

DOCUMENT RESUME

ED 133 634

CG 010 974

AUTHOR Baron, Robert A.; Bell, Paul A.  
 TITLE The Aggression-Inhibiting and Aggression-Facilitating  
 Influence of Heightened Sexual Arousal.  
 PUB DATE 76  
 NOTE 26p.; Paper presented at Midwestern Psychological  
 Association (Chicago, Illinois, May 6-8, 1976); Not  
 available in hard copy due to marginal legibility of  
 original document

EDRS PRICE MF-\$0.83 Plus Postage. HC Not Available from EDRS.  
 DESCRIPTORS Affective Behavior; \*Aggression; \*Arousal Patterns;  
 Behavioral Science Research; Behavior Theories;  
 College Students; Electrical Stimuli; \*Males;  
 Pictorial Stimuli; \*Reactive Behavior; Research  
 Projects; \*Sexuality; Stimulus Devices; Visual  
 Stimuli  
 IDENTIFIERS \*Eroticism

ABSTRACT

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ED133634

Paper Presented at NERA, 1976

THE AGGRESSION-INHIBITING AND AGGRESSION-FACILITATING  
INFLUENCE OF HEIGHTENED SEXUAL AROUSAL

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Running title: AGGRESSION AND SEXUAL AROUSAL

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THE AGGRESSION-INHIBITING AND AGGRESSION-FACILITATING  
INFLUENCE OF HEIGHTENED SEXUAL AROUSAL<sup>1</sup>

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Abstract

Eighty-six undergraduate males participated in an experiment designed to investigate the impact of various types of erotic stimuli upon aggression. On the basis of previous research, it was hypothesized that exposure to mild erotic stimuli would tend to inhibit subsequent aggression, while exposure to more arousing stimuli of this type would facilitate such behavior. In order to examine this hypothesis, male subjects were first angered or treated in a more neutral manner by a confederate of the experimenter, and then provided with an opportunity to aggress against this person by means of electric shock. Before aggressing, participants were exposed to one of five different types of stimuli: nonerotic pictures of furniture, scenery, and abstract art; pictures of semi-nude females; pictures of nude females; pictures of couples engaged in various acts of love-making; or explicit erotic passages. Results offered support for the major hypothesis.

THE AGGRESSION-INHIBITING AND AGGRESSION-FACILITATING  
INFLUENCE OF EROTIC STIMULI<sup>1</sup>

The suggestion that sexual and aggressive motives are intimately linked is far from new. For example, Freud (1933) proposed that desires to hurt or be hurt by one's lover form a normal part of heterosexual relations, and should be viewed as pathological only when they become extreme. Similarly, Berne (1964) has suggested that the arousal of aggressive motives often serves to enhance sexual pleasure for both men and women. Evidence for these assertions has actually been obtained in several laboratory studies (Barclay, 1971) which suggest that the arousal of one of these drives is generally associated with an increase in the other. Moreover, additional findings point to the possibility that they both share a similar, underlying physiological basis (Barclay, 1969). Thus, there is some indication that aggressive and sexual motives are indeed closely related, at least under some conditions.

But what of the impact of heightened sexual arousal on subsequent aggression? Are sexually aroused individuals more or less likely to engage in overt attacks against others than individuals not so aroused? Surprisingly, existing empirical evidence relating to this question is somewhat inconsistent. On the one hand, several investigations (Jaffe, Malamuth, Feingold, & Feshbach, 1974; Meyer, 1972; Zillmann, 1971) indicate that exposure to erotic materials (and the increased sexual arousal so induced) may facilitate later aggression. In contrast, several additional studies (Baron, 1974a, b; Baron & Bell, 1973; Frodi, 1976) suggest that heightened sexual arousal may actually inhibit later aggression on the part of both angry and nonangry individuals.

At first glance, the findings of these two groups of investigations appear to be quite contradictory. Close examination of the methods employed in each, however, suggests that their contrasting results may have stemmed largely

from the use of markedly different stimuli. That is, those studies which have reported increments in aggression following exposure to erotic stimuli generally employed highly arousing materials (e.g., explicit films of love-making or explicit erotic passages). In contrast, those which reported reductions in aggression have generally employed much less arousing materials (e.g., pictures of semi-nude or nude young women).

Together, these differences in results and procedures point to an interesting possibility: sexual arousal and aggression may be curvilinearly related, so that mild levels of arousal inhibit later aggression, while somewhat higher levels of arousal actually enhance such behavior. Evidence supporting this suggestion has recently been reported in an interesting experiment conducted by Donnerstein, Donnerstein, and Evans (1975).

In one portion of their study, these investigators found that mildly arousing stimuli (pictures of female nudes) inhibited aggression by angry male subjects, while more arousing materials (explicit scenes of sexual activities) failed to produce such effects, and instead restored aggression to a level similar to that shown by individuals exposed only to nonerotic stimuli. The present experiment was designed, in part, to extend the findings reported by Donnerstein, Donnerstein, and Evans, through the use of a wider range of erotic stimuli. More generally, it sought to investigate the suggestion that sexual arousal and aggression are curvilinearly related within the context of a parametric design. The basic procedures employed were as follows.

Male subjects were first angered or not angered by a confederate of the experimenter, and then provided with an opportunity to aggress against this person by means of electric shock. Before aggressing, participants were exposed to one of five different types of stimuli: neutral pictures of scenery,

furniture, and abstract art; pictures of semi-nude females; pictures of nude females; pictures of couples engaged in various acts of lovemaking; or explicit, erotic passages. On the basis of previous results and the suggestions outlined above, it was predicted that aggression against the confederate would be inhibited by exposure to mildly arousing stimuli (semi-nudes and nudes), would neither be enhanced nor reduced by exposure to the scenes of lovemaking (cf. Donnerstein, et al., 1975), and would be increased by exposure to the highly arousing erotic passages (Jaffe, et al., 1974; Byrne & Lamberth, 1971).

#### Method

##### Subjects

Eighty-six undergraduate males enrolled in introductory psychology at the University of Texas took part in the study. Subjects participated in the experiment in order to satisfy a course requirement.

##### Design and Apparatus

A 5 X 2 factorial design, based upon five levels of erotic stimuli (non-erotic, "cheesecake," nudes, acts, passages) and two levels of prior provocation (nonangered, angered) was employed. Subjects were randomly assigned to each of the cells of this design as they appeared for their experimental appointments.

The apparatus consisted of a modified Buss "aggression machine" (Buss, 1961), a Lafayette stop clock (Model 54015), lists of 40% 60% Glaze association-value nonsense syllables and an intercom system. The aggression machine was identical to that employed in previous investigations (Baron, 1974a, b), and contained ten push-button switches that could be employed by subjects to ostensibly deliver electric shocks of varying intensity to another individual. The stop clock was employed to measure the duration of shocks administered by subjects to the confederate.

### Procedure

Anger arousal. When subjects arrived for the experiment, they found a male confederate already seated in the waiting room. Shortly thereafter, the experimenter entered and obtained the written, informed consent of both individuals to participate in the study. Following these procedures, she conducted both the confederate and subject to another room where she explained that the first part of the study would be concerned with the manner in which individuals form first impressions of others. During this phase of the experiment, both the subject and confederate were asked to write brief sketches or descriptions of their own personalities. These sketches were then ostensibly exchanged, and on the basis of this information, both individuals were asked to rate their partner on a series of traits (e.g., intelligence, maturity, sincerity). Finally, these ratings, too, were exchanged, so that both were able to learn what kind of impression they had made on their partner.

In reality, both the personality sketch and ratings subjects received from the confederate were supplied by the experimenter. The personality sketch was held constant, and was designed to be quite neutral in nature. However, the ratings were varied in a systematic manner so as to influence subjects' level of anger toward the future victim. In the nonangry condition, they were quite favorable (e.g., the confederate rated the subject as high in intelligence and maturity). However, in the angry group, they were highly unfavorable and quite derogatory. These procedures were adapted, with slight modifications, from those employed in several previous studies (Baron, 1974b; Baron & Bell, 1976), and have been found to be quite effective in influencing subjects' level of anger toward a potential victim.

Exposure to erotic stimuli and aggression opportunity. Following the completion of the above procedures, the experimenter conducted both the sub-

ject and the confederate to an additional room where she explained that the second part of the study would be concerned with the effects of unpleasant stimuli upon physiological reactions. She then stated that in order to investigate this topic, one of the two individuals present would serve as a responder and receive a series of electric shocks of varying intensity from the remaining individual, who would act as a stimulator. The responder's physiological reactions to the shocks he received would then ostensibly be carefully monitored in order to determine the precise impact of these stimuli upon his responses. These procedures were employed instead of the more usual "teacher-learner" paradigm because existing evidence (Baron & Eggleston, 1972) suggests that they provide a measure of aggression somewhat less affected by various altruistic motives (e.g., a desire to help the "learner" master the experimental materials) than this more commonly used technique.

The experimenter then asked the confederate if he would agree to play the role of responder. He consented to this request, and was then conducted to a third room where the experimenter presented instructions for his task and attached shock and physiological recording electrodes to his wrists and hands. The physiological recording electrodes were connected to an impressive-looking polygraph (Lafayette Model 76014E) that was located in full view of subjects, and was switched on at this time. In reality, however, no records of the responder's physiological reactions were actually made during the study, and this apparatus was employed primarily to lend credibility to the experimenter's statements concerning the major purpose of the study.

After completing these activities, the experimenter returned to the room where the subject was waiting, and provided detailed instructions for his role as stimulator. These instructions indicated that each time a red signal light on the apparatus was illuminated, he should select and depress

one of the ten buttons on the apparatus in order to deliver electric shock to the responder. They further explained that this light would be illuminated according to a fixed random schedule specifically designed to prevent the responder from "getting ready" for each shock, and so influencing his physiological reactions to these stimuli. The experimenter further indicated that as an additional means of preventing such "readiness," and to further distract the responder's attention away from the shocks, he (the responder) would attempt to memorize lists of nonsense syllable pairs which would be read to him by the stimulator (i.e., the subject). It was clearly emphasized, however, that the illumination of the red light would have nothing to do with the responder's performance on this task, but would occur only on those occasions dictated by the prearranged schedule. The learning task was included in the procedures of the present study primarily to insure that subjects performed the same general activities (i.e., presenting various material to the victim before shocking him) as those performed in previous investigations employing the "teacher-learner" paradigm.

At this point, the experimenter went on to indicate that because any shocks employed by the stimulator would be perfectly adequate in terms of fulfilling the requirements of the experiment, he was to feel free to choose any of the shock buttons he wished, and to depress these buttons for as long a period as he desired each time the red shock signal was illuminated. These statements were included in order to counteract or lessen any feelings on the part of subjects that they were "expected" or "required" to direct at least some strong shocks to the responder (i.e., to reduce the influence of any demand characteristics operating in this direction). It was further explained that the higher the number of the shock button chosen, the stronger the shocks to the responder. In order to demonstrate the magnitude of the shocks which could be delivered to the responder, the experimenter then administered

"samples" from buttons 4 and 5. These shocks were generated by a battery-powered inductorium within the apparatus, and were generally judged to be moderately unpleasant by subjects.

After completing these activities, the experimenter glanced at her watch, and remarked that it would now be necessary to wait a few minutes before proceeding, in order to allow the responder's physiological processes to return to resting levels. She then explained that since this time was available, she would ask the subject to examine and rate some stimuli she was planning to use in another experiment. These stimuli were contained in a looseleaf notebook, and after handing the subject this notebook and a rating form, the experimenter left the room, supposedly to allow the subject to work on this task undisturbed. The stimuli in the notebook varied according to the experimental condition. In the nonerotic group, it contained ten pictures of scenery, furniture, and abstract art. In the "cheesecake" condition, it contained ten pictures of attractive young women in bathing suits and negligees. In the nudes condition it held ten pictures of nude young women taken from back issues of "Playboy" magazine. In the acts condition, it contained 10 pictures drawn from erotic magazines, depicting couples engaging in various acts of lovemaking (intercourse, oral sex, etc.). Finally, in the passages condition, the notebook contained ten explicit, typed descriptions of sexual activity.

The decision to employ these five types of stimuli in the present investigation was based partly upon the stimulus materials employed in previous studies, and partly upon data collected from an undergraduate class ( $N = 50$ ). Students in this class were presented with samples of each of these types of stimuli, and asked to rate them in terms of arousal properties on a 7-point scale (not arousing at all - highly arousing). Results

indicated that the stimuli were ordered along this dimension in the expected manner (nonerotic, "cheesecake," nudes, acts, passages). Moreover, the means for adjacent pairs differed significantly in all cases (i.e., the mean rating for "cheesecake" was higher than that for nonerotic stimuli, the mean rating for nudes was higher than that for "cheesecake," etc.). The means for the five types of stimuli were as follows: nonerotic (1.76), "cheesecake" (3.44), nudes (4.13), acts (5.18), and passages (5.94). The particular stimuli included in each of the five categories were selected by a panel of ten undergraduate judges who willingly volunteered to perform this task.

Subjects rated each stimulus they examined along two dimensions. First, they rated each in terms of attractiveness (not attractive--very attractive). Second, they rated each in terms of its arousal properties (not arousing--very arousing). Both ratings were made along 7-point scales, and subjects in all groups were allowed five minutes to complete this task.

At the conclusion of the allotted time, the experimenter returned and stated that the experiment could now proceed. She then withdrew to the room where the confederate waited, and initiated the shock trials. The red shock signal was illuminated on 20 separate occasions, thus providing subjects with 20 opportunities on which to shock the victim.

Postexperimental questionnaire and de-briefing. After the last shock trial, the experimenter returned and asked the subject to complete a brief questionnaire. Separate items on this questionnaire required subjects to rate (on 7-point scales) their level of anger toward the confederate (not angry--very angry), their level of liking for this person (dislike very much--like very much), and their current feelings along several different dimensions (calm--excited, not annoyed--annoyed, peaceful--tense). A thorough de-briefing was then conducted. During this session, all deceptions were revealed, and the true purposes of the experiment were fully explained.

## Results

### Attractiveness and Arousal

#### Properties of the Experimental Stimuli

In order to determine whether subjects found the five types of stimuli employed to be differentially attractive and arousing, separate analyses of variance were performed on their ratings of these materials. The analysis of the ratings of attractiveness yielded significant main effects both for anger arousal  $F(1,76) = 5.82, p < .025$ , and type of stimulus  $F(4,76) = 3.37, p < .025$ . Examination of the appropriate means indicated that the significant anger effect stemmed from the fact that angry subjects rated the experimental stimuli as more attractive than nonangry individuals ( $\bar{X} = 4.98, \bar{X} = 4.29$ , respectively). Further comparisons between the various stimulus conditions by Duncan multiple-range test indicated that subjects found the "cheesecake," nudes, and passages to be more attractive than the nonerotic stimuli ( $p < .05$ ). However, they did not rate the pictures of sexual acts as significantly more attractive than the neutral, nonerotic pictures. Given the explicitness of the pictures in the acts condition, and the fact that many individuals have mixed affective reactions to such scenes (Byrne, Fisher, Lamberth, & Mitchell, 1974), this latter finding was not entirely unexpected.

The corresponding analysis of subjects' ratings of the arousal properties of the various stimuli yielded only the expected significant main effect for type of stimulus  $F(4,76) = 12.39, p < .001$ . Follow-up comparisons among the appropriate means by Duncan multiple-range test indicated that subjects found the "cheesecake," nudes, acts, and passages all to be significantly more arousing than the neutral pictures ( $p < .05$ ). In addition, they found the nudes and passages to be more arousing than the "cheesecake" stimuli ( $p < .05$ ). When considered together with the ratings provided by the undergraduate class mentioned previously, these findings suggest that the

experimental stimuli generally produced the intended effects upon subjects.

### Shock Intensity

The mean intensities of the shocks directed against the confederate by subjects in each of the ten experimental groups are presented in Table 1. Inspection of this table suggests that as expected, angered subjects generally directed stronger attacks against the confederate than those who had not previously been provoked. In addition, and of greater interest, it appears that the level of shocks employed by subjects was strongly affected by the nature of the stimuli they examined. For both angry and nonangry individuals, aggression appears to have been reduced by exposure to "cheesecake," nudes, and sexual acts. However, similar effects were not induced (or were induced to a lesser degree) by exposure to the erotic passages. Indeed, in the case of nonangry individuals, aggression was slightly facilitated by such experience.

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Insert Table 1 about here  
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An analysis of variance performed upon the data represented in Table 1 yielded two significant findings, main effects both for anger arousal  $F(1,76) = 4.75, p < .04$ , and type of stimulus  $F(4,76) = 2.79, p < .04$ . The main effect for anger arousal stemmed from the fact that as anticipated, angry individuals directed somewhat stronger attacks against the confederate ( $\bar{X} = 4.01$ ) than nonangry subjects ( $\bar{X} = 3.28$ ). The main effect for stimulus type is perhaps best represented graphically, and is shown in Figure 1. Inspection of this figure suggests that consistent with previous findings, aggression was sharply reduced by exposure to the "cheesecake" and nudes. In addition, and somewhat unexpectedly, such behavior was further reduced by exposure to explicit pictures of love-making. Finally, and consistent with initial predictions, similar reductions in aggression were not induced by the erotic

passages. Instead, individuals exposed to such materials showed higher levels of aggression than those exposed to the other types of erotic materials, and approximated the behavior of subjects exposed only to nonerotic stimuli in this respect.

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Insert Figure 1 about here  
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Comparisons between the means depicted in Figure 1 by Duncan multiple-range test generally confirmed this apparent pattern of results. As suggested by Figure 1, the means of the "cheesecake," nudes, and acts groups were all significantly lower than that of the neutral (nonerotic) group ( $p < .05$ ). However, the means of the nonerotic and passages groups did not differ significantly. In addition, the mean of the passages group was significantly greater than that of the acts group ( $p < .05$ ). In sum, results offered support for the suggestion of a curvilinear relationship between sexual arousal and aggression. The inflection point of this curve, however, appeared to be somewhat higher along the dimension of erotic stimuli employed than expected.

#### Shock Duration

As has been the case in several previous investigations (e.g., Zillmann, Johnson, & Day, 1974), the findings for shock duration were far less clear-cut than those for shock intensity. An analysis of variance performed on these data yielded only a main effect for anger arousal of border-line significance  $F(1,76) = 3.70, p < .06$ . While the means for the various stimulus conditions were generally ordered in the same manner as those for the intensity measure, the effects of this variable did not approach statistical significance--  
 $F(4,76) = 0.71, p < .20$ .

#### Postexperimental Questionnaire

The first two items on the postexperimental questionnaire were employed to

assess the effectiveness of the attempted manipulation of anger arousal. The first required subjects to rate their degree of anger toward the victim, while the second required that they indicate their degree of liking for this person (both ratings were made along 7-point scales). Separate analyses of variance performed on the data for each question revealed that as expected, subjects in the angry group reported significantly greater anger toward  $F(1,76) = 30.13, p < .001$  and more dislike for  $F(1,76) = 87.83, p < .001$  the victim than subjects in the nonangry condition. Thus, it appeared that the attempted manipulation of anger arousal had indeed been successful. Additional items required subjects to rate their present feelings along three different dimensions (calm--excited, not annoyed--annoyed, peaceful--tense). While the pattern of results for these items was generally as expected (e.g., subjects reported feeling most tense after examining the erotic passages), none of the analyses performed yielded significant findings.

#### Discussion

The results of the present experiment generally provide support for the suggestion of a curvilinear relationship between sexual arousal and aggression. As has been the case in several previous studies (Baron, 1974a, b; Donnerstein, Donnerstein, & Evans, 1975) exposure to mild erotic stimuli sharply reduced later aggression by male subjects. However, exposure to somewhat more arousing stimuli failed to produce such effects, and actually seemed to slightly enhance later aggression on the part of nonangered individuals. This latter finding is consistent with the results of several previous experiments which have reported increments in aggression following exposure to highly arousing erotic materials (Jaffe, et al., 1974; Zillmann, 1971). Taken together, the results of the present study, as well as those of past research, seem quite consistent with the view that aggression may first decrease, and then in-

crease as sexual arousal (induced through erotic materials) increases.

But assuming, as seems to be the case, that sexual arousal and aggression are curvilinearly related, the question of why such a relationship should exist remains. Two possible explanations for its occurrence may be suggested. First, as noted recently by Donnerstein, Donnerstein, and Evans (1975), exposure to erotic stimuli may result in two major effects. On the one hand, it may produce an increase in subjects' over-all level of arousal, while on the other, it may serve to shift their attention away from any previous annoyance or provocation (Zillmann & Johnson, 1973). Whether exposure to erotic stimuli will facilitate or inhibit subsequent aggression, then, may depend largely upon which of these two effects predominates. If arousal dominates, subsequent aggression may be enhanced, particularly if such behavior represents a strong or prepotent response among subjects (Bandura, 1973; Berkowitz, 1974). However, if distraction or attentional-shift processes predominate, aggression may actually be reduced, since subjects' level of anger will be lowered. It seems reasonable to assume that in many cases, mild erotic stimuli (e.g., semi-nude or nude pictures of members of the opposite sex) will produce relatively small increments in arousal, but may well serve to distract subjects' attention away from prior provocations. Thus, stimuli of this type should serve to inhibit subsequent aggression. In contrast, more explicit erotic materials may induce somewhat greater increments in arousal (Zillmann, 1971). In many instances, then, exposure to such stimuli should serve to enhance later aggression. Further evidence regarding the validity of this two-factor explanation may be obtained by means of direct physiological measures of subjects' arousal, and by examining the influence upon aggression of stimuli which are distracting but nonerotic, and arousing but nonerotic. If the reasoning presented above is accurate, such stimuli should exert effects upon later aggression quite similar to those produced by various

types of erotic material.

A second explanation for the proposed curvilinear relationship between sexual arousal and aggression focuses upon subjects' affective reactions to erotic stimuli. Basically, it seems possible that most individuals find mild erotic materials quite attractive, and experience largely positive affective reactions while examining them. This suggestion is supported by the findings of previous studies (Baron, 1974a, b) in which subjects reported strongly positive reactions to mild erotic materials, and by the fact that participants in the present study rated the "cheesecake" and nudes as more attractive than the neutral pictures of scenery, furniture, and abstract art. Such positive affective reactions, in turn, may then prove incompatible with feelings of irritation or annoyance toward potential victims, and so operate to inhibit direct attacks against them. This suggestion finds support in the results of several studies (e.g., Baron & Ball, 1974; Rule, Haley, & McCormack, 1971) which indicate that aggression may often be inhibited by the induction of emotional states incompatible with anger (e.g., feelings of amusement).

In contrast, subjects' affective reactions to more explicit erotic stimuli may be quite mixed, or even predominantly negative in nature (Byrne, et al., 1974). Moreover, the high levels of sexual arousal induced by such materials, coupled with the fact that subjects can do nothing to bring about their immediate reduction, may prove to be quite irritating or annoying. Together, such negative reactions may well facilitate later aggression (Jaffe, et al., 1974; Zillmann, 1971).

As should be apparent, these two possible explanations for the proposed curvilinear relationship between sexual arousal and aggression are in no way incompatible, and may in fact prove to be complementary. Further evidence regarding the validity of both is needed, however, before either can be ac-

cepted with a high degree of confidence.

One puzzling finding of the present research lies in the fact that while explicit pictures of love-making led to reductions in aggression in this investigation, they failed to induce such effects in a previous study by Donnerstein, Donnerstein, and Evans (1975). One possible reason for these seemingly contradictory results may concern differences between the specific stimuli employed in the two experiments. Those used in the present research were especially chosen to induce largely positive rather than negative affective reactions among subjects. Thus, it is not surprising that they led to reductions in later aggression. It seems possible that in contrast, the stimuli used by Donnerstein, et al. served to induce somewhat more negative affective state among subjects, and so failed to reduce subsequent aggression. Only direct comparison of the two sets of stimuli involved, of course, can resolve such questions. The possible existence of such differences, however, points to a more general problem regarding further research in this area. Specifically, the impact of erotic stimuli on later aggression may vary not only as a function of the general type of materials employed (i.e., nudes versus acts; acts versus passages), but also as a function of the specific contents of these materials as well. To mention only one possibility, it seems reasonable to expect that pictures of tender and affectionate love-making may well exert sharply different effects upon subsequent aggression than pictures of wilder, and more impulsive activities. In view of such possibilities, it seems necessary in future research to (1) determine those characteristics of erotic stimuli which may be important in this regard, and (2) develop standardized sets of erotic materials which control for such factors.

In sum, the present study seems to suggest that the contrasting results often obtained in previous research concerning sexual arousal and aggression

have not actually been contradictory in nature. Rather, they seem to have stemmed from the fact that various investigators--by employing different erotic materials--sampled different segments of the over-all sexual arousal-aggression function. Erotic stimuli (and the sexual arousal they induce), it appears, may either inhibit, facilitate, or fail to affect subsequent aggression. The precise impact of such materials seems to depend upon the type of stimuli employed, the amount of arousal induced, and perhaps additional factors as well.

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Footnote

<sup>1</sup>The authors wish to express their sincere appreciation to Christy Achor, Evan Drellinger, Craig DuBois, Lynne Goldsberry, and Helene Reich for their able assistance in the collection of the data, which were gathered while the first author was in residence at the University of Texas, Austin.

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Table 1  
Mean Intensity of Shocks Directed Against the Confederate  
by Subjects in Ten Experimental Groups

Anger Level	Type of Stimuli				
	Neutral	Cheesecake	Nudes	Acts	Passages
Nonangry	3.68 (9)	3.56 (10)	2.74 (8)	2.26 (9)	4.15 (9)
Angry	5.21 (8)	3.28 (8)	4.04 (8)	3.31 (9)	3.86 (8)

Note.—Numbers in parentheses indicate cell n.

Figure Caption

1. Mean intensity of shocks directed against the confederate by subjects exposed to nonerotic stimuli (NE), "cheesecake" (CH), movies (NU), sexual acts (AC), or erotic passages (PA).

