Proceedings
of the
Division of Personality
and
Social Psychology, 1974

PERSONALITY AND SOCIAL PSYCHOLOGY BULLETIN

Self-Arousal, Dissipation of Anger, and Aggression[1]

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According to a revised version of the "catharsis" hypothesis (e.g., Buss, 1961), expression of aggression on the part of angered individuals should bring about a decrease in the amount of subsequent aggression. However, the overly broad definition of "expression of aggression" (based on the work of Dollard et al., 1939), which includes, for example, observation of aggressive activity, attacks on inanimate targets, and physical exercise, has led to frequent disconfirmations of the revised hypothesis also (e.g., Doob & Climie, 1972; Mallick & McCandless, 1966; Zillmann et al., 1972). Nevertheless, it seems that decreases in the amount of subsequent aggression do occur when angered people are given the opportunity to hurt their annoyer in the interpolated period (e.g., Doob & Wood, 1972; Konečni & Doob, 1972).

In some conditions of the Konečni & Doob (1972) study, subjects (Ss) who had been annoyed or not annoyed by a confederate (C) either gave this person 14 "electric shocks" or waited alone, prior to the dependent measure of aggression (shocks ad libitum to C). An interaction was obtained, such that angered people who waited in the interpolated period subsequently gave C more shocks than the angered shock-giving group did, while the latter group did not differ from control conditions of nonangered Ss. Thus, hurting the annoyer decreased the amount of future aggression to the level expressed by nonannoyed people, in comparison to not hurting him.

However, Bandura (1973, pp. 150-152) has argued that waiting was not an appropriate control for expression of aggression, because idle Ss had the time to ruminate about the preceding annoying incident, and thus maintained their anger at a high level. Shock-giving Ss, on the other hand, were kept busy by the task (as part of which shocks were given), and their anger dissipated due to the action of homeostatic processes. In this view, hurting the annoyer was not essential for the amount of subsequent aggression to be reduced: shock-giving, like any other absorbing task, merely made possible the time-linked dissipation of anger by reducing the likelihood of self-arousing thoughts. The present experiment incorporated the critical cells of the Konečni & Doob (1972) study into a larger design which permitted the evaluation of the self-arousal and dissipation-of-anger concepts.

Method

Ss were 152 experimentally naive high school students from the Metro Toronto area (16-19 years of age) who were recruited through newspaper ads and paid $2 for participation, and University of Toronto freshmen who participated for course credit. Eight Ss had to be discarded for various reasons, but their scores would not have affected the data pattern. This left a total of 144 Ss, 5 men and 7 women randomly assigned to each of the 12 cells. Cs were 4 female and 1 male University of Toronto freshmen, and 3 high school (Grade 13) females. All Cs served in each of the conditions an approximately equal number of times.

The design was a 2 x 3 x 2 factorial. Ss were first either annoyed by C or treated neutrally by this person. They then either gave C shocks, or waited alone in the room, or worked on mathematical problems. These interpolated activities were carried out for either 7 or 13 minutes before the dependent measure of aggression (shocks to C) was collected.

Ss were run individually. In the first part of the experiment, S and C were seated in a small room and given 7 minutes during which to work independently on some anagrams. (Instructions and C's behavior were identical to those reported by Konečni & Doob (1972) and Konečni et al. (1973).). C finished his anagrams quickly, and for the remaining time annoyed S by rude comments about the latter's incompetence. He also frustrated S by preventing him from completing his task. C was blind as to the condition in which S would be next.

Following the first part of the study, the experimenter (blind to how S had been treated) gave further instructions. If they had been assigned to the Shock conditions, Ss were "randomly" chosen for the role of "teacher" in a paired-associate "learning task", as

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[1] This report is based on a thesis submitted to the University of Toronto. The research was supported by a Canada Council grant to A. N. Doob.

part of which they delivered a "shock" for each of C's programmed errors. After ostensibly studying the list for 4 minutes (in all Shock conditions), C made either 14 errors (30-word list, taking 3 minutes to do), or 42 errors (90-word list, taking 9 minutes to do). In this task, S and C were in auditory, but not visual, contact; C did not emit any signs of discomfort or pain. When C's study time is counted, the Shock condition lasted for either 7 or 13 minutes. In order to keep the rate of shock-giving constant, the number of shocks was confounded, in the present experiment, with the duration of the interpolated period.

In the Wait conditions, C was sent away by the experimenter, and S waited alone in the room for either 7 or 13 minutes. In the Math conditions, C was also sent away, while S worked on interesting problems for either 7 or 13 minutes. Instructions emphasized that Ss would help the experimenter by solving many problems, as he was collecting problems of graded difficulty for a future study, but that competition was not involved, and that they should not be disturbed by failure (Ss rated the difficulty of each problem after working on it). The task was designed to keep Ss busy, without affecting their arousal level much.

In the final part of the experiment, a "creativity task" (see Konečni & Doob, 1972), Ss judged 30 responses C gave. These were obviously the same for all Ss. For each response they found "uncreative", Ss delivered one or more shocks to C. Naturally, no objective standard was provided. They then rated C on several scales, and were carefully debriefed.

Results and Discussion

On six scales (e.g., likability, aggressiveness, potential friendship), annoyed Ss, in comparison to nonannoyed ones, rated C very unfavorably (F values ranged from 32.38 to 114.12, df = 1/132, in each case). The annoyance manipulation clearly worked. The main dependent measure in the experiment was the number of shocks delivered by Ss to C on the creativity task (see Table 1). The main effect of Annoyance (F = 35.91, df = 1/132), and

Table 1
Mean Number of Shocks Administered

Activity	Shock		Wait		Math	
Duration	7	13	7	13	7	13
Annoy	8.33	11.92	16.75	11.58	13.67	9.58
No Annoy	7.83	9.17	6.67	7.17	6.92	7.42

the Annoyance X Activity (F = 4.79, df = 2/132, $p < .01$) and Activity X Duration (F = 4.17, df = 2/132, $p < .05$) interactions, were significant. The former interaction was due to the differential effects which the three interpolated activities had on annoyed Ss, which was particularly striking at the 7-min. level. The Activity X Duration interaction was almost entirely due to the reversal in the Annoy-Shock-13 cell: while the Wait and Math Ss gave fewer shocks after the greater duration of the interpolated period, the opposite was true for the Shock Ss. (Patterns of results for male and female Ss considered separately were similar to the overall pattern.)

Additional analyses for the four Math groups showed that angered and nonangered Ss did not differ in terms of the number of problems solved (although angered Ss attempted more problems), and that the work tempo of the 7- and 13-min. groups was comparable.

Both the self-arousal and dissipation-of-anger concepts received considerable support. Angered Wait Ss gave considerably more shocks than angered Math Ss (F for the appropriate contrast was 3.92, df = 1/132, $p < .05$). Angered 7-min. Ss gave more shocks than angered 13-min. Ss (F = 8.09, df = 1/132, $p < .01$, for Wait Ss, and 5.05, p .05, for Math Ss). Thus, preventing an angered person from engaging in annoying rumination, and the mere passage of time, seem to have aggression-decreasing effects; these effects also appear to be additive.

However, it is equally clear that under certain circumstances hurting the annoyer is even more efficient than engaging in nonaggressive activities in bringing about a decrease in subsequent aggression. While there were no significant differences between the three groups of annoyed Ss who gave shocks, waited, or did mathematical problems for 13 minutes ($F < 1$), the situation was drastically different for annoyed groups who carried these activities out for 7 minutes (F = 10.99, df = 2/132, $p < .01$). Ss who had aggressed previously gave fewer shocks than either the Wait or Math Ss (Fs of 21.46 and 8.62, respectively

df = 1/132 and $p < .01$ in both cases).

Thus, manipulations which presumably affect the level of arousal (labeled anger) also affect the amount of aggression; on the other hand, expression of aggression seems to decrease the level of physiological arousal (e.g., Hokanson et al., 1963), and the amount of subsequent aggression. Aggression may be more efficient than nonaggression in decreasing the amount of subsequent aggression because real-life contingencies may favor it for the purpose of reducing or terminating external threats of the kind that increase or maintain the level of anger (conducive to aggression on the source of threats); the termination of such threats would ordinarily remove the necessity for further aggressive acts.

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