

## CATHARSIS THROUGH DISPLACEMENT OF AGGRESSION<sup>1</sup>

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Half of the subjects in the experiment were annoyed by a confederate, while with half of them he behaved in a neutral manner. One-fourth of the subjects then gave shocks to this confederate (Group 1); another fourth gave shocks to a different confederate (Group 2); the remaining half of the subjects gave no shocks to anyone (Groups 3 and 4). Finally, all subjects were given the opportunity to give socially sanctioned shocks: subjects in Groups 1, 2, and 3 gave shocks to the confederate that they first interacted with, while subjects in Group 4 gave shocks to another confederate, an innocent stranger. It was found that both aggression toward the frustrator (Group 1) and displaced aggression (Group 2) were cathartic for annoyed subjects only. In addition, annoyed subjects who previously gave no shocks, when given the opportunity, aggressed virtually as much against the scapegoat (Group 4) as against the frustrator (Group 3). No similar pattern emerged for subjects who were not annoyed. The results of the experiment support a version of the catharsis hypothesis and indicate that catharsis may occur both through direct and displaced aggression.

There are at least two distinct theoretical approaches to the study of catharsis which, when formulated in a testable form, may result in different findings. According to one standpoint, closely related to the psychoanalytic "hydraulic" notion, an expression of aggression should reduce the level of subsequent aggression: "The occurrence of any act of aggression is assumed to reduce the instigation to aggression. . . . In psychoanalytic terminology, such a release is called catharsis [Dollard, Doob, Miller, Mowrer, & Sears, 1939, p. 50]." On the other hand, a different view of what catharsis stands for can be traced to Aristotle: "Tragedy serves to purge the passions through pity and terror." The difference between the two views is whether a person experiences catharsis by performing an aggressive act or merely observes such acts being performed—the latter being an essentially vicarious expression of aggression. It is understandable, then, that research paradigms designed to test the two notions should be different, and it is logically erroneous to

say that the outcomes, should they turn out to be different, are contradictory. More precisely, the validity of the psychoanalytic version of the catharsis hypothesis should be considered as unaffected by numerous findings that observation of aggression may lead to an increase rather than a decrease of aggressive manifestations (e.g., Bandura, Ross, & Ross, 1961, 1963; Berkowitz, 1965; Walters, Thomas, & Acker, 1962). Watching someone behave in an aggressive manner appears to increase the likelihood of aggressive behavior, be it because new ways of behaving with a certain object have been learned (e.g., Bandura et al., 1961, 1963), or because certain stimuli become associated with aggressive behavior and later serve as cues triggering off similar actions (e.g., Berkowitz, 1965; Geen & Berkowitz, 1967). Related to these results is the notion that the presence of aggressive cues in the situation in which annoyance or frustration takes place will increase the level of subsequent aggression (Berkowitz & LePage, 1967).

In addition to the problem of theoretical reference, a point that is often overlooked in the studies of catharsis is an obvious one, as Doob (1970) emphasized, and has to do with the simple fact of whether the subject is actually annoyed or not. In a number of experiments it has been shown that different

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results are obtained for subjects who are annoyed, as compared to those who are not (e.g., Bramel, Taub, & Blum, 1968; Doob, 1970; Doob & Wood, 1972; Feshbach, 1961).

Another point that needs clarification is the question of how and against whom aggression is to be expressed, that is, with what kind of cathartic experience the subjects are to be provided. As outlined previously by Doob (1970), "expression of aggression" has taken, in different experiments, a variety of forms. They can be divided roughly into three major groups. In the first group are the studies in which the subjects simply observe some aggressive activity taking place, which does not involve the person or agent who annoyed them (e.g., Geen & Berkowitz, 1967; Hartmann, 1969). In the second group are the studies in which the subjects witness something unpleasant or injurious happen to their tormentor, without the subjects doing anything themselves (e.g., Bramel et al., 1968; one of the conditions in Doob & Wood, 1972). The third group includes studies in which the subjects either have an opportunity to do something more or less in connection with their frustrator, but without actually interacting with him, and thus not hurting him directly (e.g., Feshbach, 1955), or have a chance to express their aggression directly to this person and to harm him (Doob, 1970; Doob & Wood, 1972; Hokanson & Shetler, 1961; Thibaut & Coules, 1952). Generally speaking, watching aggressive activity not involving the frustrator tends to increase the level of subsequent aggression. On the other hand, seeing that something harmful happened to the frustrator appears to have a cathartic effect, the strongest effect seeming to occur when the subjects themselves cause harm to the frustrator. As regards the studies in which the subjects are given the opportunity to do something in connection with the frustrator, without interacting with him directly, the situation is rather complicated. While Feshbach's (1955) study suggested that aggressive fantasy may be cathartic, Kahn (1966) found that annoyed subjects, who had been given the opportunity to express verbally their hostile feelings about the frustrator,

subsequently rated him more negatively than subjects who had not had a "cathartic" session. Kahn interpreted his results in terms of cognitive consistency, that is, that people who are induced to say nasty things about someone tend to preserve, at least overtly, such an attitude toward that person. Mallick and McCandless (1966) found no cathartic effect of either aggressive play with inanimate objects or of verbal expression of aggression (like-dislike ratings).

As for the dependent variable used in experiments attempting to test the catharsis hypothesis, again, many things have been measured such as feelings of general hostility or arousal (e.g., Berkowitz, Green, & Macaulay, 1962; Worchel, 1957), heart rate and systolic blood pressure (Hokanson & Burgess, 1962; Hokanson, Burgess, & Cohen, 1963; Hokanson & Shetler, 1961), hostile feelings toward the frustrator (e.g., Bramel et al., 1968; Kahn, 1966), or aggressive behavior toward the frustrator (e.g., Doob, 1970; Doob & Wood, 1972; Mallick & McCandless, 1966). As Doob and Wood (1972) pointed out: "There is no good theoretical reason why all of these should be considered to be equivalent forms of 'aggression,' unless one automatically assumes a perfect correspondence between cognitive, conative, and affective aspects of aggression [p. 156]."

As outlined by Doob and Wood (1972), there definitely seem to be situations in which some form of catharsis does occur. Hokanson and his colleagues (e.g., Hokanson & Shetler, 1961) have shown a decrease in the frustrated subjects' systolic blood pressure following an expression of aggression toward the frustrator, at least when he was of low status. Worchel (1957) found that expression of hostility brought about drive reduction in frustrated subjects. Studies by Bramel et al. (1968), by Doob (1970), and by Doob and Wood (1972), have as a common element that the subjects saw their frustrator get hurt in some way: catharsis occurred in all these studies.

One problem with the Doob and Wood (1972) study is that it is not necessarily "catharsis" that the subjects are experiencing when provided with an opportunity

to express aggression toward the frustrator after being annoyed, but that the whole process may be explained in terms of retaliation. The subject may be fully aware of what is happening and of what he is doing: he is insulted, and the annoying person gets hurt when there is an opportunity. Once retaliation has taken place, he gives fewer shocks on a subsequent occasion, compared to a subject whose annoyer did not get hurt. The explanation would thus be in purely cognitive terms rather than based on an essentially hydraulic notion.

The present experiment may be seen as a continuation of the Doob (1970) and Doob and Wood (1972) line of research. In both of those experiments, the decrease in aggression that was observed after annoyed subjects either hurt their annoyer or watched their annoyer getting hurt could be explained in terms of retaliation—someone had annoyed them, and he had got what he deserved. In the present experiment, part of the Doob and Wood (1972) design is replicated, but, in addition, another condition is added where the subject is annoyed by one person, then gets a chance to hurt another, before getting a chance to behave aggressively toward the annoyer. If expressing aggression against a "scapegoat" is cathartic, then subjects who are given this opportunity should behave less aggressively toward their annoyer than should subjects who are not given this opportunity. Moreover, it would be impossible to explain these results in terms of retaliation, in that the person who annoyed the subject had not been hurt.

In addition, an attempt to demonstrate the displacement of aggression was included. One would expect catharsis to occur as a result of aggression against a scapegoat if when a person were angry he was likely to behave aggressively (when allowed free choice) toward someone else.

In the experiment, half of the subjects were annoyed by Confederate A (annoyer), while half were not. This constituted the first part of the experiment (annoyance—no annoyance). The second factor was whether a subject experienced catharsis or not. Two levels of the third factor (condi-

tions) were nested under each of the levels of the catharsis factor. It was thus a  $2 \times 2 \times 2$  nested factorial design. The latter two factors were manipulated in the remaining two phases of the experiment. In the second part, one-fourth of the subjects gave "shocks" to Confederate A; another fourth gave an equivalent number of shocks to Confederate S (scapegoat); the remaining half of the subjects was given no opportunity to give shocks at this point (no catharsis). In the final part of the experiment, in which the dependent variable was measured (number of shocks given by the subject to one of the two confederates, depending on condition), the two catharsis groups of subjects gave shocks to Confederate A; subjects in one of the no-catharsis groups also gave shocks to Confederate A; the remaining no-catharsis subjects gave shocks to Confederate S (this group thus never had a chance to give shocks to the frustrator). While it was arranged for all subjects to give an equivalent number of shocks during the catharsis session, it was up to the subject how many shocks he would give at the time when the dependent measure was taken. It should be emphasized that terms such as "catharsis," "annoyer," and "scapegoat" in the above description naturally have that meaning only when one speaks of subjects who were annoyed. The experiment is outlined in Table 1.

It was predicted that the two annoyed groups of no-catharsis subjects would give more shocks than either the corresponding nonannoyed groups or the two annoyed catharsis groups. These two cells were thus expected to be the highest of the eight cells in the experiment. Such findings would indicate that catharsis did have an effect on subsequent aggression, that is, that aggression was reduced. Comparable effects were not expected for subjects who were not annoyed.

## METHOD

### *Overview*

Subjects were run individually; they interacted, in different phases of the experiment, either only with Confederate A (annoyer), or with Confederate A followed by Confederate S (scapegoat), depending on condition. During the first 7 minutes of the experiment, the subject and Con-

TABLE 1  
OUTLINE OF EXPERIMENT

Stage	Group 1	Group 2	Group 3	Group 4
I (Annoy/no annoy)	Confederate A annoys subject or sits quietly			
II (Catharsis session)	Subject gives Confederate A 14 shocks	Subject gives Confederate S 14 shocks	No shock	No shock
III (Dependent measure)	Subject shocks Confederate A	Subject shocks Confederate A	Subject shocks Confederate A	Subject shocks Confederate S

federate A were left alone to work on some anagrams; the confederate then either annoyed the subject or behaved in a neutral manner. In the second part of the experiment, one-fourth of the subjects "tested" Confederate A on a paired-associate type of task (Group 1) and gave him 14 "shocks" for the mistakes he made intentionally; another fourth of the subjects was engaged in exactly the same activity, but with Confederate S as the "learner" (Group 2). The remaining half of the subjects were simply left by themselves during this phase; thus, they had no opportunity to give shocks to anyone at this point (Groups 3 and 4). In the final part of the experiment, all subjects had a socially sanctioned opportunity to give as many shocks as they pleased to one of the two confederates, depending on condition. The subject was assigned the role of "experimenter," and his task was to evaluate the confederate's "creative responses": he was told to administer shocks for those responses he thought were not creative. Three-fourths of the subjects thus gave shocks (the number of which was the main dependent measure in the experiment) to Confederate A (Groups 1, 2, and 3); the remaining one-fourth of subjects (Group 4) gave shocks under identical conditions to Confederate S. At the end of the experiment, all subjects rated the people with whom they had interacted and were then thoroughly debriefed.

### Procedure

The subjects were 88 freshmen of both sexes from the University of Toronto participating for credit in an introductory psychology course. The confederates were two female and one male second-year students who alternated in the roles of the two confederates.

Confederate A showed up for the experiment at about the same time as the subject, and the two of them were brought in together to the experimental rooms. They were seated at a large table in one of the two rooms. Through a door that was left open between this room and a small adjoining room, the subject was able to see an impressive array of electrical equipment in the second room, with different kinds of apparatus interconnected by wires and with numerous switches, dials, and lights. The subject was seated next to a large glassless curtain-covered

window which connected the two rooms. On the table in front of the subject and the confederate, there were a small box, with a bar sticking out of it, and a microphone. From both of these, wires led through the window into the adjoining room.

The instructions given by the experimenter for the first part of the experiment were as follows:

This is one in a series of research studies we are doing in this department in the field of cognitive processes, especially those involved in problem solving. The two of you will be working on anagrams. As you may know, some authors believe that thinking aloud, saying associations that come to mind, helps problem solving of this kind. We are interested in finding out whether this is so. One of you, ah, might as well be you [pointing at the subject], you will be saying aloud anything that comes to your mind in connection with the problem you are working on. [At this point, the experimenter attached the microphone to a piece of the subject's clothing.] Naturally, you won't have to be speaking all the time. Associations sometimes don't come so easy. But when something in connection with the problem you are working on does cross your mind, be sure to say it aloud, so that we get it on the tape. I've attached the microphone, so that you don't have to think about speaking into it. Now you [speaking to the confederate] will be working on the same anagrams, except that you won't be saying anything aloud. You will simply write down the solutions, when you reach them, in the space provided. Since the two of you will be working independently [speaking to the subject], please don't say the solution itself aloud when you reach it, but simply write it down. Well, here are your lists, they are identical. Each contains seven anagrams, seven letters long, and you will have 7 minutes to solve them. The solutions, in all cases, are names of cities.

At this point, the experimenter answered any questions by repeating the appropriate parts of the instructions. He then asked the subject and the confederate not to start yet, went into the adjoining room, and noisily ran the tape recorder for a short while. He then returned to the first room, started a

stopwatch, and headed for the door. At the door, he turned around abruptly and said:

Oh, by the way, you don't have to worry as far as the recording is concerned. Even if you [to Confederate A] say something aloud, it doesn't matter. We're using a very insensitive type of microphone on purpose, and we usually get very clear recordings, just the voice of the person thinking aloud. So, don't worry about that.

At this, the experimenter left the room so that the subject and the confederate remained alone. The real purpose of the microphone was thus to prevent the subject as much as possible from speaking back to Confederate A during the annoyance manipulation.

### *Annoyance*

The annoyance manipulation began approximately 2 minutes after the experimenter's exit. The method used was similar to that reported by Doob (1970). The confederate made sure that the subject saw that he had all the anagrams done in a very short time. He started off by saying, "Haven't you finished yet?" and went on in this fashion, saying that the subject was slow, that anagrams were easy to solve if one had any brains, and that everything about the subject was somehow phoney. He commented on the subject's clothes, wondered aloud how the subject had managed to get accepted to the university, said he felt sure the subject had been getting poor grades, etc. The confederate naturally varied the procedure somewhat from subject to subject, pursuing the line that seemed to disturb the subject the most. The purpose of all this was to annoy every subject as much as possible.

If the subject was not in one of the annoy conditions, the confederate sat quietly throughout this part of the experiment and did not disturb the subject. The anagrams employed in the experiment were fairly difficult, and very few subjects finished more than two or three. This presumably added to the subject's frustration in the annoy conditions, especially since he saw that the confederate had them all done. This was not made obvious to the subject in the no-annoyance conditions, so that, presumably, his failure would be unlikely to disturb him. However, in order to keep the experimenter blind to condition, the confederate had all the anagrams done in this case too, but he made sure that the subject did not see this.

### *Catharsis—No Catharsis*

After 7 minutes, the experimenter returned to the experimental room. He switched off the tape recorder, asked the subject and the confederate to place their work sheets facedown on the table, and removed the microphone from the subject. If the subject attempted to make some comment, the experimenter interrupted by saying that everything would be discussed at the end of the experiment.

At this point, the second part of the experiment began. The experimenter was not aware of whether

the subject had been annoyed or not. Similarly, Confederate A did not know in which condition the subject was next. If the subject had been assigned to Group 1 (see Table 1), the experimenter immediately proceeded with the instructions for this part of the experiment. If the subject had been assigned to Group 2, 3, or 4, the experimenter removed Confederate A from the room by saying: "You should [to the confederate] now go and see Dr. Stephenson in Room 560. You should have no problem finding it, and you [to the subject] will go later." The confederate made additional inquiries about how to find this room and then left. If the subject had been assigned to Group 2, the experimenter looked at his watch and said: "I'm expecting another subject who is to participate in this experiment. Let me see if he arrived." The experimenter left the room, leaving the door open, and asked Confederate S, who was waiting in the hallway, for his name. This confederate was thus made to appear like another subject. He was brought to the experimental room and seated on the chair on which Confederate A had sat. The experimenter then proceeded with the instructions for the second part of the experiment. If the subject had been assigned to Group 3 or 4, the experimenter, after he had removed Confederate A from the room, said to the subject: "Well, I guess I have nothing for you to do until the next part of the experiment. So, please just sit here and wait for me to return. I won't be long, and then we'll continue." The experimenter then left the room and did not return until the final part of the experiment. Because any books that he had brought with him had been placed in another room, the subject had nothing to do except sit and wait for the approximate length of time that it took to complete the cathartic session in other conditions.

In the catharsis conditions (Groups 1 and 2), after Confederate S had been seated (Group 2), or as the direct continuation of the first part of the experiment (Group 1), the experimenter said the following:

As you know, memory and strength of retention are an important part of the cognitive processes. One of you, well, it might as well be you [to the subject], will be the teacher in this experiment, and you [to the confederate] will be the learner. You will have 4 minutes to memorize this list of paired associates after which you [subject] will examine him. You [subject] will read the stimulus word in each pair, the one on the left, while you [confederate] will respond with the number that is on the right in each pair. As you no doubt know, reward and punishment have a great deal of influence on learning and performance. We are particularly interested in the effects of punishment on recall. You [subject] will say aloud "correct" if the response is correct; if the response is not correct, you will press this bar, which will cause an electric shock to be delivered to the learner. The shock will be relatively painful, for otherwise there is no effect, but will, naturally, leave no

damage. For each wrong response, you will press the bar just once, and a shock of fixed length and voltage will be delivered. After you have said "correct" or delivered a shock, you will note his response on the sheet. Is everything clear?

At this point, the confederate, who had expressed a reasonable amount of verbal and facial surprise when the shocks were first mentioned, asked: "Will it hurt much?" The experimenter merely repeated what he had already said about the shocks and took the confederate to the adjoining room. After he was seated, the experimenter gave him the list of paired associates and told him that he would have 4 minutes to learn it. He then returned to the first room, closing the door behind him, and asked the subject to be quiet while the "learner" worked on the list. After leaving for 4 minutes, the experimenter returned with the stopwatch, took the list from the confederate, and gave it to the subject. With the door between the two rooms open, the experimenter then attached palm electrodes to the confederate, fumbled about for a while with some dials and switches, and asked the subject and the confederate not to communicate except as required by the task. He then closed the door between the two rooms and left.

During this session, the confederate always made the same 14 intentional mistakes while "recalling" the 30 items on the list. The subjects were thus given the opportunity, and, indeed, were forced by the instructions, to give 14 socially sanctioned shocks during the catharsis session, either to the frustrator or to the scapegoat, depending on condition.

### *Dependent Measure*

After the subject was finished with the list, or after an approximately equal length of time in the no-catharsis conditions (Groups 3 and 4), the experimenter returned to the experimental rooms. He removed the electrodes from the confederate's palm and brought him back to the front room. If the subject attempted to ask the confederate whether the shocks had hurt, the experimenter intervened and said that they better get on with the experiment.

In Group 1 conditions, the experimenter immediately proceeded with the instructions for the final part. In Group 2, the experimenter first removed Confederate S in the same manner and under the same pretext as he had previously used to remove Confederate A. In this condition, he then said: "Let me see if that other subject is back," and proceeded to bring in Confederate A, who was blind as to whether the subject was in Group 2 or 3. The experimenter then proceeded with the instructions for the final part of the experiment. In the two no-catharsis conditions (Groups 3 and 4), the experimenter entered the room in which the subject was waiting and briefly apologized to the subject for the delay. Following this, in Group 3, the experimenter said: "Let me see if that other subject is back." Confederate A was then brought back to the room and was seated. If the subject was in Group 4, the

experimenter mentioned that he was expecting another subject, and he brought in Confederate S.

The instructions for the final part of the experiment were as follows:

In this experiment we will be dealing with one aspect of what is called creative thinking. To avoid any bias on the part of the experimenter, I would like one of you to be the experimenter, and the other, the subject. I expect each of you to carry out your respective tasks conscientiously. You [to the confederate] might as well be the subject, and you [to the subject], the experimenter. You [to the actual subject] will read these words in the order they are on the sheet, and you [confederate] will respond within about 3 seconds with another word. However, rather than say just any word, you should try to make your response be a creative one. If you [subject] find his answer to be creative, you will simply say aloud "Good" as positive feedback, and then will write it down before going to the next word on the list. If you don't think it's a creative response, and it's really completely up to you, you will press this bar which will cause an electric shock to be delivered to the subject [the experimenter pressed the bar, at which a "click" was emitted by the event recorder in the adjoining room]. We think that under such conditions more creative responses will be given. After you have given the shock, you will write his response down and then read the next word on the list. Now let me explain about the shocks. You may give more than one shock for any particular response that you think is not creative at all, and you may also keep the bar down for as long as you think it appropriate, the uncreativity of the subject's response being the criterion. Shocks are quite painful in order for the desired effect to be produced, but they will leave no damage. You [subject] don't have to worry about his well-being, because we have a fairly sophisticated apparatus here which takes a number of basic physiological measurements, such as blood pressure, GSR [galvanic skin response], etc., so that it determines for each shock and each subject individually when the shock may become too much for the subject, and then it automatically terminates it. This is done because people react differently to shocks in the physiological sense; different thresholds are in question, and they vary a great deal for different people. So, you just go ahead and follow the instructions that I have given you: give as many and as long shocks as you think appropriate with respect to the creativity of a particular response. Here is the list. Is everything clear?

At this point, the confederate asked about the shocks, and the experimenter repeated what he had already said.

The experimenter then took the confederate to the adjoining room, asked him to sit down, and to roll up his sleeve. After he had attached the electrodes to the confederate's palm, and fumbled in

this manner for a while, the experimenter asked the confederate whether he was comfortable. The subject was able to hear all this through the door that had been left open. The experimenter then turned a few dials, started the event recorder and went to the front room, closing the door between the two rooms. He then instructed the subject to communicate with the "subject" through the curtain-covered window, but that no conversation other than what was part of the task should be carried on; at this, the experimenter left.

During this part of the experiment, the confederate gave predetermined responses that were the same for all subjects. The subjects had the opportunity to give any number of shocks; although there were only 30 items on the list, they could give more than one shock per item.

After this part of the experiment was over, the experimenter returned, stopped the event recorder, and asked the subject to come to a nearby room where he filled out a short questionnaire rating the confederates with whom he had interacted in the experiment.

A thorough debriefing session usually lasting 15-20 minutes was conducted at the very end of the experiment. Obviously, at no point in the experiment did anyone receive any electric shocks.

## RESULTS

Eighty-eight subjects participated in the experiment. The data for 8 subjects could not be used in the analysis: 3 subjects interrupted the experiment claiming that they had heard about "similar" experiments in which shocks were not actually administered; 2 subjects refused to give shocks; 2 turned out to be acquainted with Confederate S when he was brought in for the final part of the experiment; 1 subject could not complete the experiment because of language difficulties which made it impossible for him to evaluate the creativity of the responses. This left 80 subjects, 10 in each of the eight cells.

Ratings of Confederate A by subjects who were annoyed by him, and by those that were not, were strikingly different indicating that the annoyance manipulation was successful. Compared to the nonannoyed subjects, the annoyed ones found this confederate to be less likable, more aggressive, less pleasant, colder, more domineering, and they doubted whether they could be friends with him ( $F$  values range from 14.49 to 77.35,  $df = 1/72$ ,  $p < .01$ ). The annoyed and non-annoyed subjects did not differ significantly in their ratings of this confederate on the

TABLE 2  
MEAN NUMBER OF SHOCKS DELIVERED BY  
EXPERIMENTAL CONDITION

Condition	Catharsis		No catharsis	
	With annoyer; shocks to annoyer as dependent measure (Group 1)	With scapegoat; shocks to annoyer as dependent measure (Group 2)	Shocks to annoyer as dependent measure (Group 3)	Shocks to scapegoat as dependent measure (Group 4)
Annoy	10.5	10.5	16.8	15.4
No annoy	10.8	10.8	10.6	11.0

Note.— $n = 10$  in each cell. Terms such as annoyer and scapegoat are applicable only for subjects who were annoyed; for the nonannoyed subjects, the confederates are simply two different people.

dimensions of interestingness and intelligence. It is relevant, in this context, to note that the analysis of ratings for Confederate S, limited naturally to the two conditions in which he appeared, revealed that there were no differences.

The main findings of the experiment are presented in Table 2; these results and the analyses are in terms of the mean number of shocks administered by the subjects. The analysis of variance (Table 3) revealed significant main effects of the annoyance and catharsis factors, and also a significant interaction between these factors.

It is clear that the annoyance manipulation was effective. Annoyed subjects in Group 3 gave this person considerably more shocks than did the corresponding subjects who had not been annoyed ( $F = 8.74$ ,  $df = 1/72$ ,  $p < .01$ ).

The effect of cathartic activity for annoyed subjects is shown by the fact that annoyed no-catharsis subjects (Groups 3 and

TABLE 3  
ANALYSIS OF VARIANCE FOR NUMBER  
OF SHOCKS GIVEN

Source of Variation	SS	df	MS	F
Annoyance (A)	125.00	1	125.00	5.69*
Catharsis (B)	156.80	1	156.80	7.13**
Conditions (C) within B				
B	2.50	2	1.25	<1
A × B	156.80	1	156.80	7.13**
A × C within B	8.10	2	4.05	<1
Within cell	1582.60	72	21.98	

\*  $p < .05$ .

\*\*  $p < .01$ .

4) gave significantly more shocks than annoyed subjects who had previously experienced catharsis (Groups 1 and 2) ( $F = 14.27$ ,  $df = 1/72$ ,  $p < .01$ ). No such effect was observed for subjects who had not been annoyed. Annoyed subjects in Group 3 gave more shocks than did either of the annoyed catharsis groups ( $F = 9.02$ ,  $df = 1/72$ ,  $p < .01$ ).

Evidence that displacement of aggression occurred is provided by the fact that annoyed subjects in Group 4 gave this person more shocks than did the corresponding nonannoyed subjects ( $F = 4.41$ ,  $df = 1/72$ ,  $p < .05$ ).

### DISCUSSION

The results of the experiment show that under certain specifiable conditions the expression of aggression may lead to a decrease in subsequent aggressive behavior. When a person who is annoyed by someone is given the opportunity to hurt his tormentor, the probability of his aggressing again against this person is sharply decreased. This result may be regarded as a successful replication of the Doob and Wood (1972) findings: In both experiments, the subjects who experienced catharsis by giving shocks to the frustrator subsequently gave him significantly fewer shocks than did those subjects who were annoyed and not given an opportunity for cathartic activity.

It was also shown that catharsis may be experienced through displaced aggression. Annoyed subjects who had the opportunity to give shocks to someone other than the frustrator subsequently gave the frustrator significantly fewer shocks than did subjects who had no prior opportunity to express aggression. It seems possible, then, that catharsis through displaced aggression may be as efficient in reducing subsequent aggressive behavior toward the frustrator as cathartic activity involving the frustrator himself as the object of attack.

We made no attempt to vary the substitute object of aggression along some continuum of similarity to the frustrator as was done by Hokanson, Burgess, and Cohen (1963). These authors found that the an-

noyed subjects' systolic blood pressure was reduced significantly only after aggression against the frustrator himself; however, the subjects' blood pressure was reduced progressively less with the decreasing similarity of the substitute object to the frustrator, although these differences were not significant. While their results could be interpreted as supporting the catharsis-through-displaced-aggression hypothesis, the results of the present experiment seem to support this notion quite strongly. It was clear in this experiment that the expression of aggression against a person other than the frustrator was cathartic; such activity was actually as efficient in reducing subsequent aggression toward the frustrator as cathartic activity with the frustrator himself as the object of aggression. It is equally clear that this conclusion is not incompatible with the findings that the expression of aggression toward inanimate objects may not be cathartic (Mallick & McCandless, 1966).

As further support for the displacement of aggression, it was found that people who had been annoyed by someone, and not given an opportunity to experience catharsis, subsequently gave far more shocks to a complete stranger (a person who had done them no harm), as compared to the number of shocks that annoyed people gave to their frustrator after experiencing catharsis—irrespective of whether the cathartic activity involved the frustrator, or the stranger, as the object of aggression. Also, when no catharsis preceded the act of aggression, the innocent stranger was given almost as many shocks by the annoyed subjects as was the frustrator himself. This seems to be a convincing piece of evidence against the retaliation notion as an alternative to the catharsis hypothesis. The retaliation hypothesis can easily explain why annoyed people who were given no opportunity to express aggression give their frustrator more shocks than annoyed people who already had given their annoyers some shocks. However, it cannot account for the fact that aggression toward an innocent stranger was as effective in reducing subsequent aggression as was aggression toward the frustrator. The findings of the present

experiment thus answer some of the questions raised by the Doob and Wood (1972) experiment.

In sharp contrast, the number of shocks given in the final part of the experiment by subjects who had not been annoyed seems to be unaffected by previously expressed aggression. The findings of this experiment are, in this respect, more or less consistent with those of Doob (1970), Doob and Wood (1972), and Bramel, Taub, and Blum (1968). In all of those experiments, the data from nonannoyed subjects differed radically from those of the annoyed subjects. This fact rules out an explanation of the present results in terms of guilt. If people who had given shocks gave fewer shocks subsequently because of guilt, then we would not expect an interaction of the catharsis and annoy factors. In other words, a "guilt" explanation of these data cannot account for the very different pattern of results obtained for annoyed as compared to nonannoyed subjects.

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