

Catharsis, Aggression, and Persuasive Influence: Self-Fulfilling or Self-Defeating Prophecies?

Brad J. Bushman
Iowa State University

Roy F. Baumeister
Case Western Reserve University

Angela D. Stack
Iowa State University

Does media endorsement for catharsis produce a self-fulfilling or a self-defeating prophecy? In Study 1, participants who read a procatharsis message (claiming that aggressive action is a good way to relax and reduce anger) subsequently expressed a greater desire to hit a punching bag than did participants who read an anticatharsis message. In Study 2, participants read the same messages and then actually did hit a punching bag. This exercise was followed by an opportunity to engage in laboratory aggression. Contrary to the catharsis hypothesis and to the self-fulfilling prophecy prediction, people who read the procatharsis message and then hit the punching bag were subsequently more aggressive than were people who read the anticatharsis message.

Punch a pillow or a punching bag. And while you do it, yell and curse and moan and holler . . . Punch with all the frenzy you can. If you are angry at a particular person, imagine his or her face on the pillow or punching bag, and vent your rage physically and verbally. You will be doing violence to a pillow or punching bag so that you can stop doing violence to yourself by holding in poisonous anger. You are not hitting a person. You are hitting the ghost of that person—a ghost from the past, a ghost alive in you that must be exorcised in a concrete, physical way.

—John Lee, *Facing the Fire: Expressing and Experiencing Anger Appropriately*

One of television's greatest contributions is that it brought murder back into the home where it belongs. Seeing a murder on television can be good therapy. It can help work off one's antagonism.

—Alfred Hitchcock

When angry count four; when very angry, swear.—Mark Twain

Popular belief in the catharsis theory remains strong despite the theory's dismal record in research findings. According to the catharsis hypothesis, acting aggressively or even viewing aggres-

sion is an effective way to reduce anger and aggressive feelings. One likely reason for the continued widespread belief in catharsis is that the mass media continue to endorse the view that expressing anger or aggressive feelings is healthy, constructive, and relaxing, whereas restraining oneself creates internal tension that is unhealthy and bound to lead to an eventual blowup.

The present research was concerned with a pair of related questions. First, can media support for the catharsis hypothesis cause people to engage in catharsis-seeking activities, such as aggressive action? Second, if media messages do persuade people to believe in the effectiveness of catharsis, will their own indulgence in aggressive action produce that effect?

The concept of a self-fulfilling prophecy suggests that people's beliefs can shape their choices and the outcomes of their actions, so that expectations tend to come true by virtue of the changed behaviors resulting directly from the expectations (e.g., Darley & Fazio, 1980). Although researchers have mostly failed to find laboratory evidence of catharsis effects, it is plausible that media endorsement produces such self-fulfilling prophecies, which in turn might be sufficient to sustain popular belief in catharsis. In the present research, we provided people with procatharsis messages telling them that acting aggressively or expressing anger is a good way to reduce inner tensions. Consistent with the self-fulfilling prophecy notion, we investigated whether such messages would increase behavioral choices of aggressive activity following an anger provocation (Study 1) and, more important, would help produce the anticipated benefits of expressing anger (Study 2)—specifically, by reducing aggressive behavior toward another person after the participant was supposedly able to reach catharsis by hitting a punching bag.

Catharsis: Theory and Evidence

The first recorded mention of catharsis occurred over a thousand years ago, in Aristotle's *Poetics*. Aristotle taught that viewing

Brad J. Bushman and Angela D. Stack, Department of Psychology, Iowa State University; Roy F. Baumeister, Department of Psychology, Case Western Reserve University.

This research was supported in part by a Psi Chi Faculty Advisor Research Grant for the Midwestern Region. We thank Bob Stephenson and Gary Wells for their helpful comments on an earlier version of this article. Study 1 was conducted in partial fulfillment of Angela D. Stack's requirements for the degree of master of arts in psychology at Iowa State University.

Correspondence concerning this article should be addressed to Brad J. Bushman, Department of Psychology, W112 Lagomarcino Hall, Iowa State University, Ames, Iowa 50011-3180. Electronic mail may be sent to bushman@iastate.edu.

tragic plays gave people emotional catharsis from feelings of fear and pity. This emotional cleansing was believed to be beneficial to both the individual and society. The notion of catharsis was revived by Freud (Wegman, 1985), who believed that repressed emotions could build up in an individual and cause psychological symptoms, such as hysteria or phobias. Freud's therapeutic ideas on emotional catharsis became part of the hydraulic model of anger, which is the basis of the modern theory of anger catharsis (Geen & Quanty, 1977). The hydraulic model suggests that frustrations lead to anger, and that anger, in turn, builds up inside an individual like hydraulic pressure inside a closed environment until it is released in some way.

In general, empirical findings have been inconsistent with the catharsis hypothesis (see reviews by Geen & Quanty, 1977, and Warren & Kurlychek, 1981). Tavis (1988) concluded that "it is time to put a bullet, once and for all, through heart of the catharsis hypothesis. The belief that observing violence (or 'ventilating it') gets rid of hostilities has virtually never been supported by research" (p. 194). Because activities considered to be cathartic also are aggressive, they could lead to the activation of other aggressive thoughts, emotions, and behavioral tendencies, which in turn could lead to greater anger and aggression (Berkowitz, 1984; Tice & Baumeister, 1993).

Catharsis in the Popular Press

False popular belief that there is scientific justification for the catharsis hypothesis makes the hypothesis durable and resistant to change. Unfortunately, few laypeople are likely to consult scientific journal articles to find out if there is empirical evidence to support catharsis. Instead, they consult the popular press, which often reports that catharsis is valid. The pervasiveness of false beliefs about catharsis makes them potentially harmful. People expect that performing cathartic activities will reduce their anger and aggression, when cathartic activities are actually more likely to have the opposite effect (Geen & Quanty, 1977; Warren & Kurlychek, 1981). The quotations with which we began this article illustrate such misinformed views.

Fortunately, most media endorsements of catharsis stop short of advocating that people physically attack those at whom they are angry. The mass media recommend an assortment of ways of satisfying angry impulses without physically causing harm. One popular approach is to suggest displacing aggression away from its human targets and onto inanimate objects. For example, one self-help book recommended that angry people twist a towel, punch a pillow, wallop a punching bag, hit a couch with a plastic baseball bat, throw rocks, or break glass to reduce pent-up anger (Lee, 1995).

Self-Fulfilling and Self-Defeating Prophecies

The current situation may therefore be as follows. The scientific community has largely disconfirmed and abandoned catharsis theory and, if anything, is looking to understand why the opposite effect occurs (i.e., venting anger leads to higher subsequent aggression). Meanwhile, the popular mass media continue to suggest that catharsis theory is true and has scientific support, so the message reaching the general public is that catharsis is an effective, desirable way of handling angry impulses.

Two possible scenarios could follow from the popular belief in a scientifically unsound hypothesis. One is that of self-fulfilling prophecy: People would be persuaded that catharsis effects are real and effective and would act on these beliefs. When angry, they would believe that the best response would be to express this anger, possibly against a surrogate (displaced) target. These beliefs might actually help them perceive beneficial effects that have eluded laboratory researchers. That is, the expectation that catharsis relaxes the person and reduces subsequent aggression might cause people to feel relaxed and to behave less aggressively after they indulge in some form of anger expression.

However, an alternative, darker scenario might be proposed if the self-fulfilling prophecy effect is weaker than the aggression-enhancing effects of expressing anger. In this view, belief in catharsis could cause people to choose to express anger, but these actions would increase, rather than decrease, their feelings of anger and their aggressive inclinations. As a result, people would end up behaving more aggressively than they would have otherwise. The media endorsement of catharsis would thus have the potential for increasing violence through a self-defeating prophecy effect: The expectation elicits behavior that produces results opposite of what was expected.

The present investigation was concerned with how people are affected by media messages supporting (vs. questioning) catharsis. Study 1 examined whether people can be persuaded by such messages to choose expressive ways of dealing with anger. Specifically, we hypothesized that exposure to a message advocating catharsis would induce people to choose to hit a punching bag when angry.

Study 2 examined the consequences of this choice. Participants saw a procatharsis message, an anticatharsis message, or a message unrelated to catharsis. Then, all participants were induced to hit the punching bag. Following this, they had the opportunity to aggress against someone who had provoked and angered them—or, in some cases, toward an innocent third person. If the self-fulfilling prophecy effect prevailed, then people who read the procatharsis message would be less aggressive interpersonally after they had "blown off steam" by hitting the punching bag. (One would hope that they would not aggress against the innocent third person in either case.) This would suggest that the popular belief in catharsis may be sustained by self-fulfilling prophecies engendered by the media advocacy of catharsis.

Alternatively, if the self-defeating-prophecy hypothesis is correct, then hitting the punching bag might increase subsequent aggression. In many ways, this would be the worst possible outcome. It would suggest that media endorsements of catharsis can persuade people to choose to express their angry, aggressive feelings toward supposedly safe, nonhuman targets. However, those actions end up increasing aggressive tendencies, which can result in even higher aggression toward a human target.

Study 1

In Study 1, we tested the first part of the expectancy hypothesis in a persuasion format. If the media advise people that catharsis is a good way to handle anger and achieve a desirable state of relaxation, would people then in fact be more likely to choose cathartic activities? If media messages have self-fulfilling proph-

ey effects, then procatharsis messages should increase participants' preference for aggressive activities.

In Study 1, the aggressive activity took the form of hitting a punching bag. As noted above, various mass media sources advise people to express aggression toward inanimate objects. These sources say that when people are angry at someone, it would be socially desirable for them to satisfy their aggressive impulses by attacking suitable inanimate objects (such as a pillow or punching bag) instead of directly attacking the (human) target of their anger.

Although we favored the straightforward prediction that procatharsis messages would cause an increase in participants' desire to hit the punching bag, there were reasons to doubt that this would happen. Research has not consistently found displacement to be an effective defense mechanism against aggression (see Baumeister, Dale, & Sommer, 1998, for review), especially if one distinguishes displaced aggression from the simple carryover of arousal from one situation to another (as in excitation transfer; Zillmann, 1979). Our own prior work failed to find that people chose to displace aggression toward an alternative human target, even among highly aggressive narcissists who were provoked by an esteem threat (Bushman & Baumeister, 1998). Therefore, we felt it was necessary to verify that media messages could induce people to seek catharsis through displaced aggression.

Method

Catharsis Messages

A separate sample of 100 undergraduate students (50 men and 50 women) enrolled in introductory psychology courses was used to judge the catharsis messages. The judges were drawn from the same population as those who would later participate in the experiment proper. Judges were randomly assigned to read either a pro- or an anticatharsis message, which was constructed to look like a newspaper article. The headline for the procatharsis article was "Research Shows That Hitting Inanimate Objects Is an Effective Way to Vent Anger." In the anticatharsis article, the word "Effective" was replaced with "Ineffective." The procatharsis article purported to describe findings from a 2-year study, recently published in *Science* by a Harvard psychologist, showing that people who were instructed to vent their anger by hitting a punching bag were less aggressive afterward toward other people. The anticatharsis article (which was the same as the text of the procatharsis article but with key words changed) reported opposite findings. The full text of the articles is presented in the Appendix.

Judges rated how credible and authoritative they thought the article was. The procatharsis article was judged to be as authoritative ($M = 5.92$) and credible ($M = 5.63$) as the anticatharsis article ($M_s = 6.00$ and 5.65 , respectively). Neither difference approached significance (both $t_s < 1$, $p_s > .05$). All mean ratings were above the scale midpoint.

Procedure

Participants were 360 undergraduate students (180 men and 180 women) enrolled in introductory psychology courses. Students received extra class credit in exchange for their voluntary participation. They were tested individually in the laboratory session, but each was led to believe that he or she would be interacting with someone of the same sex. They were told that the researchers were studying how accurate people's perceptions of others were in different types of interactions. After giving informed consent, participants were randomly assigned to message conditions (i.e., procatharsis, anticatharsis, or control). The control message was a newspaper article unrelated to catharsis. To eliminate suspicion about any

connection between the article and the activities to be chosen later in the experiment, participants drew a number from a bag to determine which article they would read. Participants were told that they would discuss the article with the other participant later in the experiment.

Next, each participant wrote a one-paragraph essay on abortion, either pro-choice or pro-life (whichever the participant preferred). After finishing, the participant's essay was taken away to be shown to the other participant (who was, in fact, nonexistent) for evaluation. Meanwhile, the participant was permitted to evaluate the partner's essay, which by random assignment was either a pro-choice or a pro-life essay.

A short time later, the experimenter brought back the participant's own essay with comments ostensibly made by the other participant. These comments constituted the experimental manipulation of anger. By the flip of a coin, half the participants were assigned to the anger condition, and they received bad evaluations consisting of negative ratings on organization, originality, writing style, clarity of expression, persuasiveness of arguments, and overall quality. There was also a handwritten comment stating "This is one of the worst essays I have read!" The other participants received favorable, positive evaluations, consisting of high (positive) numerical ratings and a written comment stating "No suggestions, great essay!" This anger manipulation has been validated in previous research that showed people reported feeling significantly more angry after receiving the negative evaluation than before, $t(9) = 4.00$, $p < .05$, $d = 1.27$, and more angry than those who received the favorable evaluation, $t(18) = 2.21$, $p < .05$, $d = 0.99$ (Bushman & Baumeister, 1998).

After reading the evaluation, the participant ranked a list of 10 activities in the order of his or her preference for doing them later in the experiment. Included in this list of activities was "hitting a punching bag." Some other activities on the list included playing solitaire, reading a short story, watching a comedy, and playing a computer game. After ranking the activities, the study was terminated, and the experimenter probed to see whether the participant was suspicious about the study. Three participants indicated that they were suspicious, but stated that their suspicion had not changed their responses. In addition, these three participants did not correctly guess the true purpose of the study, and excluding their data did not change the results. Hence, all data were included in the analyses. Last, the participant was fully debriefed.

Results

For clarity, we reverse scored the rankings assigned to the punching bag activity, so that higher numbers would reflect higher aggressive intent. The scores were also standardized. A 3 (article: procatharsis, anticatharsis, control) \times 2 (angered vs. not angered) \times 2 (participant sex) analysis of variance (ANOVA) was used to analyze these data.¹

Although the simple interaction between article condition and anger was nonsignificant, $F(2, 348) = 1.49$, $p > .05$, planned contrasts were performed to test the effects of article condition on punching bag preferences among angered participants. As expected, the content of the article had a significant effect on angered participants, $F(2, 348) = 7.91$, $p < .05$. Angered participants who read the procatharsis article wanted to hit the punching bag more than did angered participants who read either the anticatharsis article or the article unrelated to catharsis, $t(348) = 3.91$, $p < .05$, $d = 0.69$, and $t(348) = 2.33$, $p < .05$, $d = 0.42$, respectively (see Figure 1). There was no difference between the control and anticatharsis groups, $t(348) = 1.58$, $p > .05$. Among participants who were not angered, there was no effect of the content of the article

¹ Nonparametric analysis yielded the same pattern of results as parametric analyses.

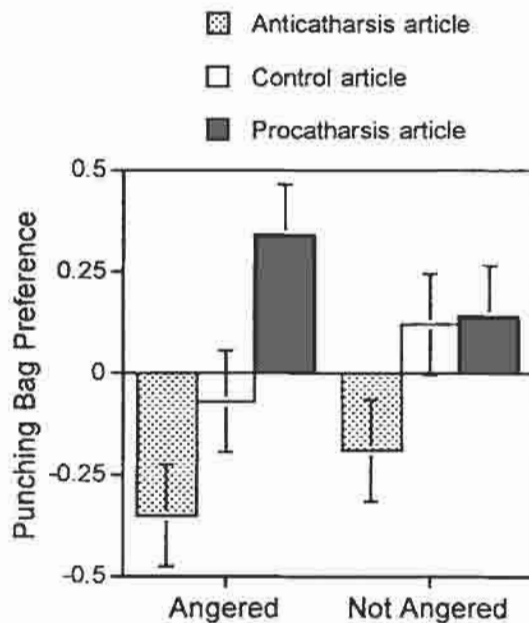


Figure 1. Preference for hitting a punching bag as a function of anger and article condition. Preferences are standardized scores. Capped vertical bars denote 1 standard error.

they read, at least not in terms of producing any differential desire to hit the punching bag, $F(2, 348) = 2.32, p > .05$.

There was also a significant main effect for article condition, $F(2, 348) = 8.58, p < .05$. Participants who read the anticatharsis article wanted to hit the punching bag less than did participants who read either the procatharsis article or the article unrelated to catharsis, $t(348) = 4.12, p < .05, d = 0.44$, and $t(348) = 2.39, p < .05, d = 0.26$, respectively. There was no difference between the latter two groups, $t(348) = 1.73, p > .05, d = 0.19$. Also, men wanted to hit the punching bag more than women did ($M_s = 0.19$ and -0.19 , respectively), $F(1, 348) = 14.62, p < .05, d = 0.41$.

Discussion

The results of Study 1 confirmed that exposure to media messages in support of catharsis can affect subsequent behavioral choices. Angry people expressed the highest desire to hit a punching bag when they had been exposed to a (bogus) newspaper article claiming that a good, effective technique for handling anger was to vent it toward an inanimate object. Apparently, people accepted the message and subsequently applied it to their own situation. In contrast, a newspaper article purporting to debunk the catharsis hypothesis and recommending relaxation instead had the opposite effect. Participants exposed to the anticatharsis message were relatively disinclined to hit the punching bag.

It is noteworthy that the procatharsis message was able to increase aggressive inclinations toward the punching bag, as compared with the baseline of people who received a message unrelated to catharsis. We had worried that popular media support for catharsis might have already persuaded most people to try to vent anger against inanimate objects, which would have resulted in no difference between the procatharsis and control conditions. Our

results suggest that people's beliefs about how to handle anger are not universally firm and can be altered by media messages.

A potential alternative explanation for these results would be that demand characteristics affected the results. After all, the message advocating catharsis through hitting the punching bag led people to choose the punching bag activity. These effects were only found among angered participants, suggesting that participants did not simply, blindly, and uncritically exhibit whatever behavior the message had advocated. Still, it was possible that participants were simply furnishing the responses that, on the basis of the persuasive message, they believed the researchers wanted, and the design of Study 1 did not offer any easy way to rule that out. However, Study 2 did offer a better opportunity to discern whether behavior was a simple response to demand characteristics or a more complex result of information processing and motivated selection of behaviors.

Study 2

Study 1 showed that people can be persuaded by media messages to seek out catharsis. People presumably came to believe a newspaper article reporting that venting one's anger can produce a desired state of relaxation, and so when they found themselves angry they chose to act out their aggression in the way the article suggested. But would it work? If people were persuaded that venting anger would succeed, they might, in fact, find that they would feel less angry and be less interpersonally aggressive after venting. Thus, some support might finally be found for the catharsis effect, with a little help from a self-fulfilling prophecy. Alternatively, if aggressive acts produce higher anger and higher aggression, then belief in catharsis might ultimately end up producing more aggression.

Therefore, Study 2 extended the procedure of Study 1 to include an opportunity to actually hit the punching bag followed by an opportunity to aggress toward the person who had insulted the participant or toward an innocent third person. The goal was to see whether people who were led to believe in the catharsis effect would actually feel a reduction in anger after hitting the punching bag and therefore show diminished aggression toward the other person, just as the ostensible newspaper article claimed would happen.

Method

Participants

Participants were 707 undergraduate students (350 men and 357 women) enrolled in introductory psychology courses. Students received extra class credit in exchange for their voluntary participation. They were randomly assigned among conditions, except that the no-punching-bag condition was run later (in response to editorial suggestion). The no-punching-bag group was recruited in the same way and from the same population as the rest of the participants. The data from 7 women were discarded because they refused to hit the punching bag.

Procedure

Experimental participants were tested individually in the laboratory session, but each was led to believe that he or she would be interacting with either 1 or 2 other participants of their same sex. Participants were told that the researchers were studying how accurate people's perceptions of others

were in different types of interactions. After giving their consent, participants were randomly assigned to message conditions (i.e., procatharsis, anticatharsis, or control). To eliminate suspicion about any connection between the article and the activities to be chosen later in the experiment, we had participants draw a number from a bag to determine which article they would read. The target article was also the first of three articles in a packet. Participants were told that they would discuss the articles with the other participant(s) later in the experiment.

Next, each participant wrote a one-paragraph essay on abortion, either pro-choice or pro-life (whichever the participant preferred). After finishing, the participant's essay was taken away to be shown to the other participant (who was, in fact, nonexistent) for evaluation. Meanwhile, the participant was permitted to evaluate the partner's essay, which always agreed with the attitudinal position advocated by the participant. This procedural modification allowed us to rule out the possibility that aggression was mediated by perceptions of partner attitude or of similarity between participant and partner.

A short time later, the experimenter brought back the participant's own essay with comments ostensibly made by the other participant. All participants received bad evaluations consisting of negative ratings on organization, originality, writing style, clarity of expression, persuasiveness of arguments, and overall quality. There was also a handwritten comment stating "This is one of the worst essays I have read!" After reading the evaluation, the participant ranked a list of 10 activities in the order of his or her preference for doing them later in the experiment. Included in this list of activities was "hitting a punching bag."

The punching bag manipulation came next. Most participants hit the punching bag. If the participant did not rank the punching bag activity first, the experimenter asked the participant if he or she would be willing to hit the punching bag, explaining that ratings were needed for each activity on the list and that more ratings were needed for the punching bag activity. By requesting the participant to agree, we were able to ensure that the punching bag activity was the result of choice by all participants, including those who had not originally listed it as their top choice. The experimenter gave the participant some boxing gloves and demonstrated how to hit the platform-mounted speed bag (Everlast Model 4213; Everlast, New York, NY).² The participant was left alone to hit the punching bag for 2 min. Participants then indicated whether they enjoyed hitting the punching bag (in an answer coded *yes* or *no*).

There was also a condition in which participants did not hit the punching bag. The no-punching-bag condition always included the procatharsis message and the direct, rather than displaced, target (i.e., aggression toward the person who had insulted the participant's essay). Participants in this group ranked the list of activity preferences and then sat still for 2 min rather than hitting the punching bag for 2 min. The justification for the delay was that the experimenter was fixing their partner's computer. No attempt was made to reduce participants' anger during the 2-min delay. Instead, participants in the no-punching-bag group did nothing at all. This allowed us to test whether angry people are better off doing nothing at all than engaging in cathartic activities.

The next part of the procedure was presented as a competitive reaction-time task, based on a paradigm developed by Taylor (1967). Previous studies have established the construct validity of Taylor's paradigm (e.g., Bernstein, Richardson, & Hammock, 1987; Giancola & Zeichner, 1995). The participant was told that he or she and the partner would have to press a button as fast as possible on each trial, and whoever was slower would receive a blast of noise. At the beginning of each trial each participant was permitted to set the intensity of the noise that the other person would receive if he or she lost between 60 dB (Level 1) and 105 dB (Level 10). A nonaggressive no-noise setting (Level 0) was also offered. In addition to deciding the intensity, the winner decided the duration of the loser's suffering, because the duration of the noise depended on how long the winner pressed the button. In effect, each participant controlled a weapon

that could be used to blast the other person if the participant won the competition to react faster.

Some participants were led to believe that the other person involved in their competition was the person who had evaluated (and insulted) their essay. Others were led to believe that it was a completely different person. It is important to note that this information was communicated to the participant prior to the punching bag activity. This would allow people to use the punching bag strategically, in case they wanted to preserve their anger for attacking the person who had provoked them or get rid of their anger before competing against an innocent third person.

The reaction time task consisted of 25 trials. Provocation was manipulated by increasing the intensity and duration of noise set by the "other person" across blocks of trials. After the initial (no-provocation) trial, the remaining 24 trials were divided into three blocks with 8 trials in each block. The average noise intensity and duration set by the other person were, respectively, 2.5 and 0.63 s on Block 1, 5.5 and 1.38 s on Block 2, and 8.5 and 2.47 s on Block 3. The participants heard noise on half of the trials within each block (randomly determined). A Macintosh II computer controlled the events in the reaction time task and recorded the noise levels and noise durations the participants set for their partner. The white noise consisted of sound files synthesized by a digital waveform editor (Farallon Soundedit 2.0.5) and reproduced through an Audiomedica 2.0 Digidesign 16-bit DA (digit-to-analog) converter (Digidesign, Inc., Palo Alto, CA). The analog output was amplified by a NAD 3225PE integrated amplifier (NAD Electronics, Buckinghamshire, United Kingdom) and delivered through a pair of Telephonics TDH-39P headphones (Telephonics, Farmingdale, NY). A General Radio 156-B sound-level meter (GenRad Incorporated, Concord, MA) was used to calibrate the noise levels. A full debriefing (with a probe for suspicion) followed.

Results

The analysis strategy featured the original and main design, which was a 3 (article: procatharsis, anticatharsis, control) \times 2 (aggression target: direct, displaced) \times 2 (participant sex) design. The no-punching-bag group was added on later, and hence we shall report its comparisons separately. Men were more aggressive than women on all measures, but sex did not interact with other variables, so we shall not discuss sex in depth.

Desire to Hit Punching Bag

As in Study 1, desire to hit the punching bag was measured by how participants ranked it among the 10 activities. Rankings were reverse scored so that high numbers indicated high desire. The scores were also standardized. An ANOVA with planned contrasts was used to analyze these data. The results were quite similar to what we found in Study 1 (except that Study 2 did not include a no-anger condition). The planned contrasts revealed that angered participants who read the procatharsis article wanted to hit the punching bag more than angered participants who read the anticatharsis article did, $t(588) = 2.02, p < .05, d = 0.20$ (see Table 1). The control group did not differ from the pro- and anticatharsis groups, $t_s(588) = -0.67$ and 1.35, respectively (see Table 1). The

² It is interesting to note that the *Everlast Health and Training Guide* that came with the punching bag states that a punching bag is "a great piece of equipment for releasing pent-up frustrations." Instructions are given for individuals of various skill levels, including the individual who wants to "let off steam."

Table 1
Preference for Hitting a Punching Bag as a
Function of Article Condition

Article condition	<i>M</i>	<i>SE</i>
Procatharsis	0.09 _a	0.07
Control	0.02 _{a,b}	0.08
Anticatharsis	-0.11 _b	0.07

Note. Means having the same subscript are not significantly different at $p < .05$.

main effect for article condition was not quite significant, however, $F(2, 588) = 2.12, p > .05$.

The ANOVA also revealed a trend involving the target of aggression. Participants who anticipated being able to express their aggression toward the person who had angered them wanted to hit the punching bag more than those who could only displace their aggression did ($M_s = 0.08$ and -0.08 , respectively), $F(1, 588) = 3.54, p < .10, d = 0.16$. This clearly rules out any suggestion that people might seek to avoid the punching bag so as to sustain their anger in order to vent it at the person who had provoked them. This effect did not depend on the content of the message the participant had seen (i.e., there was no interaction between aggressive target and message content), so the response apparently should not be interpreted as a consequence of manipulated belief in catharsis.

Interpersonal Aggression

The most important goal of Study 2 was to examine aggressive behavior toward the opponent on the reaction time task as indicated by selecting loud or lengthy blasts of noise to deliver to the opponent during the competition. Noise intensity and noise duration were measures of the same construct, namely, aggressive behavior toward another person. The same pattern of results was obtained for both measures, and the two measures were significantly correlated ($r = .34$). The correlation between noise intensity and noise duration did not differ for men and women ($z = 1.35, p > .05$). To create a more reliable measure, therefore, we standardized and summed the noise intensity and noise duration data to form a total measure of interpersonally aggressive behavior.

Trial 1. The data from the first trial are the most relevant for testing the hypothesis, because on later trials the participant's aggressive response is influenced (one might say contaminated) by how aggressive the opponent has been on preceding trials. There was a significant main effect of the article content on interpersonal aggression in Trial 1, $F(2, 588) = 6.05, p < .05$ (see Table 2). Contrary to the self-fulfilling prophecy hypothesis and the demand characteristic explanation, we found participants who had read the procatharsis message to be more aggressive than participants who had read the anticatharsis message, $t(588) = 3.44, p < .05, d = 0.31$. They were also more aggressive than the participants who had read the irrelevant control message, $t(588) = 2.14, p < .05, d = 0.20$. The anticatharsis and control groups did not differ in their aggression, $t(588) = 1.30, p > .05$. The target of aggression (direct vs. displaced) had no effect.

Remaining trials. After the first trial, aggression converged on reciprocation of what the partner had ostensibly done. This is

consistent with many previous findings suggesting that reciprocation is a powerful norm in determining aggressive responses during an ongoing aggressive exchange. Even on these remaining trials, however, there was a main effect for message content, $F(2, 588) = 3.06, p < .05$ (see Table 2). Participants who had read the procatharsis article continued to be more aggressive than participants who had read the anticatharsis article, $t(588) = 2.29, p < .05, d = 0.22$. Participants who had read the procatharsis article also tended to be more aggressive than participants who had read the article unrelated to catharsis, although this difference was not quite significant $t(588) = 1.95, p < .10, d = 0.17$. There was no difference between the anticatharsis and control groups, $t(588) = 0.35, p > .05$. There was also no effect for aggressive target (direct vs. displaced).

Enjoyment of Punching Bag Activity

To shed light on the possible subjective processes relevant to catharsis, we examined whether participants in the procatharsis group enjoyed hitting the punching bag more than those in the anticatharsis group did. Because enjoyment of the punching bag activity was a binary variable (coded *yes* or *no*), these data were analyzed using logistic regression analysis. Most participants (72%) enjoyed hitting the punching bag regardless of the condition to which they had been randomly assigned. No effects were significant (except sex—men enjoyed hitting the punching bag more than women did). In particular, message condition did not influence whether participants enjoyed hitting the punching bag.

Relation Between Desire to Hit the Punching Bag, Enjoyment of Hitting the Punching Bag, and Interpersonal Aggression

Correlation analysis was performed to determine the relations among the three dependent measures (i.e., desire to hit the punching bag, enjoyment of hitting the punching bag, and interpersonal aggression) for participants who hit the punching bag. As can be seen in Table 3, desire to hit the punching bag and enjoyment of hitting the punching bag were positively correlated with interpersonal aggression. In addition, angered participants who wanted to hit the punching bag also enjoyed hitting it more. These results contradict any suggestion that hitting the punching bag would have beneficial effects because one might feel better after doing so (which is what advocates of catharsis often say). People did indeed

Table 2
Interpersonal Aggression as a Function of Article Condition

Article condition	<i>M</i>	<i>SE</i>
Trial 1		
Procatharsis	0.26 _a	0.14
Control	-0.04 _b	0.07
Anticatharsis	-0.22 _b	0.08
Remaining trials		
Procatharsis	0.21 _a	0.12
Control	-0.08 _{a,b}	0.10
Anticatharsis	-0.13 _b	0.09

Note. Means having the same subscript are not significantly different at $p < .05$ (within each category of trials).

Table 3
Relation Between Desire to Hit the Punching Bag, Enjoyment of Hitting the Punching Bag, and Interpersonal Aggression

Measure	1	2	3	4
1. Desire to hit punching bag	—	.23*	.08	.19*
2. Enjoyed hitting punching bag	—	—	.02	.11*
3. Interpersonal aggression (Trial 1)	—	—	—	.49*
4. Interpersonal aggression (remaining trials)	—	—	—	—

* $p < .05$.

enjoy hitting the punching bag, but this was related to more rather than less subsequent aggression toward a person.

Is Hitting a Punching Bag Cathartic?

To test whether hitting a punching bag produced a catharsis effect, we compared the level of aggression for participants who hit the punching bag with the level of aggression for participants who did not hit the punching bag. For these analyses, we used only participants who read the procatharsis message and who aggressed directly toward the person who had (supposedly) criticized their essay. A 2 (punching bag) \times 2 (sex) ANOVA was used.

On Trial 1, participants who hit the punching bag tended to be more (rather than less) aggressive than those who did not hit the punching bag ($M_s = 0.40$ and -0.01 , respectively), $F(1, 196) = 2.87$, $p < .10$, $d = 0.24$. Although these results are not quite significant, they are in the direction opposite that predicted by the catharsis hypothesis.

On the remaining trials, participants who did hit the punching bag were significantly more aggressive than those who did not hit the punching bag ($M_s = 0.33$ and -0.17 , respectively), $F(1, 196) = 4.96$, $p < .05$, $d = 0.31$. These results directly contradict the catharsis hypothesis.

Because the no-punching-bag group was run later, we were concerned about any possible difference in their sample. The most worrisome possibility was that there would be some baseline difference in desire to hit the punching bag. Analysis of the rank-ordered preferences ruled this out, however: The participants in the two conditions did not differ in their desire to hit the punching bag, $F(1, 196) = 0.43$, $p > .05$.

Discussion

Study 2 accomplished several things. First, we replicated the results from previous research showing that hitting a punching bag does not produce a cathartic effect: It increases rather than decreases subsequent aggression.

Second, we replicated the main finding of Study 1: Exposure to a procatharsis message increased angry people's desire to hit a punching bag. Thus, media messages pertaining to catharsis do seem able to influence behavioral preferences.

Third, we included a manipulation of aggressive target to give participants a possible motivation for reducing their anger. That is, we thought that perhaps people who expected to interact with someone new would want to rid themselves of their anger toward a previous person who had insulted them. If they believed in

catharsis, people in this condition might be especially prone to choose the punching bag activity. We did not find this, however. Instead, we found that people who expected to interact with the person who had insulted them were, if anything, more eager to hit the punching bag before that meeting. These results do not fit an affect-regulation or demand-characteristic explanation. Moreover, this pattern was obtained regardless of which message the participant had read—procatharsis, anticatharsis, or control. A possible explanation is that expecting a further interaction with someone who has insulted you sustains anger, whereas expecting to interact with someone new is already a cue to refocus attention and diminish anger. It is plausible (although direct evidence is lacking) that direct aggression participants were angrier than displaced aggression participants at the point of choosing the activity, and that the anger itself was sufficient to increase preferences for the punching bag.

The major question for Study 2 was how the procatharsis message, followed by the ostensibly cathartic activity of hitting the punching bag, would affect interpersonal aggression. We found that the procatharsis message led to higher levels of interpersonal aggression, even after people might have achieved catharsis by hitting the punching bag. This pattern was found on the first trial (in which the person's aggression could not be influenced by the opponent's ostensible responses on previous trials), and it was sustained through subsequent trials as well, despite the rising situational forces pushing for reciprocal levels of aggression.

Thus, even the people who were led to believe in catharsis failed to show any signs of it. Instead, procatharsis messages led to increased aggression (as compared with people who heard other messages). Moreover, this elevated aggression was found regardless of whether the interpersonal target was the same person who had provoked the participant's anger or was an innocent third person. The most parsimonious conclusion was that the procatharsis message led to increased aggressive behavior across the board, and that people made no meaningful distinction between the punching bag, the person who had provoked them, and an innocent third person as aggressive target.

People who did not hit the punching bag were less, not more, aggressive than people who hit the punching bag. In other words, hitting the punching bag led to subsequently higher levels of aggression, even among participants who had been led to believe in catharsis. These results directly contradict the catharsis hypothesis and suggest that belief in catharsis can generate a self-defeating prophecy effect.

General Discussion

Catharsis has enjoyed a run of support in the popular media that far outstrips its support in the research literature. Scientists have been largely unable to demonstrate that aggressive outbursts reduce subsequent aggressive behavior, whereas the mass media continue to suggest that they do reduce it. Some pop psychology and media sources even propose that restraining angry impulses can result in mental and physical health problems, as well as greater aggression down the road.

The present research was concerned with how people are affected by media messages that tout catharsis as a viable, effective,

and socially desirable way of handling one's anger. In two studies, our participants were exposed to a message that either advocated or disputed the catharsis theory, were provoked to be angry at someone, and then had their choices and actions measured. In both studies, people who had been exposed to a procatharsis message were more prone than others to choose the aggressive activity of hitting a punching bag. The procatharsis message seems to have been effective at inducing people to vent their anger aggressively.

Thus, media support for catharsis could induce people to choose cathartic activities—but could it induce the catharsis effect itself? That is, would people who were led to believe in catharsis, and who then engaged in hitting a punching bag after being angered by someone, end up behaving less aggressively toward that person? The answer from Study 2 is a clear “no.” In fact, people who had read the procatharsis article behaved more aggressively than participants in the control group, even after they had spent time hitting a punching bag. Hitting the punching bag should have produced catharsis among people who believed in catharsis, but it did not. If anything, it appears to have produced the opposite effect, namely, an increase in subsequent aggression.

One might have hoped that the initial (Trial 1) aggression toward the partner would produce catharsis among people who had been led to believe in it, but even that possibility failed to materialize. The procatharsis message led to elevated levels of aggression right up to the end of the experiment. In other words, the procatharsis message led people to make behavioral choices in favor of increased aggression on three consecutive occasions: on their initial choice to hit a punching bag, on their first competitive trial involving the other person, and on the 24 subsequent trials.

A possible explanation for the persistence of high aggression following the procatharsis message was that people continued to seek cathartic release but failed to find it. Hence, perhaps the procatharsis message persuaded people that acting aggressively was a good way to handle anger, so they chose to hit a punching bag. When they found themselves still angry, they tried again, this time lashing out at their opponents in the first trial of the competitive game. When even that aggression failed to reduce their aggressive feelings, they kept trying on subsequent trials. The failure of the anticipated release to materialize might well cause frustration, creating a vicious circle of continued or even escalating aggression. If so, media messages that promote catharsis could end up contributing to frustration and increased aggression.

The present research extends the long history of empirical failures of the catharsis hypothesis. Even when people were led to believe catharsis worked and they freely chose to seek cathartic release, it did not happen. Put another way, even the added boost of a potentially self-fulfilling prophecy was not enough to create catharsis effects.

The present results suggest that procatharsis media messages may actually generate self-defeating prophecies. Telling people that aggressive activity is a good way to get rid of anger led them to choose aggressive activity, but performing this activity apparently failed to reduce anger. Subsequent interpersonal aggression remained high, in stark contrast to what the procatharsis message led people to believe. We noted that this outcome is the worst of all possible effects that might be predicted for media procatharsis messages. The messages made people seek out aggressive release,

but this initial venting then increased their subsequent aggression toward another person.

Direct and Displaced Aggression

A possibly surprising feature of the present results is that we found no difference between direct and displaced aggression. This contrasts with many previous findings, including some of our own (Bushman & Baumeister, 1998), indicating that people do aggress differentially toward someone who has provoked them as opposed to an innocent third person. One crucial difference between the present procedure and other, less successful studies of displaced aggression is that the present procatharsis message advocated the effectiveness of displacing anger onto new targets. The failure to distinguish between aggressive targets is consistent with the suggestion we made that people were continuing (unsuccessfully) to seek cathartic release by continued aggression. Indeed, we found the same effects on the punching bag measure as we did on the interpersonal aggression measure, which, in the most parsimonious view, suggests that people did not approach the interpersonal aggression any differently than they approached the punching bag situation. These results raise the possibility that media advocacy of catharsis could have the socially undesirable effect of fostering displacement of aggression onto innocent targets.

Limitations

Several limitations of the present work must be acknowledged. We did not include a no-anger condition in Study 2, and hence there was no way to assess the effectiveness of the anger manipulation. Probably the best evidence comes from a previous investigation in which we used precisely the same anger induction procedure and had a no-anger control (Bushman & Baumeister, 1998). This anger induction caused a large increase in anger in that study, but we can only infer that it had the same effect in this one. The lack of a no-anger condition likewise precludes us from asserting that anger was a prerequisite for the effects found in Study 2.

We also acknowledge that we do not have evidence regarding the precise intrapsychic process or mechanism that mediated the effects of the persuasive messages. Although we have emphasized anger as a likely factor, we note that the manipulation involved a blow to self-esteem, and concern over self-esteem might have helped mediate the results even apart from the anger that normally ensues from being insulted.

It might be suggested that the procatharsis and anticatharsis messages caused people to experience the punching bag activity differently. Our measures of enjoyment failed to find any such difference, however.

The Enduring Appeal of Catharsis

As we suggested, the present results go beyond prior evidence that disconfirmed the catharsis hypothesis. We could not even find a catharsis effect when we led people to believe in it and to act upon that belief. Surely if the catharsis theory were true at all, under any circumstances, it should have obtained under the highly conducive circumstances we set up. Yet, it did not. If anything, we

found the opposite: Aggression remained high throughout the procedure.

Our results thus concur with the calls by Tavris (1988) and others to pronounce the catharsis hypothesis wrong. However, research interest may need to shift to the question of why popular belief in catharsis remains high and people can still be easily persuaded that venting anger is the best way to rid oneself of the aversive inner state (and therefore avoid subsequent interpersonal aggression). We suggest that there are at least three reasons why catharsis techniques for controlling anger retain their popular appeal. First, catharsis techniques are widely advocated by pop psychologists, and they are widely cited in the popular literature. Second, cathartic-type responses may be the most natural (dominant) responses to anger-producing situations. It is possible that procatharsis media messages (such as in our procedure) constitute a kind of permission that people use to justify abandoning their self-control (see Baumeister, 1997; Baumeister, Heatherton, & Tice, 1994). Third, people may think that if the catharsis theory has been around so long, there must be some validity to it. The fact that anger does eventually dissipate, regardless of what one does, may foster the illusion that catharsis is successful. Likewise, we found that people did enjoy hitting the punching bag, so at some level the activity made them feel good, and this may be enough to help sustain popular belief in the benefits of venting. Unfortunately, these good feelings did not translate into reduced interpersonal aggression—if anything, people who enjoyed hitting the punching bag more were also more aggressive toward the opponent in subsequent trials.

Concluding Remarks

Our findings suggest that media messages advocating catharsis may be worse than useless. They encourage people to vent their anger through aggressive action, and perhaps they even foster the displacement of aggression toward new, innocent third parties. In our research, people who received procatharsis messages first chose to vent their anger by hitting a punching bag, but then they went on to show elevated aggression toward the person at whom they were angry. They even showed increased aggression toward an innocent third person. Pop writers may think they are offering helpful, sage advice on affect regulation, but the effect of advocating catharsis may be to cause a general increase in aggressive behavior. Perhaps media endorsement of cathartic release should come to be regarded as a potential danger to public health, peace, and social harmony.

References

- Baumeister, R. F. (1997). *Evil: Inside human violence and cruelty*. New York: Freeman.
- Baumeister, R. F., Dale, K., & Sommer, K. L. (1998). Freudian defense mechanisms and empirical findings in modern social psychology: Reaction formation, projection, displacement, undoing, isolation, sublimation, and denial. *Journal of Personality*, *66*, 1081–1124.
- Baumeister, R. F., Heatherton, T. F., & Tice, D. M. (1994). *Losing control: How and why people fail at self-regulation*. San Diego, CA: Academic Press.
- Berkowitz, L. (1984). Some effects of thoughts on anti- and prosocial influences of media events: A cognitive-neoassociation analysis. *Psychological Bulletin*, *95*, 410–427.
- Bernstein, S., Richardson, D., & Hammock, G. (1987). Convergent and discriminant validity of the Taylor and Buss measures of physical aggression. *Aggressive Behavior*, *13*, 15–24.
- Bushman, B. J., & Baumeister, R. F. (1998). Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence? *Journal of Personality and Social Psychology*, *75*, 219–229.
- Darley, J. M., & Fazio, R. H. (1980). Expectancy confirmation processes arising in the social interaction sequence. *American Psychologist*, *35*, 867–881.
- Geen, R. G., & Quanty, M. B. (1977). The catharsis of aggression: An evaluation of a hypothesis. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 1–37). New York: Academic Press.
- Giancola, P. R., & Zeichner, A. (1995). Construct validity of a competitive reaction-time aggression paradigm. *Aggressive Behavior*, *21*, 199–204.
- Lee, J. (1995). *Facing the fire: Experiencing and expressing anger appropriately*. New York: Bantam.
- Tavris, C. (1988). Beyond cartoon killings: Comments on two overlooked effects of television. In S. Oskamp (Ed.), *Television as a social issue* (pp. 189–197). Newbury Park, CA: Sage.
- Taylor, S. P. (1967). Aggressive behavior and physiological arousal as a function of provocation and the tendency to inhibit aggression. *Journal of Personality*, *35*, 297–310.
- Tice, D. M., & Baumeister, R. F. (1993). Controlling anger: Self-induced emotion change. In D. M. Wegner & J. W. Pennebaker (Eds.), *Handbook of mental control* (pp. 393–409). Englewood Cliffs, NJ: Prentice Hall.
- Warren, R., & Kurlychek, R. T. (1981). Treatment of maladaptive anger and aggression: Catharsis vs behavior therapy. *Corrective and Social Psychiatry and Journal of Behavior Technology, Methods and Therapy*, *27*, 135–139.
- Wegman, C. (1985). *Psychoanalysis and cognitive psychology*. Orlando, FL: Academic Press.
- Zillmann, D. (1979). *Hostility and aggression*. Hillsdale, NJ: Erlbaum.

(Appendix follows)

Appendix

Pro- and Anticatharsis Articles

This is the text of the procatharsis article. The anticatharsis article was identical except for the changes noted in brackets.

**Research Shows That Hitting Inanimate Objects Is an
Effective [Ineffective] Way to Vent Anger**

Cambridge, Mass. (AP) Do you believe that you can vent anger by hitting a punching bag? According to the results of a study published this week in *Science*, you could not be more right [wrong].

The study confirms a long history of research on the effectiveness [ineffectiveness] of displacing anger to inanimate objects. The study was conducted by Dr. Elias Boran, a psychological researcher at Harvard University. Boran says that his results provide direct confirmation of the idea that anger can[not] be vented harmlessly when people can displace their anger to an inanimate object.

The findings are the results of a 2-year study involving 1,000 university students living in the university's residence halls. Participants in the study were randomly divided into one of two groups. One group hit a punching bag (a portable floor model provided by the experimenter) when they were angry. The other group tried to relax when they were angry. Boran found that students who hit a punching bag when angry were 4 times less [more] likely to have complaints filed against them by other students in the residence hall and were 2 times less [more] likely to have been reported to campus police for aggressive incidents than were students who tried to relax.

Boran says that his study is consistent with the results of scores of studies showing that people can[not] effectively vent anger to inanimate objects. According to Boran, "When you are angry, the best [worst] thing that you can do is to find something inanimate to hit or kick to vent your anger."

Received June 25, 1997

Revision received October 19, 1998

Accepted October 26, 1998 ■

ORDER FORM

Start my 1999 subscription to *Journal of Personality*
and *Social Psychology*! ISSN: 0022-3514

_____ \$170.00, APA Member/Affiliate _____
_____ \$340.00, Individual Non-Member _____
_____ \$743.00, Institution _____
TOTAL AMOUNT ENCLOSED \$ _____

Subscription orders must be prepaid. (Subscriptions are on a calendar basis only.) Allow 4-6 weeks for delivery of the first issue. Call for international subscription rates.

SEND THIS ORDER FORM TO:
American Psychological Association
Subscriptions
750 First Street, NE
Washington, DC 20002-4242



AMERICAN
PSYCHOLOGICAL
ASSOCIATION

Or call (800) 374-2721, fax (202) 336-5568.
TDD/TTY (202)336-6123. Email: subscriptions@apa.org

Send me a Free Sample Issue

Check Enclosed (make payable to APA)

Charge my: VISA MasterCard American Express

Cardholder Name _____

Card No. _____ Exp. date _____

Signature (Required for Charge)

Credit Card _____

Billing Address _____

City _____ State _____ Zip _____

Daytime Phone _____

SHIP TO:

Name _____

Address _____

City _____ State _____ Zip _____

APA Customer # _____

GAD99

PLEASE DO NOT REMOVE - A PHOTOCOPY MAY BE USED