violent song conditions had higher SHS scores than those in the nonviolent song conditions ($M_s = 3.00$ and 2.68 , respectively). Those in the humorous song conditions had slightly lower state hostility scores than those in the nonhumorous conditions ($M_s = 2.71$ and 2.98 , respectively). The Humor \times Violence interaction did not approach significance ($F < 1.0$).

As in Experiment 4, the least hostility was expressed by those who had just heard a song with nonviolent humorous lyrics ($M = 2.53$). Somewhat different from Experiment 4 was the finding that the no-song control mean ($M = 2.62$) was closer to the humorous nonviolent song than to the humorous violent song mean ($M = 2.89$).

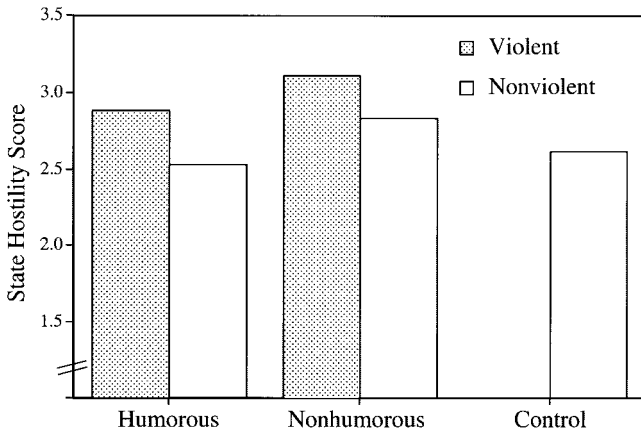


Figure 3. State hostility scores as a function of humorous and violent lyric content, Experiment 5.

The two conditions expected to yield the largest and smallest means—violent nonhumorous versus nonviolent humorous—did exactly that, and differed significantly ($M_s = 3.11$ and 2.53 , respectively), $F(1, 76) = 6.42, p < .02$. Trait hostility was also significantly related to SHS ($b = .288$), $F(1, 76) = 8.86, p < .01$. The sex effect was not significant, $F(1, 76) = 2.36, p > .12$.

Word Completions

We computed the same proportion of aggressive WC scores as in Experiment 4. Males generated higher WC scores than females ($M_s = .291$ and $.220$, respectively), $F(1, 141) = 15.00, MSE = 0.0117, p < .001$. Contrasts examining the 2 (violent vs. nonviolent lyrics) \times 2 (humorous vs. nonhumorous lyrics) conditions yielded a significant main effect of violent content, $F(1, 141) = 6.16, p < .02$. Those who had listened to a violent song had higher WC scores than those who had heard a nonviolent song ($M_s = .279$ and $.228$, respectively), mirroring the violent lyrics effect of Experiment 4. The no-song control condition yielded WC scores in between the violent and nonviolent conditions ($M = .268$), somewhat closer to the violent condition. This also mirrors the results of Experiment 4. Neither the humor main effect nor the Violence \times Humor interaction approached significance ($F_s < 1.0$).

Pooled Results

To ensure an accurate summary of these five experiments, we pooled the violent (vs. nonviolent) song effects on aggressive affect and thought using meta-analytic techniques. We calculated the average $d+$ by dividing the difference between the relevant adjusted means by the pooled standard deviation.

Four experiments provided five independent tests of violent versus nonviolent lyrics on state hostility (one each from Experiments 1, 3, and 4; two from Experiment 5). As can be seen in the first three bars in Figure 4, violent lyrics increased state hostility overall ($d+ = .55, K = 5, N = 242$) as well as within nonhumorous ($d+ = .55, K = 3, N = 161$) and humorous ($d+ = .57, K = 2, N = 81$) conditions. The five independent effects on aggressive thoughts (one each from Experiments 2–4; two from Experiment

5) similarly yielded a significant effect overall ($d+ = .44, K = 5, N = 450$) as well as within nonhumorous ($d+ = .43, K = 3, N = 283$) and humorous ($d+ = .46, K = 2, N = 167$) conditions.

General Discussion

Empirical Contributions

Two potentially problematic issues in music lyric research both revolve around the possibility that the comparison violent and nonviolent songs differ in ways that artifactually produce (or mask) differences in aggression-related dependent variables. In the present case, the two issues concern whether the obtained violent versus nonviolent song results were actually due to (a) systematic differences in the music itself rather than the lyrics or (b) differences in arousal properties. Across the five experiments, music characteristics of comparison songs were controlled in several different ways. In Experiments 1, 2, and 5, the violent and nonviolent songs were matched by the artists and were in much the same style. Furthermore, multiple violent and nonviolent songs were used in Experiments 3 and 5. Arousal was assessed and ruled out as a factor in Experiments 3 and 4. Across studies there were seven violent songs by seven artists and eight nonviolent songs by seven artists. The consistent results from these five experiments provide strong evidence that songs with violent lyrics increase aggression-related cognition and affect and that this effect is the result of the violence in the lyrics. It is not an artifact of confounded musical style, specific performing artist, or arousal.

The increase in aggressive thoughts was shown in three different ways. Violent songs led to more aggressive interpretations of ambiguously aggressive words (Experiment 2), increased the relative speed with which people read aggressive (vs. nonaggressive) words (Experiment 3), and increased the proportion of aggressive word completions (Experiments 4 and 5).

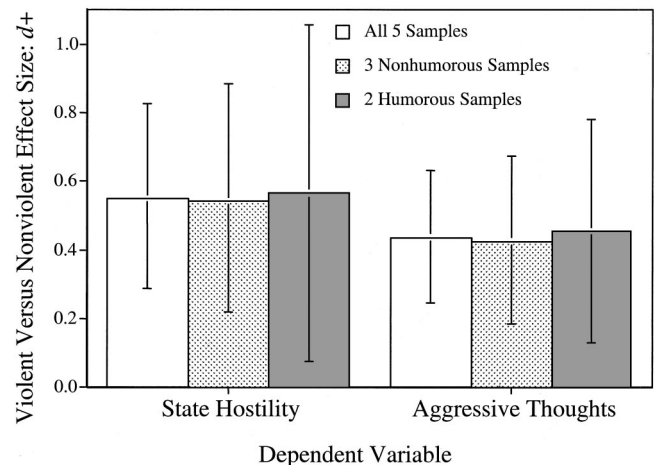


Figure 4. Pooled violent versus nonviolent lyric effect sizes ($d+$) and 95% confidence intervals on state hostility and aggressive thoughts: All samples versus three nonhumorous samples versus two humorous samples. For state hostility, only the results from participants who completed the SHS first are included; $n_s = 242, 161$, and 81 . For aggressive thoughts, $n_s = 450, 283$, and 167 . Error bars represent 95% confidence intervals.

We used the same measure of aggressive feelings across studies because it and scales like it have been widely used and validated by numerous researchers. In Experiments 1, 3, 4, and 5, violent songs increased feelings of hostility, relative to appropriate non-violent songs, in the absence of provocation or threat. These effects occurred across a variety of both humorous and nonhumorous songs and were not attributable to differences in arousal.

Furthermore, supplemental analyses revealed that the violent song effects did not interact with trait hostility in the three experiments that assessed this factor or with gender in any of the experiments. In sum, the consistency of results across songs, musical genre, artist, research method, trait hostility, and gender attests to the validity and generality of the obtained effects, as do the pooled results in Figure 4.

Implications for Violence

Our focus was on precursors to aggression, as outlined by GAM, rather than on aggressive behavior itself. The main reason for this focus was to allow in-depth testing and analysis of these critical precursors to aggression. These results support GAM-based predictions of how exposure to media violence influences present internal affective and cognitive states. Research on potential violent song effects on aggressive behavior becomes even more important now that we have clearly demonstrated that such songs increase aggressive thoughts and feelings.

GAM illustrates how exposure to media violence can produce both short- and long-term increases in aggressive behavior. In both contexts, violent lyrics most likely operate through both the affect and cognition routes, influencing appraisals of the situation and emotional state and (eventually) the behavioral decision.

Short-Term Effects: Priming Versus Venting

In the immediate situation, exposure to violent lyrics increases the accessibility of aggressive thoughts and affect. These results confirm GAM and the social-cognitive theories on which it is based in demonstrating priming-like effects and therefore add to the research literature contradicting popular notions of positive catharsis or venting effects on aggressive thoughts and feelings (Bushman, 2002; Bushman et al., 1999).

The violent-song-inspired increases in aggressive thoughts and feelings can influence perceptions of ongoing social interactions, coloring them with an aggressive tint. Such aggression-biased interpretations can, in turn, instigate a more aggressive response (verbal or physical) than would have been emitted in a nonbiased state, thus provoking an aggressive escalatory spiral of antisocial exchanges. In sum, listening to angry, violent music does not appear to provide the kind of cathartic release that the general public and some professional and pop psychologists believe.

Long-Term Effects

Direct effects. Long-term effects operate in much the same manner, except that the proximate source of the high accessibility of aggressive cognitions and affects is the chronic state of the individual rather than a very recently heard violent song. Repeated exposure to violent lyrics may contribute to the development of an aggressive personality (Anderson & Bushman, 2002b; Anderson &

Huesmann, in press), as is true for long-term TV violence effects (e.g., Eron, 1982; Huesmann, 1988; Huesmann & Guerra, 1997; Huesmann & Miller, 1994).

Indirect effects. There may also be an indirect contribution, just as has been found in the TV literature. Specifically, short-term increases in aggression due to violent lyrics affect the person's social environment as well as the person. Close others (friends, family, peers, teachers) are influenced by these initially temporary increases in aggression and naturally respond to them in a negative way. Over time, these relationships deteriorate, and acquaintances begin to expect aggressive and conflictual interactions with the person and will therefore elicit further aggressive behaviors via well-established expectancy effects. In other words, repeated short-term media violence effects (lyrics, TV, movies, video games) can indirectly create a more hostile social environment, which further promotes the development of chronic hostility biases in the person's internal makeup—their perceptual and social scripts and schemata and related knowledge structures—in short, their personality.

Balance

Of course, there is reason to believe that this type of hostile thought and affect priming by violent songs may last only a fairly short time. Presumably, if the next song heard is nonviolent or if some other nonviolent event occurs, the short-term priming effects of violent lyrics will dissipate. This would seem especially likely if some positive event occurs. Furthermore, as noted earlier, lyrics are often secondary to the music itself, so much so that some violent songs have lyrics that are undecipherable.

At present, research on the effects of violent lyrics is in its infancy. There are now good theoretical and empirical reasons to expect effects of music lyrics on aggressive behavior to be similar to the well-studied effects of exposure to TV and movie violence and the more recent research efforts on violent video games. Additional research on music lyric effects is clearly needed, both short-term and longitudinal studies. GAM provides a useful framework for understanding the current studies and for guiding such future research.

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