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Emotional Arousal as a Factor in Communication-Mediated Aggressive Behavior

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Emotional Arousal as a Factor in Communication-Mediated Aggressive Behavior

Abstract

Under conditions where a salient social problems gets coupled with an equally intense interest in an aspect of human social behavior, it is to be expected that a substantial amount of scholarly speculation and empirical research would be generated. Such would appear to be the case in recent years in connection with the considerable volume of work that has been and continues to be produced in the area of human aggression. The wide prevalence of violent and aggressive acts in the world at large and, particularly, in the United States, has provided a focus of attention and research on the part of scholars and scientists from a variety of fields. At the same time, and possibly for different reasons, there has been renewed interest in the question of man's basic and intrinsic aggressive nature, and in the stimulus conditions under which such behavior -- whether inherited or learned -- is apt to be more readily elicited.

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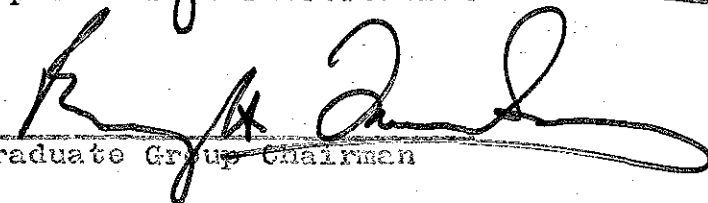
Dolf Zillmann

A DISSERTATION
in
Communication

Presented to the Faculty
of the Graduate School of Arts and Sciences
of the University of Pennsylvania
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy.

1969


Supervisor of Dissertation


Graduate Group Chairman

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CHAPTER I

INTRODUCTION:

THE PROBLEM AND ITS RATIONALE

Under conditions where a salient social problem gets coupled with an equally intense interest in an aspect of human social behavior, it is to be expected that a substantial amount of scholarly speculation and empirical research would be generated. Such would appear to be the case in recent years in connection with the considerable volume of work that has been and continues to be produced in the area of human aggression. The wide prevalence of violent and aggressive acts in the world at large and, particularly, in the United States, has provided a focus of attention and research on the part of scholars and scientists from a variety of fields (Larsen, 1968; Weiss, 1968). At the same time, and possibly for different reasons, there has been renewed interest in the question of man's basic and intrinsic aggressive nature (e.g., Lorenz, 1963), and in the stimulus conditions under which such behavior -- whether inherited or learned -- is apt to be more readily elicited.

A major aspect of this two-pronged interest has concerned the role of communication messages featuring aggressive content as instigators of hostile behavior -- both in terms of the acquisition of general aggressive response tendencies (Wertham, 1954) or a "cult of violence" (Gerbner, 1968), and as specific

stimuli for specific aggressive behavior (Bandura, 1965; Berkowitz, 1962, 1965). Such a concern has probably been manifest with different media of communication, and at different periods and places. It has received renewed and more vigorous (and possibly more rigorous) attention with the advent of television and its heavy diet of violence and mayhem, particularly in terms of the effects of such content on children. Whereas the earlier studies, based on sample surveys of children themselves, and their parents and teachers, tended to show at best a negligible relationship between media content and subsequent aggressive behavior (Himmelweit, Oppenheim, & Vince, 1958; Schramm, Lyle, & Parker, 1961; Schramm, 1964), experimental studies have suggested otherwise -- either in terms of a possible cathartic effect, whereby exposure to aggressive messages lessens the tendency to engage in hostile acts (Feshbach, 1961, 1964), or the quite opposite instigational effect, where more aggressive behavior follows from more aggressive messages (Bandura, 1965; Berkowitz, 1965). Few research projects have attracted as much attention in the field of communication as has this particular one (Tannenbaum & Greenberg, 1968; Weiss, 1968), although the controversy still rages, and is still far from resolved.

Whatever the theoretical motivation or interpretative framework for such investigations, a principal focus has been with the manifest content of violence-featuring messages. In

particular, the repeated instances in which Berkowitz and his co-workers (Berkowitz, 1965) have demonstrated an instigational effect, have been attributed to the aggressive cognitive content of the messages -- as perceived by the recipient of such messages. As will be detailed below, Berkowitz's theoretical model actually involves an interaction effect between the perceived message cues and the state of the individual toward his target for subsequent aggression (Feshbach proposes a similar interaction, although not with the same predicted effect). However, the point to be stressed here is that in terms of the contribution of the communication message stimuli per se, the emphasis is on the apparent aggressive content characteristics.

The present investigation accepts as its point of departure the demonstrated instigational effects of aggressive messages, but questions the direct attribution of such effects to the purely cognitive content characteristics. A basic motivation behind the present research is that the strongly aggressive messages, as the prize fight films conventionally employed by Berkowitz and his associates, not only contain aggressive cues, but also serve to evoke a relatively high level of generalized emotional arousal, in accordance with the model of emotional state as developed by Schachter (1964). If this were so, then an alternative theoretical model is suggested in that the observed tendency toward more aggressive behavior may be attributed to the heightened level of physiological excitation,

as such, instead of -- or, since the two models are not necessarily incompatible, in addition to -- the aggressive content cues.

That such a possible confounding of two mechanisms, accounting for the same effect, may have occurred in the previous research is, of course, purely speculative at this point. More important is to attempt to treat the two mechanisms independently of each other. While a completely orthogonal or independent arrangement in the design did not prove feasible, the present investigation represents at least a minimal such attempt to contrast between the two theoretical models.

Background to the Problem

Although much has been said and written about the nature of human aggression, and how it is affected by communications, our concern here is more with the experimental research usually involving the manipulation of apparent level of aggression in two films. For this reason, we will omit any consideration of various sample surveys allegedly studying the relationship between the television content and aggressive behavior in children (Himmelweit et al., 1958; Schramm et al., 1961; Schramm, 1964), and case-study accounts purporting to demonstrate a link between particular instances of communication, such as comic strips or particular television programs, and subsequent violent acts (Wertham, 1954). Neither involve the systematic

manipulation and comparison of different messages, and any causal relationships, or lack of such relationships, are more often assumed than demonstrated.

The social learning paradigm. Any phenomenon involving the behavioral effects of communication messages may readily be accommodated within the general social-learning model (Miller and Dollard, 1940; Bandura and Walters, 1963). Virtually by definition, a communication message is a stimulus for socially mediated learning, as opposed to direct learning, since it provides a best a vicarious means for acquiring a particular response. A special case of the social learning paradigm as applied to the learning of aggressive behavior is represented in the work of Bandura and his associates (Bandura, 1965; Bandura and Walters, 1963). The typical procedure in the relevant research has usually involved the presentation of a model engaging in some specific "aggressive" act, and being implicitly (e.g., Bandura, Ross, & Ross, 1961, 1963) or explicitly (e.g., Bandura, Ross, & Ross, 1963a) rewarded for the demonstrated behavior. Children exposed to such filmed messages are then studied for relative instances or strength of the depicted (or similar) behavior, either under relatively spontaneous (e.g., Bandura, Ross, & Ross, 1961) or specifically manipulated (e.g., Lövaas, 1961; Mussen and Rutherford, 1961) conditions.

A number of studies, involving long term (Hicks, 1965) as well as the more conventional short term effects, have yielded

generally positive findings. In addition to supplying support for the basic theoretical model, such results have been used as a basis for advocating control of television programming which has tended to feature repeated and cumulative instances for imitative behavior, particularly when the protagonist, as the "good guy hero", is shown experiencing reward for his use of violence.

Serious questions have been raised, however, with the operational definition of aggression in such research. Hartley (1964) has argued that in the so-called "Bobo-doll" experiments (Bandura, 1962) the child does not necessarily tend to inflict pain or injury on the doll, when it imitates depicted behavior of kicking or punching the doll, and accordingly, the observed behavior should not be regarded as evidence for the acquisition of aggressive behavior per se. Weiss (1968) has raised similar objections regarding equating various behavioral acts as instances of aggression. In the end, such controversies boil down to matters of individual definition.* If one adheres strictly to the inclusion of the intent to harm and injure as a necessary condition for aggression to exist (Dollard, Doob, Miller, Mowrer, & Sears, 1939), the entire question of aggressive behavior is rendered spurious, since the issue of intent is almost impossible to establish experientially. While such a position has been employed by those seeking to exonerate the television industry in the current controversy (cf. Klapper,

1969), it can be used equally on the other side as well. The point is, that in the experiments of the Bandura group, as in most of the other aggression research, there is an operational definition of what is meant by the term "aggression," and the results should be treated accordingly.

The symbolic catharsis doctrine. Feshbach (1955, 1956, 1961, 1964) has developed a rationale of symbolic catharsis from Freud's notions on the function of fantasy. Freud (1949) had argued that "unsatisfied wishes are the driving power behind fantasy", and "every separate fantasy contains the fulfillment of a wish, and improves on unsatisfactory reality" (p. 176). The apparent motivational relationship led Feshbach (1955) to postulate a drive-reducing function of fantasy behavior for conditions in which the most adequate goal response cannot be made. Because fantasy and imaginative behavior can acquire reward value, Feshbach argued that it can serve as substitute goal response, thus yielding symbolic satisfaction.

In an experiment in which college students were aggressively instigated by insult, and then either given or not given an opportunity to express aggressive fantasies, Feshbach (1955) found support for this contention. Subjects who expressed apparent hostility in a Thematic Apperception Test, subsequently showed less aggressive behavior, as assessed by attitude questionnaires. The expression of aggressive fantasy thus seemed to operate toward the reduction of aggressive drive.

However, evidence of a cathartic effect resulting from an individual's expression of aggressive behavior is far from consistent. A number of related studies have failed to confirm the findings of the original Feshbach experiment -- Thibaut & Coules (1952) and Rosenbaum & DeCharms (1960) in experiments slightly modifying the original design, and Kenny (1953) and Feshbach himself (1956) in studies operationalizing aggression through doll-playing. Moreover, Pirojnikoff (1958) and, more recently, the work of Mallick & McCandless (1966), and also Hornberger's (1959) study dealing with nail hammering as the aggressive activity, not only did not support the cathartic conception, but found the opposite effect, where covert aggressive activity led to more rather than less overt aggressive behavior.

For the most part, insofar as the above studies involve communication, they deal with the consequences of encoding behavior. Feshbach (1961) has extended his basic theoretical model to include the decoding of messages with aggressive content, and it is at this point that his research becomes particularly relevant to our present interest. He has reasoned that by witnessing aggressive behavior, or by the reception of aggression-related expressions and events, an angered subject can vicariously engage himself in the depicted aggressive activity, and "use the act to satisfy and thereby reduce his hostility" (Feshbach, 1961, p. 381). An important quali-

fyng condition in this formulation is that the individual be aggressively predisposed at the time of exposure to the message. For an individual not so predisposed, Feshbach predicted that the message would have an instigational effect rather than a cathartic one.

In his prototype experiment Feshbach (1961) varied the two critical factors independently. To differentiate between S's initial level of aggressive drive, Ss were either insulted or not insulted by E. The second variable involved either an aggressive film (a clip of a prize fight sequence from the motion picture *Body and Soul*), or a neutral film (depicting the consequences of the spread of rumor in a factory). Aggressive behavioral tendencies after exposure to a film were assessed by means of a word association test and by ratings of the attitude toward the experimenter. The word association measure did yield the expected pattern of results, but the differences between conditions failed to reach statistically significant levels. The findings were clearer on the attitudinal measure with the expected cathartic effect obtaining between the insult / aggressive film versus the insult / neutral film conditions. The expected reverse effect in the non-insult situation did not occur; in fact, the differences here were in the direction opposite to the predicted ones, although not to a statistically significant degree.

But Feshbach's catharsis hypothesis has not been too readily accepted. Based on the finding of aggression anxiety responses to strong anger arousal (Berkowitz and Holmes, 1960), Berkowitz (1962) offered the alternative explanation that Feshbach's prize-fight film may have excited the aggressively aroused subject to a point where he became aware of his socially disapproved inclinations, and ultimately generated high aggression anxiety and guilt feelings operating toward the inhibition of aggression. Similarly, Bandura (1965) has expressed doubts about the appropriateness of the independent variable manipulation, the procedure, and the dependent measures of Feshbach's experiment. More important, the symbolic catharsis doctrine faces a steadily increasing bulk of counter-evidence. In basically the same experimental situation, but with different, and presumably improved, dependent measures, exposure to filmed aggression was consistently found to facilitate subsequent aggressive behavior rather than to reduce it (Berkowitz, 1965).

The eliciting cue paradigm. By far the most active experimental investigator in this area, and the one whose work provides the main incentive for the present research, is Leonard Berkowitz. In a dozen or more studies he and his co-workers have repeatedly demonstrated a facilitative instigational effect of aggressive films on subsequent aggressive behavior. Basing his work on the revision of the classical frustration-aggression hypothesis (Dollard et al., 1939),

Berkowitz has revived a postulate of a specific, acquired aggressive drive in humans. He has argued that stimulus complexes, such as filmed communication messages, may contain specific cues that are associated by the individual with learned aggressive responses, and accordingly serve to elicit such responses -- which become manifest when other constraints on such behavior (e.g., acquired social inhibitions of aggression anxiety) are reduced or overcome.

Along with Feshbach and others, Berkowitz has found it necessary to include a specific aggressive target in his formulation. That is, the individual must first have experienced some frustrating or anger-inducing behavior by a tormentor, such activity presumably serving to set off the specific aggressive drive. He is explicit in denying the possibility of displacement to another object, arguing that the original frustrating experiences evoke a tendency toward a sequence of behavior whose final goal response is to inflict injury on the instigator of frustration, and that this behavioral set is not completed until the injury-inflicting goal response is attained. "As long as the anger lasts and the individual is set to aggress, he does not obtain completion until he sees that he has injured his frustrator or that someone else has done so" (Berkowitz, 1962, p. 221). Or more recently: "Once such aggressive responses are put into motion, even if only implicitly in the person's thoughts, then an individual will not attain

completion until the goal object has been aggressively injured" (Berkowitz, 1965, p. 324).

Thus, Berkowitz is led to a three-stage paradigm, suggesting a corresponding three-stage experimental procedure. There is an initial frustrating experience (in experimental terms, this involves setting up a contrast between an angering and a non-angering condition); this is followed by exposure to aggression-eliciting cues (i.e. comparing between an aggressive film versus a relatively non-aggressive film), and lastly, by an opportunity to engage in aggressive behavior against the original tormentor (in the experimental context, this would involve obtaining some measure of aggressive behavior with adequate degrees of sensitivity and range to detect different levels of aggressive response tendency). Within such a formulation, the angering condition presumably serves the triple function of (a) initiating the aggressive behavioral sequence, (b) serving to sensitize the individual to the potentially aggression-provoking cues of the film, and (c) providing an appropriate goal object for the termination of the aggressive behavior. The communication would appear to mainly serve the function of providing additional aggressive cues, which presumably achieve their potential only when the individual is already "primed to aggress" (Berkowitz, 1965). The response task is necessary to complete the interactive instigation toward aggressive behavior, which presumably will occur only under socially

sanctioned conditions.

A number of studies based on Berkowitz's general model, and employing the outlined experimental procedure, provided considerable evidence favoring such a formulation (Berkowitz, 1965), and thus serve to refute Feshbach's catharsis model. In earlier experiments the angering manipulation was accomplished through the use of insults and derogatory remarks (e.g., Berkowitz, Corwin, & Heironimus, 1963; Berkowitz, 1965a), while later studies tended to have a confederate administer electric shocks to the subject under the guise of a "learning task" (e.g., Berkowitz & Geen, 1966, 1967). A film clip from the motion picture *The Champion*, featuring Kirk Douglas as one of the antagonists in a bloody boxing match, served as the aggressive film, while the neutral film condition was accommodated with such innocuous short films as those dealing with the travels of Marco Polo (Berkowitz, 1965a), English canal boats (Berkowitz, 1965a), or, more recently, somewhat more dramatic and competitive but presumably less aggressive, a one-mile track race (e.g., Berkowitz & Geen, 1966, 1967). From earlier studies, in which the dependent variable consisted of ratings of the tormentor-confederate that could be damaging to his career, Berkowitz has moved to others employing somewhat more behavioral measures of intensity and duration of electric shocks administered by the subject to the confederate, the shocks apparently serving as negative feedback in a simple

learning situation.

In other studies, utilizing essentially the same experimental paradigm, the model has been extended to accommodate the issue of different degrees of cue similarity between the angering and/or response situations, on the one hand, and certain aspects of the film, on the other. Thus, the instigational effect was still further enhanced when the confederate was identified as a college boxer rather than a speech major (Berkowitz, 1965a), or having the same first name as the lead actor (Berkowitz & Geen, 1966, 1967) or as the character portrayed by the lead actor (Geen & Berkowitz, 1966).

Another associated issue of interest -- particularly in terms of its implications for mass media messages -- was the factor of the degree of apparent justification for the portrayed filmed aggression. The typical television show tends to represent aggression as an appropriate, socially sanctioned means toward a legitimate end, and it was reasoned that under such circumstances the viewing subject would be even more prone toward subsequent aggressive behavior (Berkowitz, 1962). Such an expected effect was clearly demonstrated in a number of studies by Berkowitz and his associates (Berkowitz, 1965a; Berkowitz et al., 1963; Berkowitz & Rawlings, 1963) using a simple "good guy versus bad guy" justification distinction, and was also demonstrated by Hoyt (1967) where the aggression was justified as representing either self-defense or vengeance.

As with many other theoretical models in psychology, the integration of findings of an active program of ongoing research with those of earlier research does not always yield a consistent set of results. Such would appear to be the case with respect to the need for postulating the original frustrating condition. Consistent with his original formulation of a specific aggressive drive, Berkowitz and his associates have indeed found in most of the studies that an aggressive film without the original angering condition is not quite sufficient to instigate a significant increment of subsequent aggressive behavior. There are, however, a number of additional studies where the angering condition was not necessary for producing a significant effect. For example, Lövaas (1961) and Mussen & Rutherford (1961), working with children, found this to be the case. More directly related to Berkowitz's paradigm, two studies by Walters and his co-workers (Walters & Thomas, 1963; Walters, Thomas, & Acker, 1962) demonstrated a significant facilitative effect of a knife-fight scene in the absence of any initial aggressive instigation, while Hartmann (1969) found a significant effect under both angering and non-angering conditions.

By the same token, Tannenbaum and Hoyt (1968) questioned the assumption implicit in the Berkowitz formulation that prior frustration serves to make the individual particularly sensitive to the aggressiveness depicted in a film. They tested this notion by varying the order of the angering and the film con-

ditions, reasoning that, if the frustration followed the film, it should obviously not as readily sensitize. Contrary to the expectation from the basic Berkowitz model, there was no difference between the two orders, with both producing comparable instigational effects. Along a similar vein, Geen (1968) found that, when the original experience was one of task failure not associated with the subsequent target for aggression, there was still significant increase in aggressive behavior toward the target, but without any apparent retaliation.

Such findings, particularly the latter, have stimulated speculation --- in a number of quarters --- that frustration and/or attack against the subject may facilitate a general rather than specific arousal. Among other things, this general arousal is assumed to heighten the individual's susceptibility to other simultaneous or subsequent stimuli, including, of course, aggressive stimuli. When the violent film does indeed provide aggressive cues, in relative abundance, and furthermore, when the subsequent response task virtually demands some form of hostile reaction, such as the administration of electric shocks, it is to be expected that the aggressive responses in the subject's repertoire become more pronounced. Berkowitz (1969) hints vaguely at such a reformulation, but does not treat it systematically, nor does he propose a particular mechanism for such a sequence.

Most recently, Geen and O'Neal (1969) studied the relation-

ship between general and specific arousal in somewhat more detailed terms. For them, however, the general arousal did not precede the specific aggressive disposition, but followed upon it. In the absence of any initial frustration, subjects saw either an aggressive or a neutral film. Half the subjects in each film condition were then subjected to presumably arousing or energizing white noise, while the other half went through all the motions, but did not receive the white noise. While the results were somewhat equivocal in that the same pattern did not emerge on each of the various dependent measures, there was evidence for a facilitative effect as a consequence of the addition of the white noise in the aggressive film condition.

This and several other recent studies (e.g., Baker & Schaie, 1969; Gambaro & Rabin, 1969) point up that a general arousal factor may be involved in the instigation of aggressive behavior. It would appear premature, however, to draw conclusions as to the precise role of general arousal in the elicitation of aggressive responses. The notion of an arousal factor as being involved in the instigation of communication-mediated aggression obviously merits further attention, and the present investigation is directed at just such a consideration.

An Alternative Explanation: Emotional Arousal

The behavior during the exposure to communication, and

immediately following the exposure, may be conceptualized as an emotional experience. The individual may be regarded as responding viscerally, as well as cognitively, to the presented message, the pattern of his emotional response being structurally similar to that occurring with the corresponding direct stimuli. However, in terms of emotional conditioning, it is assumed that the individual can discriminately adapt to the difference between the communication-mediated and "real" or direct situation. Most typically, this adaptation will serve to reduce the level of his overall emotional response.

Pre- and post-communication interpersonal exchanges may also be considered to constitute emotional experiences of the individuals involved. Thus, the three stages inherent in the previous research and theory dealing with the instigation of aggressive behavior through films -- pre-communication interpersonal encounter, exposure to communication, and post-communication interpersonal behavior -- may be dealt with collectively within the framework of emotional theory.

The two-factor model of emotional state recently advanced by Schachter (1964) would appear to fit this situation. According to this theory, physiological and psychological components of responding interact to determine the perceived nature and degree of an emotional state.

It is assumed that the autonomic component of the physiological activation to a given stimulus -- or, possibly, merely the

interoceptive feedback of that autonomic activity -- is general and non-specific to a given emotional state, with the individual depending on situational cues to determine his perception of the specific emotional state. That is, he cognitively generates an explanation of his excitation by inferentially connecting apparent environmental stimuli with the arousal he feels at the time. Put differently, he uses external cues to label his internal responses, in order to legitimize or explain these reactions to himself. It is this cognitive labeling that makes a rather ambiguous general autonomic activation a relatively unequivocal specific emotional experience.

This interdependency of physiological and psychological determinants of emotional state has been formalized in three theoretical propositions:

- 1) Given a state of physiological arousal for which an individual has no immediate explanation, he will "label" this state and describe his feelings in terms of the cognitions available to him.
- 2) Given a state of physiological arousal for which an individual has a completely appropriate explanation, no evaluative needs will arise, and the individual is unlikely to label his feelings in terms of the alternative cognitions available.
- 3) Given the same cognitive circumstances, the individual will react emotionally or describe his feelings

as emotions only to the extent that he experiences a state of physiological arousal (Schachter, 1964, p.53).

Schachter and his associates have presented a substantial amount of experimental evidence in support of these propositions -- or, at least, in support of their apparent behavioral implications (Nisbett & Schachter, 1966; Schachter, 1967; Schachter & Singer, 1962; Schachter & Wheeler, 1962; Singer, 1963).

In applying the two-factor rationale to communication-provoked emotional experiences during the exposure to a communication, it is assumed that these emotional responses are labeled readily and without too much ambiguity. Most characteristically, the relevant cognitions for labeling are provided by the message at the same time that it produces a reaction of autonomic activation. If the individual feels excitation in the presence of such specific stimuli, he can most readily explain why he feels what he feels. He thus can label his responding as specific emotional experiences -- e.g., as fear, anger, repulsion, sympathy, etc. It is further assumed that the perceived intensity of excitation determines the intensity of the specific emotion and feeling. This expectation is in accord with Schachter's (1964) third theoretical proposition, which clearly states that the individual will react emotionally to the extent that he experiences physiological arousal. It should be noted that the

intensity of excitation does not determine the degree of certainty associated with the labeling of a particular emotional state (unless one would be willing to regard certainty itself as an emotional state).

Similarly, cognitions of an interpersonal interaction situation can determine the specific emotion felt toward the other person, again with the degree of the excitation determining the felt intensity of the emotion. Thus, if an individual is frustrated or attacked in his pursuit of highly valued interests, he is apt to label any generated excitation in accord with his cognitions of the source inflicting these negative experiences. If the frustration or attack can be attributed to deliberate behavior on the part of another person, the individual will presumably label his emotion as "anger toward this person," or something to that effect.

We may further assume that cognitions relevant to the labeling of a given emotional experience may be reinstated at a later time, even after the initial experience has totally subsided, with the introduction of appropriate stimuli. In the context of the present investigation this would imply that a communication which offers information about activities between people who were directly involved in an earlier social interaction would have a greater reinstatement effect than one which introduces new and different characters -- which may help explain the obtained effects of the cue-similarity studies cited earlier

(e.g., Berkowitz & Geen, 1966, 1967).

At least one additional assumption is required to apply such a model to the situation of communication-induced or communication-mediated behavior. This relates to the temporal characteristics of the induced excitation, which is assumed here not to disappear abruptly with the cessation of the communication message, but to decay over some increment of time (probably in most cases, the decay period exceeds the time needed for any cognitive adjustment or readjustment to the changed situation).

This assumption is based on properties of the autonomic system, which partly operates through relatively slow humoral processes -- locally or circulatorily distributing secretions, frequently functionally sequenced. Accordingly, physiological arousal is not abruptly elevated, nor does it, once elevated, abruptly disintegrate. Ignoring conceivable intervening variables which might affect the decay of excitation, there is considerable experimental evidence (Ax, 1953; Brady, 1967, Funkenstein, 1954; Funkenstein, King, & Drolette, 1962; Schachter, 1957) suggesting minimal decay periods of over 15 and quite regularly up to 30 seconds in mainly humorally-controlled vascular reactions. In the case of vasoconstriction and blood pressure, decay periods of as high as 3-5 minutes are not unusual.

The critical aspect of all this for our theoretical formu-

lation here is that, if there is a state of excitation persisting beyond the termination of the message, as such, any subsequent activity called for or spontaneously occurring within this decay period, may be affected by that persisting residue of emotional arousal. For one thing, this would imply that a novel stimulus, introduced during the decay interval, might well be labeled and responded to differently, because of the prior and persisting arousal -- in accord with Schachter's second and third proposition. That is, the excitation produced by the novel stimulus is superimposed upon the already present heightened base-level of excitation. By the same token, we would expect that any specific behavior the individual may have to engage in after the communication message, would be somewhat influenced by the existing level of arousal at the time this behavior is elicited. Again, if the behavior occurs during the time interval in which the residual arousal is still present within the organism, we would expect that particular behavior to be somewhat more intense.

Applied to the typical experimental paradigm of communication-instigated aggressive behavior, this line of reasoning suggests a novel and perhaps alternative way of accounting for the instigational effects observed. To begin with, the response task in these experiments is one that the subject must either perform or withdraw from the experiment entirely. If he stays in the experiment, it is demanded that he make a response --

moreover, a response that is directed at another person, and is of a particular kind, calling for the administration of an electric shock to that other person. What is left free for the subject, is to select which of several (usually 10) different levels of intensity of shock he administers. As we have noted earlier, in most of the experiments cited, such a response situation serves to reinstate cognitions associated with the originally frustrating, and thereby arousing, experience -- at least in the sense that the frustrating agent is now presented as the object toward whom the behavior is directed. Since the original angering situation was readily identified and labeled as aggressive, this reinstatement may well serve to make the response stage be identified as more aggressive than it might be otherwise. Moreover, if this aggressive behavior is called for during the period where the residual physiological excitation is still present to some degree, we would expect an intensification of the aggressive behavior. Obviously, if the intervening communication message evokes only a negligible level of excitation to begin with -- as may well be the case with the so-called "neutral" film in the experiments -- there is no substantial increment of residual arousal available when the response is called for. Similarly, under the model outlined here, there should be little additional excitation available, if the response task was delayed beyond the decay interval until the organism had returned to a presumably tranquil basis. To

the extent that the residual arousal from a preceding emotional experience is applied to --- and thus operative in --- a subsequent, cognitively related or independent emotional behavior, we can speak of emotionality being transferred.

* If this line of reasoning is correct, communication messages may be expected to facilitate subsequent aggressive behavior to the degree that they elevate physiological arousal or excitation. By the same token, messages may be expected to reduce the intensity of subsequent aggressive behavior to the degree that they lower an existing level of excitation. Such predictions, it should be noted, are quite independent of the specific content of the messages. In accord with the two-factor rationale, the interoceptive feedback from general physiological arousal was conceptualized as non-specific, and it is thus feasible -- theoretically, at least -- to facilitate post-communication aggressive behavior with residual excitation from arousing messages other than aggressive ones. What is important, then, from the standpoint of such an emotional transfer model, are not the specific aggressive cues the violent message may possess, but merely that this message be emotionally arousing to the subject.

It is this critical differentiation which poses the present emotional transfer model as an alternative to the eliciting cue paradigm. While the latter focuses primarily on the apparent aggressive cognitions inherent in violent messages, the former

emphasizes the sheer emotional arousal value of such messages. But while the two are thus alternatives in the sense of relative emphasis, they are not intrinsically incompatible with one another in the sense that the validity of one negates that of the other.

The Research Problem

A most obvious implication of the line of reasoning developed in formulating the emotional transfer model is that a confounding element was introduced (probably inadvertently) in the previous experimental research on communication-instigated aggressive behavior. By comparing an apparently aggressive film with an apparently "neutral" film, Berkowitz and others may have been contrasting not only different levels of aggressive cue value, but also markedly different levels of emotional arousal. Aggressive film sequences, like the clipping from the movie *The Champion*, may or may not contain appropriately aggressive cues; this was an implicit assumption made by previous investigators, based largely on their own subjective judgment. The suggestion here is that such films constitute highly emotionally arousing experiences for the kinds of subjects employed in these experiments; this also being an assumption, which may or may not be correct.

The present experiment was undertaken as an attempt to provide a deconfounding of these two theoretical mechanisms to

account for the instigation of aggressive behavior from aggressive film messages. Rather than assume relatively different levels of either aggressive content or emotional arousal, an attempt was made to select appropriate film stimuli by more empirical and objective means. This was readily accomplished in the case of indexing level of emotional arousal, where a number of sensitive and appropriate physiological measures were available. The matter of inherent aggressiveness of a film must remain a judgmental phenomenon, however. An attempt was made to employ a variety of such judgmental indices from a sample of the subjects to be used in the experiment -- rather than basing the selection on the experimenter's personal judgment.

The ideal experimental design to accommodate a deconfounding of the two possible factors would involve a complete orthogonal design in which different levels of one variable vary with correspondingly different levels of the other. Considering a simple high versus low dichotomy on each variable, in the present case this would involve a simple 2 x 2 design. This was the design originally planned. It proved to be operationally infeasible, however, when details of experimental materials and procedure were spelled out.

One condition of the indicated design was responsible for the operational barrier -- oddly enough, for the same reasons that were responsible for originating this research, in the first place. This involves the case where a message of

high aggressiveness but low arousal was required. As has been reasoned and surmised earlier, a highly aggressive film is -- almost by definition, and by its very nature of being aggressive -- also highly arousing. Designing and producing a message that would be high on the first factor but low on the second, proved to be a conceptually and practically impossible task.

The reverse, however, is quite feasible. Since generalized, non-specific emotional arousal can be produced by stimuli other than aggressive ones, it was reasoned that a film of high emotional excitation but low aggressive cue value could be obtained. Further, if the differences between such a film and an aggressive one were such that not only was the former significantly lower in aggressiveness than the latter, but also significantly more arousing, then at least a minimal comparison of the two theoretical mechanisms would be possible. That is, if the eliciting cue model was more valid, the prediction would be for the aggressive film to lead to more subsequent aggressive behavior than the non-aggressive but more arousing film. On the other hand, the emotional transfer model developed here would predict just the opposite effect. To provide a common base line, and to accommodate an interpretation based on the symbolic catharsis model in the event the results agreed with the emotional transfer explanation, a third condition, representing low levels of both aggressiveness and excitation, was included in the design.

CHAPTER II

METHOD AND PROCEDURE

Selection of Experimental Materials

The primary order of business in initiating the present investigation was to locate or develop three films that faithfully reflected the three experimental conditions. Assuming that evaluations of various aspects of films, and the excitatory response to films, are generalizable across samples drawn from the same population, a pretest was performed with an independent sample to assess the particular aggressive-cue and excitatory potentials of preselected films. This pretest had the ultimate goal of deciding the selection of films which best establish the critical experimental variations.

Materials. Six experimental films were preselected on intuitive grounds to meet the requirements regarding the specified stimulus and response properties of the three necessary experimental conditions.

Two films, used as controls in previous research by Berkowitz and his associates, were judged as potentially meeting the requirements of the neutral (N) condition. (1) The Travels of Marco Polo, an educational, historically oriented, entirely non-sensational film reporting on the title figure's travels in China. (2) Banister Versus Landry, a film showing the track race between the first two men to run the mile in less than four

minutes.

Two films -- the first one used by Feshbach, the second one consistently used by Berkowitz and his co-workers in the critical, aggression-depicting experimental condition -- were judged to satisfy the requirements of the needed aggression (A) condition. (3) Body and Soul, a film clip showing a vivid prize fight yielding a happy ending for the main protagonist played by John Garfield. (4) The Champion, a film clip showing a vivid prize fight in which the main protagonist, played by Kirk Douglas, is brutally beaten.

Two films of erotic content, one especially produced for the experiment, the other taken from a so-called exploitation film planned for public distribution (but, at the time the pre-test was conducted, it was not yet distributed), were judged to have potentially the properties of the needed excitation (E) condition -- that is, to generate considerable excitation without depicting apparent aggressive activities in any way. (5) The Couch, introduced as a film on married students' life, showing a young couple in intimate, apparently pre-coital behavior. The film contains shots of female nudity. The behavioral exchange stresses tenderness. Any scene suggesting wild passion, interpretable as aggressiveness, had been excluded. This film was specifically prepared for the present experiment. (6) 42nd Street, a film showing (actually pretended) sexual intercourse. Again, any indication of wild passion was excluded.

All films were clipped at the beginning, or the ending, or both. This was to create the impression of incompleteness throughout all experimental films, as incompleteness was unavoidable in some films. The running time of each film clip was between six and seven minutes.

Subjects. Subjects were recruited from undergraduate and graduate students at the University of Pennsylvania by the announcement of the need for volunteers for a research project involving filmed materials. Payment of \$ 3.00 was offered for participation in an experimental session of about 90 minutes. Twelve male college students served as Ss.

Apparatus. A four-channel SANBORN oscillograph was used to take continuous readings of heart rate and skin temperature, and, intermittently in scheduled intervals, readings of both systolic and diastolic blood pressure.

Heart rate was measured from the electro-cardiogram using a cardio-tachometer. Skin temperature was measured from a thermistor probe with the distal pad being attached to the index finger. Systolic and diastolic blood pressure were measured from a cuff placed on the upper arm. Cuff pressure and heart sounds were recorded graphically using an E&M blood pressure monitor.

Procedure. Each S was exposed to all six experimental films, thus serving as his own control in a fully replicated design. To account for possible order effects, the sequential arrangement of the films was systematically varied from one S to the

other. The presentation conditions across Ss were such that every film occurred equally often in every ordinal position, and that in no case was a film presumed to belong to a particular message category (i.e., neutral, aggressive, or excitational) followed by a film in the same category.

In order to reduce the substantial, inter-individual variation typically found in physiological measures, and in accord with general research procedures in physiology, change scores were obtained on the various physiological indices -- i.e., changes relative to the base level unique to the individual S -- and used as the basic data for analysis.

Ss were scheduled and tested individually. E received S in front of the laboratory, and informed him about the erotic nature of some of the materials, giving S an opportunity to withdraw from the experiment. No S selected this option. E led S into the laboratory. S was seated, and E attached the necessary electrodes (at both arms and at both legs), the temperature sensor, and the cuff for blood pressure readings, at the appropriate places at S's limbs.

After calibrating the various measures and taking baseline readings, E briefly announced the content of the film to be shown next. An assistant turned off the room light and started the screening of the film. E controlled all polygraph recordings. Blood-pressure readings were taken 60 seconds after the beginning of the film, 60 seconds before the end of the film, and

immediately after the end of the film. All other measures were continuously recorded.

After the film had ended, the assistant stopped the projection and turned the light on. S was given time to return to base-level readings. As soon as S's skin temperature had come back to a level not differing by more than .5 centigrades from the pre-film level, and the readings, disregarding minor fluctuations, assumed a zero-slope for at least 15 seconds, base-line readings were taken again, the content of the film to follow was announced, the film screened, and so forth. This cycle was repeated for all experimental films.

After S had been exposed to all experimental materials, he was asked to fill in a final questionnaire, designed to measure primarily the films' aggressive-cue potential. S was instructed to rank-order the six films in terms of (1) the degree to which he perceived them to excite him physically, (2) their entertainment value for him, and (3) the apparent degree of aggressiveness in the behavior of the protagonists. Subsequently, S was asked to judge every film individually -- in the particular order that S had seen the films --- on verbal rating scales assessing: (1) the degree to which he felt inclined to view the total film (he had seen clips only), (2) the extent to which hostility was involved in the interaction between the main characters in the film, and (3) the overall level of aggressiveness of the film.

After completing the questionnaire, S was paid by E. Any experiment-related questions of S were answered by E, and S was dismissed.

[The specific instructions given in the pretest, and the questionnaire used, are presented in Appendix A.]

Physiological measures. As has been stated, excitatory changes were determined as the difference (ΔX_i) between S's base line of excitation prior to exposure, and his excitation at the end of the communication. In general, to assure adequate sampling of a particular response, and to allow for the later determination of decay, the post-arousal scores were determined from measures taken just before as well as after the termination of the film. For the particular dependent measures, ΔX_i was defined as follows:

- a) Blood pressure: The base level was taken immediately before the announcement of film content. The final level was the arithmetic mean of a reading 60 seconds before termination and one immediately following the film.
- b) Heart rate: Twelve maxima (highest frequency of heart beats per minute) were sampled over predetermined periods to obtain both base and final levels. The former was the arithmetic mean of maxima collected during the 30 second period preceding the announcement of film content, the latter was the arithmetic mean of maxima collected in the periods from -60 to -30 seconds, and from 0 to +30 seconds, relative to the

film's ending. The periods of heart-rate assessment thus coincide, roughly, with the timing of the blood pressure readings.

- c) Skin temperature: The base level and the final level were identical with the blood-pressure assessment in both timing and computation.

Given these primary measures, two additional composite measures were computed:

- d) Mean blood pressure: The measures for both base and final levels were determined as

$$BP_{\text{mean}} = BP_{\text{diastolic}} + \frac{2}{3}(BP_{\text{systolic}} - BP_{\text{diastolic}}).$$

- e) Sympathetic activation: The measures were determined as $\Delta X_i(\text{SA}) = (\Delta X_i(\text{HR}))(\Delta X_i(\text{MBP}))$, where SA stands for sympathetic activation, HR for heart rate, and MBP for mean blood pressure.

According to the functional differentiation between neurally controlled and humorally controlled physiological reactions (e.g., Buss, 1961), heart rate is expected to adjust rapidly to changes in stimulation. If exposure to communication has an accelerating effect, at certain points at least, heart rate is generally expected to normalize in 2-3 seconds. Thus, heart rate cannot be considered a sensitive index of the theoretically important, mainly humorally controlled, relatively slow decay of excitation. It needs to be considered here, however, to assure that it does not run counter to the more humorally controlled --

and hence more relevant for our purposes -- excitatory reactions of blood-pressure elevation and vasoconstriction, the latter being measured by the decline in skin temperature. The measure of sympathetic activation combines neurally and humorally mediated factors of excitation, and may thus be considered a most appropriate single index.

Results. Analyses of variance were performed on the base-level readings of all physiological measures taken. Differences between sequential positions across films, and differences between films across sequential positions, both were highly insignificant. Thus, any variation in base level does not appear to be biased toward a particular film or sequential position.

Various additional analyses, mainly on changes in mean blood pressure, also failed to produce results indicative of any sequential effects.

The measured changes on each physiological variable were first subjected to analysis by Cochran's test for homogeneity of variance. Only the data of sympathetic activation were found to be in violation of the homogeneity assumption ($C(6/11) = .433$, $p < .01$). Consequently, the sympathetic activation measure alone was analyzed by appropriate non-parametric techniques.

Table 1 presents the findings on each of the arousal indices, including the mean scores for the six films, the results of the overall analyses of variance, and the subsequent comparisons between means. Similarly, Table 2 and Table 3 present the

TABLE 1

Mean Changes in
Physiological Responses
to Six Test Films

Physiological measure	Film						F(1/11)
	MP	BL	BS	CH	CO	ST	
Δ Systolic blood pressure	-2.292 _a	4.458 _a	3.792 _a	4.917 _a	19.625 _b	15.333 _b	13.900***
Δ Diastolic blood pressure	-3.083 _a	-0.500 _a	6.500 _{ab}	-2.125 _a	14.042 _b	13.375 _b	9.145**
Δ Mean blood pressure	-2.555 _a	2.805 _{ab}	4.694 _b	2.569 _{ab}	17.764 _c	14.681 _c	16.573***
Δ Heart rate	1.825 _a	7.040 _a	2.726 _a	7.144 _a	5.314 _a	4.109 _a	2.529
Δ Sympathetic activation	-5.058 _A	48.667 _{AB}	22.643 _{AB}	45.945 _{AB}	106.245 _C	73.542 _{BC}	18.011*** ¹
Δ Skin temperature	0.377 _b	-1.233 _a	-1.130 _a	-1.132 _a	-0.940 _a	-0.932 _a	4.823*

* $p < .05$; ** $p < .025$; *** $p < .005$.

(contd.)

(TABLE 1 contd.)

Note.-- MP: The Travels of Marco Polo, BL: Banister Versus Landry, ES: Body and Soul, CH: The Champion, CO: The Couch, ST: 42nd Street.

All blood-pressure changes are in mm of mercury, heart-rate changes in beats per minute, and skin-temperature changes in centigrades.

Differences between means were analyzed by the Newman-Keuls method, indicated by lower-case subscripts, or by the Wilcoxon test (two-tailed), indicated by upper-case subscripts. Cells having a subscript in common are not significantly different at the .05 level, these comparisons applying only between the six films within a given measure and not across measures.

All F-ratios are evaluated conservatively by the Geisser-Greenhouse method. The value indexed with ¹ results from Friedman's test (χ_r^2 with $df = 5$).

If the intuitive expectation of differential excitatory changes in the various conditions is used to state directional hypotheses, one-tailed Wilcoxon tests may be performed. In one-tailed tests, the change produced by ES significantly ($p = .055$) exceeds the change produced by MP, and is significantly ($p = .046$) exceeded by the change produced by ST. All other comparisons remain unchanged.

TABLE 2

Mean Ratings
of Six Test Films
in Terms of Judged
Desire to See Remainder of Film,
Enacted Hostility, and
Overall Aggressiveness

Characteristic	Film						F(1/11)
	MP	BL	BS	CH	CO	ST	
Desire	3.250 _{ab}	2.667 _{ab}	3.167 _{ab}	3.500 _b	2.167 _a	2.417 _{ab}	2.678
Hostility	4.250 _{bc}	3.750 _b	1.333 _a	1.833 _a	4.333 _{bc}	4.667 _c	45.365**
Aggressiveness	4.500 _c	2.333 _b	1.333 _a	1.250 _a	3.250 _b	2.833 _b	19.382*

Note.-- MP: The Travels of Marco Polo, BL: Banister Versus Landry, BS: Body and Soul, CH: The Champion, CO: The Couch, ST: 42nd Street.

Desire is measured on a 5-point scale, 1 indicating greatest, 5 indicating lowest desire.

Hostility is measured on a 5-point scale, 1 indicating highest, 5 indicating lowest degree of hostility.

Aggressiveness is measured on a 7-point scale, 1 indicating highest, 7 indicating lowest degree of aggressiveness.

Differences between means were analyzed by the Newman-Keuls method. Cells, having a subscript in common, are not significantly different at the .05 level.

All F-ratios are evaluated conservatively by the Geisser-Greenhouse method.

TABLE 3

Mean Rankings
of Six Test Films
in Terms of Judged
Excitement,
Entertainment Value, and
Aggression Between Protagonists

Characteristic	Film					
	MP	BL	BS	CH	CO	ST
Excitement	6.000	3.000	3.418	4.250	2.500	1.833
Entertainment	4.580	2.333	2.667	4.667	3.333	3.418
Aggression	5.667	2.418	1.667	3.000	4.333	3.918

Note.-- MP: The Travels of Marco Polo, BL: Banister Versus Landry, BS: Body and Soul, CH: The Champion, CO: The Couch, ST: 42nd Street.

The smaller the number, the higher the rank position, and the more pronounced the judged characteristic.

findings for the judgmental ratings for the six films, and the judgmental rankings across films, respectively. Considered together, the data in these three tables provide the basis for selection of an appropriate film to represent each of the three experimental conditions.

For purposes of the present experiment there was little uncertainty in selecting the appropriate neutral (N) film. The desired properties of relatively low aggressiveness and relatively low arousal potential are better represented by The Travels of Marco Polo than the Track Race (i.e. Banister Versus Landry). On the physiological measures The Travels of Marco Polo scores consistently the lowest of all six films, including the Track Race. Similarly, as Tables 2 and 3 attest, it rates lowest on aggressiveness and hostility, while the Track Race yields considerable relative aggressiveness.

Selecting the appropriate excitational (E) film also presented little choice, the especially produced The Couch proving to be superior for our purposes to 42nd Street on both criteria of relatively high arousal potential and relatively low aggressiveness. As desired, The Couch does not significantly differ from The Travels of Marco Polo on the aggressive-cue judgments, the ratings on degree of hostility being virtually identical. More importantly, it scores significantly higher on the excitation continuum, as documented across all the physiological measures.

The data for the selection of the film for the aggression (A) condition were somewhat less clear-cut, but still sufficient to make the selection. The required properties of relatively high aggressive-cue potential and moderate excitatory potential seem best manifested in Body and Soul. As compared to The Champion, it was assigned a markedly higher rank position regarding aggression between protagonists, and it was rated higher in enacted hostility. Differences between the excitatory potential of the two possible aggression films are statistically negligible. However, in general, the responses to Body and Soul were found to be more consistent (in terms of between-subjects variance) than were those to The Champion.

The choice becomes clearer still, in differentiating this condition from the selected representations for the neutral and excitational conditions. As required, Body and Soul significantly exceeds both The Travels of Marco Polo and The Couch in terms of judged aggressiveness; the rank difference is pronounced, and the rating differences are extremely significant. More critically, Body and Soul falls in an intermediate position in terms of emotional arousal. As is demanded by the experimental design, it is significantly less arousing than The Couch, at the same time being significantly more arousing than the neutral The Travels of Marco Polo. By comparison, the more commonly employed The Champion fails to yield the required differentiation from The Travels of Marco Polo on the arousal indices

of mean blood pressure and sympathetic activation (even when the one-tailed test is employed). In general, then, the resolution was in favor of selecting Body and Soul.

Although the differentiation in excitation between the three films thus selected was sufficient in statistical terms, it was made even more so by changes introduced into the Body and Soul film. In the process of recording the various physiological measures it was noted that the happy ending of Body and Soul -- the main character wins the fight, triumphs over corruption, rejects "sweet" temptations, and finally wins back the love of his "honest" girl -- typically had the effect of reducing the level of excitation. This was particularly apparent on the heart rate and skin temperature measures. In order to eliminate or reduce this premature de-excitation -- an especially important consideration in view of the rationale involved in the emotional transfer paradigm -- it was decided to truncate the happy ending (running some 45 seconds in the original). In the truncated version, Body and Soul ends with the fight ending, showing the main protagonist with a raised arm being declared champion of the world. When the data for the new version of Body and Soul were examined, higher indices of arousal were apparent as compared to the original (systolic blood pressure: $t = 1.873$, $df = 11$, $p < .05$; diastolic blood pressure: $t = 1.874$, $df = 11$, $p < .05$; heart rate: $t = 2.445$, $df = 11$, $p < .025$ -- all tests being one-tailed), and showed

even more marked appropriate differentiations from the two other selected films.

In additional analyses, the differentiation of film-produced excitation between the selected experimental films was checked under conditions in which the presentation of the critical film was not preceded by the presentation of any other film, this situation corresponding more closely with the procedure in the main experiment. All results were highly consistent with the reported findings of the differential film effects.

It should be noted in passing that the data from this pre-test allow for an after-the-fact comparison of the Track Race control film with the experimental The Champion film, which were employed in the research of the Berkowitz group. Rejecting earlier, more banal control films (1965a), Berkowitz did select (Berkowitz & Geen, 1966) the Track Race for the specific reason that it was judged by him to be equally competitive but less aggressive as compared to The Champion. Presumably the former criterion was to control for something akin to excitatory potential, among other things, and the physiological data here show this to have been a not unreasonable assumption to make. The physiological indices of excitation yield an inconsistent differentiation, none of the differences being statistically significant. Closer examination, however, reveals this lack of differentiation to be more a function of rather high with-

in-film variances, probably making for an inflated error term. Since the supposedly neutral Track Race is also judged relatively high on aggressiveness (rated lower than The Champion, but in direct comparison ranked higher), it raises some questions with a purely eliciting cue explanation.

One remaining point of interest: A key assumption of the emotional transfer model is that the excitation level does not drop abruptly with the termination of the film, but lingers on for some time. A limited test of this assumption was available in the pretest data on the skin temperature variable, where readings were obtained at pre-communication base level, end of film, plus 30 seconds, plus 60 seconds, and plus 90 seconds after exposure. Removing The Travels of Marco Polo, since it showed only negligible deviations from the base level, an analysis of variance across the remaining five films indicated pronounced changes. In each case the skin temperature is significantly ($p < .01$ by Newman-Keuls test) below the pre-communication base level. Decay appears to set in after the plus 30 seconds interval, but at plus 90 seconds it is still significantly ($p < .01$) below the initial base figure and negligibly above the plus 30 seconds level. In the absence of contra-indications, this is testimony for a relatively slow decay in the mainly humorally controlled vascular reactions.

Experimental Method

Subjects. Male undergraduates at the University of Wisconsin, Milwaukee (UW-M) served as Ss.

Initially, it was intended to use volunteer Ss without payment. The need for Ss was announced in various classes in the Department of Communications and in the School of Journalism. The participation in the experiment was recommended by the instructors as a valuable experience. However, in an eight-day period only a total of 27 Ss volunteered. It was then decided to solicit additional Ss by posting announcements on various bulletin boards on the campus. These additional Ss were promised and received \$ 1.00 for their participation in an experimental session of about 30 minutes. A total of 36 Ss was obtained in this manner, making for a total of 63 Ss in all.

Since Ss in both categories were randomly and knowingly assigned to the three experimental conditions, it was possible to systematically determine the effect of this selection difference.

Aggressive behavior measures. Aggression was measured with the so-called "aggression-machine" adapted from the one first used by Buss (1961), and subsequently employed in a number of studies by Berkowitz and his co-workers.

The main dependent variable measuring aggressive behavior was the mean shock intensity of 12 shocks delivered by S in response to scheduled "errors" made by a confederate who pre-

sumably received the shocks.

Secondary dependent variables were the number of shocks delivered (S was free to administer more than one shock per trial), and the accumulated shock duration across the 12 trials. A composite intensity-duration measure, the product of mean shock intensity and accumulated shock duration, was also employed. Additionally, the individual shock intensity was analyzed to investigate the distribution of intensity over time.

Procedure. Because the present study was largely motivated by Berkowitz's research, essentially the same procedure as employed in his experiments was followed. However, three important changes were introduced -- one designed to reduce possibilities of experimenter expectancy effects (Rosenthal, 1963) and possible demand characteristic effects (Orne, 1962) induced by E, a second to reduce such possible contamination from the behavior of the confederate, and a third to accommodate a necessary requirement for the present experimental test.

In most previous experiments a graduate student served as E and verbally presented the various instructions to S in a face-to-face situation. As has been amply documented (Rosenthal, 1966), such a situation can readily influence S's behavior beyond that introduced by the experimental treatment. In order to reduce such potential contamination, wherever possible instructions were presented from tape recordings, and were thus uniform for all Ss across all conditions.

It has also been conventional, in earlier research in this area, for S and the confederate C to meet face-to-face, at least at the outset of the experiment. In several experiments, moreover, C has to enact a particular role for a given experimental condition. One can only wonder, how consistently such a C (usually another student) can play his role with Ss within the same condition, and how much extra variation he may be unwittingly introducing between conditions. In some recent research, we noted that S, while waiting with C for E, frequently started a conversation with C, creating an interpersonal exchange that might conceivably influence subsequent interactions, not to mention the possibility of S's apprehension of being evaluated by C (Rosenberg, 1965). Again, to accommodate such possible contamination, C and S do not meet at any time in the present experiment.

The third change in procedure involved a modification of the instructional sequence. In order to minimize the time lapse between the end of the experimental film and the taking of the dependent variable measure, parts of the instructions relating to the post-communication interaction period were given before the screening of the film instead of afterwards. The displaced instructions deal with the use of the apparatus in S's transmitting film-related information to C, this information being coded in letter triplets that are not meaningful to S. The instructions here are somewhat time-consuming and could just as

readily be introduced before the film. It should be noted that in all other respects there is no deviation from the usual instructions preceding S's exposure to the film; in particular, no mention is made of the upcoming administration of electric shock.

The arriving S was instructed by posters to take a seat in a waiting room. E met S there and led him to the experimental room. S was seated and given information, both orally and from tape recordings, on the presumable purpose of the study. Subsequently, he received specific instructions regarding the procedure to be followed.

[Appendix B presents the procedure in full.]

S was told that the basic research interest was in the effect of punishment on learning. He was informed that the present study operationalizes punishment in mild electric shock, and given an opportunity to withdraw from the experiment -- should the administration of electric shock in the experimental situation appear intolerable to him.

After agreeing to further participate in the experiment, S was told that he, due to random assignment to experimental conditions, was to play the part of the teacher in a learning situation. The other subject, C, he was told, had already seen a complete feature film. This other subject, playing the part of the learner, had the task to identify critical relationships between characters and events in the film he had seen. In the

process of learning to identify the critical relationships, S was to provide C with information.

S was told that learning in a teacher-student setting depended very much on "how student and teacher are in tune with each other," and that in the present study this relevant relationship would be established in a brief period of controlled interaction between him and the subject in the adjoining room (C). S was given a list of 12 opinion items, and instructed to express his opinion on any particular issue on the list over an intercom installed between the rooms of S and C. S was to operate the intercom to be heard by C. The other subject, C, was to express agreement or disagreement with S's attitudes on the various issues. Agreement was to be expressed via a light signal. Disagreement was to be expressed via the administration of electric shock to S.

E attached a shocking strap to S's arm, in a way such that the electrodes (circle-shaped metal plates of a diameter of $3/4$ inches, separated by $1/2$ inch) were in steady contact with the skin of the inner wrist. S did not receive a test shock.

The interaction period was initiated after S had familiarized himself with the opinion items. After S expressed his attitudinal position on an issue, C, following a prepared schedule, either gave the light signal or delivered shock. The induction stimulator was calibrated for delivery of 25 volts provided by dry-cell batteries. Duration of shock was $.5 \pm .1$

seconds. S received nine shocks in response to 12 expressed opinions. During the exchange between S and C, E turned away from S, and sat down at a table, pretending to read some papers.

Following the interaction period, S was instructed how to provide C with the relevant information in the upcoming teaching situation. Then he was told that he will be shown a part of the film the other subject had seen before. This was to give him an idea of what the film is all about.

E announced the film as including references to religion and politics (N), as showing scenes from a prize fight, including some rather vivid boxing shots (A), or as dealing with married students' life, containing some shots of female nudity and intimate kissing (E), and gave S another opportunity to withdraw from the experiment, should he object to being exposed to a film with such content.

After S agreed to further participate, E started the projection and left for the adjoining room, supposedly to give instructions to C. E returned at the end of the film. S was instructed that, whenever the learner-subject makes an error in response to his sending of the critical information, he is to administer negative reinforcement, that is, electric shock to the learner. S was informed that he may vary the number and the intensity of shocks delivered to the learner. "Whenever the WRONG signal comes in response to your sending a set of letters," he was instructed, "you must punish the learner. You

may give as many shocks as you feel are adequate in this particular learning situation between you and him. Similarly, you may vary the shock intensity from 1 through 10."

After indicating that he is obligated to be with the person receiving shock, E left S to be with C. Following a prepared schedule, C responded erroneously in 12 out of 20 trials. C recorded S's shock responses to his 12 errors in terms of: intensity of all shocks delivered, number of shocks delivered per trial, and total duration of delivered shock.

At completion of the teacher-learner interaction, E returned to S and debriefed him. E informed S that, facing the possibility of campus rumors about the experiment, which would make further testing impossible and/or devalue any findings, it had been decided to delay a full disclosure of the true purpose of the study. If acceptable to S, he would be mailed a detailed explanation as soon as the experiment had been completed. After E appealed to S to delay discussing the experiment with his fellow students until he received the explaining letter, S put his address on a mailing list, was paid (when poster-solicited), and left.

It should be noted that the experimental procedure deviates from the procedure used in the pretest in that, in the latter, S has not been instigated aggressively -- presumably. To generalize the findings, this then would seem to necessitate the assumption that the differentiation of the excitatory potential

of the three films, and also of their aggressive cue value, is not critically affected -- though possibly slightly modified -- by the delivery of electric shock to S preceding the exposure to communication.

CHAPTER III

RESULTS

Although Ss had been instructed to deliver as many shocks as they felt were adequate, and thus were free to vary the number of shocks administered in response to C's erroneous trials, only four out of the total of 63 Ss used the opportunity to deliver more than one shock, these being randomly distributed across the three experimental conditions. Because of such negligible occurrence and because the results are redundant with those on the main dependent variable of mean shock intensity, the shock number variable will be omitted from further consideration.

The data on all remaining measures were first subjected to Cochran's test of homogeneity of variance. None was found to violate homogeneity assumptions.

The possible effect of Ss' payment for experimental participation on the dependent variables was tested in analysis-of-variance procedures. Film conditions were factorially varied with a payment factor, defined by the levels: Ss who had not received payment for experimental participation (nine Ss per cell), and Ss who had received payment for experimental participation (12 Ss per cell). The data were analyzed by the method of unweighted means.

On the main dependent variable and on the two secondary ones,

there was no noticeable effect due to the payment factor, nor to the film-payment interaction ($F < 1$. in both cases). Thus, the payment factor was not considered to introduce any appreciable effect, and accordingly the data for both volunteer and paid Ss were combined in all subsequent analyses.

Shock Intensity

In accord with the earlier research, the main dependent variable for analysis here is in terms of the average intensity of the shocks administered over the total of 12 trials. Table 4 reports the findings on this variable, and demonstrates a high level of significance ($p < .001$) for a differential effect of the three experimental film conditions on subsequent behavior.

Of most salient interest, these results demonstrate a significantly ($p < .05$) higher level of aggressive behavior in the relatively more arousing but less aggressive excitational film condition (E) than in the reverse more-violent, less-arousing aggressive film condition (A). This finding -- the main focus of the present study -- is clearly in accord with the prediction based on the theoretical model developed in this paper, attributing the main influence of a film on subsequent aggressive behavior to the film's emotionally arousing potential. By the same token, this result is contrary to what one would expect from an eliciting cue type of model, where the instigational effect is presumably due mainly to the aggressive

TABLE 4

Analysis of Variance
and
Comparison of Means
on the
Mean Shock Intensity Measure

Source of variance	df	MS	F
Films (A)	2	21.187	10.620*
Error S(A)	60	1.995	

* $p < .001$

Neutral film	Aggressive film	Excitational film
3.067 _a	3.948 _b	5.071 _c

Note.— Differences between means were analyzed by the Newman-Keuls method. Cells having a subscript in common are not significantly different at the .05 level.

cognitive content of the film.

Given this finding, one could argue that the differential effect between the two film conditions was due not so much to a superior instigational influence of the E-condition, but rather to an inferior effect of the A-condition. Such an explanation, for example, would follow from the type of symbolic catharsis model as advanced by Feshbach (1955, 1961), by which an already instigated individual reduces his disposition toward aggressive behavior as the result of his vicarious participation in activities presented in an aggressive film. However, if such a phenomenon was operating in the present experiment, there should be no difference between the low-aggressive E-condition and the comparably low-aggressive N-condition. Since both represent the same level of initial angering, and because of their relatively low level of depicted aggressiveness, the E and N conditions do not offer an opportunity to engage vicariously in aggressive behavior, and thus do not allow a cathartic release of instigated aggression. By similar reasoning, such a theoretical position would predict a lower level of aggressive behavior resulting from the presumably cathartic A-condition than from the N-condition.

The main reason for including the neutral condition (N) was to allow for the testing of such an explanation. The results on both comparisons are clearly contrary to the symbolic catharsis predictions. The E-condition is most significantly

($p < .01$) more instigating than the N-condition. Similarly, the A-condition produces significantly ($p < .05$) more rather than less aggressive behavior than does the neutral film.

Secondary Measures

While obtaining the data on the main dependent variable it was also possible to obtain an additional measure of the duration of the shocks, accumulated over the total of 12 shock trials. Such a secondary measure has been employed in much of the earlier research in this area, as has been a third measure representing the multiplicative combination of intensity and duration.

Table 5 presents the data on the shock duration measure, and demonstrates no difference to speak of between the three film conditions. Given the entirely negligible between-films F-value, it is quite meaningless to consider the directions of the mean differences, which, at first glance at least, appear to be contrary to those expected on the basis of the findings of shock intensity.

This latter possibility can, of course, be investigated with more sensitivity by examining the correlation between each S's shock intensity and shock duration measures, across all conditions and within conditions. When this was done, the relationships proved to be negligible across all 63 Ss ($r = .189$) and across 21 Ss within a given condition ($N: r = .272$;

TABLE 5

Analysis of Variance
and
Comparison of Means
on the
Shock Duration Measure (in seconds)

Source of variance	df	MS	F
Films (A)	2	5.811	0.361
Error S(A)	60	16.086	

Neutral film	Aggressive film	Excitational film
9.024 _a	8.417 _a	7.976 _a

Note.--- Differences between means were analyzed by the Newman-Keuls method. Cells having a subscript in common are not significantly different at the .05 level.

TABLE 6

Analysis of Variance
and
Comparison of Means
on the
Intensity x Duration Measure

Source of variance	df	MS	F
Films (A)	2	739.813	1.154
Error S(A)	60	640.781	

Neutral film	Aggressive film	Excitational film
29.586 _a	34.960 _a	41.439 _a

Note.— Differences between means were analyzed by the Newman-Keuls method. Cells having a subscript in common are not significantly different at the .05 level.

A: $r = .266$; E: $r = .217$).

Similarly, there is nothing to be gained from detailed analyses on the combined intensity-duration measure. As Table 6 indicates, the differences here are in the predicted directions -- at least in terms of the emotional transfer model -- but are well within chance limits.

CHAPTER IV

DISCUSSION

The main purpose behind the present investigation was to deconfound two possible explanatory mechanisms that were presumably confounded in earlier research dealing with communication-induced aggressive behavior. While it did not prove feasible to totally disambiguate the eliciting cue and emotional transfer models in this experiment, a minimally necessary critical comparison between the two possible theoretical models was attempted. Fairly clear-cut results were obtained, at least on the main variable of shock intensity, allowing for a contrast between the models.

The findings clearly support the emotional transfer model developed here as providing the best single explanation to account for the observed pattern of results across all three experimental conditions. Most importantly, the excitational film led to more intense shocks than did the aggressive film, which was less arousing but more violent in terms of cognitive content. Such support for the emotional transfer model is further bolstered by the very pronounced difference between the excitational and neutral film conditions. In helping establish the emotional arousal explanatory mechanism, this latter result also tends to rule out the symbolic catharsis hypothesis as an alternative explanation to the fact that the aggressive film

is less instigating than the less-violent excitational film.

Taken in and of itself, the finding that the aggressive film condition has a significantly greater effect than the neutral condition should come as no great surprise. Although the specific films used to represent these conditions are somewhat different, such a finding has been obtained on more than one occasion by Berkowitz (e.g., Berkowitz, 1965a; Berkowitz & Geen, 1966; Geen & Berkowitz, 1966). These previous studies have more or less dispensed with the symbolic catharsis model, and the results of the present study merely contribute more in this direction.

It is, of course, this very same difference, with its apparent confounding of two different explanatory mechanisms, that motivated the present study. The emotional transfer model developed here addresses itself to the emotional arousal value of the film stimulus. Since the physiological data on the pretest showed the particular aggressive film selected to be higher in excitation than the selected neutral film, the present data on this comparison are in accord with the model. It is clear, however, that this finding (again, considered by itself) can be just as readily accommodated by Berkowitz's eliciting cue hypothesis, which tends to emphasize the aggressiveness of the film content rather than its excitatory potential as such.

Re-Introducing the Track Race Film

In this connection, it is worth recalling that the physiological data from our pretest showed the track film, employed by Berkowitz to represent the neutral condition, as being substantially more arousing than was desired for a neutral film appropriate to the present study. While falling significantly below the selected excitational film in terms of arousal potential, it was not sufficiently lower than the selected aggressive film, and was substantially but not significantly more arousing than the other film available for representing the neutral condition.

What would be the expected pattern of results if the track film would have been included along with the other three film conditions in the present experiment? In terms of emotional arousal value per se -- and apart from any results of earlier research by Berkowitz and his co-workers -- we would expect the pattern in terms of aggressive behavior to match that of relative excitatory potential. An independent study by Tannenbaum and Eklund (1969), conducted subsequent to the present experiment, provided some evidence for just such an effect.

Rather than replicate the entire present experiment, Tannenbaum and Eklund had a single group of 12 SS go through the same experimental procedure, but utilizing the Track Race film as the experimental communication message. However, there were other differences with the present experiment as well --

out of necessity, they had to employ different Ss at a different place (paid recruits at the University of Pennsylvania) and also a different E. To partially control for these differences, a separate group of six Ss, randomly selected from the pool of recruits available, replicated the aggressive condition from the present study. The shock intensity data for the same conditions in the two locales was virtually identical (means of 3.948 and 4.131; $t = .242$, $df = 25$, $p > .80$), giving some assurance that the two sample pools did not differ appreciably for their purposes.

Tannenbaum and Eklund found shock intensity scores for the track film to assume an intermediate position between that of the neutral and the aggressive conditions in our study. The obtained mean shock intensity of 3.410 is not significantly higher than the neutral condition (3.067), nor significantly lower than the aggressive condition (3.948), but is significantly ($p < .01$) lower than the excitational condition (comparisons by Newman-Keuls test after an analysis of variance using the unweighted means method). These findings are substantially as expected from the emotional arousal data (particularly from non-parametric analyses), and accordingly help reinforce that model.

Analysis of Aggressive Response Sequence Data

In much of the earlier research dealing with aggression,

electric shock data were obtained across a number of trials --- and hence across some sequence of time --- largely to obtain an adequate sampling of aggressive disposition. While most analyses have focused on a single composite measure across the set of trials (such as mean shock intensity, total duration, etc.), the data obviously also lend themselves to analyses on the basis either of individual trials or of blocks of trials in units less than the total number. Whether the past aggression research offering such detailed analyses has been communication-oriented (e.g., Hoyt, 1967) or not (e.g., Berkowitz, Lepinski, & Angulo, 1969; Buss, 1966), a rather persistent finding has been that of a successive increase in level of shock intensity as S proceeds through the response sequence. The results of the present study generally tend to confirm this earlier finding.

Figure 1 represents the shock intensity data for each of the 12 trials and separately for the three experimental groups. A general positively-accelerating linear trend is quite apparent for the excitational and the aggression film conditions, but not as readily apparent on the generally lower neutral film condition. The data in Figure 1 would thus seem to suggest significant differences between certain individual trials and selected blocks of trials, and possibly a significant films-by-trials interaction effect. This indeed proves to be the case when appropriate analyses of variance are performed on an

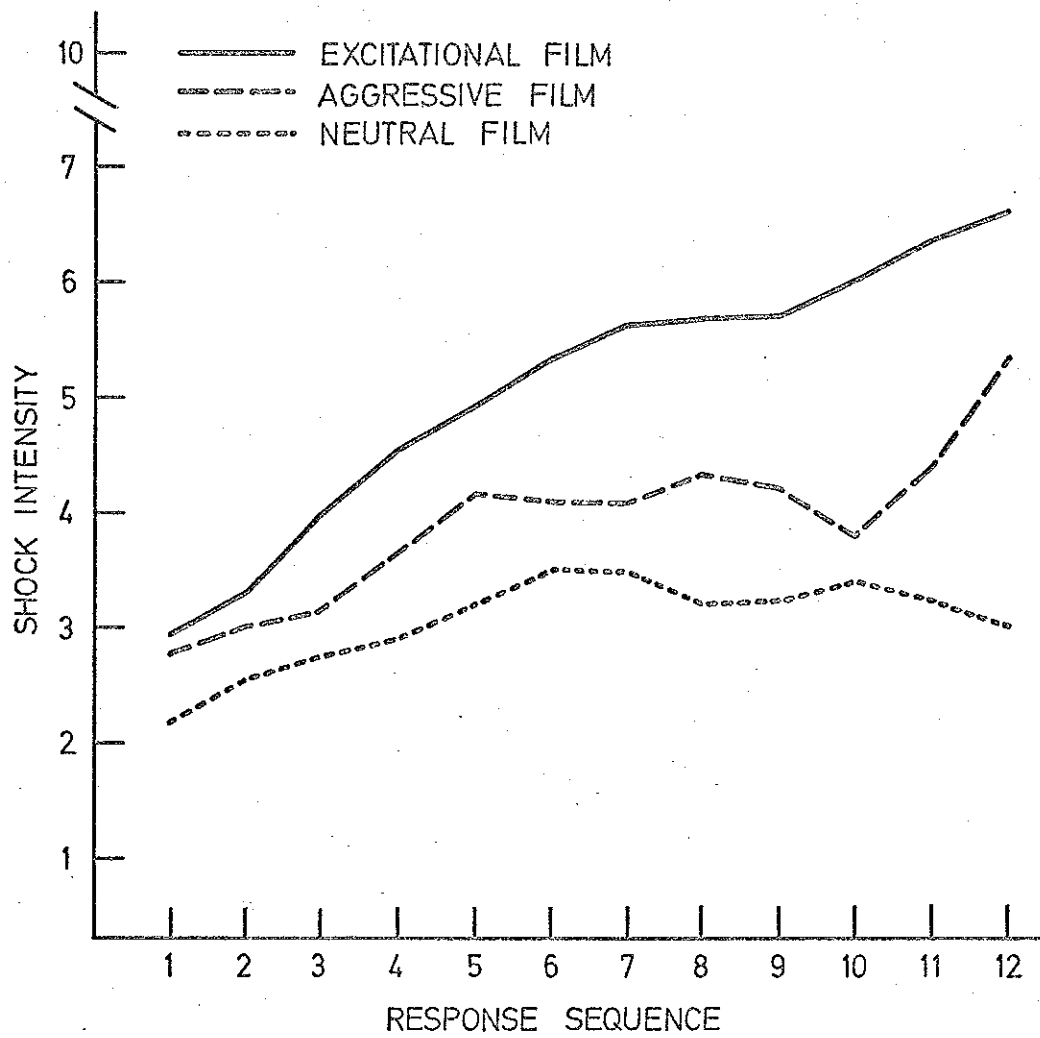


FIGURE 1. Smoothed curves of shock intensity scores across the sequence of 12 trials.

individual trials basis (see Appendix C), or in terms of blocks of three consecutive responses per block (see Appendix D).

Buss (1961, 1966) has given this problem detailed attention, and has tended to explain the increase in response strength in terms of S's gradually overcoming initial social and personal inhibitions in engaging in the administration of shock to another person. He found that the response slopes were highly susceptible to variation in feedback of the shocks' effect on the apparent victim. Whereas low initial aggressive instigation and low instrumental value of enacted aggression failed to flatten the gradients appreciably, a victim's expression of pain did significantly reduce the slopes (Buss, 1966).

A somewhat different explanation is provided by extending the emotional arousal notion underlying the present experiment to the specifics of the response task. Just as it may be assumed that being frustrated in the first stage of the experiment, and witnessing filmed aggression or eroticism in the second stage, can be emotionally arousing situations, it may be equally reasonable to assume that some level of generalized arousal can accompany the activity of administering a shock to another individual. Since presumably the excitation induced by such an action does not dissipate immediately, we would expect the general level of excitation to increase progressively in the absence of external constraints. Such a tendency should be more apparent

where there is a higher level of arousal transferring to the response task from prior experimental manipulation, thus suggesting the kind of interaction effect noted in the present experiment.

It is quite obvious that an explanation of this kind is totally speculative for the present and must be subjected to empirical testing. Some evidence along such lines is available, but is quite inconsistent and leaves the situation still to be resolved. On the one hand, and in opposition to such a model, are the findings of a series of studies by Hokanson (Hokanson & Burgess, 1962, 1962a; Hokanson, Burgess, & Cohen, 1963; Hokanson & Shetler, 1961), which suggest that excitation (as measured by changes in systolic blood pressure) dissipates as the individual engages in aggressive activity. More recently, however, Holmes (1966) has argued that Hokanson's data can be faulted on the basis of inadequate experimental control procedures. Introducing minor procedural changes presumably accommodating such shortcomings, Holmes reported an increase in arousal (also using systolic blood pressure as the sole measure) with more involvement in aggressive activity.

Considering Alternative Explanations

One of the advantages -- and disadvantages -- of having such detailed data available, is that they often enable closer scrutiny of the theoretical model being entertained. Such is

the case with the sequential data in Figure 1, and it would be unwise to leave them before pointing out one glaring inconsistency with the emotional transfer theory.

A principal component of the model, as formulated in this paper, is the notion of a carrying-over of a residual level of excitation from a particular communication exposure to a given response situation. Moreover, the implicit assumption in such a formulation is that this transfer of arousal makes itself manifest when the response task is introduced -- in fact, if the response task is delayed beyond the limits of the decay period of the communication-induced excitation, no such a transfer is assumed to operate. Applied to the present experimental context, this would suggest different levels of excitation being carried over from the three different films to the shock administration task, and that this difference would be apparent at the outset of the sequence of shock trials. The data in Figure 1 show this not to be the case in the present experiment, with no significant differences in shock intensity on the first few trials, at least.

We are somewhat at a loss to account for this apparent discrepancy with the model. One possibility that suggests itself is that the obtained results represent a gradual resolution of contrasting pressures on S between the type of initial inhibition suggested by Buss (1966), on the one hand, and aggressive drive pressures (Berkowitz, 1962, 1965), on the

other. Under such circumstances, S, faced with a basically undesirable task of administering shocks to a fellow student, may find himself initially more subject to constraints against exercising any explicit or implicit levels of aggression. But the combined pressures of (a) a relatively high degree of arousal carried over from the communication message, and (b) the reinstatement of aggressive cues in the form of his earlier tormentor, gradually begin to take over, these pressures being further abetted by any generalized arousal induced by the acts of administering the shocks early in the series. Perhaps most important in the light of Buss' (1966) finding, there is a total absence of feedback about possible negative effects of the early shocks on the apparent victim, thus tending to reduce initial inhibitory constraints.

Such an explanation is similar to one advanced by Hoyt (1967). He suggested that S first "feels out" the aggression apparatus by initially delivering rather moderate shocks. Then, in the absence of information about the victim's suffering resulting from the shocks, he presumably "levels in" at a level representing his particular, originally felt anger. Both explanations are plausible, at best, and must, remain, again, highly tenuous and speculative for the present.

An admixture of excitatory and cognitive factors leading to a combined effect appears to be suggested in the main findings of this study, as well as in the analysis of the sequential

response data. On a more general level, while the findings are readily accommodated within the emotional arousal paradigm, they do not completely rule out the more cognitively-based Berkowitz model. This, coupled with the results of Berkowitz's earlier research not so readily accounted for by a purely excitatory mechanism -- e.g., the enhancement of aggression effects due to justification of the portrayed aggressive behavior (cf., Berkowitz & Rawlings, 1963; Hoyt, 1967) or of increasing levels of cue-similarity (cf., Berkowitz, 1965a; Berkowitz & Geen, 1966; Geen & Berkowitz, 1966) -- would suggest the possibility that both types of theoretical mechanisms may be operative. As was indicated earlier, the two models are not necessarily mutually incompatible, and the results of the present experiment do not make them any less so.

In arguing that both components may be involved, several additional questions of theoretical interest are raised. An obvious one involves the specific interdependencies between the cognitive and arousing responses to a communication. Without being very specific about it, Berkowitz's original model (1962, 1965) and its present orientation (Berkowitz, 1969) reflected in the Geen and O'Neal (1969) study would appear to argue for the excitatory mechanism coming into play after the initial aggressive cue responses are triggered. Lazarus and his co-workers have demonstrated that the cognitive "orientation" toward a film can critically affect the elicited excitatory response

pattern (Lazarus & Alfert, 1964; Lazarus, Opton, Nomikos, & Rankin, 1965; Speisman, Lazarus, Mordkoff, & Davison, 1964). In the same way, it could be argued that the initial angering situation makes an individual more responsive to the aggressive cues in a message and, accordingly, more aroused. In an associated manner, Geen and O'Neal suggest that once the individual is predisposed to respond aggressively, the addition of an external arousing stimulus such as white noise will create an even greater aggressive response tendency.

A somewhat opposite position could also be entertained -- proposing that an individual must first be aroused emotionally, and thus become more responsive to aggressive cues. A position we took on the outset of this paper is that all three phases of the typical experimental procedure contain cues for emotional arousal, and it is thus difficult to separate respective contributions of excitatory and cognitive components, and of the sequence of influence. In fact, in terms of the present experimental design, the observed effects could be quite readily explained in terms of only the arousal potential of the film and the nature of the given response situation. Such a formulation would merely hold that with increased arousal an individual tends to heighten and intensify whatever behavior he is called upon to engage in. In the present case, the subject's arousal is affected by a film; he is then put into a situation where he must respond by administering electric shocks.

Given such demand characteristics, he responds as directed -- only more so, dependent upon the degree to which his state of arousal was heightened. Note that, if this formulation were correct, we would expect a more aroused subject to respond more intensely regardless of the particular response situation and its apparent correspondence to the communication message content. That is, just as we assume any arousing stimulus leads to more aggressive behavior, as such, it could be argued that it would lead to more of whatever type of behavior is called for in the response situation -- e.g., an aroused person would laugh more at subsequent humor. Among other things, this might explain why the rather modest humor of burlesque comics following a striptease routine is often said to be judged as quite funny.

It should be noted in passing that even in case the operationalization of aggressive behavior through electric shock as employed in the present study were inadequate -- as it seems to be implied by some critics of the research of media effects on aggression (e.g., Hartley, 1964) -- the emotional arousal explanation would still be meaningful and its predictions accurate. In line with the outlined rationale we expect the administration of shock, independent of whatever psychological significance this behavior might have for the subject, to be facilitated by any communication-produced elevation of arousal.

All this speculation may or may not be idle. The questions

raised are essentially matters for empirical study and verification. The degree to which purely cognitive and purely excitatory aspects of an event or a communication co-occur and interact is hard to assess, and the separation of the two factors, for experimental purposes, meets extreme difficulties. We found a provisional separating procedure in the empirical selection of experimental materials for the present study, and perhaps the type of design used, incomplete and possibly not fully sufficient as it might be, suggests more detailed experimental treatments to study such problems.

APPENDIX A

Instructions Used in the Pretest

Outside the laboratory. E and S are seated, and face each other.

Let me first give you a statement on the purpose of our research.

The experiment in which you are asked to participate is designed to study the similarities and differences of various physiological responses to various audio-visual stimuli. That is, if one is exposed to different filmed scenes, does one react differently to them in terms of certain emotional responses?

You will be shown 6 films, each lasting about 6 minutes, and we are interested in 3 types of reactions. While you are watching the films, we will be taking a set of physiological measures -- more specifically, of your heart beat, your blood pressure, and the temperature of your skin -- which have been shown earlier to indicate the degree of emotional response. None of the measuring procedures is painful to you, or harmful in any way. All they involve is that we attach some electrodes at various parts of the body. These are standard procedures in medical and physiological clinics and laboratories, and they are done here with appropriate

medical supervision.

After you will have seen all the films we would also like you to give us your personal reactions to the films in the form of a short questionnaire.

Before getting into details, there is one additional matter: these films include a variety of content, including an historic adventure, a vivid boxing match, and also some erotic scenes. We feel it to be our obligation to ask you at this point, if, for some personal reason, you do not want to be exposed to any one of these materials, especially, of course, the erotic ones, which contain some shots of female nudity and love-making. Actually, the erotic scenes are no more explicit than what has been publicly available in movie theaters. But some people are sensitive to such matters, and if for your personal reasons you would prefer not to be exposed to the erotic film clips, please tell me now. The same, of course, applies to any other content you may be particularly squeemish about.

Pause for S's response. If S wants to leave, E leads him out. Otherwise E leads S into the laboratory.

Inside the laboratory. E instructs S to sit down in the experimental chair, and to lean back to ensure maximal relaxation. E tells S that he is going to attach electrodes and the cuff, necessary to take the measures. E wires in S and attaches

the cuff. Then he gives the following instructions.

The procedure will be as follows: We will take measures of your blood pressure. Then you will be shown a film, and another measure of blood pressure will be taken. During the film we will also take a measure of your blood pressure. This will be done for each one of the 6 film clips.

One last point: It is very important that you do not move around in your chair -- such movements would cause errors in our measures. So, please sit as relaxed as you can, and try not to talk to anybody while we take measures -- particularly during the film.

Pause for any questions S might want to ask.

Now we will run the experimental films.

E runs the cycles: measure of blood pressure, announcement of the content of the particular film clip, presentation of the film and recording of continuous measures of heart rate and skin temperature, measure of blood pressure, and pause to allow S to return to base-level readings of skin temperature. After all 6 films E announces the end of the main part of the experiment. E detaches S, and gives further instructions.

Now we would like you to fill in the final questionnaire which asks for various evaluations. You will find the simple instructions on the form sheet.

After S completed the questionnaires, E debriefs him.

The information we gave you at the outset of the experiment on the purpose of this research was quite correct. We are studying similarities and dissimilarities in the physiological response to filmed materials, in particular those to aggressive and erotic materials. This is of interest to us in itself, and also as a preliminary to further research in this area of emotional reactions to films.

E thanks S for his cooperation and asks him, not to talk about the study for at least one week. S is then payed and dismissed.

Announcements preceding the presentation of each film. The order depends on the specific sequence of the film clips as prescribed by the experimental design.

The Travels of Marco Polo. This film clip shows scenes from an educational film dealing with the travels of Marco Polo in China.

Banister Versus Landry. This film was part of a documentary on the British Empire Game in Vancouver and shows the one-mile track race in which Banister wins over Landry.

Body and Soul. This is a prize fight scene from the feature film "Body and Soul", starring John Garfield.

The Champion. This clip is a prize fight scene from the feature film "Champion", starring Kirk Douglas.

The Couch. This is a scene from a student-made film

dealing with married students' life.

42nd Street. This scene shows a couple making love, and is taken from a film which is available to theaters throughout the country.

Questionnaires. Film titles and film-specific questionnaires were presented in the order S had seen the films.

The first questionnaire begins here.

The attached sheet gives you the titles of the film clips you have seen. Associated with every title is a letter. Please use the letter associated with a specific film when you refer to this film.

(I) Rank order the six films in terms of the degree to which you think they excited you physically.

(Put the letter associated with the film you think aroused you most in line 1, your second choice in line 2, and so forth to line 6 representing the film you think aroused you the least. Make sure you list all six films by letter designation.)

- 1 _____ (most exciting)
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____ (least exciting)

(II) Rank order the six films in terms of their entertainment value for you.

(Again, put the film you think was most entertaining in line 1, your second choice in line 2, and so forth to line 6 representing the film you think was least entertaining.)

- 1 _____ (most entertaining)
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____ (least entertaining)

(III) Rank order the six films in terms of the apparent degree of aggressiveness in the behavior of the protagonists.

- 1 _____ (most aggressiveness)
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____ (least aggressiveness)

The following pages contain more specific questions for every film individually. The title of the film to which the questions refer is given at the top of every

page.

The first questionnaire ends here.

The second questionnaire begins here.

Title of a specific film in here.

(I) This was, of course, just a segment from a larger film. To what degree do you feel inclined to view the total film?

(Please place a check mark in the one category that best reflects your feelings.)

_____ Want very much to see the remainder

_____ Want somewhat to see remainder

_____ Do not care one way or the other

_____ Want somewhat not to see remainder

_____ Want definitely not to see remainder

(II) To what extent is there hostility involved in the interaction between the main characters in this film?

(Please place a check mark in the one category that best represents your judgment.)

_____ Extremely hostile

_____ Quite hostile

_____ Somewhat hostile

_____ Only slightly hostile

_____ Not hostile at all

(III) Some people are concerned with the degree of aggression in a film. How would you rate this film in terms of its over-all level of aggression?

- _____ Very aggressive
- _____ Quite aggressive
- _____ Slightly aggressive
- _____ Neither aggressive or non-aggressive
- _____ Slightly non-aggressive
- _____ Quite non-aggressive
- _____ Very non-aggressive

The second questionnaire ends here.

APPENDIX B

Instructions to S

While leading S into the laboratory, E makes a casual remark about his foreign accent. S is seated, and E tells S that prepared tapes will be used to ensure best understanding and consistency of the instructions. S is told to pay close attention, and to ask later any questions he might have.

Tape 1 starts.

The main purpose of this experiment is to study some of the effects of punishment on learning. As you may know, there are different points of view on this subject. Some people feel that learning is most likely to occur when reward is given for correct responses, while others feel that the punishment of incorrect responses is the best way to facilitate the learning process.

The learning process usually involves two people -- a teacher and a learner -- and accordingly there are two subjects involved in our study. You are in this room and will play the part of the teacher. There is another student in the adjoining room who will be the learner. This is actually the second phase of the study for him. He has already seen a complete feature film, and the learning part of the study will deal with how

well he has acquired appropriate information from that film. Since the way he will learn -- at least, as we try to test it here -- involves the administration of punishments, we have deliberately not allowed you to meet together.

The actual punishment we will use will be mild electric shock. However, before we begin we want to assure you that these shocks are not dangerous or harmful in any way. They are generated by dry cell batteries, not by altering current. This is a standard procedure in such research, but if you have any personal objections to working with electric shock in an experiment, just say so now to the experimenter, and we will not go on from here.

Pause of 3 seconds.

If S does object and refuses to participate in the experiment, he is dismissed. Otherwise the instructions continue.

As you may know, one of the critical aspects in learning is the degree to which the teacher and learner agree, or are in tune with each other, on various items both connected or unconnected with the actual learning task. It is necessary, in this experiment, to obtain this measurement before we come to the actual learning situation. To do this, we will give you, the teacher, a set of twelve items on which you probably have some

attitude or opinion, and ask you to briefly state that opinion. Your opinion statements will be received by the learner.

You will be given the list of items now. Please familiarize yourself with the various items, and think of one sentence statement that expresses your opinion on any particular topic.

Tape 1 ends.

E hands S the list of 12 topics and reminds him to think of opinion-expressing statements for all the issues. E leads S to the shocking box. S takes a seat there.

Tape 2 starts.

You'll notice in front of you a microphone and a box with two lights on it. Through the microphone you will be able to communicate to the other subject. What we will do in this task is to determine how the two of you stand on these opinion items. When the other subject is ready, he will press a button which will turn on the light marked "READY" on your box. When this light goes on, you will talk into the microphone and briefly, in about one sentence, give your opinion on the first item on the list. The other subject will then inform you if he agrees with you or not. If he agrees, he will turn on the other light on your box, which is marked "AGREE". If he does not agree, he will administer a shock to you

through a shocking strap that will be attached on your arm.

Just repeating the procedure quickly then: When the "READY" light goes on, you will give your condensed version of your opinion on the first topic. After that you will either see the "AGREE" light go on, or will receive an electric shock if the other subject disagrees with you. His response is completely up to him. You will then await the "READY" light to go on again, and will complete each of the twelve items on your list in exactly the same manner.

Tape 2 ends.

E places the shocking strap on S's arm, and uses the first item on the list as an example of a brief response. E then speaks into the microphone to tell C that they are ready to begin. E tells S to begin when the light goes on. After the 12 items are completed, E tells S that they have now completed this interchange, and that they can now go on to the main part of the experiment.

Tape 3 starts.

We can now proceed with the main part of the experiment.

On the panel of the apparatus before you, notice that on the top is a row of five red buttons, labeled with the letters A through E. Along the bottom is a row

of ten black buttons, labeled with the numbers one through ten. Between the two are two lights labeled "RIGHT" and "WRONG". These are the only items which will be used in this experiment. You may ignore anything else on the panel.

Your task is to present information to the other subject. This information regards characters and events in the film the other subject has seen. You will give this information in the form of sets of three letters which have been coded to represent the critical relationships to be learned. The other subject's job will be to figure out these relationships on the basis of the coded information which you give him. On the sheet you will be given there will be 20 sets of combinations of three letters. You will follow this list, pushing for each trial the buttons representing the letters listed. For this you will use the five red buttons on your panel. For example, the first set of letters is D-B-A. This, then, is a coded reference to a particular relationship to be learned. After you sent the set of three letters you will then wait while the other subject picks out on his board a set of buttons representing the correct relationships for that trial.

After he has made his decision you will be informed automatically whether his decision was right or wrong.

If it was right, the green light marked "RIGHT" on your board will go on. If it was wrong, the red light marked "WRONG" will light up.

Again: your purpose as teacher in this experiment is to present information about critical relationships of events and characters in the film which the other subject saw earlier. Now, while the other subject receives instructions for the learning part, we will show you a segment of the film he saw, so that you will be able to know the basis of what the film is about, and to give you some of its flavor.

Tape 3 ends.

At this point, dependent upon S's experimental condition, the content of the film is introduced.

Live: neutral condition.

The film segment you will see shows scenes from an educational film, including some references to religion and politics.

Live: aggression condition.

The film segment you will see shows scenes from a prize fight, including some rather vivid boxing shots.

Live: excitation condition.

The film segment you will see shows scenes from a film dealing with married students' life, containing some shots of female nudity and intimate kissing.

Live continued in all conditions.

Though such scenes are common enough in contemporary films, some people may be sensitive to such materials. If for some personal reason you object to being exposed to a film with this content, let me know before we proceed.

Pause for interaction.

If S objects to seeing the film, he is dismissed and paid for the time of participation in the experiment. If S agrees to participate further, E continues.

While I prepare the projection -- why don't you look over this MESSAGE form here, containing all the letter combinations you are to send later.

E hands S the form sheet. Shortly thereafter, E asks S to change seats. S is seated facing a screen for the projection. E starts the projector, turns off the light and leaves, stating that he will be back at the end of the film. E returns at the end of the film, turns off the projector, turns on the light, and, while doing these things, gives further instructions.

Well, the other subject is ready for the next part.

Please come back here to the apparatus.

S takes seat at aggression machine.

You know the apparatus already. All you have to do now is to follow these instructions.

Tape 4 starts.

Whenever the other subject makes a wrong response you must give him negative reinforcement through electric shock by pushing one of the ten black buttons on your board. These represent shocks of ten different intensities running from a relatively weak shock at button one to quite a painful one at button ten. The intensity increases gradually between the two. You MUST shock the other person every time he makes a mistake, but the number and the intensity of the shocks you give him is up to you. The only stipulation we ask is that you do not give him the same shock twice in a row.

Just remember: Whenever the "WRONG" signal comes in response to your sending a set of letters, you MUST punish the learner. You may give as many shocks as you feel are adequate in this particular learning situation between you and him. Similarly, you may vary the shock intensity from one through ten.

Tape 4 ends. Live continued.

I have to be with the learner subject who receives the shock. You just follow the instructions. Whenever he signals "READY", you go on with your part.

E announces over the intercom:

We are ready to send the coded information. Whenever you are set, press the "READY" button.

E to S:

Watch out for his signal.

At C's signal "READY", E leaves S's room. The dependent measure is taken. After completion, E returns to S.

S is asked not to talk about the experiment to his fellow students for the next few weeks while the testing is still going on. He is asked to leave his address, in case E wishes to make further contact with him.

S is told that a letter describing the experiment in detail will be mailed to him as soon as the study is completed.

All Ss are sent a debriefing letter, giving purpose and design of the study, and also, in brief, the general findings.

List of Opinion Items Used

OPINION ITEMS

NOTE: In one short sentence express your basic opinion on each of the following statements.

1. There should be severe limitations on the number of out of state students allowed to attend the University of Wisconsin.
2. The right to dissent should be basic on any university campus.
3. Intercollegiate sports are extremely overemphasized at major universities.
4. Some censorship of motion pictures should be enforced by

local authorities.

5. There is a definite need to improve the quality of instructors in undergraduate courses at Wisconsin.
6. The quality of acting in motion pictures today is far superior to what it was some years ago.
7. The United States has lost considerable international prestige in the past three years.
8. All full-time college students should receive automatic draft deferments.
9. Fraternities, on the whole, contribute greatly to the university community.
10. Religious centers have an important role to fulfill on the campus.
11. The United States is investing entirely too much money in a space program which has completely unpredictable results.
12. On a large university campus it is usually quite impossible for there to be a close personal relationship between professors and students.

Response Schedule for Agreement-DisagreementSCHEDULE OF RESPONSES TO OPINION STATEMENTS MADE BY S

1. agree	5. agree	9. SHOCK
2. SHOCK	6. SHOCK	10. SHOCK
3. SHOCK	7. agree	11. SHOCK
4. SHOCK	8. SHOCK	12. SHOCK

Coded Information Sent by S

LIST OF PRE-CODED CRITICAL RELATIONSHIPS

1. D B A	6. E C A	11. D A C	16. D B C
2. A D C	7. C D E	12. C E A	17. B A E
3. C B A	8. C A D	13. E B D	18. E C D
4. B E A	9. A E C	14. B C A	19. A E D
5. A B D	10. E D B	15. D E A	20. B C E

Response Schedule for "Errors"SCHEDULE OF RESPONSES TO INFORMATION SENT BY S

1. WRONG	6. WRONG	11. right	16. WRONG
2. WRONG	7. WRONG	12. WRONG	17. right
3. WRONG	8. WRONG	13. WRONG	18. WRONG
4. right	9. right	14. right	19. right
5. WRONG	10. WRONG	15. right	20. right

APPENDIX C

Analysis of Variance
of the Intensity
of Individual Shocks

Source of variance	df	MS	F
Films (A)	2	254.230	10.617***
Shocks (B)	11	39.315	11.921**
Interaction (AB)	22	8.234	2.497*
Error S(A)	60	23.942	
Error S(A)B	660	3.298	

* p < .10; ** p < .005; *** p < .001.

Note.-- When appropriate, F-ratios are evaluated conservatively by the Geisser-Greenhouse method.

APPENDIX D

Analysis of Variance
and
Means of Shock Intensity
of 4 Blocks
Composed of 3 Responses

Source of variance	df	MS	F
Films (A)	2	84.778	10.621**
Shocks (B)	3	40.241	32.983**
Interaction (AB)	6	4.573	3.749*
Error S(A)	60	7.982	
Error S(A)B	180	1.220	

* $p < .05$; ** $p < .001$.

Note.-- When appropriate, F-ratios are evaluated conservatively by the Geisser-Greenhouse method.

Shock block	Communication condition		
	Neutral	Aggressive	Excitational
1	2.460 _{A,a}	2.873 _{A,a}	3.365 _{A,a}
2	3.222 _{A,b}	4.079 _{AB,b}	4.889 _{B,b}
3	3.302 _{A,b}	4.302 _{A,b}	5.714 _{B,c}
4	3.286 _{A,b}	4.540 _{B,b}	6.317 _{C,c}

Note.-- All comparisons are orthogonal.

Upper-case subscripts specify differences between film means (horizontal comparisons) as determined by multiple t-tests corrected by Cochran's method.

Lower-case subscripts specify differences between block means (vertical comparisons) as determined by the Newman-Keuls method.

Cells having a subscript of identical case in common are not significantly different at the .05 level.

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